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A C EVERTON

**Assessment of fundamental strategic issues in structural change in
United Kingdom and South African ports by systemic scenarios.**

Supervisor: Dr D Wright

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ABSTRACT

The future complexity of strategic issues in international structural change was demonstrated by UK and SA ports. This arose from the likely extent of structural constraints and the effects of stakeholder power.

From a review of emerging Advanced Systems Theory a new Boundary-spanning perspective of strategy was developed, that led to the specification of conceptual circumstances of potential outcomes of change. Since existing systems methodologies could not accommodate future power relationships, a new methodology and data collection technique was developed.

The circumstances were developed into multiple scenarios which were judged by international decision-makers. These judgements were subjected to quantitative and qualitative analysis from a Strategic Choice Perspective.

The outcome was a Boundary-spanning 'Long-term Strategic Service Industry' model which proposed the outlines of the future strategy and organisational structure that ought to be adopted to meet 'public interest' constraints.

A dual subject and methodological contribution was made.

ACKNOWLEDGEMENTS

Futures research in transport is notoriously problematic because of its inherent ambiguity and uncertainty - this requires an innovative approach to seeking data.

The research process was evolutionary and was somewhat akin to setting out to design a unicycle, discovering the benefits of bicycle along the way, but ultimately developing a tricycle. Such is the nature of futures research - it will always be growing as circumstances change and knowledge develops. A line has to be drawn in the development process so as to document the research from the benefits of hindsight. Researchers following the holistic multiple scenario route may find a four-wheeled contraption is created, though this may not have been envisaged.

A note of caution for those considering international research and using the Multiple Scenario Technique. In the process of trying to find answers to the 'so what' questions you may visit many 'academic' and 'real' world pigeon-holes. Unless you are seen to fit by the inhabitants of each of these, you may find they do not appreciate a challenge to their beliefs. You may find that those who hold power see no reason to examine their pigeon-holes - why should they? You may find that you have to build your own pigeon-hole - do not expect the inhabitants of other pigeon-holes to approve of the carpentry from the comfort and security of their own abode. They will not necessarily recognise the reasons for the design and the compromises caused by scavenging for materials!

My grateful thanks to all who helped the evolution, but in particular the model could not have been produced without the support of anonymous participants from:

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I also wish to record a tribute to Sir Brian Kellett, former Chairman of Port of London Authority, for his inspiration to undertake the research and his support until his sudden death.

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INTRODUCTION - STRUCTURAL CHANGE IN INTERNATIONAL PORTS

"Research!

A mere excuse for idleness; it has never achieved, and will never achieve any results of the slightest value." Benjamin Jowett (1817-1893).

These views may well have been appropriate to management practice in the last century before the problems of ports restricting the increasing flow of international trade became apparent in the UK, particularly in London. This led to the first of the major structural changes to safeguard the public interest. Since then, expectations of the roles of decision-makers have changed. This introduction sets out the background for the research into the importance of strategic management in an international trend towards privatisation and commercially oriented restructuring as demonstrated by the ports industry. It provides an overview of these global changes and identifies the contrasting ports industries of the United Kingdom and South Africa for comparison.

Port structures developed from historical decisions taken to facilitate global transport and the influence of favourable geography. On commencement of this research in 1992 the latest available HM Customs trade statistics showed that by value some £90.9 billion imports and £78.1 billion exports passed through the United Kingdom ports in 1991. Hence the survival of ports is of national importance for the functioning of commercial enterprise, and it was assumed that the ports industry possessed unique factors which made these structural changes worthy of research.

Understanding the thesis depends on understanding the public/private role of ports. Not all the elements in structural change in the international ports industry are included in general perceptions of strategy and the management of change. Altering the structures of ports without a clear understanding of the reasons underlying their existing form may lead to unforeseen future complications in meeting the needs of stakeholders. Consequently the introduction specifies the role of ports in global trade and the facets of privatisation and restructuring that are of concern for the future.

Leading on from this background information, the strategic and managerial implications of structural change are discussed in Chapter 1 to show a need for research. The basic research design problems posed for conducting high level international research are identified and the research approach adopted is then outlined in Chapter 2. The multi-disciplinary nature of the topic meant that there is no literature review chapter, since this is referred to when needed to support the thesis.

In reading the thesis it should be borne in mind that the researcher had direct relevant senior level experience of the privatisation process in the United Kingdom ports industry and observing decision-makers in action. Likewise, the South African context was not unfamiliar, although there was no direct port knowledge. This experience posed a benefit for research in that it enabled an informed perspective and cultural awareness to be brought, and eased somewhat the considerable problem of access.

However experience can also introduce potential bias and the research method adopted specific approaches to control this possibility. These included the use of reported events as examples of concepts and frequent use of comments from participants in the research to explain, confirm or refute concepts to minimise distortion in the argument arising from personal experience. The strengthening of a researcher's role as a participant and the lessening of the role as a detached observer is a key feature of the philosophy developed that underpins the research.

Because of the multi-disciplinary nature of the thesis, and the multi-lingual and multi-cultural participants, an ordinary dictionary meaning of the words used throughout the research process and thesis applies (unless defined otherwise). To attribute technical meanings to words would diminish the impact of participants' perceptions of the outcome of events - the purpose of the research was to obtain these views. The participants in the research were drawn from senior decision-makers in the United Kingdom (UK) and South Africa (SA) ports industry, related businesses, and academia. (The sampling procedure is discussed in Chapter 10 and participant coding follows the order of first letter representing country (U)nited Kingdom, (S)outh Africa; the second letter representing occupation group - P(ort), B(usiness), A(cademic); the remaining letters are random identifiers).

1/ THE ROLES OF PORTS

The word "port" can have several meanings - a shelter or refuge (e.g. from bad weather); or a more general meaning of a land/sea cargo interchange; or a wider meaning incorporating both functions. This wider meaning is used in the thesis. One managing director of a port terminal expressed the generally perceived economic benefits of structural change in the ports thus:

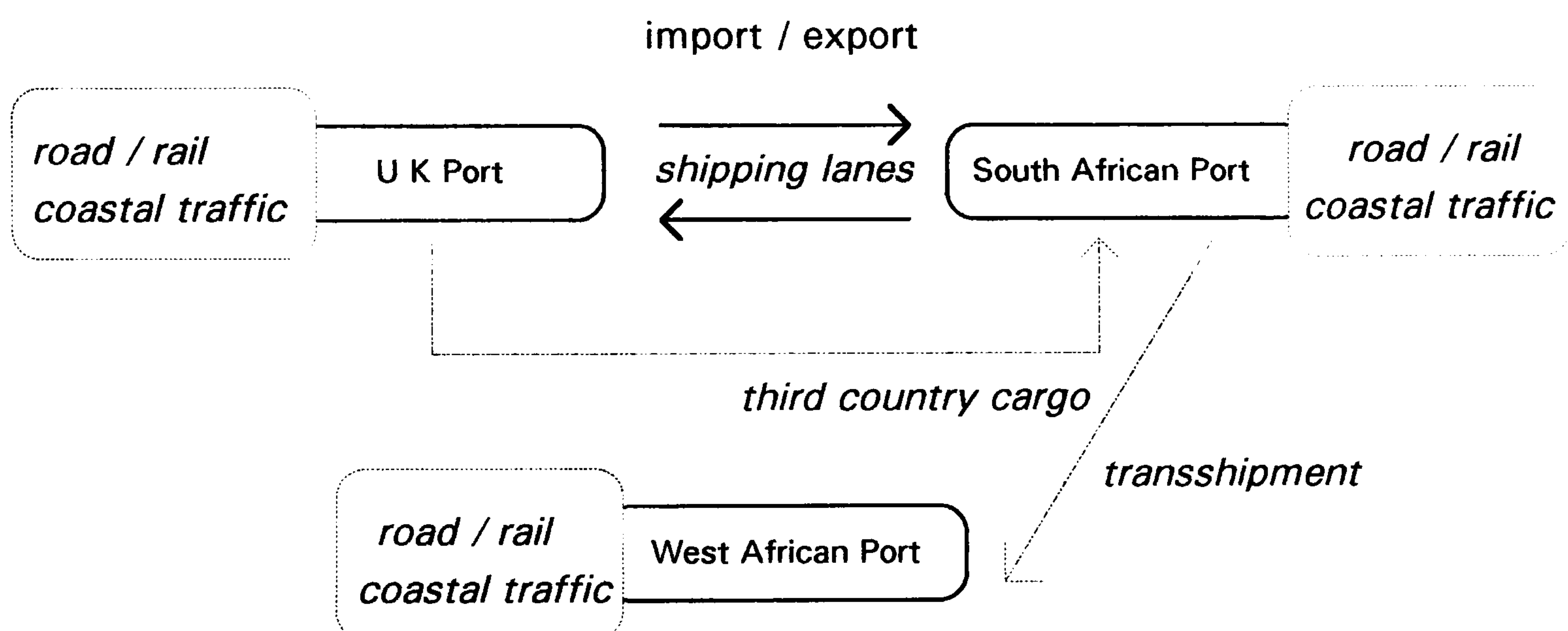
"I believe that 'privatisation' is merely the tool of change. Whether in the UK or without, the moribund state of public management is incapable of instituting change on its own initiative whatever the background. It has taken a prime governmental instrument to dismantle the current regimes, and the most acceptable form has been 'privatisation' or 'commercialisation'..... The major difference, worldwide, in the approach to making Ports more commercially aware, or responsive, has been the question of degree; all, part (and which part), or nothing. In nearly every case ideology has been subservient to commercial effectiveness. In other words the customer is getting what he wanted." (UB - D).

The principle of ports existing in the national interest has been long established. The prime requirements for the location of a port are deep water for vessels and proximity to the markets for the goods they carry. Historically, these requirements were met by river estuaries, and using the river Thames as an example, the Port of London's recorded history dates from AD 61. The existence of conservancy and navigation powers for the river Medway were recorded in 1189. Traditionally, this industry has

been neglected as a source of generalisable research conclusions for change management, possibly because of the small number of organisations present, its pseudo public/private sector status and its low image. As one of the oldest industries in the world still continuing with a similar line of business in essentially the same locations it has become so familiar as to be consistently overlooked.

The primary purpose of a port is to act as an intermodal interchange point between land and sea cargo transport, i.e. to act as a node in an international transport system. This nodal purpose can be envisaged as shown in Figure 1.1. Cargo arrives at one country's port by road, rail or coastal vessel, is off-loaded onto a sea-going vessel in the port; this vessel leaves the port and sails to another country, where on arrival the process is reversed. The cargo may then enter the local transport system, or if it is destined for a third country where there is no direct call by the original vessel (e.g. one of the massive 'round-the-world' container ships), may be loaded onto a smaller vessel which is destined for that country. Ports are thus a key element in an international transport system. The overall efficiency of the system is highly dependant on the smooth functioning of a port, as is the economic well being of an exporting or importing country.

PORTS AS NODES IN INTERNATIONAL TRANSPORT Figure 1.1



An indication of the importance to the global economy of ports can be derived from the type of cargo passing through the ports. The makeup of the world's shipping fleet reflects both current and anticipated demands for particular products which comprise international imports and exports. This is shown in Table I.1.

The high importance of raw materials to the world's economy is shown in the fact that 57.2% of the world's fleet are oil or bulk carriers. Containerised cargo, which can be equated to finished articles, represents just 5.6% of the fleet, a surprisingly low figure given the emphasis placed on modern developments in this form of transport.

WORLD MERCHANT FLEET BY SHIP TYPES *Table I.1*

Oil	30.4%	Liquefied Gas	2.5%
Bulk and Ore	26.8%	Roll-on/roll-off	1.8%
General Cargo	12.9%	Refrigerated	1.7%
Container	5.6%	Oil/chemical	1.5%
Oil/Bulk/Oil	4.7%	Chemical	0.8%
specialised	3.6%	Others (passenger etc.)	5.8%
fishing	3.0%		

Source: OECD 1990

The pattern of vessel calls in the United Kingdom (UK) for 1994 (totalling 156,266 calls) shown in Table I.2 illustrates that advanced economies are still heavily dependent on these raw materials for which no suitable alternative forms of transport to have been developed. This emphasises the importance of the ports to trade.

SHIP ARRIVALS AT UK PORTS *Table I.2*

Vessel (Deadweight tonnes)	Tankers	Roll-on/ Roll-off	Container roll-off	General Cargo
under 5000	15,841	69,867	1,972	35,794
5 - 20,000	4,453	15,543	1,190	3,234
under 100,000	3,049	364	2,419	1,574
over 100,000	754			212

Source: DTp Port Statistics 1994

In terms of the volume of cargo passing through ports the best indication is given by the sheer weight of the products handled, which shows the difficulty of finding alternative means of transport to shipping, and ports acting as a node in the transport system. These are significant for UK and South Africa (SA) as shown in Table I.3.

PORT FREIGHT TRAFFIC *Table I.3*
million tonnes

	Imports	Exports	Coastal	Transshipment
UK 1994	190.1	179.0	169.1	not available
SA 1993/94	15.2	103.8	2.4	1.0

Source: DTp Port Statistics 1994 and Portnet figures

It is for these reasons that Branch (1986) lists the principal roles for ports as being provision of shelter for vessels from the elements; a terminal forming part of a transport chain; cargo and passenger handling; provision of support services for ships; and a base for industrial development. The basic factors determining the shipowners' or shippers' choice of port are numerous and Branch (1986) has identified the following key factors affecting the pattern of international trade. These relate to factors outside the ports control and those within its control or which can be influenced by the actions of port management:

General international demand for a particular product which is outside their control:

- the overall transit cost in relation to the port's geographical situation to the market;
- climatic conditions.

Quality of service to the international transport trade which is within their control:

- the overall competitiveness of the port;
- the port tariff structure;
- the nature of the commodity and volume of the traffic which requires specific cargo handling methods and equipment;
- land and sea access to the port;
- tugs, bunkering, waste and other service facilities.

External factors which they can influence:

- the extent of any political or statutory activity;
- the mode of onward transport, e.g. road, rail links;
- general agreements, e.g. conference lines and trade associations;
- the range of port facilities, e.g. customs, forwarding agents;
- local industry.

These factors depend on future trends in the transport industry, which Branch (1986) identifies as:

- through transport concepts and combined transport concepts requiring enhanced road and rail linkages in the transport chain;
- the further development of containerisation leading to requirements for specialised cargo handling equipment;
- increasing container vessel sizes leading to increased concerns for navigation access, deep water berths and container stacking areas;
- demands for productivity improvements involving increased use of mechanised and computer equipment in both importing and exporting countries;
- reform of cargo handling practices by dock labour and reductions in work forces;
- legislative changes regarding documentation, e.g. customs, in order to match or speed up improvements in cargo handling;
- free trade zones and free port arrangements.

It can be seen from this listing that the emphasis is on incremental development of existing practices based on the assumption of linear growth, and no major change in port operations such as the container revolution of the 1960's was envisaged. These developments do not presuppose that the status quo will be maintained for ports, rather the thrust will be on greater efficiency and competition between ports. This implies that in countries with large numbers of ports there will be rationalisation where the priority will be given to the development of those ports which fitted in with modern needs. In particular, emphasis was likely to be placed on those with the ability to raise capital and provide the modern berths required by the market and modern vessel tonnage. Consequently geographical factors of port location on shipping lanes, navigational access and availability of land for expansion were likely to become increasingly prominent.

The listing concerned operational developments but did not consider social or economic developments. Ports where these factors posed difficulty, or where capital funding was short, were likely to suffer and the emphasis would change towards non-cargo handling social developments such as surplus land sales for housing in London or redeployment of harbours towards leisure developments e.g. the marine-related Waterfront complex in Cape Town. Greater prominence would be given to the hazardous nature of the cargoes carried by growing strength of the environmentalists e.g. on oil spillage, leading to increased control measures being instituted. This could affect competitiveness according to geographical location and specialist cargo attracted to port terminals e.g. the grounding of the Sea Empress in Milford Haven causing pollution to tourist beaches which led to calls for the banning or increased control over hazardous substances in sensitive areas.

The economic growth of many countries was based on increased exports which could only succeed in the long term in highly competitive markets if the international transport distribution arrangements were effective. External non-linear considerations outside the ports' control, such as environmental and political issues, could concentrate traffic in certain ports. Conceivably, the volume of traffic could outgrow the navigational access and land availability to handle the increase. In the absence of suitable geographical sites for port expansion, then unfavoured or former ports, smaller vessels, other intermodal interchanges etc. would be required. The future of ports was not therefore necessarily one of solely incremental cargo handling developments. These aspects and factors of ports are discussed further in Chapter 5.

1.1 Ports Commercialisation Worldwide

Broadly, ports can be divided into three differing organisational structures according to the level of ownership:

service - where the owner of the port (public or private sector) carries out all port-related activities (including navigational access, provision of berths and terminal facilities, supply of labour), and undertakes cargo handling;

landlord - the supply of labour and cargo handling may be undertaken by either the public or the private sector - berths and facilities remain owned by the public sector although they are generally leased for long periods to cargo handling companies or shipping lines;

statutory - where the public sector is only responsible for ensuring navigational access to a port and the private sector owns berths and facilities and is responsible for labour and cargo handling.

These broad categories are flexible according to the nature of a particular port or estuary and depend on the nature of the definition being sought to answer a particular question. The Port of London is usually classified as a public sector statutory authority but, for example before privatisation, it was a statutory organisation; a landlord operator in the enclosed docks whilst still retaining its statutory function; a service operator on the failure of private companies in the docks whilst still retaining its statutory function; a statutory organisation after privatisation of Port of Tilbury, but with some residual landlord and service activities. The answer to a question on the structure of a port usually depends on what duties that port is obliged by law to carry out and the powers it possesses to do these; what activities it has the discretion to carry out and the powers it possesses to do these (essentially this is the legal doctrine of *ultra vires* which could have a significant effect on the organisation of a port and its corporate status in the public or private sectors. This is discussed further in Chapter 4).

MeesPierson NV (1994) was the only research located which attempted a worldwide survey of intentions of ports within these categories to carry out commercialisation (or restructuring activities) and those which had already done so. The survey followed the general perception of ports based on a logistical view of cargo handling, or economic view as a trading activity, rather than the wider view of ports. The survey responses were erratic, with Africa and South America being excluded from their evaluation because of insufficient numbers, and a substantially greater number of responses from Asia and Europe. Of the total responses received, 77% claimed that governments had an active role in the ports at that time, and after commercialisation the governments would still play an active role in price, cartel, monopoly and service considerations. The most popular positive considerations for increasing private sector participation were:

- reducing size of public sector deficits;
- improving flexibility of government departments by reducing the governmental organisation (notably in Asia);
- reducing the size of the labour force (notably in Europe and Australia);
- improving productivity through competition;
- improving port efficiency;
- revoking excessive regulations (notably in Asia).

The preferred negative considerations against increasing private sector participation were:

- too many opponents, e.g. labour unions (notably in Europe and Australia);
- private sector (local) was not interested because of low profit expectations (notably in the United States of America);
- private sector was not interested because of expected administrative control by public authority (notably in Asia).

The response showed the favoured activities for commercialisation were all cargo handling and associated facilities such as sheds, warehousing etc., and towage, but the least favoured were marine facilities such as quay walls and locks. These operational areas were selected as a result of national strategic planning influences, rather than for local tactical decisions to meet the threat of competition. This implied that landlord and statutory (as opposed to private sector service) structures would dominate the global ports in the longer-term. These conclusions were supported by the frequency of specialist press reports of moves to privatise terminals and cargo handling at the instigation of relevant governmental bodies.

The preferred method of transfer was notably different between Europe and Asia as shown in Table I.4. This survey, although not completely reliable because of definition and response concerns, indicated that there was a difference in the international perceptions of the appropriate organisational structure and method of transfer to the public sector.

<i>Table I.4</i>		
<i>PREFERRED INTERNATIONAL METHODS OF TRANSFER</i>		
	<i>EUROPE</i>	<i>ASIA</i>
Outright sale	10%	
Management and Employee Buy-out	13%	
Sale by tender	44%	
Lease	10%	40%
Contracting out	23%	24%
Joint venture		36%

Source: MeesPierson NV (1994), Holland.

The UK was chosen as an example for comparative research since this country had the most varied public and private sector structure; was most active in transferring its service ports to the private sector; and access could be obtained. A matching comparator to the UK would be a country where all port activities were carried out by the private sector with share ownership of the organisations being freely transferable, to demonstrate the extent of generalisability of subject and methodological conclusions. No country fitted this ideal, although New Zealand presented an

example of a fully privatised commercial industry with public sector control over landlord activities. However, access to port decision-makers there was a problem.

At the opposite end of the spectrum lay countries whose port activities were wholly in the public domain, where decisions were centrally made and affected not only the nation concerned but also neighbouring land-locked countries. Following the trend towards greater private sector involvement, these countries were actively reviewing their arrangements and in a number of cases instigating privatisation or commercially oriented restructuring, and would serve to demonstrate the equally important extent to which context can limit conclusions. Such a country was South Africa (SA) where political change has resulted in an emergence on the international stage. For these reasons it was chosen as a comparator country where access could be obtained. In order to limit the research scope to a manageable size, only these two countries (UK and SA) were assessed.

2/ OVERVIEW OF PRIVATISATION IN THE UK PORTS

The UK has taken a leading role in privatisation and has introduced a phased process of ownership change of its ports industry. The first phase began in 1983 with the flotation of Associated British Ports PLC (ABP). In 1991 there were 111 trust ports owned and administered by statutory authorities and the second phase of voluntary trust port sales took place during 1992 with the passage of the Ports Act 1991. The third phase of compulsory privatisations under this Act began in 1995. These privatisations are subject to clawback provisions on land sales. Municipal ports can be sold under local government legislation - Boston and Bristol are the only significant ports sold so far. The major ports of Felixstowe and Liverpool have always been in the private sector, although the government has a large shareholding in Mersey Docks and Harbours Company (MD & H) which was acquired in 1974 as part of a funding arrangement to avoid the financial collapse of the Port of Liverpool.

However, before the introduction of these initiatives for structural change, there was already strong competition between those ports which did not have a large natural hinterland, or which possessed expensive specialist facilities for a particular traffic that were difficult to copy. An early incisive action in the promotion of competition was the reform of statutory labour practices in the ports in 1989, which enabled major privately owned ports and trust ports to compete on an equal employment footing. Thus competition was of a sufficiently high level to preclude the necessity for economic regulation. Separate legislation had increased the responsibility of ports for the effective operation of pilotage services, security measures and control of dangerous substances, plus granting enhanced powers for carrying out activities relevant to harbours.

The Ports Act 1991 provided a mechanism for the sale of major trust ports with a turnover exceeding £5 million in 1991, and the first wave of *voluntary* privatisations under this Act took place in 1992 with five trust ports seeking private sector status.

At that time the Ports Act 1991 applied to 15 ports as shown in Table I.5, which also records the differing methods of sale. The extent of competition between the ports in the public and private sectors could be inferred from the total tonnage handled by these ports as shown in Table I.6, which also records ownership.

<p style="text-align: right;"><i>Table I.5</i></p> <p style="text-align: center;">MAJOR TRUST PORTS IN THE UNITED KINGDOM (Turnover exceeding £5 million cut-off point in the Ports Act 1991)</p>		
<i>Port</i>	<i>Turnover £m</i>	<i>Sale Method</i>
Dover	48.9	deferred
Tilbury	40.7	MEBO, then to Forth
Tees & Hartlepool *(1990)	38.8*	to private sector company
London (PLA)	33.4	excluded
Medway	33.2	MEBO, then to MD & H
Forth	32.4	stock market
Tyne	14.7	opposed compulsory sale 1996
Aberdeen	13.6	
Ipswich	13.2	compulsory sale 1996
Clyde	11.6	MEBO, then placing
Harwich Haven	11.0	
Milford Haven	10.0	
Poole	8.8	
Lerwick	5.7	
Blyth	5.6	
Dundee	5.2	to Forth
<i>Source National Audit Office</i>		

There are differences in opinions of the benefits to be gained from privatisation. An early indication of a major potential concern over outcomes in the UK is that given by the decision of a House of Lords Select Committee (1991) to reject a private bill from a UK port seeking to leave the public sector as there was "no guarantee that the original shareholders will not sell to a predatory outsider....such risks are acceptable in the private sector....could endanger the successor company's ability to fulfil its statutory obligations and to carry on its core business of running the ports". There was no political consensus that a particular form of ownership, with its resulting management practices, was the most important influence on an organisation's performance. This objection was overturned by the Ports Act (1991). Some decision-makers support the principles of ownership change, some are cautious about timing, others do not agree that privatisation is appropriate in their particular circumstances.

One view of geographical and social factors influencing ownership and strategic choice was expressed by a port Chief Executive as:

"...The Trustees of the Port are strongly opposed to any element of compulsory privatisation and do not feel that privatisation will be in the best interests of this port or community since Lerwick is the only substantial marine link with the rest of the United Kingdom, a link which we feel should not come under private control...." (UP - Z).

Table I.6

PRINCIPAL UNITED KINGDOM SEAPORTS 1991

(excluding inland waterway ports, Local Authority ports and Northern Ireland ports which are not covered by the Ports Act 1991)

<i>geographical order</i>	<i>ownership</i>	<i>million tonnes</i>		
		<i>bulk</i>	<i>container</i>	<i>total</i>
London (# inc. Tilbury)	<i>mixed</i>	46.6	6.2	52.8
Medway	MD & H	13.7	2.3	16.0
Dover	trust	0.3	11.7	12.0
Southampton	ABP	27.6	3.9	31.5
Plymouth	ABP	1.4	0.2	1.6
Poole	trust	0.6	1.2	1.8
*Bristol	private	4.3	0.1	4.4
Newport	ABP	2.7	0.6	3.3
Cardiff	ABP	2.5	0.0	2.5
Swansea / Port Talbot	ABP	15.0	0.2	15.2
Milford Haven	trust	35.4	0.3	35.7
Liverpool	MD & H	20.9	3.9	24.8
Ayr / Troon	ABP	1.2	0.0	1.2
Clyde	private	7.7	0.5	8.2
Lerwick / Sullom Voe	trust	36.5	0.1	36.5
Aberdeen	trust	4.0	0.1	4.1
Dundee	private	1.2	0.0	1.2
Forth	private	22.1	0.8	22.9
Blyth	trust	1.3	0.0	1.3
Tyne	trust	5.7	0.2	5.9
Tees & Hartlepool	private	40.8	2.1	42.9
Hull	ABP	3.9	3.6	7.5
Grimsby & Imming.	ABP	35.5	4.7	40.2
Goole	ABP	1.5	0.1	1.6
*Boston	private	0.9	0.3	1.2
Felixstowe	private	0.7	15.4	16.1
Ipswich	trust	1.5	2.9	4.6
Harwich	trust	0.3	4.1	4.4

total Tilbury tonnage was 2.9 3.0 5.9

* former local authority port sold under Local Government legislation

Source: Port Statistics, 1991

In June 1995, plans were announced for the *compulsory* privatisation of a further three ports (Dover, Ipswich and Tyne). In an editorial on June 21, 1995 Lloyd's List summarised the feeling against compulsory privatisation with the comment:

"....Profits, tonnage, turnover and investment, claims Dr. Mawhinney, soar when trust ports are converted into privatised entities and he cites the examples of the five ports privatised in the earlier expedition of the government into port waters. There is no denying this is the case, although it has to be said that he is employing his statistics with cunning selectivity, attributing these successes to the change in status of the five port authorities and ascribing no credit to the increase in UK trade as the country has hauled itself out of recession. It is also not entirely irrelevant that trust ports have been usually charged with a requirement not to make profits, but to plough their surplus funds back into the business. He suggests that the ports industry is being progressively opened up to market forces, although in truth in a country as "over-ported" as the UK, it is difficult to conceive of any more competition being generated by his actions.The extraordinary difficulty of establishing a value for something like a port, with its property, potential and goodwill, which can vanish away like the dew in the morn, has already been illustrated by the fiasco of Sheerness."

The generally perceived benefits of privatisation were considerably complicated by the manifestations of conflicts between public and private interests in the operation of ports. Not all the factors influencing port activities were included in general perceptions of competition and regulation. The outcome of these structural changes depended on constraints in choice of policy and strategy. According to one Harbour Master:

"It would seem that the remaining non Privatised UK Ports on the Minister's Shopping List are somewhat reluctant to proceed down the Privatisation Route, unless directed to do so. Being a Trust Port with vast areas of the Harbour covered by an English Nature SSSI Directive, etc. the decision making processes in running the **Harbour** as opposed to the Port Area are in great measure conditioned by Environmental aspects and considerations. These clearly have an influence upon the manner in which the Harbour Authority can successfully, or not, manage its business." (UP - AH).

Those ports facing compulsory privatisation responded to the government's proposals calling for a delay in the process as they believed that in their particular circumstances the time was not 'ripe' for privatisation. Dover was concerned over the still unknown effects of the Channel Tunnel on future traffic levels; Ipswich was worried about recent traffic loss, asset stripping and environmental considerations; Tyne's customers saw little benefit and the port had little land for development. They and their advisors did not believe that the government would obtain full value for money until these concerns were resolved. There was been strong opposition to these measures from port users, local residents and businesses, particularly in Dover and Ipswich. Following consultation, Dover was excluded from the compulsory process for a short

period to allow trends in traffic levels to be established for a future sale prospectus, but not Ipswich and Tyne.

Ipswich acquiesced to the government's wishes and the privatisation process commenced in June 1996. Tyne however did not, seeking to safeguard pensions, a port users' consultative committee and a 'golden share scheme'. The government has expressed intentions to use its reserve powers under the 1991 Act to force privatisation. This path has not been used before and could well produce legal pitfalls (Trust Ports are not owned by the government and Tyne has indicated that it will seek a judicial review of the government's actions - the 1991 Act has not as yet been tested in court, although the Port of London was involved in a application for judicial review which was ruled out of time).

Other ports, with environmental and other responsibilities, such as Harwich which had limited cargo handling but was the statutory authority for the Orwell and Stour estuaries and controlled navigational access to the ports of Felixstowe and Ipswich, were able to convince the government that there were insufficient advantages to privatisation in their unique circumstances. However, a differing view on the government's reasons not to privatise the remaining Trust Ports compulsorily was given in a Lloyd's List article (12 July 1996) "... But if it is appropriate for Tyne and Ipswich, why is it not appropriate for the others? It can only have been political considerations which saved the day for them and it can hardly be a coincidence that there are four highly marginal seats in and around those ports.... "

In contrast to the efforts to avoid privatisation, one Scottish port (Dundee) subsequently sought voluntary privatisation and was purchased by Forth Ports PLC, who outbid the MEBO team.

2.1 Implications of UK Privatisation

The future effects of volatile trading conditions on the ports system as a whole, and on competing ports with differing policy and structures, is unclear. Baird (1994) took the view that "The UK model of ports privatisation demonstrates unique features, in addition to significant inconsistencies and weaknesses. These include the sale methods employed, the questionable port valuations, the lack of competition in regard to certain sales, and the transfer of port authority regulatory functions to successor companies which can result in the creation of private estuarial monopolies." This was somewhat at odds with regard to Associated British Ports PLC who had controlled several estuaries since 1983 as a private sector operator without serious complaint. Finney (1991) had already pointed out that privatisation offered an opportunity to form viable competitive independent trading groups to Associated British Ports PLC, which seemed to be the route being followed by Forth Ports PLC.

There seemed to be general support for the aims of structural change, and agreement that this posed a commercial opportunity, from most commentators. Whilst no

evidence has been presented to the contrary, a genuine concern over potential future events emerged. The views of a managing director of a private terminal serve to summarise the UK approach to structural change:

"In the UK that experiment went as far as the limits of public accountability and liability for larger ports. As yet there is no evidence that these enterprises would jeopardize their public liability by imprudent management of the marine environment.... The retention of vessel management within the state's domain has less to do with a sense of duty to the environment and more to do with control over Transport Policy. In the UK, where there is no definable transport policy, there is no hesitation in giving up control. However, in most countries the state sees a strong role for this position. Indirect, but controlling influence on Port infrastructure and its management play a vital part in the economic development of regional prosperity. Private investment is also much happier estimating risk in such an environment, long or short." (UB - D).

In an article on April 16, 1996 Lloyd's List commented on "concern[s] that the ports would put commercial advantage before conservancy. This has not proved to be true". However, Fairplay, 9th May 1996 reported that "Others identify an unfortunate habit among UK ports, one which looks good on paper but is frustrating their customers no end. Ports are maximising revenue as property managers. Road hauliers ... do not appreciate increasing ground rent fees.... there is a quietly spoken feeling among the ports' customers that the real mission statement of UK ports, to facilitate the movement of trade, is being hindered by another, to boost the share price wherever possible."

In September 1995, the second of the ports voluntarily privatised in 1992 and bought by its management and employees (MEBO) was purchased by a quoted company. Forth Ports PLC paid some £90m more for Port of Tilbury than the original sale price by Port of London - a quadrupling of share value. Mersey Docks and Harbours Company had purchased the Port of Sheerness for some £80m more than this MEBO team had paid in 1993. Prior to these sales both ports had made employees redundant and had compulsorily repurchased shares at a valuation supplied by their auditors which was considerably lower than that achieved in the subsequent sales. Aggrieved former employees instituted legal action against the auditors, and in the case of Sheerness the auditors agreed an out of court settlement of £3 million.

These 'profits' from subsequent sales have aroused severe criticism of the government's handling of privatisation and management becoming multi-millionaires. This criticism came from the general public, port users and from bodies such as the National Audit Office and the Public Accounts Committee. The government's case was that the process was the best that could be achieved at the time. The potential outcome of these events was expressed by one port executive as:

"Privatisation via MEBOs encourages a reduction of employee levels to facilitate management making a quick profit from a subsequent sell-off within 2-4 years.

As a result incoming management would have little scope to increase profits other than through increased trade, which is never easy to achieve. Therefore the long term prosperity of the port may be jeopardised, for it is possible to envisage the port's ownership changing a number of times as each owner in turn becomes disillusioned with its capacity to produce profits." (UP - H)

In conclusion, it appeared that ownership changes and restructuring were a matter of political expediency and power, both at a national and organisational level.

3/ OVERVIEW OF RESTRUCTURING IN SA PORTS

SA ports generally have a vast natural hinterland, which reduces the effective scope for inter-port competition and a different course of action was adopted. The South African government-owned transport organisation Transnet is primarily responsible for national transport. Its operating divisions include road transport, pipelines, harbours (including lighthouses), airways, rail services and parcels. The harbours division trades as Portnet. The SA Chairman of a liner service to Europe summarised their particular situation as:

"South Africa has relatively few ports to serve a country with a vast hinterland plus surrounding states plus an enormous industrial complex 500 kms from the nearest port. Our problem is a shortage of port resources, there is no danger of shutting any down...." (SB - K).

The total tonnage handled by the SA ports is shown in Table I.7 as a comparison to the major UK ports. This tonnage includes both imports and exports for SA as well as the landlocked countries of Botswana, Lesotho, Swaziland; and some traffic for Zambia and Zimbabwe which also have rail access to the port of Maputo in Mozambique. The table shows that the ports generally handle smaller cargo tonnages than the major UK ports, except for the large coal and iron ore exporting ports.

<i>Table I.7</i>			
<i>PRINCIPAL SOUTH AFRICAN PORTS 1990 / 1991</i>			
	<i>million tonnes</i>		
<i>geographical order</i>	<i>bulk</i>	<i>container</i>	<i>total</i>
Richards Bay	52.6	0.0	52.6
Durban	17.2	8.5	25.7
East London	0.8	0.4	1.2
Port Elizabeth	3.1	1.1	4.2
Cape Town	2.6	2.6	5.2
Saldanha Bay	16.5	0.0	16.5
<i>Source: Portnet figures</i>			

The pattern of large vessel calls for SA for the financial year 1993/1994 shown in Table I.8 as a comparison to the UK illustrates that, although the number of calls is lower, these represent a significant proportion of world trade. This is particularly for the raw materials exported from Richards Bay and Saldanha Bay for which no suitable alternative forms of transport to these large vessels have been developed. It emphasises the importance of the ports to international trade.

<i>SHIP ARRIVALS AT SA PORTS</i>				
<i>Port</i>	<i>Ocean Going</i>	<i>GRT</i> <i>(million tonnes)</i>	<i>Coasters</i>	<i>GRT</i> <i>(million tonnes)</i>
Richards Bay	1280	127.5	78	1.0
Durban	3366	119.5	249	4.8
East London	93	3.4	192	3.6
Port Elizabeth	490	35.2	202	2.6
Cape Town	1723	76.6	176	3.9
Saldanha Bay	239	43.6	0	0

(Gross Registered Tonnage expressed in Cubic Metres)

Source: Portnet figures

Transnet itself had been organised along business lines with company status in 1990. From April 1995, the commercialisation of Portnet was "extended to separating management activities from terminal operations" by being split "into two autonomous divisions, an operations division with responsibility for the supply of handling equipment and superstructure, and a management division, in charge of navigational aids, infrastructure, port planning and marketing" (Fairplay, August, 1994). The reason given by the Chief Executive was quoted by Fairplay as "We are currently both referee and player in the ports. It is essential that these interests are separated".

"The port users are more concerned with efficiency of the ports than with public interests or even costs. S.A. ports are very profitable and also very inefficient, especially the container terminals. Private sector control of terminals must benefit the shipowner and ultimately the cargo owner. If there are no benefits to the user he will go back to Portnet and the private sector terminal will fail." (SB - K).

In other words, the reason for structural change was governance as illustrated by McGlade's (1995: 78, 80) comment that "To have effective governance the expectations of the different participants of the system should be broadly convergent and at the same time consonant with the prevailing environmental setting... if people do not perceive that a balance exists they feel that they have lost control.... different

types of instrument are required to meet different needs; regulation - based on the formal authority of the state; economic or financial - based on the market; and communicative governing - based on the force of argument." The method of control chosen to obtain a balance was a blend of regulation and economic instruments. At the time of the research fieldwork this process of separation had just begun and many operational details were still to be resolved. Significantly, the operating businesses of Portnet were still to be owned by Transnet and subsequent ownership of Transnet had yet to be determined.

"In the NEW South Africa privatisation of ports is most unlikely. Commercialisation of Portnet including some leasing out options is probable also joint ventures. Transnet recognises the need to force Portnet to become more efficient and the plans to allow limited privatisation and commercialisation are intended to achieve this end. Transnet will retain "control" of the ports and their development. Portnet will seek joint venture management arrangements with the private sector for some existing facilities. Portnet will probably offer for lease new facilities, e.g. the new Container Terminal at Durban, although Portnet Terminals will also be free to tender for those same facilities." (SB - K).

As a result of political change, the principal port of Walvis Bay in Namibia was handed over to the Namibian government on 28 February 1994. It therefore no longer formed part of South Africa's national port structure (of six major ports and one smaller port), although a significant element of previous managerial expertise remained within the port:

"Namport has achieved a high level of efficiency in its workshops ... by applying business principles and cost allocations to end users of services. This was achieved under the threat of "privatisation"." (SP - U)

3.1 Implications of SA Restructuring

The SA government has indicated that it was favourably disposed towards privatisation of the state-owned utility and service companies as part of the process of political change. There were potential problems according to a port manager:

"In South Africa the ability of the new government to maintain previous standards is questioned when comparing with ports to the North. Privatisation appears to be the answer, but in South Africa most businesses look at SHORT TERM profit, in particular at present uncertain times." (SP - U).

The restructuring of Portnet could be seen as the first stage of preparation of the cargo handling activities for privatisation, with the port authority remaining in the public sector in a landlord role. This would then follow the concepts behind the New Zealand model of privatisation as described by a leading ports lawyer:

"I think that there is much to be said for the navigational safety functions being the responsibility of a public service body (a statutory board or local authority) and the cargo handling etc. being administered by a commercial company. One approach to achieve this is embodied in the New Zealand Port Companies Act 1988. The former Port Boards (now replaced as harbour authorities by local government authorities) were required to establish companies under general company law to be responsible for the commercial functions. The Port Boards held controlling interests in the companies and retained the navigational safety functions.

With regard to the constitution of a statutory port board, I think that the concept adopted for major British port trusts - a small number of members appointed by the Secretary of State on the basis of relevant knowledge and experience with 2 or 3 senior managers on the board ex officio or by co-option - has much to commend it (at least if the danger of political patronage can be avoided)."
(UB - A).

The capital expenditure budget for 1996/7 has been increased by 138% to help cope with increased demand (Lloyd's List 18 July 1996), but whilst congestion in the ports has eased, the waiting time to enter the ports and achieve cargo clearance is greater than in the UK. This is partly as a result of lower efficiency and partly as a result of increased traffic due to the country's re-emergence on the world scene from political events. In general the SA ports have sufficient demand available to undertake expansion and investment from port user fees, but there are also considerations of national economic policy which affect capital allocations:

".... The Government through Transnet will maintain its control over all S.A. ports and the railways on which they all so heavily depend.... It is doubtful that Transnet will permit the various ports (and therefore rail routes) to compete against one another unless the outcome also happens to suit Transnet, e.g. Cape Town capturing traffic from Durban and therefore relieving pressure on the Durban-Reef railway system." (SB - K).

A further consideration for capital allocations is a social requirement:

"The Port of East London is a case where cargo volumes do not justify dredging costs, but it serves a business community that would probably suffer negatively should the port shut down." (SP - P)

The question of funding for investment is a sensitive internal issue for Transnet. The profits or losses of the divisions are pooled and capital expenditure allocation is unrelated to the income generated. This has caused resentment amongst port users and Portnet staff seeking to expand the port services (e.g. developing transshipment and reducing congestion).

"Port Elizabeth because of its geographical location is too far from the Johannesburg area (Rail tariffs are no longer equal for all ports). Therefore at present this port is likely to remain fairly low on the priority list for anything." (SP - N)

The restructuring and affirmative action process at director and executive level appears to have caused dissatisfaction and concerns for the future:

"Generally South Africa as you can imagine is experiencing huge changes & all of us are fairly anxious about 'our' future. Portnet is sitting on the edge right now with regard to privatising or not. The system of total control of the port operations in the past ensured work for a certain group of the total population. It could well be the same with the new government.... Black businesses etc. are being encouraged to take on special maintenance tasks. Again it takes time for implementation, but the process must take place & an enormous culture change has to take place for all of these concepts to happen." (SP - N)

For reasons which are not clear, but seem to be associated with these capital, restructuring and personnel issues, the Chief Executive, the Deputy Chief Executive, the Information Technology Manager, and the Remunerations Manager all resigned in July 1996. Press reports imply boardroom strife and a judicial review has been demanded by transport unions over allegations of the writing off, by Portnet, of substantial personal expenses on a company credit card for a newly appointed executive director.

Again, it appeared that ownership changes and restructuring were a matter of political expediency and power, both at a national and organisational level.

4/ SUMMARY

The role of the international transport system was reviewed and the complexity of its strategic issues was demonstrated by UK and SA ports, where structural change generated fears of future complications. Ports are nodes in a national and global transport system, in that they provide a linkage between two international customers - the importer and the exporter. The prime effect of the change from public to private sector was to transfer responsibility for economic efficiency to new ownership. This included both those essential services to be provided by law and those discretionary activities in pursuit of profit. Whilst individual ports could vary in their approaches to strategy, an underlying similarity in their importance to the national economy and international trade implied a similarity of strategic stance. It was assumed that selection of strategy reflected both the contextual social systems and decision-makers' perceptions. Structural change therefore has implications for management practice. This suggests a need for research to advance understanding of the potential impact of structural change on selection of strategy.

CHAPTER 1 - THE NEED FOR RESEARCH

1/ AN EXPERIENTIAL VIEW OF THE NEED FOR RESEARCH

Ports are nodes in a national and global transport system, in that they provide a linkage between two international customers - the importer and the exporter. The fundamental factor in the change from public to private sector was to transfer responsibility for economic efficiency to new ownership. This included both those essential services to be provided by law and those discretionary activities in pursuit of profit. Structural change has implications for management practice. The turbulent transitional interval from public ownership philosophies (commonly perceived as logically planned stability) to private ownership philosophies (often seen as being concerned with sustainable creativity) was sparsely addressed in the literature, as was the long-term impact of investment decisions that needed to be made in this period. This suggests a need for holistic research to advance understanding of the potential impact of structural change on selection of strategy.

There was a disputed presumption that structural change in ports aimed at enhancing freedom of decision-making at an organisational level would serve national economic purposes. There did not appear to be a consensus, rather it seemed that 'taken-for-granted' assumptions existed in determining the choice between public or private sector control of a port. In discussing economic programmes of deregulation and privatisation, Wilson (1992: 116) observed that "... this planning of capitalist economies has brought into play a very particular form of programmed change. It may appear obscure, highly macro and irrelevant to the day-to-day management of change, yet it is ultimately the overall context in which organisations and their managers operate. It sets and determines the parameters within which they function, and in which all theories and models of change management are located.... The dynamics of change are, therefore, both multivariate and occurring at many different levels of analysis..... These macro-economic changes have effects at the levels of the individual enterprise and the business sector."

Two trends in this process of change were apparent; firstly the UK move from predominantly public sector control towards economically unregulated private sector control. The process generated conflicting views on potential future outcomes. This conflict appeared to be resolved by the exercise of national and local power. The second trend was to ensure that ultimate control over long-term security of port provision was retained in the public sector and cargo handling operations were undertaken by the private sector, or according to private sector philosophies. SA provided an example of this process. Again, conflicting views were generated, which appeared to be resolved by the exercise of power. The following structure seemed to approach the ideal sought by this method:

"...This would depend on location, type of trade and operating tradition. I know of one highly successful port [in Canada], slightly above 1.25m tonnes/year whose port authority has a staff of one man working part-time." (UA - B).

These two trends implied that there was a difference in perception of the roles of ports in the international transport system. An early indication of a major potential concern over the outcome of structural change in the UK was that given by the House of Lords Select Committee (1991) in rejecting a private bill from a UK port seeking to leave the public sector on the grounds of 'public interest'. 'Public interest' in the operation of a port is a concept rather than a specific description. For this research it had a meaning according to the illustration of the purpose for the existence of, and access to, a port that was used by the House of Lords (1991: 3):

"the proposed new company would be subject to all the risks - as well as the opportunities - that any private sector company faces *But we believe that exposing the holding company to such risks could endanger the successor company's ability to fulfil its statutory obligations and to carry on its core business of running the ports. That could have a detrimental impact on local industry and on the local economy.*" (italics added)

In terms of this decision the 'public interest' is thus concerned with the continued presence of a port so long as statutory obligations exist and the local community has a measurable need for the facilities of a port, e.g. import/export activities are undertaken in the locality or hinterland of a port. Should commercial pressures exist for diversification or alternative use of 'low return' assets then there *may* be conflict. This could occur between the objectives of the owner of a port when pursuing opportunities in the 'market', and the objectives of local shippers, vessel service organisations etc. who are pursuing their own opportunities in a different 'market', e.g. maximising rents on under-utilised land to boost share values, thus creating competitive problems for road hauliers, as described in the Introduction. Markets in this sense are avenues available for return on capital employed i.e. profits.

The presumption of 'public interest' is that in times of conflict the needs of local industry and the local economy take precedence. The converse to this presumption is the concept of fairness for a private owner. There should be no enforced losses of capital or profit, nor should there be restrictions on activities in pursuit of profit, so long as these are within the powers of the port or are not prohibited by legislation. This is the 'private interest' of port owners and investors.

The House of Lords' reasons for rejection based on the notion of a 'public interest' in the continued operation of a port were subsequently overridden by legislation in the UK. In SA the underlying principles of the Lords' ruling still applied. It seemed that there was no global political consensus that a particular form of ownership, with its resulting management philosophy, was the most important influence on an organisation's future performance. Ownership changes, selection of strategy and organisational restructuring appeared to be a matter of political expediency and power, when viewed from their effect on enhancing managerial freedom of choice of strategy to fulfil statutory obligations and to carry on the core business.

Was this experiential view of the outcome of international events valid?

1.1 What are the Strategic Implications of Structural Change?

If a port is considered from a macro viewpoint as a node in a transport network, then the prime strategic consideration must be its economic survival. In effect, it seemed that a long-term social experiment was taking place where the long-term impact of decisions made in this period of change was not well understood. Conceptually, there seemed to be an underlying 'public interest' in the survival of a port. This could be viewed as that the primary purpose of the port was not to generate profits for the organisation, but to provide an efficient global transport service for the benefit of other industries at a reasonable cost. Hence opportunistic tactical notions of 'beating the competition' are inappropriate for corporate responsibilities, but may well be indicated for business unit levels. This implies that a degree of cross subsidy for tactically failing business units is justifiable beyond normal commercial success criteria. Does this mean commercial operations in ports are solely tactical in order to capture sufficient traffic to warrant their strategic survival, which is an activity independent of their statutory obligations?

This raises the question of what is the role of decision-makers entrusted to undertake structural change? The implementation of structural change rested on their efforts. The research was governed by this prime assumption, which meant that it was the perceptions of those people entrusted to implement change that were crucial to outcomes. The research assumed that these people were key-decision makers in an organisation who would have to consider the implications of many business facets in order to assess potential outcomes of change and choose the appropriate course of action, i.e. formulate a strategic response. Johnson and Scholes (1993: 10) defined strategy as "the *direction* and *scope* of an organisation over the *long term*: ideally, it matches its *resources* to its changing *environment*, and in particular its *markets*, *customers* or *clients* so as to meet *stakeholder* expectations" (italics as original). In this sense then strategic means decision-making regarding the direction taken (i.e. governing) and the scope (i.e. activities undertaken) over the long term so as to meet stakeholder expectations, rather than the techniques of resource allocation.

The complexity and therefore potential conflict in structural change was expressed by Handy (1994: 159) as "The principal purpose of a company is not to make a profit, full stop. It is to make a profit in order to continue to do things or make things and to do so even better and more abundantly. To say that a profit is a means to other ends and not an end in itself is not a semantic quibble, it is a serious moral point. A requirement is not a purpose." Hamel and Prahalad (1994) appeared to concur with this view in believing that the ultimate test of research is its managerial significance. They contended that a great deal of managerial and competitive reality lay beyond the boundaries of existing theory, and that the forces conspiring to produce the future often lay well outside the purview of managers. They considered that current theories of strategy and organisation described existing structures but provided little insight into what was required to fundamentally reshape an industry and the foresight needed to balance competitive forces and evolutionary change.

Their futures oriented stance posed questions for which there are no ready answers, e.g. was strategy foresight being devalued in favour of incremental tactical planning and manoeuvring? - does an insensitivity to the broader scope of public and private needs versus market competition prevent an organisation from adequately preparing for the future? - was organisational transformation a belated response to a crisis or the outcome of calm foresight?

Structural change had created an alteration in the environment faced by decision-makers in the ports, i.e. the expectations and constraints created by a 'public interest' generated *uncertainty in outcomes* as discussed in the Introduction. There are different aspects to future uncertainty - Milliken (1987) identified three types of uncertainty about change in the environment surrounding an organisation (these were supported by Gerloff *et al*, 1991):

state uncertainty - an individual did not understand how components of the environment may have changed;

effect uncertainty - an individual's inability to predict the impact of environmental events on his/her organisation;

response uncertainty - an individual's lack of understanding of what response options were available to the organisation and what the value of each might be.

The implications of these differing types of uncertainty could create differing responses to the successful management of structural reform. Selection of strategy by decision-makers depended on identifying the precise nature of uncertainty in order to choose the most appropriate strategy in response to environmental change. There is therefore a problem of assessment. Which type of 'uncertainty' was the research addressing? This would actively depend on the status of participants assisting with the research. A target level of decision-makers and policy influencers would mean that state uncertainty could be ignored, simply because it was their job to deal with state uncertainty in policy considerations. It was assumed that, by virtue of their office, decision-makers and policy advisors would be adept in assessing this form of environmental change. However, state uncertainty would be an unknown factor for any stakeholders whose views could provide additional 'richness' to supplement the perceptions obtained from decision-makers. It would be dependent on knowledge of events gained through their work and contacts with decision-makers, but by careful specification of roles an understanding of the extent of change could be assumed.

Future effect uncertainty is the major issue in identifying the expected outcomes of structural change. The most common research method for reconciling future effect uncertainty in the absence of data to enable a trend analysis was the consensus judgement of a panel of experts. Their judgement was dependent on the way in which their preconceived views were challenged by the problem put to them. Generalisation outside the context of study was dependent on identification of issues creating future effect uncertainty.

Differences in perceptions of structural change could be expressed as two concepts of their future effect uncertainty. Change posed either strategic advantages or disadvantages in the managerial environment. These ought to be addressed by an appropriate selection of strategy. Accordingly, decision-makers had to determine whether change posed broadly either an opportunity or a threat in their governance of a port, where:

opportunity refers to the idea of an advantageous occurrence of combination of circumstances which is seen as resulting in a greater managerial freedom of selection of strategy;

threat refers to the idea of a disadvantageous occurrence of a combination of circumstances which is seen as limiting managerial freedom of selection of strategy;

governance refers to the idea of the overall managerial process of fulfilling statutory obligations and carrying on the core business of running a port, by selection of strategy, and the organisational structure to implement decisions.

Response uncertainty is effectively the net outcome of state and effect uncertainties. The target level of decision-makers largely negated this aspect, since they could reasonably be expected to have sufficient knowledge of strategic options to form an opinion. However, their views could only be proved right or wrong by the passage of time. It was, however, a factor of greater importance for stakeholders, since it could be assumed that they had a lesser knowledge of, and experience in, operational considerations for the ports.

Consequently, there was a research need for knowledge of decision-makers' future effect uncertainty, i.e. opportunity or threat, which was the key aspect in selection of strategy and organisational form in response to structural change.

1.2 Does Structural Change affect the Strategic Corporate Plan?

The efficient operation of port functions has a vital effect on the national economy, particularly for landlocked countries with restricted access to another country's ports. This implied that maintenance of infrastructure assets has a public interest requirement which is independent of the form of ownership or organisational structure. The success or failure of structural change depended on how decision-makers identified and resolved issues and tensions that arose from this change. Tensions could arise from a conflict between the public interest in the ports' continued operation as a cargo transfer point in a land/sea transport network and investors' desire for commercial returns. There could also be other forces operating in the business climate which had yet to surface. The overall process of identification and resolution of issues and tensions reflects a planned managerial approach to implementing change, i.e. a strategic perspective. Selection of strategy could differ according to environmental circumstances and the time scale of the decision-making and implementation process.

Kenyon and Mathur (1993) made the point that ex post observations of managerial actions are useful, but ex ante intentions are essentially a strategic concept. The implications of differing views of strategy were captured by Wilson (1992: 122) with the statement that "change is a phenomenon which cannot be restricted solely to the 'behavioural' aspects of management learning. It needed a perspective which could blend the behavioural with the economic, the historical with future-oriented decision-making, and the political with the social and economic factors of change. Unfortunately, current developments in the analysis of change have developed along the either/or path of skill versus context. For virtually every management discipline currently taught, the implications of this split are far-reaching.... Depending on which perspective is taken, the practitioner will be guided or will turn towards a particular set of solutions to effect change."

Beliefs of a need for a universal method of managing in turbulent times were not new and a large proportion of management literature has advocated, and discarded, various techniques to this end. Pascale (1990: 13) charted this trend and pointed out that "when the competitive environment pushes an organization to its limits, the old mindset no longer holds ... we keep trying to apply the *tools* of transformation without a corresponding shift in our managerial mindset". An alternative framework was required for fundamentally different ways of thinking and assumptions, values, beliefs about strategy, organisation, motivation and nature of competition.

Senge (1990: 71) felt that the "... reason that sophisticated tools of forecasting and business analysis, as well as elegant strategic plans, usually fail to produce dramatic breakthroughs in managing a business. [is that] They are all designed to handle the sort of complexity in which there are many variables: detail complexity. *But there are two types of complexity.* The second type is *dynamic complexity*, situations where cause and effect are subtle, and the effects over time of interventions are not obvious. Conventional forecasting, planning, and analysis methods are not equipped to deal with dynamic complexity. When the same action has dramatically different effects in the short run and the long, there is dynamic complexity. When an action has one set of consequences locally and a very different set of consequences in another part of the system, there is dynamic complexity. When obvious interventions produce non-obvious consequences, there is dynamic complexity" (italics as original).

This led to a surmise that in times of linear change conventional strategic management philosophies are indicated as being the most appropriate since well developed techniques exist for planning (objective and goal setting), positioning and scanning the environment. However, when rapid environmental changes create a non-linear progression of events, conventional strategic management philosophies retreat to the role of broad objective setting and emergent tactical management philosophies take over the role of goal setting, positioning and scanning the environment. Following this surmise further, then it appears that both strategy and tactics have a common purpose - which is survival. The difference between them appears to be the degree to which perceptions of the future and opportunistic response to current events dominate.

The restructuring of ports had potentially differing consequences, hence structural changes were dynamic. Decision-making to resolve potential tensions and forces arising from structural change was not a random response to external events, but required managerial forethought, consideration of options, picking a course of action, implementation, monitoring and measuring outcomes. The requirements of stakeholders and investors had to be balanced. The core managerial issue arising from structural change is therefore the reconciliation of issues and consequential tensions through selection of strategy to achieve a balance. This reconciliation determined the overall shape of future planning for the implementation of structural change and affected the consideration of matters for a strategic corporate plan. The need for corporate planning was borne out in the UK by submissions considered by the House of Lords (1991) that provided clear evidence of the existence of a strategic corporate plan. A key feature of the SA landlord approach to restructuring is retention of long-term strategic planning in the public sector.

Mintzberg (1994: 12 & 23) defined planning as "a formalized procedure to produce an articulated result, in the form of an integrated system of decisions", but also stated that "... strategy is a plan... strategy is also a pattern". In this sense the strategic corporate plan addresses issues and tensions arising from structural change that should be explicitly taken into account by decision-makers when formulating a coherent strategy, rather than the formal procedure undertaken to produce an articulated document. Effectively, the design of a corporate plan is dependant on decision-makers' perceptions of the managerial environment and their assumptions concerning the suitability of a particular strategy in response to changes in this environment.

The survival of the organisation depended on corporate planning which balanced the selection of long-term and short-term strategy. An over-commitment to short-term adaptive specialisation in a pursuit of profit (the commercial role) could compromise the future of the organisation, whereas an over-commitment to long-term adaptive generalisation to secure the future of the port to serve 'public interest' needs and legislation (the statutory role) could result in short-term cash crises, viz:

Adaptive Specialisation (Chakravarthy and Lorange, 1984):

this process sought to fine tune the strategies of the organisation for a better fit with its environment, e.g. maximising the return in each of the businesses in the organisation's portfolio;

Adaptive Generalisation (Chakravarthy and Lorange, 1984):

this process sought to prepare the organisation for strategic responses to future environments, e.g. the future businesses that the organisation should be involved in.

The implication is that the operational requirements of a global transport system cause its own unique managerial behaviour. This could be tested internationally by means of assessing decision-makers' understanding of the potential strategic impact of structural changes to the global transport system (i.e. their mental models - Argyris,

1990). An underlying dialectic philosophy was apparent both in the distinction between public and private sectors, and in the corporate plans and strategies of previous decision-makers, as to which was the most appropriate organisational form for an industry dating back many hundreds of years.

In Handy's (1994: 80) view, differing approaches to managing structural change meant that "There is no neat general answer. It is always a question of finding the appropriate balance." The need for research to assess the extent to which structural changes have influenced future selection of strategy and organisational structure was identified by Wilson (1992: 120) as "the problem in merging theory and application is that many of the biases and contradictions of the underlying theories are lost in the haste to apply them." It was assumed that a mix of individual perspectives of international decision-makers gave an enlarged strategic view for research purposes. This presumed that the future would be different, but clues and weak signals existed which they would be able to detect and would be reflected in their approach to corporate planning and selection of strategy.

1.3 How appropriate are Generic Perspectives of Strategy?

The beliefs in both countries were that private sector management philosophies delivered benefits to the global transport system and selection of a particular strategy appeared to be a matter of decision-maker preference. However, restructuring has created organisations which must compete, but whose objectives and contexts are more complex than profit maximisation (Whittington, 1993). Generic strategies differed in their basic assumptions in the nature of the environmental structure and in decision-makers' freedom in selection of strategy. Whittington (1988) considered the nature of theories of environmental determinism and human action, taking the view that underlying theories were often simplistic in their scope. For example, in environmental determinism (e.g. neo-classical economics) there was no need to assess decision-maker freedom since tight market demands confined selection of strategy to a small number of feasible options compatible with survival; in action determinism (e.g. managerial economics) the environment was secondary since the choice of entrepreneurial strategy was effectively governed by presumptions of wealth maximisation in a capitalist society; in interpretative voluntarism approaches, structure was a secondary consideration since the capacity of decision-makers for independently motivated environmental assessment and strategic action was so great as to be only constrained by the way in which they viewed the world.

Turning to decision-making approaches for selecting strategy in organisations, Whittington (1993: 2) classified strategy into two dimensions according to the outcomes and the processes by which it was made. These are the "degree to which strategy either produces profit maximising outcomes or deviates to allow other possibilities to intrude... [whereas the other dimension] considers processes, reflecting how far strategies are the product of deliberate calculation or whether they emerge by accident, muddle or inertia".

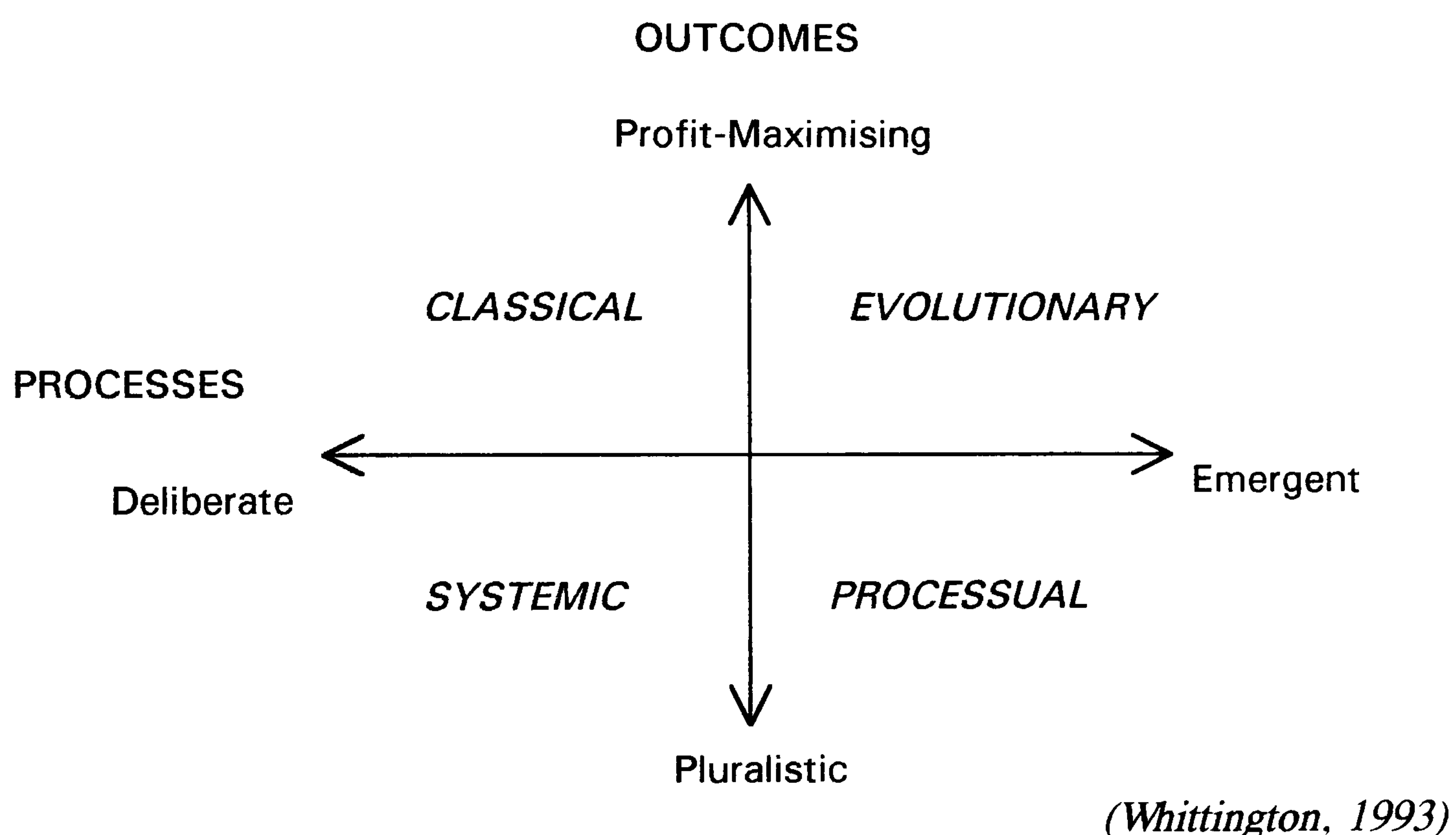
Using this classification, then four basic approaches to strategy are illustrated in Figure 1.1:

Classical ("rational planning") and Evolutionary ("the discipline of the market") approaches which are concerned with profit maximisation to meet investors' demands as the natural outcome of selection of strategy;

whereas the Systemic ("the ends and means of strategy [is] inescapably linked to the cultures and powers of local social systems") and Processual ("pragmatic accommodation strategy to the fallible processes of both organisations and markets") allow for objectives other than profit-maximisation, such as satisfying the social demands of all stakeholders and not just investors.

GENERIC PERSPECTIVES OF STRATEGY

Figure 1.1.



Whilst this broad classification was useful in determining how to view the strategic planning options available to ports it did convey the impression of an either/or method of selection of strategy. "This is the moment for you to choose which approach best fits your own experience, and then to build your own coherent strategic philosophy around it. The choice is quite stark: the four generic approaches to strategy differ fundamentally about what people are like and how they get on in the world that surrounds them. People are seen variously as objective calculating machines, muddled makers-do, or the particular products of their time and place, rational only according to the criteria or their peculiar culture or interests. The world in which they operate is portrayed by some as a simple series of markets to be conquered, by others as a fierce jungle of competition, or by others as a complex interweaving of the social, the political and the economic." (Whittington, 1993: 8).

The potential tensions and forces arising from structural change created a need to assess the balance between planned stability and creative innovation with its potential risk of failure. In discussing selection of strategy, Whittington (1993: 145) asserted that "...the theoretical bases of the four basic perspectives of strategy, especially the Evolutionary perspective, draw heavily upon private-sector assumptions. This is not to say that the perspectives are inapplicable to the public sector". Johnson and Scholes (1993) support this view of transportability of strategy philosophies. In organisations operating on the borders of the public/private sector divide, the obvious conclusion to draw from the strategic management literature is that any of the private sector perspectives on strategies may be appropriate for privatised and restructured ports and selection is a matter of decision-maker preference.

These approaches for selecting strategy led to debate on the respective merits of a 'planned strategy in a deterministic environment' versus an 'emergent strategy in an interpretative environment', which can be equated to traditional deliberate public sector logical (or linear) processes and emergent private sector creative (or non-linear) processes. However, these approaches can lead to research for the causes of competitiveness that presumes the existence of key success factors and is comprehensively, but sometimes inappropriately, addressed in the literature. The assumption is that organisations whose strengths match these factors will perform well. This stance can be criticised as narrow, both in terms of time frame and unit of analysis (i.e. product or business unit rather than entire organisation), hence creating a focus on short term processes. This focus on techniques for transformation and adaptation to prevailing environments could prevent a broader view of longer term strategy and the demands of public interest.

It seemed that managers had a free choice of any one of these perspectives for selection of strategy. This may be so for private sector firms, but not necessarily for organisations with public interest responsibilities. With regard to these organisations, (Whittington, 1993: 8) commented "... privatization and quasi-privatization have created organizations which must compete, but whose objectives and contexts nevertheless remain much more complex than the simplicities of profit maximisation and perfect markets. The Systemic approach takes these differences seriously."

However, even that is not necessarily the case. As is argued in Chapter 5, ports exhibit three distinctive attributes to their operational sub-systems, each of which could be assessed from differing strategic perspectives, e.g. public interest requires a rational (Classical) strategy, recognising local social systems (Systemic), whereas cargo operations were subject to market forces (Evolutionary) and hinterland (Systemic), but land utilisation decisions arose from internal needs of the organisation and what the market saw as the best use of surplus (Processual). The result was a distinctive selection of strategy for a particular sub-system. Which stance was appropriate for international ports? These selections were not necessarily the same for strategy for a port as a whole. A complex strategy option was exhibited which was primarily Systemic, but which had significant elements of other approaches. Hence private sector assumptions on strategy philosophies were not necessarily transportable.

- II high strategic choice and high environmental determinism* (provides the context for turbulent adaptation and exercise of power in the emerging advanced systems literature - implying an 'Organisation Cybernetics' blend of mechanistic and evolving structures, as discussed in Chapter 5, exhibiting a systemic approach to strategy formulation and planning with overtones of classical, evolutionary and processualist strategic thinking);
- III high strategic choice and low environmental determinism* (addressed by voluntaristic strategic management theories - implying proactive evolving organisational structures with a processualist approach to strategy formulation and planning);
- IV low strategic choice and low environmental determinism* (provides the context for placid adaptation by chance; perceptions of inappropriate strengths and competencies in the organisational, economic and strategic management literature - implying bureaucratic unreactive mechanistic organisational structures with a classical approach to strategy formulation and planning to meeting changing environments).

Hrebiniak and Joyce (1985) believed that the adaptation process was dynamic and an organisation's position within the quadrants may shift over time as a result of selection of strategy or (un)foreseen changes in the environment. These constraints implied that conflict between decision-making freedom and stakeholder expectations existed in some form, which was resolved by an exercise of power. Lawless and Finch (1989: 360) found some support in an empirical test of this approach and the considerations in selection of strategy implied by it. In discussing their results they drew attention to the small numbers of organisations facing "high environmental determinism [which] may indicate that the preferred strategic choice for single industry firms is to move to a lower determinism environment, rather than try to find a successful strategy-environment fit. Alternatively if they remain in high determinism environments, single industry firms increase their risk of being selected out [by bankruptcy]".

The implication was that organisations which could not move must diversify into activities with low determinism, e.g. land usage such as Port Of Tilbury's concept of a 'maritime business park and Freeport' thus effectively capturing customers by differentiation and also providing an alternative income stream to cargo operations; or land utilisation activities such as ABP's property developments and Cape Town's recreational Waterfront development. They also conjectured that "longitudinal study of movement among environments may help determine if single industry firms exit high-determinism situations regardless of the level of managerial choice" implying support for Potter's (1991) view that the result of hostile competition was consolidation and shakeout. This implies that the UK privatisation of individual organisations may result in mergers or acquisitions to create a small number of very large trading groups.

It raises the conjecture of possible breaches of trust (discussed in Chapter 4), implying the subsequent appointment of a regulator, or the recreation of public sector authorities:

"I have regular visitors from eastern block countries, Australia and Japan on port privatisation who had difficulty in understanding that the PLA was not subject to overriding wishes of local government and central government, and were totally bemused by the overseas ownership of Felixstowe. They seemed to be following less ambitious aims and I wondered sometimes whether it was a case of the UK being further ahead on a circle or whether they were!" (Interview notes - UP - B).

1.5 The Need for Research into Structural Change

It appeared that the UK and SA port industry as a whole was in the process of moving from a condition of low strategic choice/high environmental determinism to a situation of high strategic choice/high environmental determinism as a result of structural change. However, decision-makers may perceive the change as being towards high strategic choice/low environmental determinism, overlooking the high environmental determinism implied by ongoing statutory obligations and stakeholders expectations.

Consequently, there was a research need to:

understand how structural change ought to be perceived by decision-makers as affecting their freedom of selection of strategy in corporate planning; and

understand the organisational structure that decision-makers perceive ought to be adopted in order to fulfil their governance responsibilities.

2/ IMPLICATIONS FOR RESEARCH

Ports could be seen to be operating in a 'pseudo' public/private managerial environment of high strategic choice and high environmental determinism. In this respect, 'pseudo' means that neither a wholly public sector, nor a wholly private sector, managerial philosophy explains decision-makers' selection of strategy or organisational structure. The contextual political economic, social and legal constraints on selection of strategy imposed by obligations to provide essential services did not appear to have been given due consideration in previous management research. Ongoing manifestations of stakeholder power over ports were not fully explained in the literature, nor were the implications of operational sub-systems requiring differing choices of strategy. The unique circumstances that arose from the manifestations of stakeholder power implied that a blend of attributes from both types of philosophy was required for the governance of ports. Therefore, general perceptions of structural change creating a radical shift from public sector to private sector managerial philosophies could be seen to be incomplete. Investigating this

assertion involved assessing the nature of future strategic issues arising from structural change, and the wider implications for management practice.

2.1 'Long-term Strategic Service Industry'

From an experiential view of ports within an international transport system, previous management science research did not describe constraints in the industry that had been witnessed in the course of former employment. Either the data was wrong, or the method was wrong, or both - thus conveying an incomplete picture. In this respect the survival of ports was seen by the researcher as being a vital aspect of the long-term performance of the national economy. Collectively their purpose was to serve other organisations pursuing activities which resulted in international trade - therefore they are of 'strategic' importance when viewed from a notion of international competition, i.e. their continued existence is of national interest. A long-term perspective of their purpose was needed, since major infrastructure investments had life-spans into the next century.

Widening this view to encompass organisations other than ports whose continued existence is of national interest led to the concept of a 'Long-term Strategic Service Industry'. By this it is meant that there is conceptually a broad grouping of industries whose future survival is of paramount importance to the continued well-being of citizens of a nation where governance, including selection of strategy and planning, is entrusted to appointed decision-makers. This is in order that the citizens (including commercial organisations) may continue to benefit from the activities undertaken or services provided by these industries. Other than the international ports industry, no attempt is made to identify or define the potentially wide scope of organisations this description covers, but conceptually they could include nationalised organisations, agency undertakings on behalf of government conducted on a 'cost plus investment basis' e.g. coast guards and civil aviation control, and organisations in the private sector covered by special regulatory systems, e.g. utilities.

Hence a 'Long-term Strategic Service Industry' may be envisaged as being characterised by unique managerial philosophies which span an amorphous public/private sector divide. In this amorphous area decision-makers are concerned with factors such as the social constraints inherent in industry structures arising from historical factors of 'public responsibility and duty', which potentially conflict with investors' and individual stakeholders' demands. Conceptually this may extend further to include high environmental determinism private sector industries, since "All businesses are faced with non-economic aspects of decision-taking - but such factors are part of the long term process of seeking to maximise profits within that particular environment e.g. a chemical plant would face similar all round pressures." (UB - B).

Understanding these constraints on selection of strategy to meet desired outcomes (pluralistic or profit-maximising) is necessary for understanding the actions of decision-makers in these industries. In turn, this will help explain their stances

towards the conflicting processes of deliberate or emergent strategy and long-term corporate planning. Current theories of environmental determinism (deliberate strategy processes) and managerial freedom of decision-making (emergent strategy processes) had some merits and deficiencies which led to dispute over which was the appropriate strategy base in the literature. This implied that neither theoretical base was particularly suited to a research area which spanned an amorphous public/private sector divide. Ports illustrated the extent of strategic management achieved by decision-makers within constraints imposed on their organisations by an environment featuring high environmental determinism and high freedom of selection of strategy.

The problem was in finding an appropriate theoretical grounding for explaining the views of decision-makers on the way structural change was likely to influence their future selection of strategy. This theoretical grounding had to encompass the high environmental determinism and high freedom of selection of strategy which was assumed to be characteristic of 'strategic futures services industries'. Whittington (1988) saw the reconciliation of the biases and contradictions in the literature as requiring an approach which spanned the boundaries between underlying assumptions on environmental structure and capacity for human action. He proposed expanding the environmental determinism concept to allow for the impact of decision-makers' actions in order to obtain a more complete representation of the structural constraints on the selection of strategy. As part of this process, he suggested that the freedom of decision-making concept was constricted in its scope to reflect the implicit and explicit nature of stakeholder influences and societal constraints on the capacity of decision-makers to influence outcomes of structural events through selection of strategy.

Consequently, there was a research need to develop a Boundary-spanning Perspective of strategy as a means of understanding the considerations of decision-makers in their selection of strategy for a 'Long-term Strategic Service Industry'.

2.2 Research from a Strategic Choice Perspective

Approaching strategy from a boundary-spanning perspective meant a congruent view of the key issues which affected decision-makers' strategy selection and corporate planning was required. This was addressed by Child (1995: 119 - italics as original) who commented that the Strategic Choice Perspective considered "the ways in which the leaders of organizations, whether private or public, were in practice able to influence organizational forms to suit their own preferences. Strategic choice drew attention to the active role of leading groups who had the power to influence the structures of their organizations through an essentially *political* process."

He considered that this comprised "three key issues:

- 1 the role of agency and choice in organizational analysis
- 2 the nature of the organizational environment
- 3 the relationship between organizational agents and the environment".

Decision-makers implementing the aims of structural change in the ports industry are effectively acting as agents for stakeholders who represent the 'public interest'. Consequently, each of these three key issues was relevant to the overall shape of the strategic corporate plan. Thus strategic choice and governance considerations for decision-makers in restructured ports included:

- the identification of stakeholders who are concerned with the maintenance of a port;
- the ramifications of the environment within which the ports operated;
- the standards of performance required by stakeholders and investors; and
- the rewards required by investors.

In effect, these considerations forced an assessment by ports decision-makers of the structural constraints imposed by the 'public interest' within which they had to operate. The presence of 'public interest' in the organisational environment of ports meant that decision-makers were both pro-active and re-active in their relationships with various stakeholders and investors. They both anticipated and responded to their demands. In order to resolve conflicts created by stakeholder demands, power in some form or another was exercised - either by, or on, decision-makers. Consequently, decision-makers could be seen to be in a position of having high strategic choice, as well as high environmental determinism, i.e. they were subject to some form of constraint on their selection of strategy. A suitable administrative system, i.e. organisational structure, had to be designed to meet conclusions on these structural constraints.

In discussing strategy selection Whittington (1988) distinguished between external and internal forms of constraint - external relating to perspectives which presumed that decision-makers had little free choice (determinist), whilst internal related to perspectives that decision-makers had great free choice (voluntarist). He argued that a prevailing dichotomy between voluntarist and determinist was too simple, and that this simplicity had dangerous consequences for understanding strategic choice. He qualified the assumption that decision-makers could exercise free choice once external constraints were removed, since it was possible that other factors such as popular opinions, professional status, standards and methods of operation could act to limit their ranges of strategic choice. "The problem for a theory of strategic choice, however, is that it must provide non-determinate accounts of both human action and environmental structure." (Whittington, 1988: 523)

However, in identifying this problem, he did not appear to have investigated the detailed ramifications of stakeholder-agency effects (as discussed in Chapter 3) at an international industry level of analysis. This related to the extent of decision-makers' freedom of strategic choice was constrained by stakeholder power, as distinct from their own managerial power for selection of strategy, or power over activities of subordinates. For ports, external constraints were effectively determined by the 'public interest', which is an amorphous concept representing all the stakeholders in a port. Their needs, as interpreted by decision-makers who are acting as their agents,

may lead to strategy being selected as a means of resolution of potential conflict, rather than primarily for financial gain. Paradoxically, strategic choice is both limited by considerations of 'public interest', i.e. demands for maintenance of existing standards (from a legal viewpoint) as well as social expectations of improvement from employees, customers, port users, local residents and economic trade considerations, but also enhanced by 'public interest', i.e. privatisation and restructuring led to perceptions of greater freedom. Thus the direct or indirect pressure stakeholders exert can be seen as an incentive that constrains or enables the selection of strategy, which leads to distancing the reality of strategic choice in ports from simplistic conceptions of voluntarism or determinism.

Presumptions of free will by decision-makers in a constraining environment may not give sufficient prominence to the political process of conflict resolution that is inherent in stakeholder relationships. It arises from the operation of an implicit and explicit social structure, which influences strategic choice in various ways (and with variable strengths according to shifting balances of power between various groups of stakeholders). This political process can be seen as being driven by a need to balance internal and external power bases. It is distinct from notions of environmental determinism which assume that choice of strategy to enter and exit environments and consequential organisational structure, for example, is governed solely by external pressures. Conflict resolution can take two forms - reactive decision-making, i.e. response to stakeholder demands for action, or pro-active decision-making, i.e. circumventing existing constraints or acting in advance of anticipated stakeholder demands. The problem in this latter course is how to do it without creating a crisis through ill-judged action that leads to future stakeholder demands for corrective action, e.g. by altering the corporate plan or organisational structure.

Whittington (1988: 533) expressed this as "Environmental structures, then, are not necessarily antagonistic to strategic choice; rather they both form its precondition and inform its content. Indeed, the greater threat to strategic choice is a neglect of social structure that, motivated by an exclusive preoccupation with environmental determinism, mistakenly denudes actors of the inner complexity and the external resources on which their agency depends". The Strategic Choice Perspective should thus be seen as reflecting a dynamic rather than a static perspective on organisations and their environments in shaping the strategic corporate plan.

Limitations to selection of strategy apply in one form or another - a framework for the identification of these limitations and methods of circumvention was provided by the strategic choice concept. "It also helps to clarify two long standing issues in the relationship between organizational agents and the environment which arise from strategic choice analysis, namely (1) *whether or not the environment is constraining or enabling* and (2) *how externalised the environment actually is*. (Child, 1995: 128 - italics as original). The outcome of the research would further understanding of this concept as it applied to a 'Long-term Strategic Service Industry'.

The scope for pro-active action seems to be limited to some degree once in a constraining environment, but this does not mean that constraints cannot be tailored to further governance objectives. The selection of strategy in international ports appeared to be influenced by the varying degrees of priority given to the expectations of different groups of stakeholders, as well as investors. This seemed to be encompassed by the general Strategic Choice Perspective.

Consequently, there was a research need to explore the Strategic Choice Perspective as a means of explaining:

how future influences and constraints in structural change affecting their freedom in corporate planning ought to be seen by decision-makers; and

identifying the organisational structure that ought to be adopted by decision-makers in order to fulfil their governance responsibilities.

2.3 Research Questions - Subject

A consideration of the implications of establishing the overall thrust of the research towards the concept of a 'Long-term Strategic Service Industry', and the primary data required for identification and explanation of its attributes through the strategic choice perspective, raised the subject research questions of:

(Key Question - 1)

Are public interest obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

The circumstances which could lead to constraints arising are addressed in Chapters 4, and 5. The apparent answer gleaned from international decision-makers to this question is given in Chapter 10. The perceptions of a non-random group of international stakeholders, adding 'richness' by their differing perspectives of the potential circumstances, are also given.

(Key Question - 2)

So what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

The core options of a voluntaristic or deterministic managerial philosophy and decentralised or centralised organisational structure are addressed in Chapter 6. The apparent answer gleaned from international decision-makers to this question is given in Chapter 10. The perceptions of a non-random group of international stakeholders, adding 'richness' by their differing perspectives of strategy and structure, are also given.

From a Strategic Choice Perspective, inferences are drawn from the answers to these Key Questions (in Chapters 12, 13 and 14) in order to build a model of the characteristics of a 'Long-term Strategic Service Industry' (in Chapter 15).

The research approach adopted to answer these questions is outlined in Chapter 2.

3/ SYSTEMIC RESEARCH

The boundaries between ports and their environment are ill-structured and not necessarily fully addressed within a single academic discipline. Ports' decision-makers must possess a holistic and multi-disciplinary perspective to resolve or forestall conflict in meeting future demands. Consequently, the tone of the research was set by their considerations, i.e. it must also adopt a holistic and multi-disciplinary stance in order to surface their perceptions of effect uncertainty created by viewing structural change as posing an opportunity or threat in their governance activities.

Ports were viewed as conceptual examples of a systemic 'Long-term Strategic Service Industry' because of their role as nodes in a national and global transport system. In this respect, the term 'systemic' concerns the entire international transport system and not just the individual operating systems in a port. It follows the epistemological form that ports 'may be taken to be' examples of these industries, i.e. a subjective statement of knowledge about the global transport system, rather than the ontological form of 'is', i.e. an objective representation of reality. This suggested that a systems based methodological approach to the research was required, which was capable of generating a model that reflected their unique characteristics.

A systems methodology which attained both a depth and breadth of understanding in addressing future effect uncertainty was extremely difficult to achieve, particularly in a replicable structured format (Bell and Olick, 1989). The methodology would have to cope explicitly with the differing ramifications of an exercise of power, which posed the problem of simultaneously considering opportunity and threat responses. A further difficulty was that the holistic research addressed strategic factors that decision-makers might not necessarily have considered before, or have viewed as too esoteric, and had formed no opinions, thus providing irrelevant feedback.

Handy (1985: 336) considered the power of systems analysis for holistic research and modelling as being that:

"The great advantage of the 'systems' approach to organization theory is that it embraces in its folds the contributions of a wide number of disciplines ranging from those of the cybernetician and the engineer, to biology and the natural sciences.... The systems of organizations can be looked on in many ways. One can, with Brown, distinguish the legislative, executive and representative systems. One can regard organizations as systems for decision-making, as socio-technical systems, as open systems, searching for homeostasis, or, with

Stafford Beer, as sets of activity systems interacting with the environment but linked at various levels by co-ordinating systems. Most usefully, however, for the purpose of understanding the role of systems in activating parts of the organization, we can think of the *Adaptive systems*: those systems which are concerned with fitting the organization into its environment, with shaping its future, dealing with divergencies and deciding its policies." (italics as original)

From a holistic systems view, international ports exhibited adaptive systems interacting with the environment, i.e. legislative, executive and representative functions were linked at various levels by adaptive and co-ordinating systems of decision-making. Consideration of the operations of ports (discussed in Chapter 5) showed that there were three nominal sub-systems, each with differing criteria for determining appropriate long-term strategy for an operational area.

Since the operational areas of the organisation could be specified, then changes in one area could be traced through the system to determine how these affected the overall port performance. Feedback and feedforward of changes in the system could be depicted, and the consequences of changes made to the system demonstrated, by considering scenarios of differing opportunity or threat outcomes for governance. These scenarios could demonstrate the balancing acts required in a strategic corporate plan for a port - whilst a strategic focus on improving a particular sub-system may be required to meet certain stakeholder expectations, the maintenance of the system as a whole in the interests of all stakeholders may not be sustainable unless some form of compromise strategy was adopted. From this consideration, a holistic model illustrating future selection of strategy and structure for ports could be constructed.

However, the use of a systems approach for futures research does present difficulties. Hodge and Anthony (1988) saw the disadvantages of a systems approach as being the necessity for considering holistic models as tools for understanding complex representations of reality, rather than as being a total depiction of all cause-and-effect relationships. Problems perceived by one group of stakeholders often had multiple causes. Actions taken in response often produced effects that went in unintended directions at different times for other groups of stakeholders. Hence there was a tendency for many people to find the nature of systemic models too abstract and difficult to apply.

The human mind tended to oversimplify reality, and to rely exclusively on modelling solutions at the expense of managerial judgement could have unwanted consequences. Decisions had to be made on the best information available and holistic models were helpful in making sense of this information, but were not a substitute for judgement.

There was also a tendency to oversimplify organisational relationships because these conceptual 'systemic models' did not fully express all the relationships among the elements of the organisation - e.g. some detail was lost in attempting to reduce the complexity. The ramifications of diverse strategies and organisational structures led to a tendency towards advocating a more centralised administrative structure in

organisations because of an emphasis on cybernetic command and control considerations, in preference to innovative or creative organisational structures (e.g. the disagreements over centralised or decentralised administration identified by Greiner (1972) for organisations at various stages of growth discussed in Chapter 6).

Nevertheless, the purpose of the research was to propose a 'Long-term Strategic Service Industry' model based on the specific example of international ports:

which incorporated a Boundary-spanning Perspective of, and a Strategic Choice Perspective of, the selection of the strategy of the organisational structure which ought to be adopted by decision-makers in the future; and

which ought to have wider implications for further research into industries other than ports, that appeared to have similar characteristics.

3.1 Research Scope

This identification of a 'Long-term Strategic Service Industry' model as the purpose of the research raised the issue of the scope of the research. It seemed from the literature, e.g. Handy (1985, 1994) and Whittington (1993), that the same problems and broad concepts in organisational and strategic choice analysis were being discussed *but at differing levels of penetration into systemic functions*. At what organisational level should the research and hence modelling take place? At a governmental policy and hence legislative level? Industry as a cohesive strategic group? The individual firms within the industry? Their boards and chief executives as decision-makers? The business unit and the head managers as influencers of policy? Managers and staff as implementers of policy? Stakeholders' expectations? This raised the pragmatic problem of the extent of work that could be feasibly undertaken.

Research at high levels of abstraction for modelling future decision-making areas was characterised by holistic perspectives, whereas research at lower levels of the way in which decisions were implemented was characterised by reductionistic perspectives. Some information was lost at each level of abstraction, since holistic perspectives concentrated on breadth of study (e.g. the macro environment of a nation) whilst reductionistic perspectives concentrated on depth of study (e.g. the micro environment of an organisation).

Consequently research findings and their implications were limited by the perspective adopted. Holistic research missed depth of content, whilst reductionistic research missed breadth of content. A holistic approach to modelling in preference to a reductionist approach was supported by Senge (1990: 283) who thought that:

"The "compartmentalization of knowledge" creates a false sense of confidence. For example, the traditional disciplines that influence management - such

disciplines as economics, accounting, marketing, and psychology - divide the world into neat subdivisions within which one can often say "This is the problem and here is its solution." But the boundaries that make the subdivisions are fundamentally arbitrary Life comes to us whole. It is only the analytic lens we impose that makes it seem as if problems can be isolated and solved. When we forget that it is "only a lens," we lose the spirit of openness."

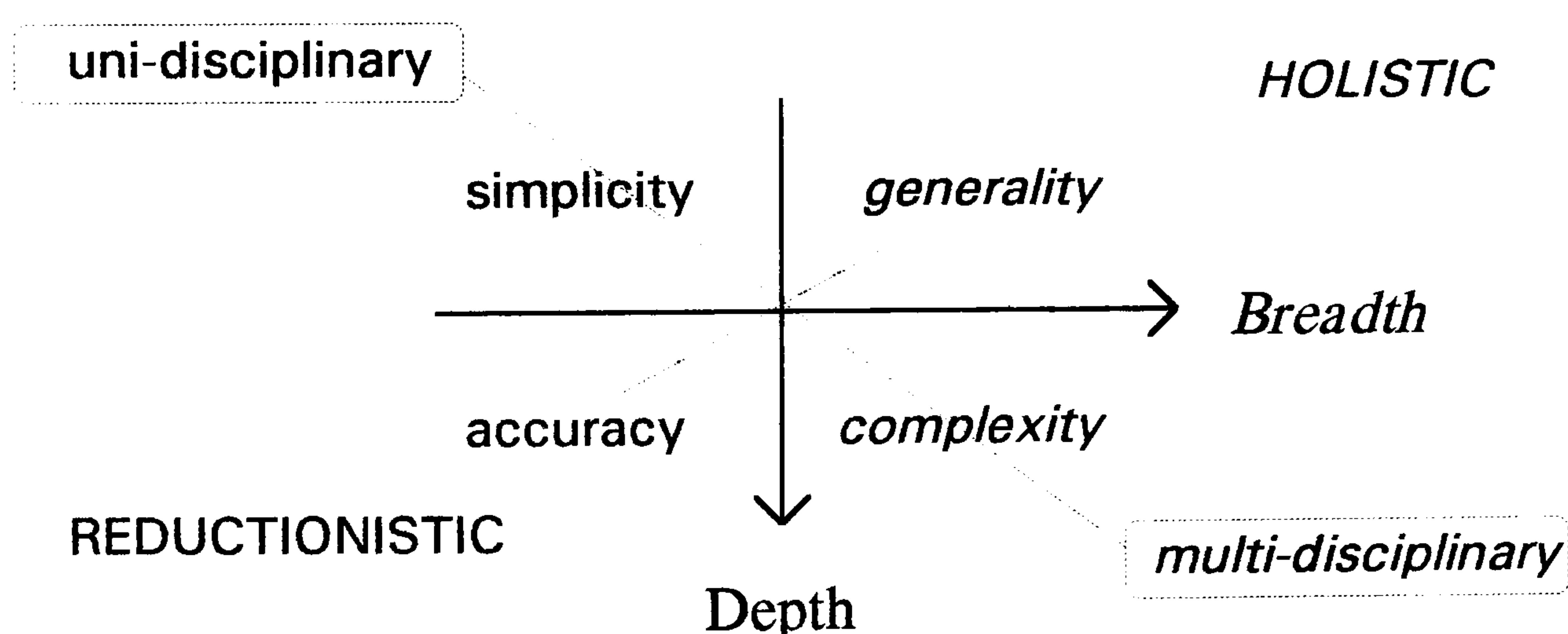
3.2 Trade-offs in Research Design

The choice of the appropriate analytic lens was not simple - it was dependant on the philosophical stance adopted for research as to whether it provided a clear or blurred view of the context of systemic issues. These issues, by their nature, were inter-disciplinary and thus crossed paradigm boundaries when undertaking management research (this necessitated the development of a systemic philosophy to underpin the research as discussed in Chapter 3, and consequential systemic methodology discussed in Chapters 7 and 8).

The trade-offs in research design can be depicted according to the dimensions of breadth vs. depth of study, and holistic vs. reductionistic perspective of research, as shown in Figure 1.3 (the holistic perspective is shown in italic type). Pragmatic choices have to be made in research design between the conflicts of accuracy or generality, and simplicity or complexity, which were identified by Thorngate (1976). These unavoidable trade-offs in research outcomes are shown by dotted lines.

TRADE-OFFS IN RESEARCH DESIGN

Figure 1.3



Only two of the four aspects of research design dilemmas can be comfortably achieved, and compromises must be made with the other two. For example, in international research, a generalisable result can only be achieved with a complex multi-disciplinary research design but, pragmatically, this implies a compromise in the degree of accuracy since a solo researcher can only do so much. These trade-offs are inherent in systemic research design. A choice of a holistic perspective for modelling

meant a breadth of research that was biased towards achieving generality from a multi-disciplinary investigation of a problem area. Thus compromises had to be made on simplicity and accuracy.

In an attempt to minimise the effects of these trade-offs, holistic researchers have adopted multiple qualitative and quantitative techniques to enhance accuracy, on the principle that they are complementary procedures for collecting different kinds of data of the same phenomenon. This increases the complexity of the research design. Jick (1979), in discussing this 'triangulation' of research approaches, held that these characteristics of multiple techniques were more important in holistic work than precision and reproducibility, but demanded creativity from their user, ingenuity in collecting data and insightful interpretation of data.

This was a difficult balance to achieve and meant a complex design for data collection. Both the tone of the research design and the level of penetration into the subject matter was set by these pragmatic trade-offs.

3.3 Hierarchical Research Level

These differing analysis levels of penetration into the decision-making and organisation are illustrated by Castrogiovanni's (1991) approach from the viewpoint of munificence of the organisational environment. Munificence relates to the ease or difficulty the organisation has in obtaining and deploying resources, but, for the purposes of this research, it is interpreted as being the extent of those constraints on strategic choice created by considerations of public interest. He asserted that there were deficiencies in previous organisational studies which limited theoretical development and empirical findings, identifying the prime causes as being:

"(a) *overabstraction*, which exists when environment is defined too broadly, resulting in inappropriate aggregation of disparate environmental units; and

(b) *conceptual ambiguity*, which exists when researchers use different labels to describe similar munificence constructs and similar labels to describe different constructs".

To overcome these problems he proposed a classification scheme of five hierarchical environmental levels for researchers to consider for study:

resource pool - e.g. study of specific resource acquisition efforts, e.g. assets;

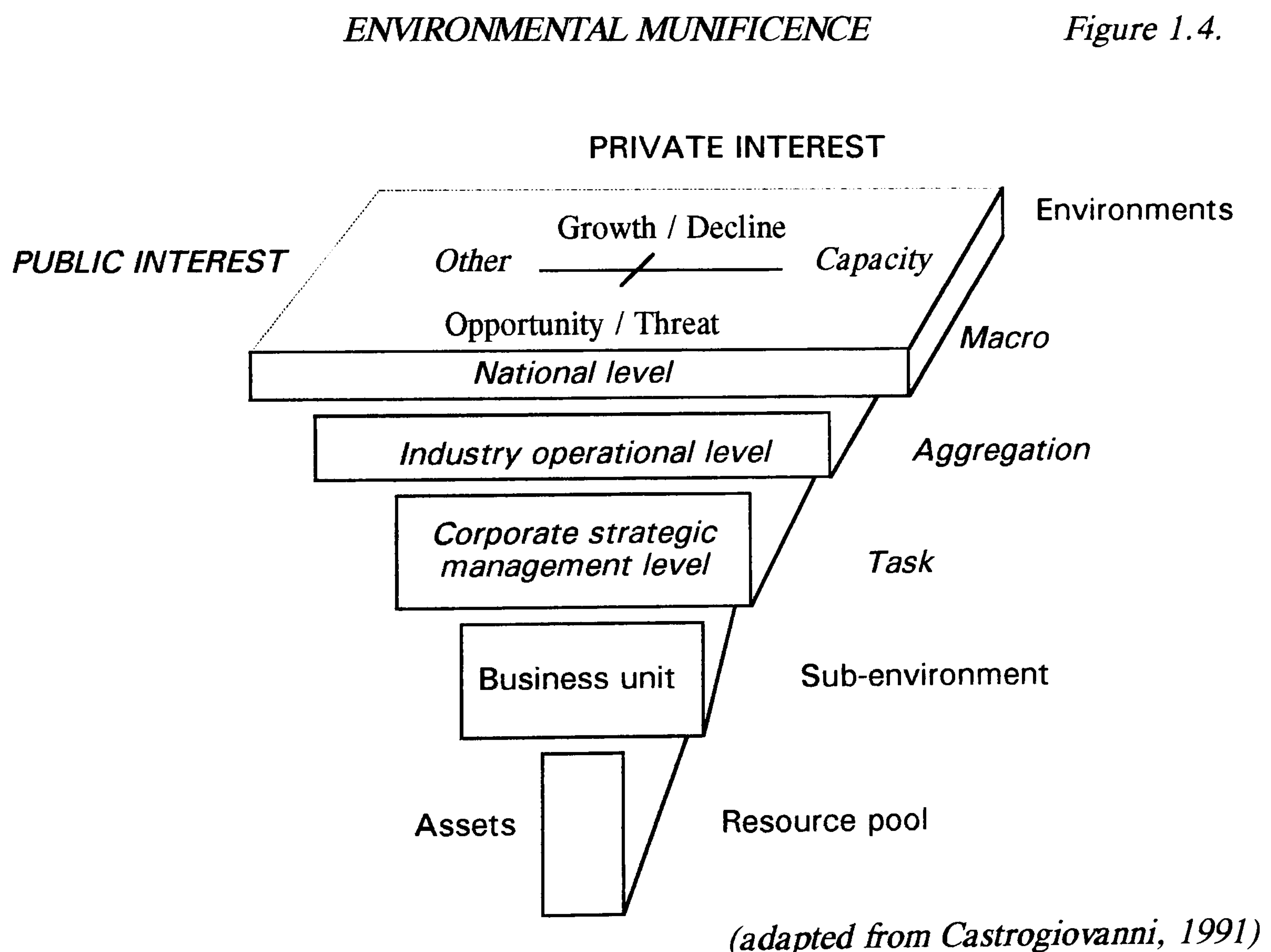
sub-environment - e.g. study of decisions and actions of individual managers and organisations who control the resource pools, i.e. business units;

task environmental level - e.g. study of an organisation's corporate environment and interactions with customers, suppliers, etc., i.e. strategic management;

aggregation environment - e.g. study of aggregate behaviour of actual, perceived or logical groupings of organisations, i.e. industry operations;

macro environment - "is the general cultural context of a specified geographical area and contains those forces recognized to have important influences on organizational characteristics and outputs", e.g. national economic, social, political and technological patterns and movements.

Each higher environmental level was more encompassing but less detailed than the previous one. From this consideration of environmental levels, the focus of the research could be specified and thus the appropriate philosophy and congruent methodology selected. He recommended focusing on the level most appropriate to the research purpose, but examining other, usually adjacent, levels in order to add richness to research findings. In order to minimise conceptual ambiguity further, he proposed that the environmental level was considered in terms of dimensions of capacity; growth/decline; opportunity/threat; and 'other dimensions'. These are illustrated in Figure 1.4, (with holistic aspects in italic type).



The holistic research purpose was to model the implications of a continuing 'public interest' in the existence of, and access to, a port, i.e. capacity of the transport network. 'Other dimensions' was interpreted as the legal aspects of 'public interest'.

The 'private interest' is thus represented by the dimension of growth/decline which posed a decision-making opportunity or threat. This classification showed that, when the background ports industry information (see the Introduction) was analysed, international structural changes occurred primarily in the industry operational environment, with additional 'richness' obtained from the national and corporate environment levels. Hence model construction should relate to these levels.

This approach to understanding which aspects of strategy and organisational structure are being changed, and which are unchanged, is within the spirit of Whittington's (1992: 707) comment that "the character of key organizational actors needs to be explored not only in terms of internal hierarchy, but also in terms of their position within and their relations to external structures stretching beyond the organization itself ...". Changes at the aggregate level will have an impact on decision-makers' power bases, thereby forcing consideration of strategy options. This sets the level of participants in the research, i.e. boards and chief executives as decision-makers. Additional 'richness' could be obtained from business unit managers (whose perceptions may influence policy), and stakeholders' perceptions of the potential outcomes, by acting as an independent view of data provided by decision-makers.

3.4 Research Question - Methodology

A consideration of the implications of establishing the overall breadth and depth of the research required raised the methodological research question of:

(Key Question - 3)

How can decision-makers' perceptions of the potential future outcomes of structural change be gathered and analysed to demonstrate the extent of applicability of a 'Long-term Strategic Service Industry' model?

This is addressed in Chapters 7, 8 and 9.

4/ CONTRIBUTIONS TO KNOWLEDGE

The assertions that not all factors were included in general perceptions of 'strategic futures service industries', and that a systems methodology which attained both a depth and breadth of understanding was extremely difficult to achieve, raised questions on what the thesis was aiming to achieve:

If a new understanding of the management of structural change emerges when literature from differing disciplines and competing strategic management theories are brought together within a systemic futures context - then would the research provide a subject contribution to knowledge?

or

If it emerges that international ports are a different area that challenges management science methodology - then would the research provide a methodological contribution to knowledge?

or

If it emerges that international ports are an example of a conceptual 'Long-term Strategic Service Industry' that required the application of a blend of hard and soft management science methodology to accommodate decision-maker and stakeholder power relationships - then would the research provide a dual subject and methodological contribution to knowledge?

The purpose of the research was to show that ports were conceptual examples of this type of industry and propose a model of the inherent characteristics. Hence:

the thesis aims for a dual subject and methodological contribution to knowledge.

5/ SUMMARY

Ports were considered as examples of a 'Long-term Strategic Service Industry' where an understanding of structural constraints was necessary to understand the actions of decision-makers, a gap in knowledge identified by Whittington (1988), and the need to develop a boundary-spanning perspective of strategy was shown. Manifestations of stakeholder power and implications of operational sub-systems requiring differing selections of strategy were not fully explained in the literature, nor were the contextual political, economic, social and legal constraints on choice of policy.

The strategic choice perspective was identified as the appropriate framework for the investigation. Assessing the systemic subject matter depended on identification of a systems methodology which encompassed the expectations of all stakeholders concerned in the operation of a port and the implicit power they possessed to ensure these were taken into consideration by decision-makers.

The outcome of the research investigating this complex area would advance understanding of the constraints on managerial philosophies in the transport field, as well as furthering understanding of the strategic choice concept. Although the assessment was restricted to ports for reasons of scope, aspects could also have a bearing on the management of other organisations whose purpose spanned a public/private sector divide and which possessed characteristics of a 'Long-term Strategic Service Industry'. These characteristics could be modelled in order to explain the potential impact of structural change and to guide further research.

No similar PhD research has been located.

CHAPTER 2 - The Research Approach

1/ OVERVIEW

The thesis has a holistic stance, taking the view that understanding the potential impact of international structural change is a precursor to further research on the implementation processes adopted. This assumed that general perceptions of the ports industry did not include all of the complex social factors.

In order to produce a coherent research result, the following needs that were identified in Chapter 1 ought to be encompassed by the overall research design:

for knowledge of decision-makers' future effect uncertainty, i.e. opportunity or threat posed, which was the key consideration in their selection of strategy and organisational form in response to structural change;

for understanding how structural change ought to be perceived by decision-makers as affecting their freedom of selection of strategy in corporate planning;

for understanding the organisational structure that decision-makers perceive ought to be adopted in order to fulfil their governance responsibilities.

The research needs were derived from an assessment of gaps in the literature. In order to direct and limit the scope of the subject matter to a manageable size for solo PhD research, they were expressed as Key Questions that needed to be answered:

(Key Question - 1)

Are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

(Key Question - 2)

So what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

These Key Questions set the focus of the research and the approach adopted was designed to ensure that the questions could in fact be answered. These answers would provide a contribution to knowledge regarding how changes in UK and South African ports were perceived by senior managers and informed observers within the industry. As a consequence of answering these questions satisfactorily, it was anticipated that it would be possible to create a model of the considerations decision-makers ought to make in the future when responding to change. This represented the desired outcome of the research.

It was expressed as:

The purpose of the research was to propose a 'Long-term Strategic Service Industry' model based on the specific example of international ports, which incorporated a Boundary-spanning of, and a Strategic Choice Perspective of, selection of the strategy the organisational structure which ought to be adopted by decision-makers in the future. This ought to have wider implications for further research into industries other than ports, that appeared to have similar characteristics.

In order to model the characteristics of a 'Long-term Strategic Service Industry' there was a need:

to explore the Strategic Choice Perspective as a means of explaining how future influences and constraints in structural change ought to be seen by decision-makers as affecting their freedom in corporate planning;

to explore the Strategic Choice Perspective as a means for explaining the organisational structure that ought to be adopted by decision-makers in order to fulfil their governance responsibilities;

to develop a Boundary-spanning perspective of strategy as a means of explaining the factors decision-makers ought to consider in their selection of strategy.

This was an ambitious research project, particularly as it was difficult to conduct international research into perceptions of the future from a common base that allowed for cultural differences. In considering the breadth and depth of research entailed, it became apparent that the methodology adopted for the research would be problematic. It raised the question regarding the methodology aspect of the thesis:

(Key Question - 3)

How can decision-makers' perceptions of the potential future outcomes of structural change be gathered and analysed to demonstrate the characteristics of a 'Long-term Strategic Service Industry' model?

Before adopting a final research technique to answer this question, it was necessary to consider in some detail the theory that would be required to underpin the research from both the subject aspects and the methodological aspects, in order to ensure that they were congruent. This included not only specifying the base philosophy, but also the practical considerations involved in achieving the desired scope of the research.

1.1 The Research Sequence

To encompass the characteristics of a 'Long-term Strategic Service Industry' from a Strategic Choice Perspective an appraisal of existing systems philosophy, identification of systemic features and theoretical development was required. It also involved identifying and overcoming deficiencies in existing systems methodologies to

meet the requirement for a blend of hard and soft methodologies to accommodate the effects of power relationships between stakeholders and decision-makers. A similar theoretical development stance was taken for both subject and methodology aspects of the research. It commenced with a consideration of the implications of the research questions and the holistic scope of the research. This followed a sequence of:

Research Needs - subject / methodology

- when the reasons for undertaking the research were examined this led to the means of limiting the scope of the research by:

Research Questions - subject / methodology

- when examined this led to identification of the objectives for the research, i.e. the ambitions for achieving a coherent research result:

Research Objectives - subject / methodology

- when examined this led to identification of the core assumptions made:

Research Assumptions - subject / methodology

- when examined this led to the achievable goals for the research, i.e. what was practical for a solo PhD researcher:

Research Goals - subject / methodology

- when examined this led to a means for implementing the research process:

Research Expectations - subject / methodology

- the outcome of testing these indicated if the purpose of the research could be achieved, i.e. creation of a 'Long-term Strategic Service Industry' model from a Strategic Choice Perspective, which incorporated a Boundary-spanning perspective of the selection of strategy:

which in turn led to a review of the research to assess whether or not the desired Research Aim in Chapter 1 had been achieved:

- was a dual subject and methodological contribution to knowledge made?

These critical stages of the overall research approach are discussed in this chapter - firstly from a subject aspect and secondly from a methodological aspect. A summary of the research design and analysis phases is illustrated at the end of this discussion. This shows how the various strands of the research process ultimately linked together through a sequential analysis of responses received from research participants to demonstrate a contribution to knowledge. In effect this shows the 'storyline' of the thesis. This review also provided pointers to further research into the ideas underpinning the model and the methodology by which it was created.

1.2 *The Strategic Choice Perspective as a Base for Modelling*

The procedure adopted for testing research expectations as a means of ultimately creating a 'Long-term Strategic Service Industry model had theoretical implications for the Strategic Choice Perspective discussed in Chapter 1. This Perspective considered the ways in which the leaders of organisations were able to influence organisational forms to suit their own preferences. It also drew attention to the active role of stakeholders who had the power to influence the future structures of these organisations. These influences arose from perceptions of the effect structural change would have on the environment and the appropriate managerial response to change.

Child (1995) expressed the Strategic Choice Perspective in the present tense as a means of understanding historical decisions in order to guide current practice. However, the research purpose revolved on assessing future governance structures (where 'governance' referred to the overall idea of fulfilling statutory obligations and carrying on the core business of running a port). Consequently the three key issues in strategic choice that he identified needed to be expressed in future terms for the research to reflect Hamel and Prahalad's (1994) views, and decision-makers' future effect uncertainty (discussed in Chapter 1). Restated to accommodate this need, these key issues were:

- the *future* role of agency and choice;
- the *future* nature of the organisational environment;
- the *future* relationship between organisational agents and the environment.

Testing the primary perceptions of decision-makers on how these issues could influence corporate planning would indicate:

whether or not the future environment was perceived as being likely to be constraining or enabling, i.e. the extent to which decision-makers felt that structural change would be likely to pose an opportunity or threat to their governance activities;

how externalised the future environment was perceived as being likely to be, i.e. the extent to which decision-makers felt that they were likely to possess a freedom of choice of strategy that was independent of stakeholder influences.

By addressing these primary perceptions on the potential effects of structural change, those key aspects of a strategic corporate plan which decision-makers thought ought to be adopted to meet a governance requirement of fulfilling statutory obligations and carrying on the core business of running a port would be highlighted.

The characteristics of a 'Long-term Strategic Service Industry' could then be modelled to reflect the overall international perceptions of decision-makers regarding the likely future environment within which their strategic management activities ought to be undertaken.

2/ SUBJECT ASPECTS OF THE RESEARCH

The subject aspects of the research follow directly from an examination of the implications of the needs for research and the Key subject research Questions 1 and 2.

2.1 Subject Objective

The purpose of the research was to show that ports were conceptual examples of a 'Long-term Strategic Service Industry'. Applying this purpose meant initially identifying subject objectives. These were:

1/ to assess systemic structural change in the international ports industry from a Strategic Choice Perspective;

2/ to model the considerations decision-makers ought to make in selection of a Boundary-spanning strategy.

These objectives for the research reflected the concerns of the two subject research questions - what is likely to be changed by structural reform and what are decision-makers likely to do in response to change? It also implicitly incorporated the prime research assumption that a suitable systemic philosophy could be identified or developed, as outlined in Chapter 1.

2.2 Subject Assumptions

The objectives presumed that the research participants' perceptions of structural change and strategic choice could be challenged and implicit beliefs surfaced. It was dependant on the crucial assumption that there was a potential for conflict, and further assumed that this conflict could be contained by managerial action.

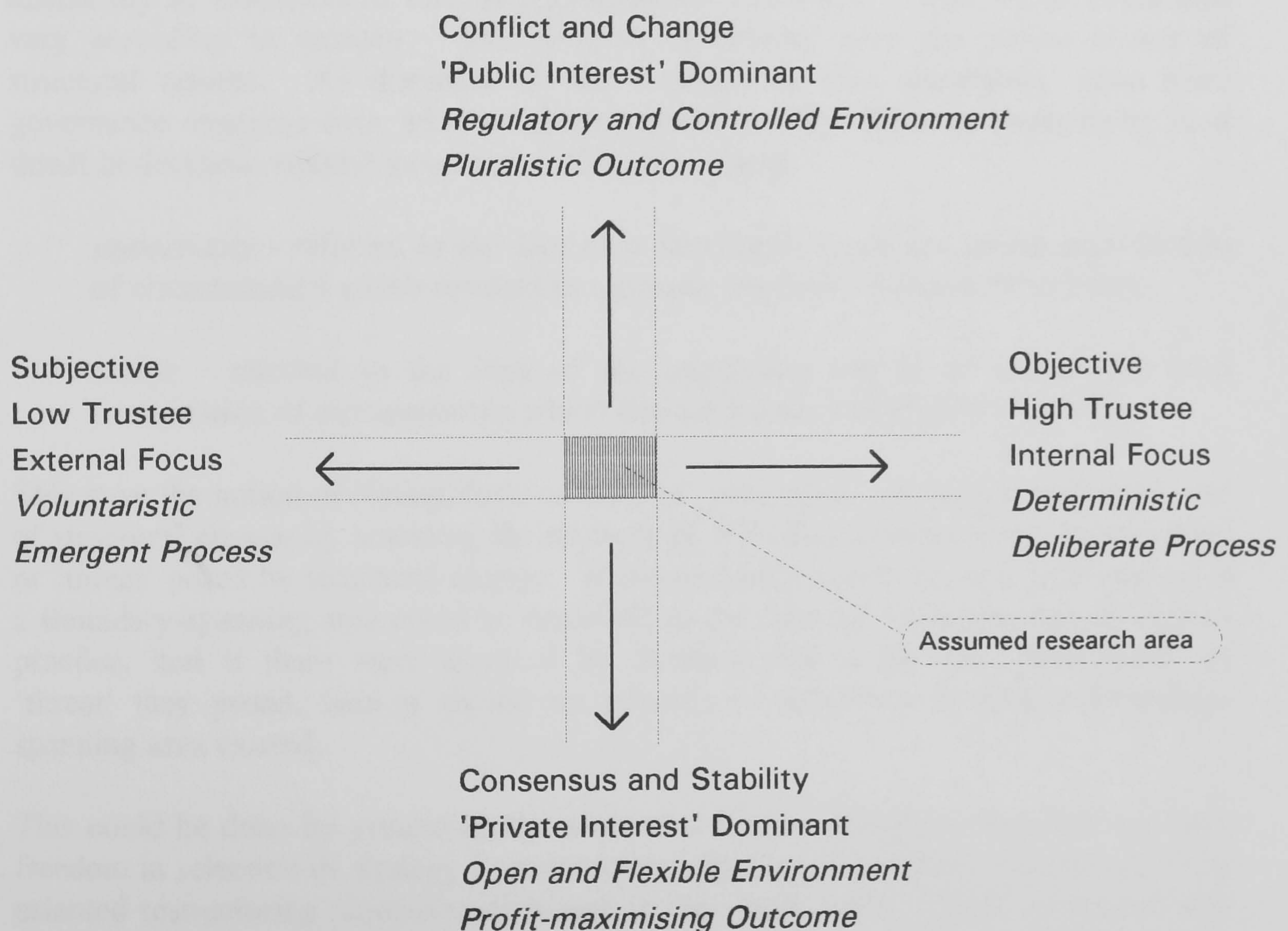
It was the researcher's experiential perception that the purposes of ports and their methods of operations spanned a public/private sector divide. In effect this divide could be represented by the intersection of two continua which captured the essence of the problem of selection of appropriate strategy and structure in a 'Long-term Strategic Service Industry'. These continua were:

the extremes of 'public interest' versus 'private interest'. These were dependant on the extent of conflict and change in the organisational environment. This led to a selection of strategy based on perceived needs for a particular outcome;

the extremes of voluntaristic versus deterministic strategic choice. These were dependant on decision-makers' presumptions regarding the extent of their freedom to select strategy and the requirements to justify their selection to stakeholders.

If the continua were illustrated as intersecting axes representing the beliefs of decision-makers as to how far these extreme philosophical stances applied to ports, then where they crossed there would be in effect a complex area within which decision-makers operated. This represented an area of potential conflict, i.e. the overall problem area for the research. This is illustrated in Figure 2.1 and draws on Whittington's (1993) presentation of generic strategies, as well as Hrebiniak and Joyce's (1985) concept of environmental determinism (both shown in italics). There are further links to literature quoted in Chapters 3 and 4, notably Burrell and Morgan (1979), Meyers and Wijnholds (1990), Nutt and Backoff (1994).

PORTS SPANNING PUBLIC SECTOR / PRIVATE SECTOR DIVIDE Figure 2.1



From this viewpoint there appeared to be an ill defined research area which the multi-disciplinary literature had not specifically considered, although it had identified the extreme positions. From a strategic management perspective it appeared to illustrate Whittington's (1988, 1993) concerns that the prevailing dichotomy between voluntarist and determinist views was too simple. It also illustrated Handy's (1994) view that a balance was required.

This created the first Research Assumption:

- 1/ *it was assumed that decision-makers in a 'Long-term Strategic Service Industry' operate within a complex managerial area that spanned the boundary between 'public' and 'private' interests, implying that the boundary between voluntaristic and deterministic approaches to strategy was also spanned.*

The problem with this assumption was that to demonstrate the validity of the concept of a 'Long-term Strategic Service Industry' there needed to be some form of measure to indicate where it differed from the extreme stances adopted by the literature.

The implication was that the future outcomes of structural change could be viewed differently by managers in various organisational structures. These views could also vary according to country. This created uncertainty over the future effects of structural reform. As discussed in the Introduction this uncertainty arose from governance concerns over whether change posed broadly either an opportunity or a threat in decision-makers' governance of a port, where:

opportunity - referred to the idea of a favourable or advantageous combination of circumstances which resulted in a greater freedom of choice of strategy;

threat - referred to the idea of the impending arrival or occurrence of a combination of circumstances which limited freedom of choice of strategy.

This gave the notion of testing decision-makers' perceptions of the potential outcomes of structural change by assessing the strength of their perceptions of the 'opportunity' or 'threat' posed by structural change. If the uncertain effects of structural change in a Boundary-spanning area could be described in the form of a scenario for managerial practice, and if these were assessed by decision-makers for the 'opportunity' or 'threat' they posed, then it should be possible to determine if such a Boundary-spanning area existed.

This could be done by presenting the aims of structural change as enabling a greater freedom in selection of strategy in accordance with the privatisation and commercially oriented restructuring objectives discussed in the Introduction. Total agreement with these objectives would indicate one extreme point of the continua of Figure 2.1. Total opposition to these would indicate the second extreme point of the continua. Any deviation from either of these extreme points would indicate the existence of the Boundary-spanning problem area for research, since it would mean that no clear views were held, i.e. there would be a mixture of agreement and disagreement, depending on which aspects of structural change caused concern over potential outcomes.

This can be illustrated as follows:

opportunity	/ <i>problem area</i> /	threat
<i>Boundary-spanning</i>		

To infer the extent of the Boundary-spanning area, a simple proportioning could be used whereby a one-third split of the continua enabled the Boundary-spanning area to extend one-sixth of either side of the mid point. This can be illustrated as follows:

one-third	/ <i>one-third</i> /	one-third
<i>Boundary-spanning</i>		
<i>measure</i>		

Hence research participants' perceptions could be ascertained and used to measure divergence from the extremes of the literature.

This idea of establishing a measure of decision-maker judgement of a narrative could then be refined by presenting two opposing scenarios of circumstances posing an 'opportunity' or 'threat' to decision-makers and asking them to judge these. A qualitative assessment of 'obvious' if they agreed with a particular scenario, or 'absurd' if they disagreed with it, would establish the existence of a Boundary-spanning area, on the basis that if the expected response for an 'opportunity' scenario would be, for example:

	opportunity scenario
decision-maker's	
judgement	<i>obvious</i>

then this would imply that one of the extreme points of the continua had been established.

This response could be confirmed by judgement of the opposing 'threat' scenario, for example:

	threat scenario
decision-maker's	
judgement	<i>absurd</i>

If however the response to both scenarios was, for example:

	opportunity scenario	threat scenario
decision-maker's		
judgement	<i>obvious</i>	<i>obvious</i>

then this would imply that neither of the extreme points had been established and conflict could occur, i.e. the Boundary-spanning area had been established.

This was a means of double checking that the research was in fact addressing key issues in structural change. By counting responses and 'netting-off', i.e. comparing strengths of perceptions of opposing opportunity/threat scenarios, then it would be possible to determine the overall favoured scenario. These favoured responses could then be tested to establish whether or not concepts from the literature contained in the scenario narratives were endorsed by decision-makers.

This created the second research assumption:

- 2/ *it was assumed that the complex influences operating on decision-makers in a 'Long-term Strategic Service Industry' could be measured by the strength of their perceptions of the 'opportunity' or 'threat' posed by structural change.*

If these two Research Assumptions could be tested in practice satisfactorily, then it would be possible to address the research questions with confidence in the data obtained from decision-makers. Therefore establishing that the assumed research area did in fact exist was a necessary precursor to testing research results obtained in order to answer the research questions. This took two forms and was based on the notion of an expected research area as shown in Figure 2.1. Firstly, considering the 'public interest' versus 'private interest' continuum, then conflict could be said to occur in the middle third. Thus if the circumstances which could lead to potential conflict could be described in the form of scenarios and subjected to a judgmental assessment this would imply the first axis of the research area had been established or refuted. (This was measured by the proportion of research participants favouring an obvious response to the researcher's commentary of potential conflict in structural change contained in Section 1 of a Multiple Scenario Questionnaire outlined below. This commentary reflected the future nature of the organisational environment from a Strategic Choice Perspective.)

Secondly, considering the 'voluntaristic' versus 'deterministic' view of environmental change, then conflict could be said to occur in the middle third. Thus if the circumstances which could lead to potential conflict could be described and subjected to a judgmental assessment this would imply the second axis of the research area had been established or refuted. (This was measured by the proportion of research participants favouring a mixed opportunity/threat scenario in Section 4 of the Multiple Scenario Questionnaire outlined below. The participants' judgement reflected the future relationship between organisational agents and the environment from a Strategic Choice Perspective. It incorporated their judgement on the researcher's commentary as well as their own viewpoints on other factors.)

2.3 Subject Goals

Considering the identified needs for research and drawing on the objective and the implicit research assumptions produced three goal groupings for the research:

1/ understanding international managerial perceptions of the future effects of a continuing 'public interest' and extent of strategic choice arising from structural change, i.e. what is likely to be changed by structural reform?:

(a) to ascertain international decision-makers' perceptions of the potential impact of structural change on fulfilling statutory obligations;

(b) to ascertain international decision-makers' perceptions of the potential impact of structural change on choice of a voluntaristic or deterministic strategic stance.

2/ as a consequence of adopting the Strategic Choice Perspective the research would need to assess the future role of agency and choice; the future nature of the organisational environment; the future relationship between organisational agents and the environment, i.e. what are decision-makers likely to do in response to change?:

(a) to assess international decision-makers' perceptions of the potential impact of structural change on key aspects of a strategic corporate plan;

(b) to assess international decision-makers' perceptions of the potential impact of structural change on organisational structure.

3/ as a consequence of specifying the purpose of the research, there was a need to assess whether a model of the likely outcome of structural change to aid decision-making in ports and act as a guide for further research could be presented, i.e. what may be implied by the research?:

(a) to propose the extent to which Boundary-spanning processes and outcomes ought to dominate international decision-makers' selection of strategy and organisational structure in a 'Long-term Strategic Service Industry';

(b) to identify further avenues for research into the concept of a 'Long-term Strategic Service Industry'.

2.4 Overview of Research Expectations

The research approach adopted presumed that there would be agreement by research participants on the potential for conflict to arise in the future, but this would not materially constrain decision-makers' selection of strategy, nor organisational structure, since they would have the capability to resolve conflict situations.

The Research Assumptions led to the notion of deriving Research Expectations from the literature as a means of implementing the research process. In order to avoid experiential bias, the researcher would assess the literature and form a view on the

'overall tone of the message' this was conveying. If this view was then expressed as an all-encompassing statement anticipating the perceptions of decision-makers regarding their managerial environment, then this would form the anticipated result of the research, i.e. the Research Expectation. Comparing decision-makers' actual judgements to the Research Expectations would in effect test whether or not the literature reflected their perceptions. In other words, if a reading of the literature suggested that structural change ought to be 'welcomed' by decision-makers as enhancing their freedom of action, then the research process should be designed towards assessing the extent to which decision-makers agreed with this reading in practice. By presenting this reading to decision-makers in the form of two opposing examples of circumstances that could arise from structural change which could lead to conflict (i.e. scenarios) for them to judge which was the most likely, then it should be possible to measure the strength of their agreement/disagreement.

In effect therefore, the Research Expectations would provide themes for detailed scenarios describing circumstances and opposing potential choices of strategy. These could be put to decision-makers for judgement and comment. By presenting opposing choices that were equally balanced then bias would be minimised and the favoured scenario determined. The strength of the views they held could then be assessed and from this assessment the extent to which the literature was supported or refuted could be gleaned. This would indicate the direction the conclusions from the research should take:

if either the opportunity scenario or threat scenario was favoured then what would this imply what for strategic management?

The outcome of the research would thus take the form of tending to confirm one or other of the voluntary/deterministic strategic management perspectives. If this occurred then the perceived research need to create a 'Long-term Strategic Service Industry' model which bridged the extremes of the perspectives in the literature would not be supported. Hence the experiential perception of the researcher would be disconfirmed, and the international ports industry was not unique.

However, if no scenario was clearly favoured then what would this imply for strategic management?

If a 'mixed opportunity/threat scenario' was favoured then this implied that the complex considerations that ought to be taken into account by decision-makers in selecting strategy and structure had been surfaced. The inference was that, depending on the quality of the response, these could be modelled within a Boundary-spanning framework for a 'Long-term Strategic Service Industry'. Thus they gave the basic measurement parameters - firstly, the extent to which the Research Expectations were endorsed would illustrate the scope of, or limits to, the Boundary-spanning concept, and secondly, the quality of a Bias-free response would determine strength of inferences that could be drawn in order to inform the strategic choice concept. Hence a consolidation of international decision-makers' views could be used to construct a

measured model of a 'Long-term Strategic Service Industry' that would highlight the need for further research. The measured results would have a 'prima facie' value but, ideally, other supporting evidence would help understand change in the organisational environment, and the future response of decision-makers to this.

Thus the Research Expectations could be seen as holistic 'mini-hypotheses', i.e. tentative proposals that explained the variations in a particular phenomenon (Gill and Johnson, 1991), in that they could be tested and results measured. However, they were of necessity imprecise, since they were concerned with uncertain future outcomes, and broad in scope. They would produce a lower level of accuracy than that normally expected from hypotheses since they followed the epistemological form of 'may be taken to be', rather than 'is'. Hence the results obtained would not be of the normative form of 'this will be the outcome of change', or even 'this should be the outcome of change', but a less precise 'this ought to be the outcome of change'. In other words, the results obtained from testing these 'mini-hypotheses' would be strong inferences which could only be proved by the passage of time or application of differing forecasting methodologies to support results achieved.

The Research Expectations were derived from a theoretical development of the subject literature in Chapters 4 to 6 from the stance of the macro, operational and strategic management hierarchical level of analysis proposed by Castrogiovanni (1991), as discussed in Chapter 1. The overall tone of the literature did seem to support the aims of structural change, which indicated that participants in the research ought to see this as providing a future 'opportunity' and not as posing a 'threat' to their freedom of action. Hence it was anticipated that the opportunity scenario would generally be favoured in an overall judgement as to which would be the most likely outcome of structural change. However, the complexity of port operations and differing strategic management views (also identified in Chapters 4 to 6) implied that there was a potential for decision-makers to oppose some aspects of structural change. This indicated that the assumed research area did in fact exist and thus enabled opposing scenarios to be constructed - one geared towards providing circumstances which decision-makers would see as enabling freedom of action - an 'opportunity' scenario - and one geared towards constraining their freedom of action - a 'threat' scenario. An overall judgement could therefore be sought, which would provide a measure as to whether the research ought to be ultimately proposing a model.

2.5 The First Research Expectations

The research approach adopted presumed that testing the perceptions of decision-makers on how the actual strategy and structure that would develop in the future would solely reflect their perceptions of their environment, and their choices in meeting and anticipating the demands of the various stakeholders in a port (as discussed in Chapters 3 to 6). If testing the research assumptions produced a satisfactory result, i.e. the existence of a Boundary-spanning strategy area was established, then in order to explain these apparent results from a Strategic Choice

Perspective the *future role of agency and choice* had to be considered. This was addressed by the Research Expectations. The first expectation considered the future role of agency from a stakeholder viewpoint:

(Research Expectation - 1a)

structural change ought to be perceived as improving 'public interest' governance.

In other words, in the researcher's view from a reading of the literature (as outlined above) regarding the implications of structural change, the substantial majority opinion of research participants would be that any potential future conflict between 'public' and 'private' interests was containable. There would be no meaningful future manifestation of tensions between these interests, when considered from the macro economic and legal stance discussed in Chapter 4. Any sources of conflict were presumed to be reconciled within the strategic choice process and could be explained from a Strategic Choice Perspective. This was measured by the extent to which research participants favoured an opportunity scenario over an opposing threat scenario. (This research expectation provided one aspect of the scenario theme from which scenario circumstances of potential conflict were derived. It was tested by Sections 2.1 and 3.1 of the of the Multiple Scenario Questionnaire outlined below).

Considering the *future role of agency* from the operational level of decision-making, in particular the potential future conflict between adaptive generalisation and adaptive specialisation (Chakravarthy and Lorange (1984) and identified Chapter 1), led to:

(Research Expectation - 1b)

achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being necessary to meet 'public interest' considerations in a port.

In other words, in the researcher's view from a reading of the literature (as outlined above) regarding the implications of structural change, the substantial majority opinion of research participants would be that potential future conflict between stakeholders' interests in the ports' continued operation and investors' desire for commercial returns would not lead to dispute over investment needs when considered from the operational stance discussed in Chapter 5. Any sources of conflict were presumed to be reconciled within the strategic choice process and could be explained from a Strategic Choice Perspective. This was measured by the extent to which research participants favoured an opportunity scenario over an opposing threat scenario. (This research expectation provided a second aspect of the scenario theme from which scenario circumstances of potential conflict were derived. It was tested by Sections 2.2, 2.3; and 3.2, 3.3 of the Multiple Scenario Questionnaire outlined below).

The answers to these two Research Expectations would act as a guide to explaining the answer to the first Key research Question:

(Key Question - 1)

Are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

which implicitly addressed the *future role of agency* from the macro and operational levels.

2.6 The Second Research Expectations

This led to questioning assumptions on determinism versus voluntarism in the choice of strategy for the operation of a port. In order to guide the answer to the second subject Research Question:

(Key Question - 2)

So what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

which was implicitly concerned with the *future role of choice* at the strategic management level, two further Research Expectations were derived:

(Research Expectation - 2a)

a voluntaristic managerial philosophy and decentralised organisational structure ought to be perceived as being able to meet 'public interest' considerations in a port;

and

(Research Expectation - 2b)

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

In other words, in the researcher's view from a reading of the literature (as outlined above) regarding the implications of structural change, the substantial majority opinion of research participants would be that potential future conflict situations would be resolved by the strategic management stance and organisational structure adopted (discussed in Chapter 6). Thus any manifestations of conflict were presumed to be reconciled within the strategic choice process and could be explained from a Strategic Choice Perspective. This was measured by the extent to which research participants favoured an opportunity scenario over an opposing threat scenario. (This research expectation provides the remaining aspects of the scenario theme considering decision-making approaches from which scenario circumstances of potential conflict resolution were derived.)

Since the second key question covered perceptions of conflict and perceptions of likely responses to structural change, this involved testing a wide range of aspects of the future role of choice. It was not possible within the practical constraints of the Multiple Scenario Questionnaire design to create individual 'mini' scenarios for testing as was achieved for the first Key Question. Hence these second Research Expectations were tested by a blend of Sections in the questionnaire (discussed in Chapter 9).

2.7 Outcome of the Research Expectations

The outcome of testing these research expectations would be a series of measures illustrating the expected research area and the applicability of the strategic choice concept as a base for model building. If these proved satisfactory, they would confirm the existence of a Boundary-spanning area with unique strategy and organisational structure characteristics.

The Research Expectations had a second purpose. On the assumption that they confirmed a Boundary-spanning area, then the process by which they were created could be used for further analysis from a Strategic Choice Perspective:

Research Expectation 1 (a) arose from an identification of macro level potential conflict in Chapter 4. The circumstances of conflict highlighted the role performed by decision-makers in resolving the differing needs of 'public' and 'private' interests identified in Chapter 1. A further analysis of the results obtained would indicate perceptions of the *future role of agency and choice*. This is discussed in chapter 12.

Research Expectation 1 (b) arose from an identification of operational level potential conflict in Chapter 5. These circumstances of conflict highlighted concepts of environmental determinism that reflected the differing needs of 'public' and 'private' interests regarding the statutory and conservancy functions of a port. A further analysis of these concepts would indicate perceptions of the *future nature of the organisational environment*. This is discussed in Chapter 13.

Research Expectations 2 (a) and (b) arose from an identification of strategic management level potential conflict in Chapter 6. These circumstances of conflict highlighted propositions of environmental management that reflected the differing needs of 'public' and 'private' interests on a day-to-day basis. A further analysis of these propositions would indicate perceptions of the *future relationship between organisational agents and the environment*. This is discussed in Chapter 14.

The outcome of this additional analysis was the model (in Chapter 15) which reflected *how externalised the future environment was perceived as being likely to be*, i.e. the

extent to which decision-makers felt that they were likely to possess a freedom of selection of strategy that was independent of stakeholder influences. It also reflected *whether or not the future environment was perceived as being likely to be constraining or enabling*, i.e. the extent to which decision-makers felt that structural change would be likely to pose an opportunity or threat to their governance activities. Hence testing the Research Expectations was crucial to drawing inferences from the additional analysis and achieving the purpose of the research. They also assisted in the explanation of the Boundary-spanning strategy that was likely to be adopted.

3/ METHODOLOGY ASPECTS OF THE RESEARCH

As discussed in the Introduction there was an implication that resolution of differing views of opportunity or threat would be obtained by the exercise of power. Hence the research aim concerned the future implications of stakeholder power arising from a continuing 'public interest' in a 'Long-term Strategic Service Industry' and consequential managerial strategic choice.

This raised the problem of determining how decision-makers' perceptions of the potential future outcomes of structural change could be gathered and analysed to demonstrate the applicability of a model.

3.1 Methodology Objective

The subject goals for the research implicitly presumed that a suitable systemic philosophy could be identified or developed in order to assess what was the likely effect of structural reform as perceived by decision-makers. Considering the practicalities of achieving these goals led to the methodology research objective of:

to identify or develop a congruent systemic methodology that accommodates power relationships to assess perceptions of the future effect uncertainty in selection of strategy.

The philosophy identified is discussed in Chapter 3 (and its subject implications are further considered in Chapters 4 to 6), but no suitable systems methodology through which to implement the subject objective was identified (as discussed in Chapter 7). In order to investigate decision-makers' perceptions of structural reform in a global transport system it appeared that it would be necessary to apply a blend of hard and soft management science methodology that accommodated power relationships, since no single methodology seemed to address the systemic implications.

Consequently it was necessary to develop guidelines for the selection of a systemic technique, and this is discussed in Chapter 8. Within this process a key assumption which required testing was made.

3.2 Methodology Assumption

The problem faced in the research design was to select an appropriate methodology which would meet the subject objective. Besides meeting the requirements:

- to recognise the importance of the researcher's subjectivity;
- to incorporate methods of assessing degrees of future pluralism and coercion;
- to represent the dynamic nature of the problem situation;

this would also have to incorporate methods for the validation of the data obtained, as discussed in Chapter 7. A major aspect in selection of a research technique would be the pragmatic constraints in attempting to obtain data by solo PhD research in an international arena. These constraints could be summarised as:

- time - this precluded a major longitudinal study of evolving structural change in international ports;
- access - to high level decision-makers was problematic in a volatile area of international political and commercial sensitivities;
- content - the questions asked of, and data supplied by, participants must be of interest to them and be within their expertise, and also answerable within the limited time they have available to help with the research;
- finance - the severe limits on a student's resources for international research precluded expensive data collection and analysis techniques.

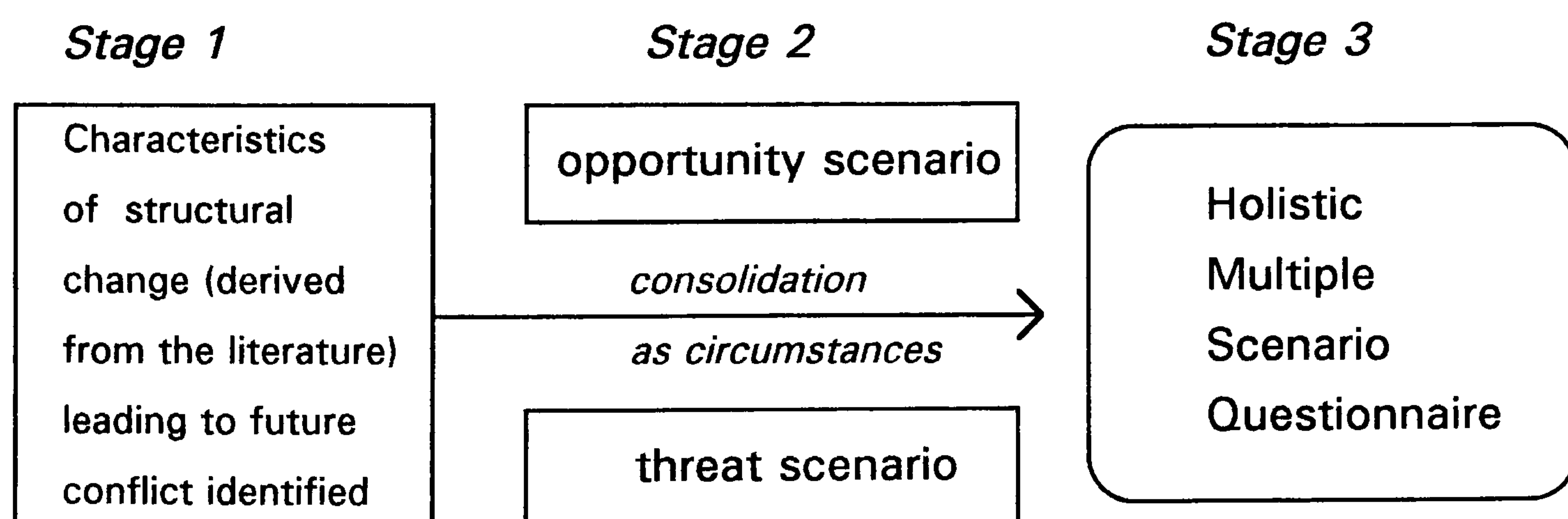
A number of techniques were looked at and reviewed for their ability to expose differing international perceptions of potential future outcomes of structural change. Some possible approaches to answer the key questions were deduced but, in the circumstances created by the research topic, these posed problems in achieving the objective for the subject. All but one approach was rejected on various grounds. For example, international interviews were rejected on the grounds of cost, access and researcher's subjectivity. Case studies generated richness and depth of meaning but, on their own, failed to capture pluralistic perceptions of the future, and failed to provide strong judgmental validation for drawing research conclusions. Whilst structured questionnaires potentially overcame the problems posed by interviews and case studies, they were inherently static, concentrating on current or past events, and exposing pluralism was problematic. International surveys, in a situation where there were limited numbers of potential participants and low response levels could be expected, created their own additional access problem of an anonymous researcher, thus further limiting response.

In the absence of stable, quantitatively predictable environments the generally accepted method was eliciting the judgements of experts. It seemed therefore that a blend of existing futures forecasting and judgmental techniques would be needed to minimise drawbacks in a systemic methodology at an international level. The final technique chosen was multiple scenarios assessed by decision-makers and stakeholders. This is discussed in Chapter 8.

This judgmental technique was holistic and depended on the second subject research assumption, viz. *that the complex influences operating on decision-makers in a 'Long-term Strategic Service could be measured by the strength of their perceptions of the 'opportunity' or 'threat' posed by structural change.* This presumed that it would be possible to create a coherent narrative of the circumstances that could lead to possible future conflict in structural change for research participants to judge whether or not this posed an opportunity or threat to decision-makers' activities. In other words, that it would be possible to word the narrative in such a way that it met the conflicting needs for simplicity and generation of substantial data that addressed decision-makers' uncertainty over the potential effects of structural change.

It was theoretically simple to construct a structured questionnaire which asked participants to judge whether or not a short and simple descriptive statement of an isolated characteristic of future uncertainty could pose an opportunity or threat. However, an assessment of series of isolated characteristics would not necessarily 'add up' to create a holistic perception, since these self-contained statements would not reflect the intricate feedback patterns created by the stakeholder power relationships in the complex subject matter. All that would be achieved would be obtaining a verdict on separate small facets of structural change of a 'notional world', rather than an overall judgement of a holistic scenario which was attempting to portray a potential 'real world' situation of future effect uncertainty.

Hence this approach on its own would not produce a measure of the holistic perceptions of decision-makers who had to resolve the future effect uncertainty inherent in structural change (which is discussed in Chapters 4 to 6 from a subject aspect and 7 and 8 from a methodological aspect). It appeared that if the researcher could address this shortfall by consolidating the identified characteristics of structural change to create opposing holistic scenarios, these could then be assessed by decision-makers. This would allow them to judge whether or not any influences of stakeholder power would act to strengthen or weaken the opportunity or threat effect of structural change. This process is discussed in Chapter 9 and illustrated below.



To someone accustomed to a reductionist approach to research data collection this may seem an unusual stance, but to decision-makers of Chief Executive status this

approach ought to challenge their beliefs and encourage thought on potential outcomes. In the researcher's experience of privatisation, it was a normal part of their job to judge the implications of structural change in the absence of comprehensive forecasts, and to balance conflicting views on the potential effect changes in the environment would have. Hence the research would be obtaining their actual perceptions of the overall future effect uncertainty posed by structural change and not attempting to deduce this from the data. It presumed that decision-makers and not researchers were the best judges of the ramifications of the explicit and implicit power held by stakeholders and how this influenced their own actions.

Consequently, the significant aspect of the research approach adopted was to propose the macro, operational and strategic management implications of structural change before and not after the data collection phase. This would imply that the characteristics of the 'Long-term Strategic Service Industry' model (identified in Chapters 4 to 6) had been endorsed 'in the field' by decision-makers and stakeholders. This would also help to control experiential bias in data interpretation.

Hence the third Research Assumption was developed from the subject assumptions. This was that:

3/ it ought to be possible to obtain holistic judgements of holistic multiple scenarios - if research participants were unable to form a judgement then this would imply that the proposed characteristics of the model did not reflect their perceptions of future effect uncertainty.

Hence measures of this assumption were available in respect of the ratios of participants who favoured an opportunity scenario, a threat scenario, or who were unable to form a view favouring either scenario for some reason. The latter would imply that both the model and the methodology were not reflecting perceived reality (this assumption was addressed by Section 4 of the Multiple Scenario Questionnaire, and tested in Chapter 11).

3.3 Methodology Goals

Considering the practical application of the subject aspects led to the methodology goals of:

1/ theoretical development in a systemic research project:

to develop a data collection technique that ought to achieve the subject goals;

2/ and what is revealed by the research:

to test the data collection technique in practice;

3/ and how the methodology could be improved:

to identify further avenues for research into the validity of the data collection technique as a judgmental methodology.

With regard to the second, and hence third, goals the problem faced in the research design was to find a method of 'triangulation' (as discussed in Chapter 1) in order to increase confidence in the results provided by the data collection technique.

It was intended that participants' perceptions of these multiple scenarios would be validated through a Delphi process (discussed in Chapter 8), in order to provide the verification desired by the 'triangulation' process. However, as discussed in Chapter 10, longitudinal problems prevented this procedure. As a consequence of this, the research design to obtain relevant data consisted of seven elements in order to provide the necessary breadth of data:

literature review - for background information and derivation of multiple scenarios;

trade and financial statistics - for background information (but not for trend analysis in view of the unknown future effects of current structural change that was underway at the time of research);

supplementary access and confirmation interviews - to provide additional background 'richness';

multiple scenario questionnaire results - quantitative analysis of participants' judgements of potential outcomes of structural change;

multiple scenario questionnaire results - qualitative analysis of comments made by participants indicating their perceptions of the sources of effect uncertainty;

correspondence with participants - qualitative analysis of further research related comments made by participants;

supplementary questionnaire - to ascertain causes for refusals to participate in the research to identify methodological or subject concerns.

The background data was primarily contained in the multi-disciplinary published academic literature, published government reports, published ports literature, press reports, unpublished ports papers and various published or unpublished trade and financial statistics. This bank of data was sufficient to provide the required information for multiple scenario construction, but did require an experiential perspective to both locate and interpret it to meet the research goals. The multiple scenarios were also reliant on topical press reports since these were fairly

representative of concerns within the transport field - to the extent that each major element of either an opportunity or threat scenario could be extrapolated from an actual incident reported somewhere in the world. This was felt necessary to control potential research bias and to reassure participants if a particular scenario element was challenged as being unrealistic.

A large proportion of the unpublished ports papers (such as privatisation documents) were obtained on a confidential basis and are not referred to in the thesis, although they influenced selection of some of the elements of the multiple scenarios. For this reason the thesis contains 'retrospective' examples of participants' comments being used to illustrate those points which were incorporated in the final multiple scenarios. These future effect uncertainties were incorporated into the multiple scenarios in the knowledge that participants would be highly likely to raise similar points to explain their perspectives. This presumption proved correct so confidentiality was not breached. Two supplementary interviews, primarily for the purpose of explaining the research in order to gain access to an organisation, were undertaken (one in the UK and one in SA). One confidential supplementary clarification interview with a UK Chief Executive was undertaken - this highlighted operational tensions in public sector and private sector ports sharing the same estuarial waters.

In the absence of a Delphi confirmation of the perceptions obtained, the thesis rests on the very high levels of response from the UK and SA population of ports decision-makers judging the multiple scenarios, as discussed in Chapter 10. These were 30.8% for the UK and 58.3% for SA. The response from a non-random group of stakeholders in both the UK and SA judging the multiple scenarios was 69.2%.

3.4 Methodology Research Expectation

In order to satisfactorily answer the methodology Research Question:

(Key Question - 3)

How can decision-makers' perceptions of the potential future outcomes of structural change be gathered and analysed to demonstrate the characteristics of a 'Long-term Strategic Service Industry' model?

the research approach adopted presumed that the actual strategy and structure that ought to develop in the future would solely reflect decision-makers' perceptions of their environment, and their choices in meeting and anticipating the demands of the various stakeholders in a port (as identified in Chapters 3 to 6). In other words, their views, as surfaced by the research, would be based only on their experience and assessment would not be swayed by other influences such as personal political beliefs, i.e. a bias-free judgement of the scenarios would be made.

Hence the extent of the applicability of the model depended on obtaining a discerning holistic appraisal of the multiple scenarios presented for judgement. It was anticipated that the target level of the participants would ensure this, i.e.:

(Research Expectation - 3)

decision-makers' judgements of opportunity/threat scenarios that address future effect uncertainty ought to be the outcome of their Bias-free holistic perceptions.

To have confidence in whether or not the research technique generated also countered biases, it would be necessary to have some measure as to how far the results obtained deviated from the research expectation. The process adopted is described in Chapter 11 and essentially consisted in assessing how the participants changed their initial views over the course of the questionnaire when judging the opportunity or threat posed by the circumstances described by the scenarios.

It also involved assessing the extent of researcher intervention through a series of tests tracking:

the extent of no views surfaced by requesting participants' judgement of potential sources of conflict identified in the questionnaire;

the extent of no views surfaced by challenging their perceptions when assessing scenario elements in the questionnaire; and

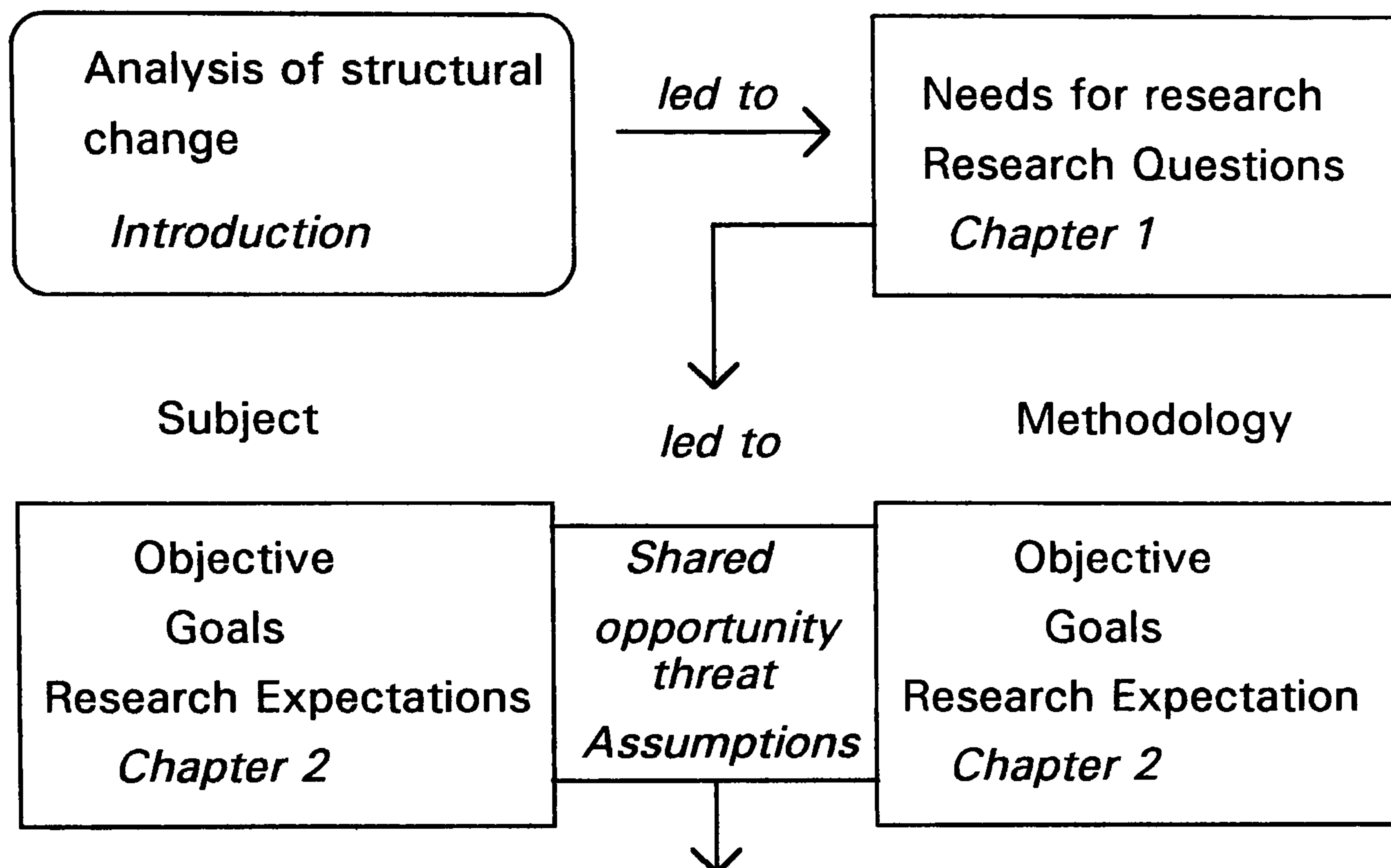
the extent of no views surfaced by an overall opportunity/threat judgement.

These would indicate whether or not the approach adopted of challenging 'taken for granted beliefs' had resulted in bias-free judgements. Overall, bias appeared to be sufficiently well controlled to enable the analysis from a Strategic Choice Perspective to be presented as 'strong inferences' for model building.

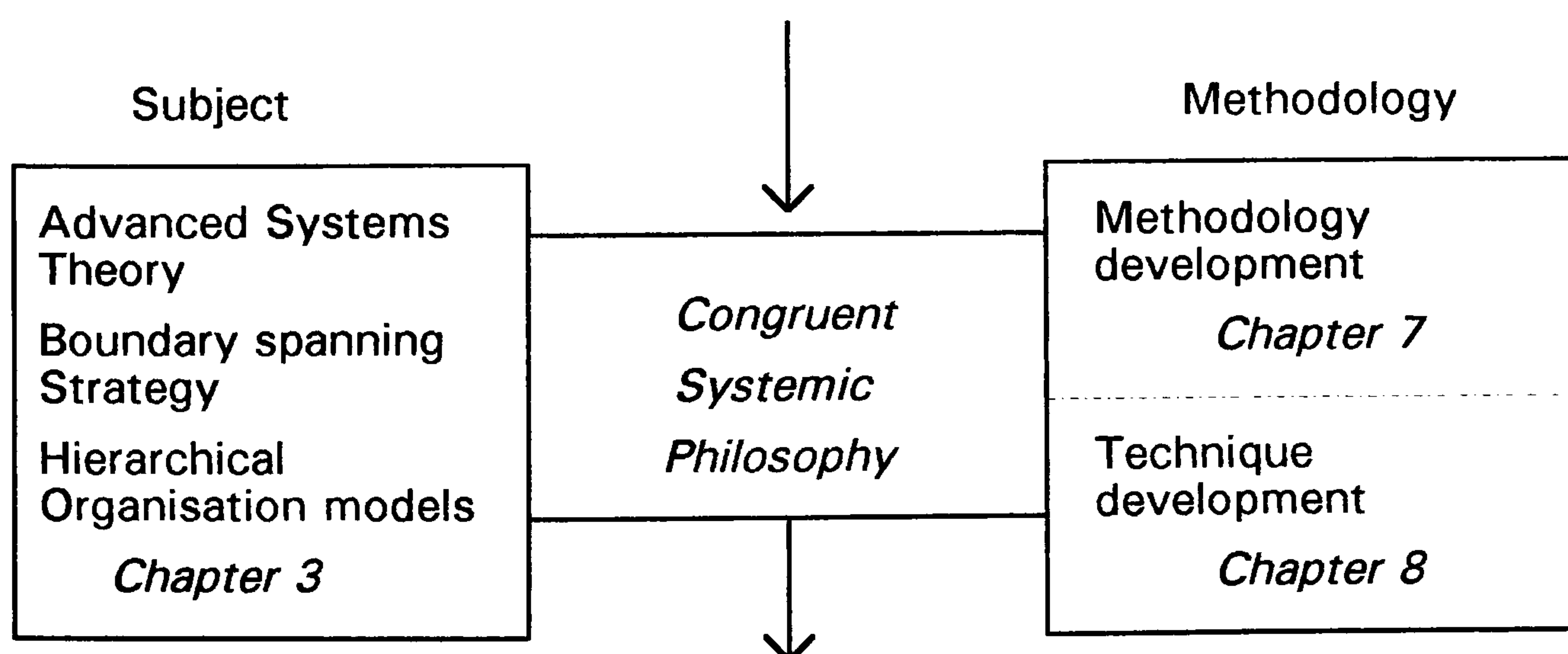
A further research expectation from methodological 'triangulation' was that a judgmental Policy Delphi would not only confirm differing international perceptions of the favoured method of structural change in each country, but would also confirm an international agreement on key areas of strategy and structure for a 'Long-term Strategic Service Industry' model - this could not be tested.

4/ SUMMARY

The overall sequence of the research approach can be depicted in the following diagrams. This commenced with the analysis of structural change in international ports which highlighted several needs for research:



In turn, this led to the theoretical development of the systemic philosophy that underpinned both the subject and methodological aspects of the research, in order to justify a claim for a contribution to knowledge:



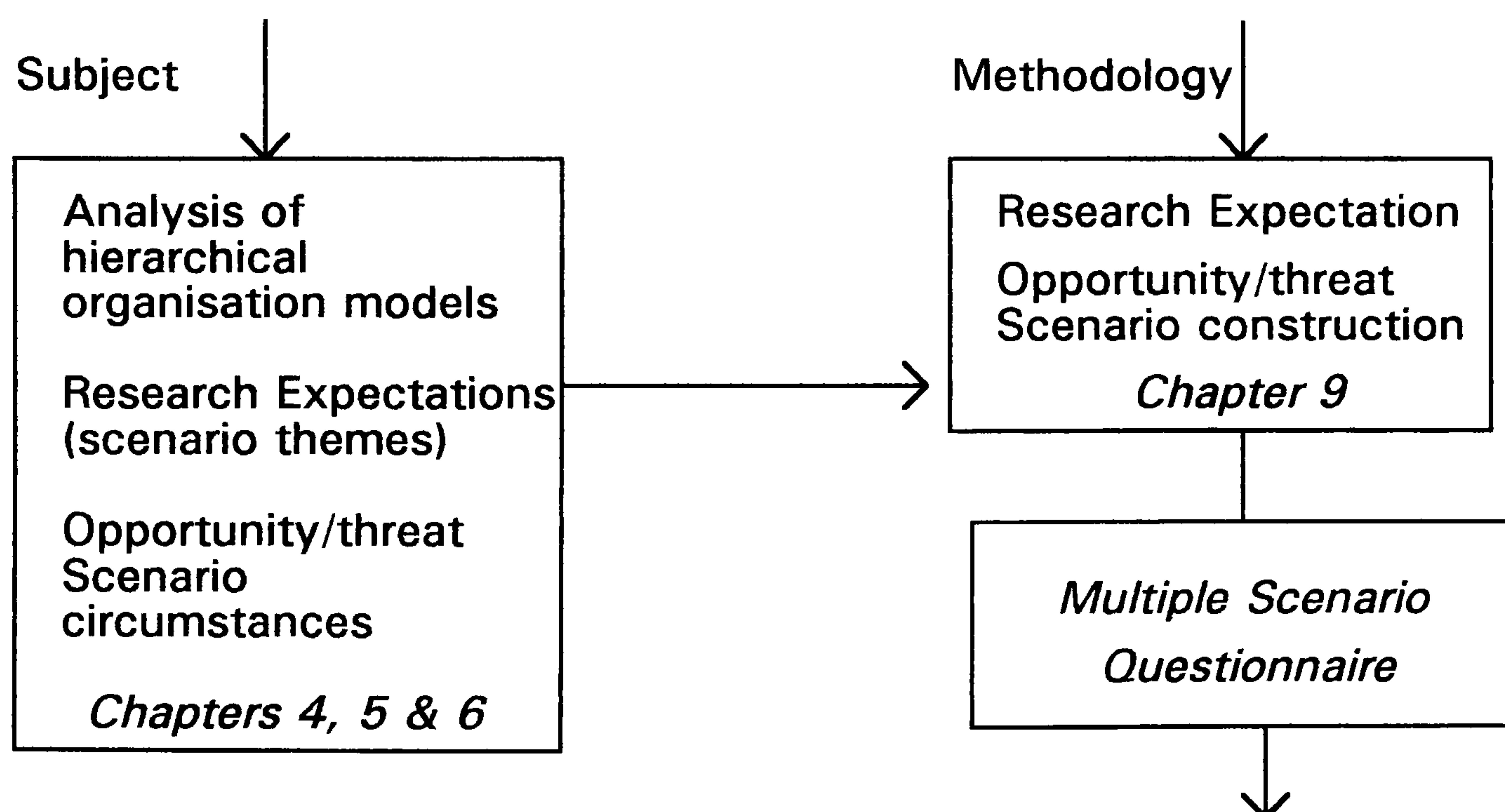
Chapters 3 and 8 represented the achievement of an initial subject objective, and the methodological objective. The next task was to address the practical considerations of the data collection through multiple scenarios. The underlying subject principle was that data from various sources would be used to construct multiple scenarios.

The underlying sequential methodological principle was that the data gathered would be of sufficient quality to enable the research assumptions to be tested; if these tests were satisfactory, the data should then be adequate to enable tests of the research expectations to be conducted. If these were in turn satisfactory (i.e. the Research Questions could be answered), then the research could address the task of modelling the characteristics of a 'Long-term Strategic Service Industry' from a Strategic Choice Perspective. This involved:

firstly, assessing the relevant literature pertaining to the hierarchical organisational models discussed in Chapter 3; forming a view on the message of the literature and the characteristics to be modelled; deriving anticipated decision-maker responses to structural change, i.e. - the Research Expectations which established a scenario theme; and thus identifying future opportunity or threat circumstances in order to create opposing scenarios; and

secondly, assessing the relevant literature relating to multiple scenario research and developing Research Expectation on obtaining bias-free holistic judgements of opposing opportunity/threat scenarios; constructing a Multiple Scenario Questionnaire for data collection and specifying the analysis principles.

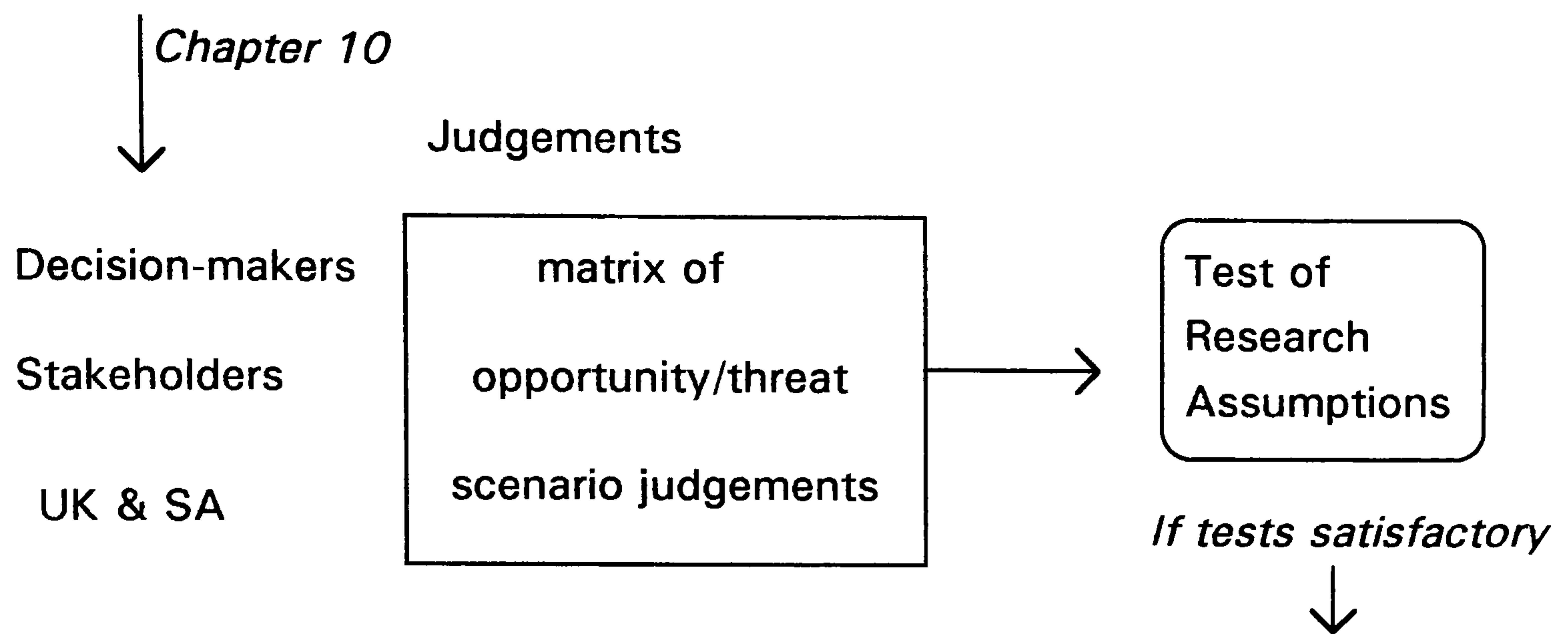
Hence the outcome of the subject chapters was fed into the research technique to create a data collection instrument:



This represented the achievement of an initial Subject Objective and Methodology Goal 1.

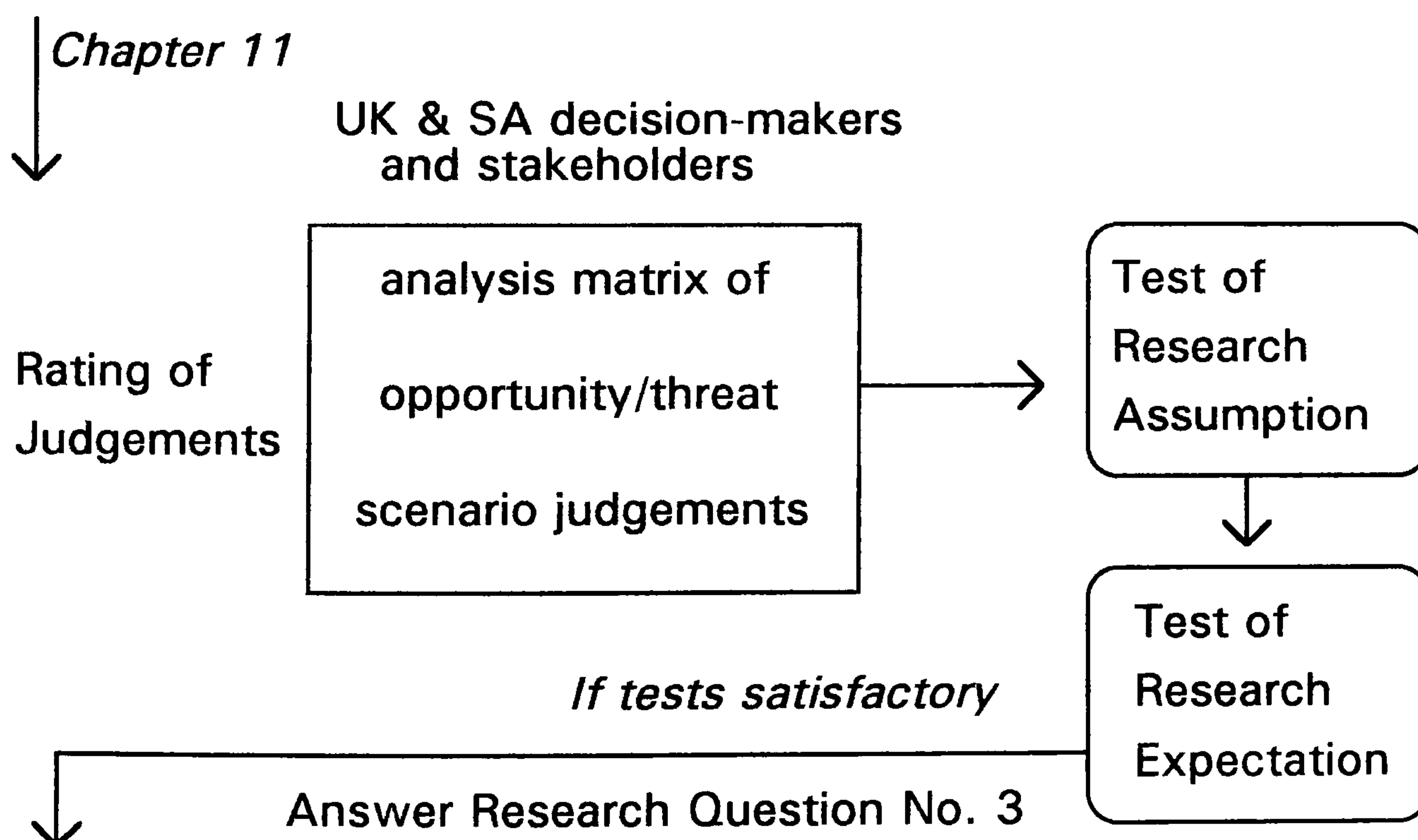
Having established the theoretical aspects of the research, the next task was to test the questionnaire in practice. The sampling process and participants' response is discussed in Chapter 10. In the absence of a confirming Policy Delphi, the high levels of response enabled sufficient confidence to consolidate the data gathered.

From this consolidation, the favoured multiple scenarios could be gleaned in order to test the subject Research Assumptions to establish the existence of a Boundary-spanning area, and hence the implied answers to the subject Research Questions:



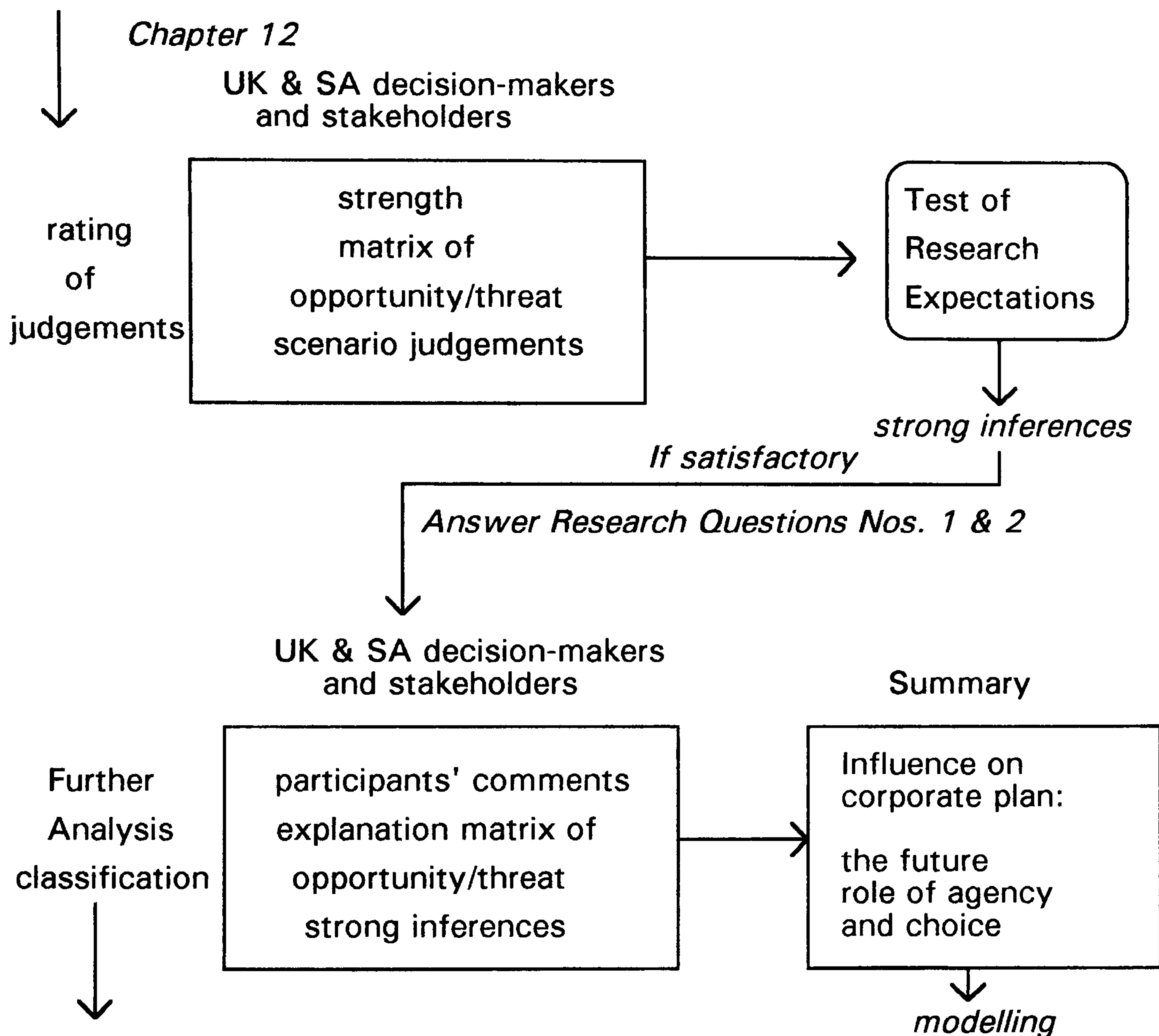
This represented the achievement of Subject Goals 1 (a) and (b).

However this presumed that the judgmental perceptions obtained were valid. Chapter 11 examines this presumption by various tests to assess whether or not a consistent Bias-free holistic judgement of the multiple opportunity/threat scenarios was obtained in accordance with the methodology Research Assumption and Research Expectation. If this was confirmed then it would be possible to answer the methodology Research Question:



This represented the achievement of Methodology Goal 2.

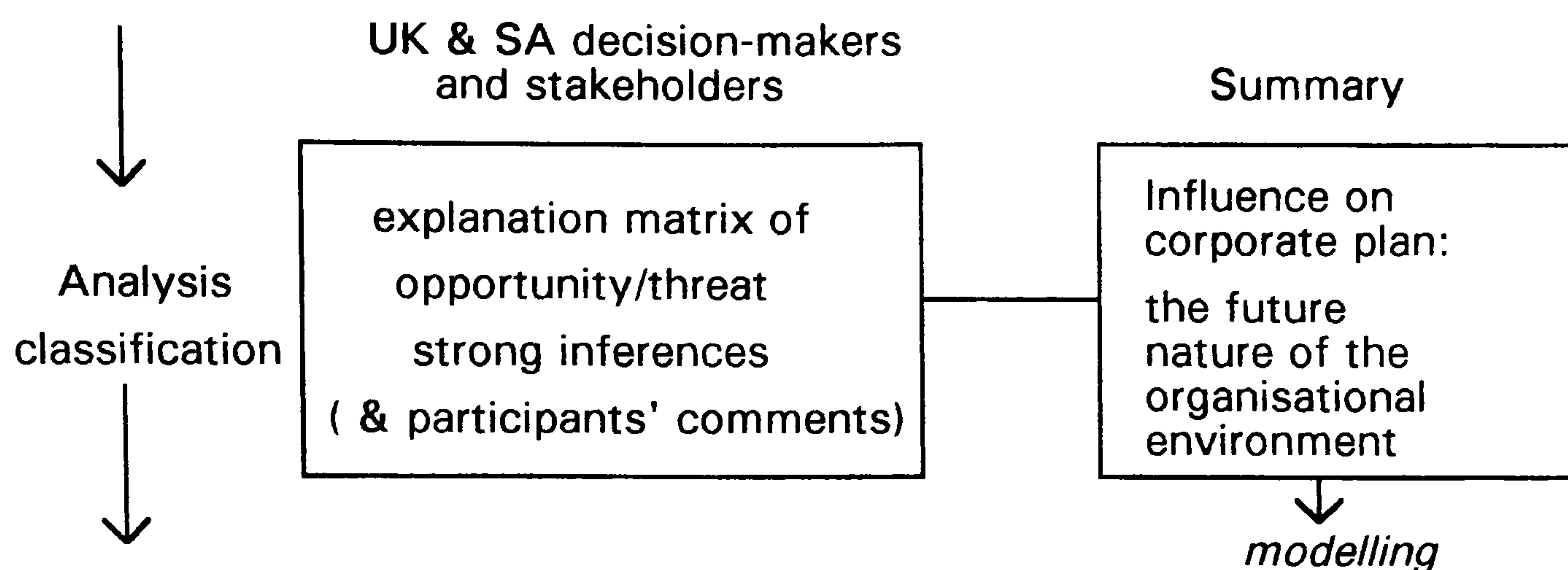
If the results of this process were satisfactory, i.e. relatively bias-free holistic judgements had been obtained, then the data interpretation task could be addressed. This presumed that the Strategic Choice Perspective was the appropriate stance for the research. The first stage was testing the subject Research Expectations in order to confirm/refute the existence of a Boundary-spanning area and answer the subject Research Questions. Within this area, the judgements of the participants on the multiple scenarios could then be explained from the Strategic Choice Perspective:



Once a satisfactory explanation had been given to the Research Questions it could be assumed that the actual data collected and the method by which it was generated was adequate to enable the characteristics of a 'Long-term Strategic Services Industry' to be summarised and modelled.

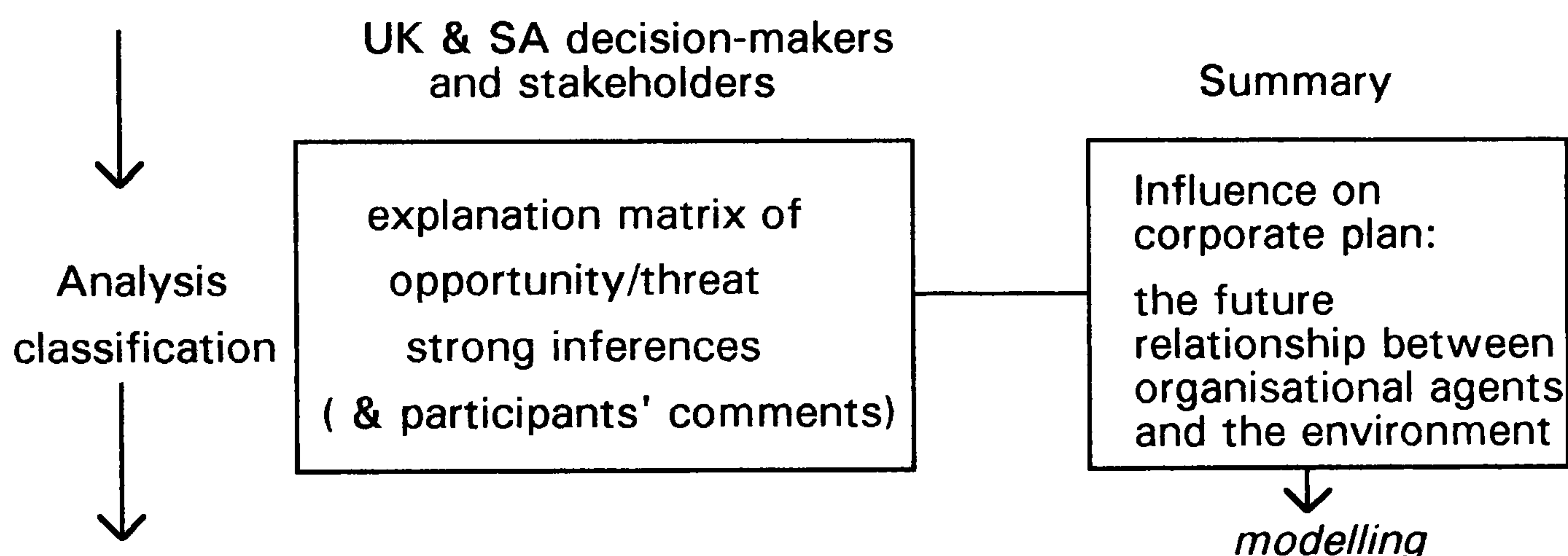
To do so, further information from a Strategic Choice Perspective was required. This could be obtained from additional analysis of the data obtained that reflected the model characteristics built into the Multiple Scenario Questionnaire:

Chapter 13



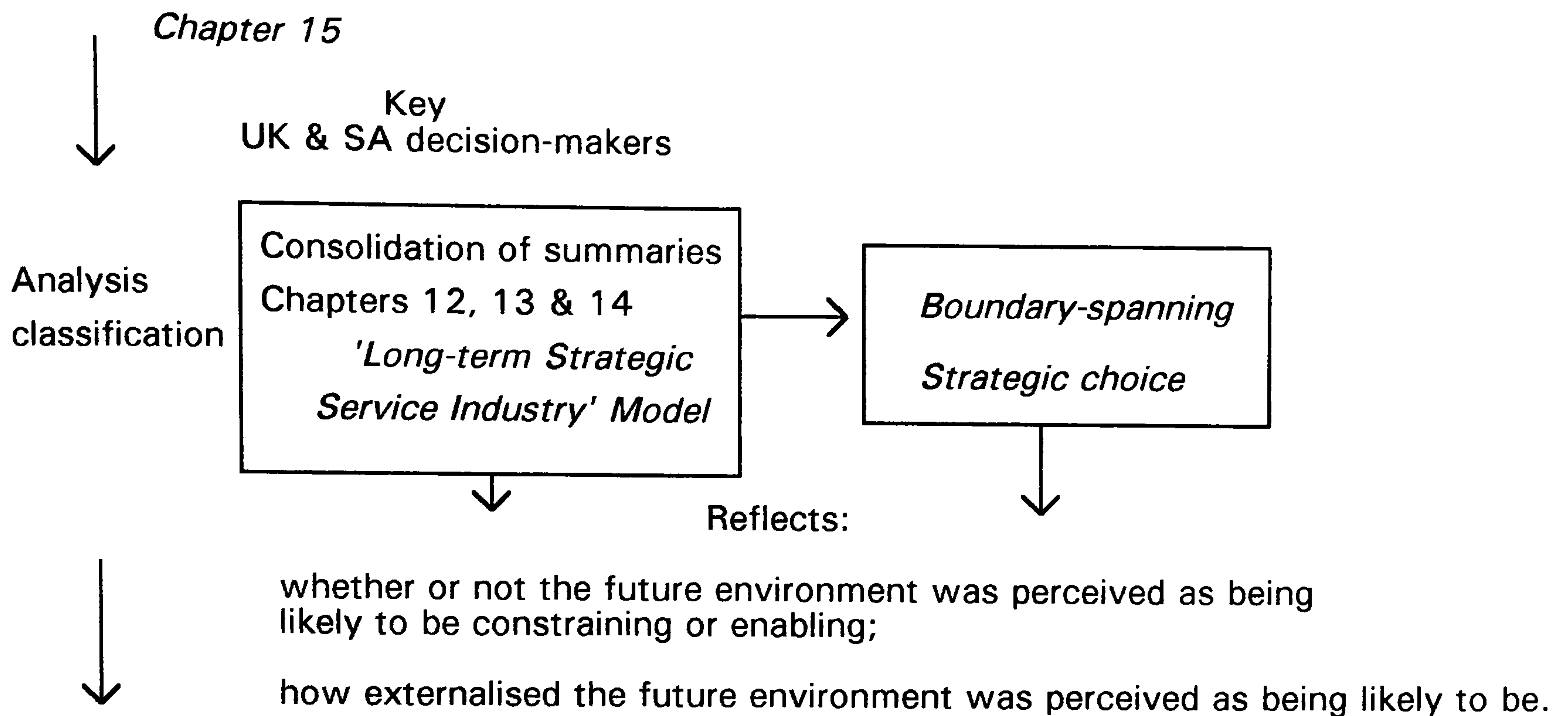
The data was further analysed to extract other information from a Strategic Choice Perspective that reflected the model characteristics built into the Multiple Scenario Questionnaire:

Chapter 14

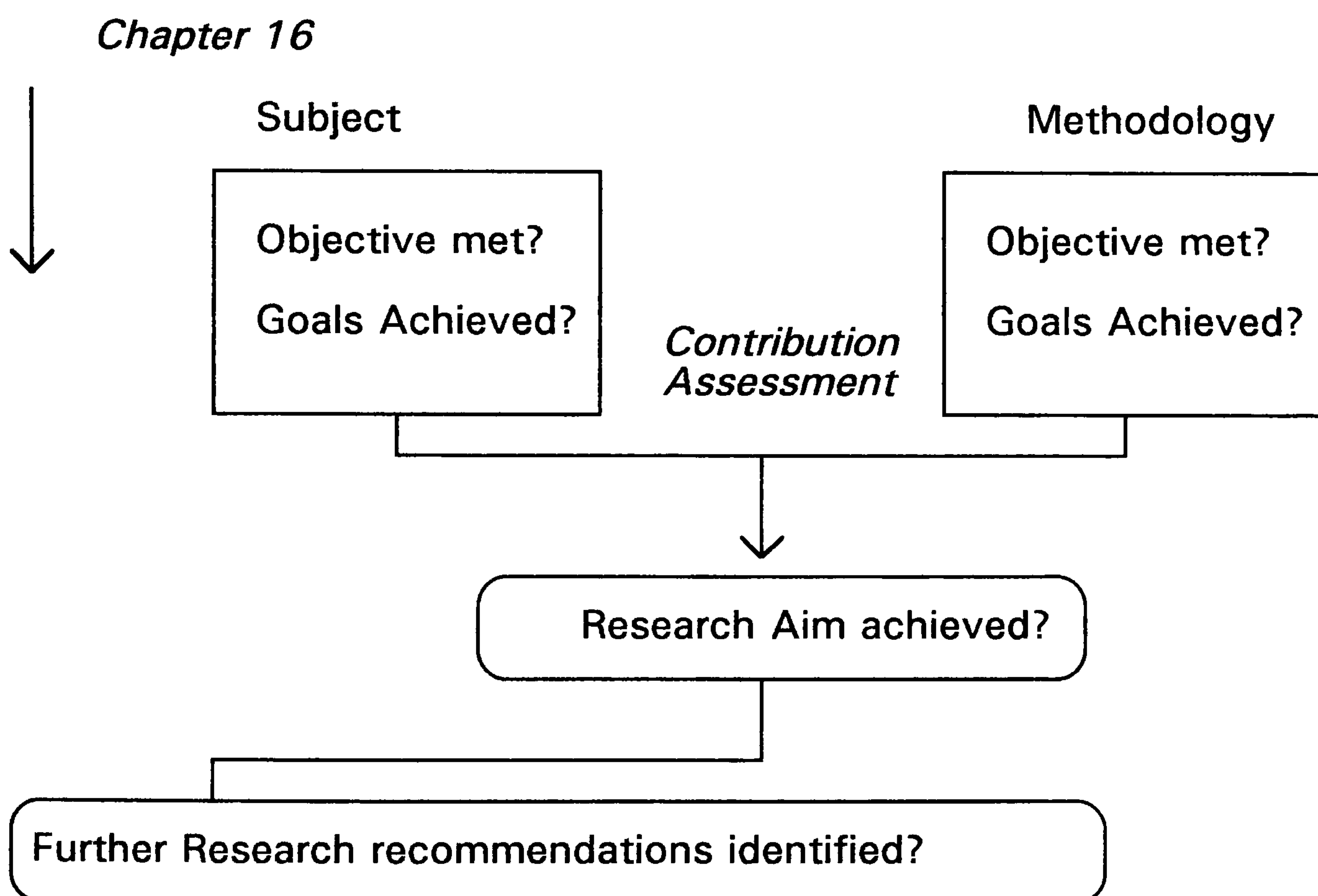


Chapters 12, 13 and 14 represented the achievement of Subject Goals 2 (a) and (b).

The final stage in the thesis was to address the purpose of the research, i.e. the creation of a 'Long-term Strategic Service Industry' model. By consolidating the strong inference summaries of the previous chapters, the model reflected an international judgement of the future effect uncertainty and the likely strategy and structure that could be adopted in response. This was developed from the judgements of key UK and SA decision-makers only, since they had would have the greatest influence over how structural change would be implemented. Although the stakeholders' judgements obtained were relevant, these could not be used for modelling purposes because of the non-random sampling procedure used. The strategic implications of the model took the form of expanding on the theoretical Boundary-spanning strategy concept developed in Chapter 3:



This represented the achievement of the final subject objective, as well as Subject Goal 3 (a). In conclusion, the process of the research was reviewed:



This represented the achievement of Subject Goal 3 (b), and Methodology Goal 3.

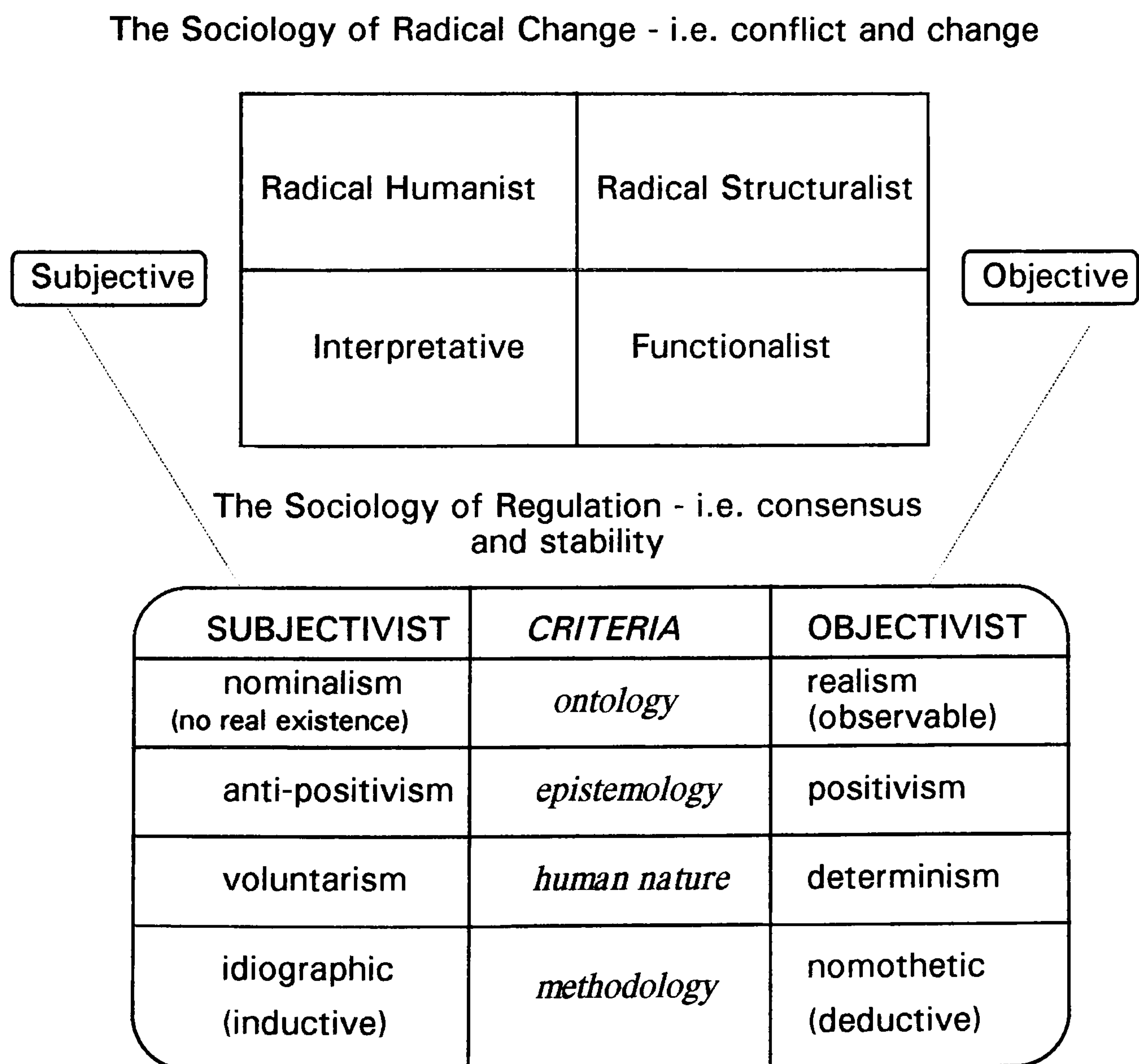
The next chapter discusses the development of the theoretical systemic philosophy that underpins the research. This includes the development of a Boundary-spanning framework and the identification of organisational models for analysis. These models are discussed in detail in later chapters in order to derive the Research Expectations.

CHAPTER 3 - ADVANCED SYSTEMS PHILOSOPHY

1/ DEBATES ON THE NATURE OF REALITY

A holistic research stance drew together multiple strands of thought concerning the nature of the 'truth' in a problem context. It depended on identifying the major paradigms in the literature, assessing their suitability for this research, and integrating them within a holistic systems framework. This chapter discusses existing classifications, their shortfalls and the need to reconcile opposing perspectives in order to locate the research on a sound philosophical base. Hassard (1991: 276), in reviewing Burrell and Morgan's (1979) work on social theory, commented that "all social scientists, implicitly or explicitly, approach their disciplines via assumptions about the nature of the social world and how it should be researched. Assumptions are made about: 'the very essence of the phenomena under study' (ontology), 'the grounds of knowledge' (epistemology), 'the relationships between human beings', (human nature) and 'the way in which one attempts to investigate and obtain knowledge about the real world' (methodology)". These assumptions led to debates in social science regarding differences in theories over the nature of society and distinct perspectives for analysing social phenomena, as shown in Figure 3.1.

PARADIGM MODEL OF SOCIAL THEORY (Burrell & Morgan 1979) Figure 3.1.



(adapted from Hassard, 1991)

According to Hassard (1991: 277) the four paradigms assumed that:

"The *functionalist paradigm* rests on the premises that society has a real concrete existence and a systematic character and is directed toward order and regulation. The social science enterprise is believed to be objective and value free. The paradigm advocates a research process in which the scientist is distanced from the subject matter by the rigour of the method. The paradigm possesses a pragmatic orientation; it is concerned with analyzing society in a way which produces useful knowledge."

"In the *interpretative paradigm* the social world possesses a 'precarious ontological status'. From this perspective, social reality, although possessing order and regulation, does not possess an external concrete form. Instead it is the product of inter-subjective experience. For the interpretative analyst, the social world is best understood from the viewpoint of the participant-in-action. The interpretative researcher seeks to deconstruct the phenomenological processes through which shared realities are created, sustained and changed. Researchers in this paradigm consider attempts to develop a purely 'objective' social science as specious."

"The *radical humanist paradigm* shares with the interpretative paradigm the assumption that everyday reality is socially constructed. However, for the radical humanist, this social construction is tied to a 'pathology of consciousness', a situation in which actors find themselves the prisoners of the (social) world they create. The radical humanist critique highlights the alienating modes of thought which characterize life in modern industrial societies. Capitalism, in particular, is subject to attack in the humanist's concern to link thought and action as a means of transcending alienation."

"Finally, in the *radical structuralist paradigm*, we also find a radical social critique, yet one at odds with that of the radical humanist paradigm in being tied to a materialist conception of the social world. In this paradigm social reality is considered a 'fact'. It possesses a hard external existence of its own and takes a form which is independent of the way it is socially constructed. In this paradigm, the social world is characterized by intrinsic tensions and contradictions. These forces serve to bring about radical change in the social system as a whole."

These paradigms generated four main areas of dispute: ontology, epistemology, the human nature and methodology. Flood and Carson (1988) and Oliga (1988) summarised these disputes as:

Ontology - this debate concerned the nature of reality and what the world was or contained. There were two opposing extremes of thought, realism which held that reality was of an objective nature external to the observer; whereas

nominalism held that reality was a product of one's own mind, i.e. an individual cognition.

Epistemology - this debate concerned the basic assumptions of knowledge and how an observer could understand the world and communicate knowledge. The opposing extremes of this debate were positivism, which held that knowledge was hard, real and capable of being communicated in a tangible form; whereas antipositivism held that knowledge was soft, subjective and essentially of a personal nature being based on experience and insight.

Human nature - this debate concerned the opposing assumptions of freedom of action. These were determinism, which viewed humans as being products of the environment and conditioned by external circumstances, i.e. a mechanistic perception; whereas voluntarism held that humans had a free will, were creative and had mastery over the environment.

These debates directly affected the appropriate methodological approach to investigate and obtain knowledge about the world. Depending on the researcher's views of an external world, then the following opposing extreme approaches could be appropriate:

Nomothetic approaches - these approaches to social science sought to construct a deductively tested set of general theories that explained and predicted human behaviour. A hard objective view was held by the observer. Relationships and regularities in the world were analysed with the concern for identification and definition of the elements comprising that world. An assumption of stability in the environment during observation was implicit so that measurements could be made and underlying themes identified, in order to seek out universal laws that governed the reality that was being observed. Objective knowledge was defined in terms of observer independence and thus freedom from the personal values of the observer. Methodology was a question of choosing the appropriate method of validation, typically verification or falsification, thus providing an undistorted picture of the phenomena under study (e.g. empiricism). Hence methodological techniques were based on a systematic process of measurements by a neutral observer. The overriding concern was the order and regulation of social affairs in the interest of maintaining the status quo.

Ideographic approaches - these approaches to social science emphasised that explanation of human behaviour was only possible by gaining access to actors' subjectivity or culture. A subjective experiential view was held by the observer in which the principal concern was the way in which an individual created, interpreted and modified the world. These experiences were seen as being unique rather than general and universal, hence the existence of an external reality was questioned. Since the observer already had a preunderstanding of the phenomena he/she was unable to start with a neutral mind. Understanding and interpretation were linked in a dialogical process of question and answer (e.g. historical hermeneutics). Consequently, methodological techniques were

based on acquiring subjective first-hand knowledge of the topic under investigation, since objective knowledge was unobtainable. Thus no observation or description was free from the observer's interpretation based on his/her presuppositions or values, theories etc. There was a concern for the maintenance of tradition and authority.

1.1 Methodological Problems in Multi-Paradigm Research

It was usual to find in the literature that extreme nomothetic or ideographic approaches were rarely adopted for research methodology. Generally, methodologies chosen veered towards one or other stance e.g. the soft and hard systems methodologies discussed in Chapter 7. The predominant methodologies were nomothetic. The functionalist scientific approach implied a high degree of determinism in the subject matter of a research topic. The characteristics of the scientific approach (hypothesis testing, reductionism, repeatability and refutation) meant the design of an artificial situation where a small number of variables were investigated whilst the remainder were held constant. This methodology of empiricism had achieved great successes in the natural and, to a lesser extent, social sciences. Nevertheless, Flood and Carson (1988: 271) noted that "...pure empirical inquiring systems cannot seriously consider the task of, for example, predicting future events... [because of] the notion that there are situations in which varying actors may perceive various aspects to be problematical. Emphasis is not placed on external reality but on people's perceptions of reality, on their mental processes rather than on the objects of these processes.... these [soft systems] methodologies both gain in relation to hard systems approaches and suffer (in relation to their ability to bring about radical change) from adopting this theoretical position."

It appeared that these extremes of methodological debates gave rise to studies which presented an incomplete picture of reality, since they were based on fundamentally opposing assumptions. The results of studies into the same topic gave potentially conflicting views of the world, which had led researchers to consider the benefits of multi-paradigm, or holistic, perspectives to aid understanding. Hassard (1991: 296) took the view that, although a topic could be researched from each paradigm for organisational analysis, "... of more general concern is whether a paradigm is ideally suited to the analysis of a particular topic or whether it can assess any topic.... one may suggest that, in practice, the solution will lie in developing a typology or contingency model which specifies appropriate combinations of topics, methods and paradigms. ... each of the Burrell and Morgan paradigms is limited in its methodological scope."

This posed problems. In discussing experiential learning cycles, Gill and Johnson (1991: 25) commented "that particular individuals might emphasize particular elements of the learning cycle due to the presence of particular predilections into which they have been socialized". Argyris (1990: 25) drew attention to organisational defence patterns involving bypass and cover-up, commenting that "whenever human

beings are faced with any issue that contains significant embarrassment or threat. they act in ways that bypass as best they can the embarrassment or threat.... Organizational defence routines are actions or policies that prevent individuals or segments of the organization from experiencing embarrassment or threat. Simultaneously, they prevent people from identifying and getting rid of the causes of the potential embarrassment or threat".

These barriers to obtaining valid data could be seen as 'human interest' in the topic of the research circumventing the research process, either consciously or unconsciously. Data obtained without allowing for these barriers would be suspect and invalidate a claim for contribution to knowledge. Consequently, an ideal research methodology would have built in controls to minimise distortion arising from effect of implicit biases. The controls depended on identifying the source of distortion most likely to affect the purpose of the research, which was to propose a model based on decision-makers' judgements.

The first stage in identification of such a methodology seemed to be clarifying the type of knowledge sought. Oliga (1988: 93) considered that this could be done by "extend[ing] the Burrell and Morgan (1979) framework by incorporating ... social theories [whose human interest concerns] are seen as reflecting a technical interest for prediction and control (man-nature interaction), a practical interest for understanding (human communicative interaction), or an emancipatory interest (social relations of power, domination and alienation). The technical interest constitutes empirical knowledge and parallels Burrell and Morgan's functionalist paradigm. The practical interest constitutes historical-hermeneutical [learning] knowledge, paralleling the interpretative paradigm. The emancipatory interest constitutes critical [self-reflective] knowledge, paralleling the radical-humanist and -structuralist paradigms."

The three different kinds of knowledge sought implied different methodological approaches and data collection techniques according to the level of penetration into the subject matter envisaged. This is summarised in Table 3.1.

<i>BASIS OF RESEARCH INTEREST</i>			<i>Table 3.1</i>
<i>knowledge sought</i>	<i>basis of human interest</i>	<i>underlying paradigm</i>	
Technical (control)	Instrumental action	Functionalist	
Practical (understanding)	Communicative interaction (pluralism)	Interpretative	
Emancipatory (freedom)	Authority (power) interaction	Radical	
			<i>Adapted from Oliga (1988)</i>

As identified in Chapter 1, the focus of the research was on the actions of corporate decision-makers as influenced by an industry level of change. Thus the kind of knowledge sought concerning their perceptions of future outcomes of structural change was:

not technical knowledge (i.e. current control methods) at the business unit level;

but practical knowledge (i.e. understanding of potential sources of conflict) - in the sense that there could be broad agreement on strategy options, but selection could be influenced by stakeholders' interests;

and emancipatory knowledge (i.e. exercise of power) - at a national and international level in the sense that decision-makers were granted differing degrees of freedom from direct control by governments (who retained ultimate power), but stakeholders and investors could exert implicit or explicit power.

The potential to exercise power was thus apparent within both the corporate and industry levels. Hence the key aspect of human interest in privatisation and commercially oriented restructuring was the authority (or power) relationship, as understood by the decision-makers who had to select strategy in practice. The potential for conflict within this group implied disagreement on choices, i.e. a pluralist outcome that would be resolved by an exercise of power. Consequently, the methodological approach indicated for the research had to address the explicit and implicit ramifications of pluralism and power. By examining the knowledge sought to meet the model building purpose of the research it could be seen that a complex and demanding data collection technique was required to cope with human interactions.

This extension was a useful improvement over the opposing paradigms identified by Burrell and Morgan (1979), since it viewed each of the paradigms as being necessary, but also individually incomplete for understanding the totality of a problem situation. In effect, the extension emphasised the difficulties faced in making a claim for valid contribution to knowledge, but the problem of how to approach multi-paradigm futures research and selection of the appropriate data collection technique remained.

1.2 Advanced Systems Theory

The concern expressed by Hassard (1991) over the results of single paradigm research had also been expressed by van Steenberg (1990), who identified an emergence of a holistic perspective in the literature of the 1980's. This holistic perspective appeared to be the outcome of undertaking multi-paradigm research, although authors had not identified it as such. He believed that its potential for futures research in the social sciences lay in the concept of 'relative holism'. By the term 'relative holism' he meant a process of development in a more holistic direction than single paradigm research which presented an extreme viewpoint. He thought studies were likely to be characterised by:

a shift from thinking in terms of structure to thinking in terms of process, since the emphasis was on viewing society as a network, i.e. structures observed in research were seen to be manifestations of an underlying process;

an affinity with a broader systems approach to research, rather than with systems theory in a mechanistic paradigm since there was a less pronounced emphasis on the notion of control, i.e. a concern with understanding dynamic complexity in relatively open systems, as distinct from detail complexity in relatively closed systems;

the development of a new form of systems theory based on the concept of a continuum of lower to higher levels of self-organising systems, that were open to the influences of the environment;

an emphasis that human affairs were influenced not only by social, economic, political and cultural factors, but also by intricate linkages of cause, effect and feedback patterns;

a perspective where social change was considered to be a dialectic process in which opposite views strengthened the outcome, i.e. a non-zero sum game where in principle if one party won the other did not automatically lose;

the concept that change processes were normal evolutionary features, and 'order' represented relative stability or a special form of frozen change;

the strengthening of the researcher's role as a participant and the lessening of the role as detached observer.

A holistic perspective of the boundary spanning attributes of complex systems has prompted many writers to state that a new paradigm is emerging, based on a rejection of classic scientific methods of studying a phenomenon in isolation, i.e. a rejection of the primacy of reductionistic thinking. This new paradigm had not been clearly defined and each writer had adopted a different viewpoint, but there seemed to be a general consensus on its emergence, that it is relatively holistic (i.e. development in a more holistic direction rather than refuting traditional approaches), required thinking in terms of processes, and had an affinity with systems theory and ecology. Daneke's (1990: 383) view was that "for the lack of a better designation, this prospective paradigm is labelled *Advanced Systems Theory*".

The spread of the paradigm can be seen in the writings of Prigoiné and Stengers (1984) in physics; Gleick (1987) in several scientific fields; Stewart (1989) in mathematics; Waldrop (1992) in economics; Mannermaa (1991) in evolutionary futures research; van Steenberg (1990) in social sciences. King (1989) has applied it to ethics and Sungaila (1990) has related it to leadership. Cohen and Stewart (1994) have combined natural sciences and biology in pointing towards a route for further research into complex systems. Vinten (1992) possibly gives an extreme flavour of

this paradigm in the comments that "the deep rift between these two views, respectively holism and reductionism, has existed ever since [Greek philosophers]. Although reductionism seems barren as a complete explanation of the world, it nevertheless came to dominate scientific thinking ... Only with chaos theory has it been possible to realise that both holism and reductionism are needed, but that of the two the greater is holism".

A core concept in this holistic perspective when related to management was that of a deep-structure, which was believed to be an underlying stability of choices in organisational activity. These choices were effectively subject to some form of 'guideline' (either externally imposed or the workings of an internal consensus) that ensured survival during revolutionary periods. A holistic longitudinal study of change in UK local government by Hinings and Greenwood (1988) presented this concept of activity patterns as a means of understanding transformation in highly complex environments and the tracks organisations take in response.

Gersick (1991: 10) described the attributes of advanced systems theory by identifying models of change which viewed "change as a punctuated equilibrium: an alternation between long periods when stable infrastructures permit only incremental adaptations and brief periods of revolutionary upheaval [these models of change were drawn] from six domains - adult, group, and organizational development, history of science, biological evolution, and physical science - to explicate the punctuated equilibrium paradigm and show its broad applicability for organizational studies". She argued that the key components were the shared constructs that relatively long periods of stability are interrupted by short periods of revolution and that the interrelationship was explained through the concept of a highly durable underlying order or deep structure. This deep structure persisted and limited change during equilibrium periods.

She identified the 'commonalties' between the models as:

- (a) Systems evolve through the alternation of periods of equilibrium, in which persistent underlying structures permitted only incremental change, and periods of revolution, in which these underlying structures were fundamentally altered.
- (b) Systems do not evolve through a gradual blending from one state to the next. Systems' histories were unique. They did not necessarily evolve from lower to higher states through universal hierarchies, or towards pre-set ends.
- (c) Deep structure was a network of fundamental, interdependent 'choices', which in the case of ports could be seen as the 'public interest' aspects of maintaining an essential node in an international transport system. These created a basic configuration into which a system's units were organized, and governed the activities that maintained this configuration and the system's dealings with its environment.

- (d) During equilibrium periods, systems maintained and carried out the 'choices' of their deep structure. Incremental adjustments were made that preserved the deep structure against internal and external demands. Pursuit of stable deep structure 'choices' could result in behaviour that appeared to be turbulent on the surface.
- (e) Revolutions were relatively brief periods when elements of a system's deep structure were reassessed, leaving it in disarray until the period ended and a new deep structure formed. Revolutionary outcomes, based on interactions of systems' historical purposes with current events were not predictable; they may or may not leave a system better off. Revolutions varied in magnitude.

The choice of models and Gersick's (1991) treatment of them can be criticised on the basis that she selectively extracted attributes from creative thinking in social science and logical thinking in natural science, based on systems principles of hierarchy, emergence and self organisation. Not all systems may exhibit a deep structure, for example highly flexible systems such as Weick's (1979) loosely coupled systems of organisation which have fundamentally differing objectives. Further, models from one domain should not be too freely applied to another since human systems, that were self-aware and goal-directed, had the capacity to 'schedule' their own opportunities for revolutionary change (discussed from a strategic management stance in Chapter 6), to solicit outside perspectives, and to manage their histories in ways that are inconceivable for nonconscious systems, e.g. the fast moving computer industry quoted by many authors.

1.3 Ports as Advanced Systems

Nevertheless, if Gersick's (1991) work is interpreted from the perspective of global port systems undergoing change then she has identified three fundamental questions:

What triggers revolutionary periods? - this can be seen as the major impact of privatisation and commercially oriented restructuring;

How do systems function during revolutionary periods? - this can be seen as being dependant on decision-makers' actions in response to their perceptions of future effect uncertainty and whether structural change poses an opportunity or threat;

How do revolutionary periods conclude? - this can be seen as being reflected in the concerns over the future viability of ports and the 'public interest' discussed in the Introduction and Chapter 1.

If the assumption that a deep structure is an inherent characteristic of both linear and non-linear systems is correct, then it must be possible to track this characteristic through the phases of change of stability, instability, the new form of stability and so

on through successive periods. There must be a thread of continuity linking these periods and, unless this pattern is identified by a consistently demonstrable theme, it must be questioned whether or not a particular system is in fact non-linear. There is a substantial opportunity for zeal in a newly developing field to discount carefully considered studies of strategy and structure in a well understood linear field.

Hansson (1991: 57) saw the direction advanced systems research ought to take as being that "... any non-linear system may lead to chaos within a certain parameter range [and] ... small-scale chaos can destroy parts, but depending on the parameters, this will either stabilise the situation or drive it to a new state.... the challenge.... is to identify latent structures *before* they combine with local triggering events to breach a system's stability...". This led to a concern with understanding dynamic complexity in relatively open systems, as distinct from detail complexity in relatively closed systems.

The experiential conclusion is that a deep structure operates in the UK and SA ports industries with regard to the conservancy obligations for the safe operation of the land and sea interface. This is a recurrent historical pattern (discussed in Chapter 5). It represents a continuing 'public interest' which exists irrespective of significant changes in ownership. The 'public interest' in the sustained operation of the ports industry was seen to provide the relative stability inherent in a deep structure. This provided legislative and administrative controls to stabilise change within a national transport system. During revolutionary periods of structural change the 'public interest' could be viewed as acting as 'externally enforceable' guidelines for managing an open system, rather than as control measures in a closed system.

Structures observed in research which represented the cessation of a special form of ownership, and its replacement with another, could merely be manifestations of an underlying process of a deep (or latent) structure. The presumption was that society was acting as an informal network which led to stabilising change. However, at a local level, the process of structural change was reliant on decision-makers to act with diligence and foresight. It may be that managerial controls were not sufficiently responsive to prevent instability. There appeared to be some overlap in the managerial stances advocated for ensuring survival during revolutionary periods of structural change. These comprised the traditional linear logical methods of planned management and creative unplanned methods which were essentially non-linear. Both sought effective solutions to issues and tensions created by structural change through selection of strategy, but their methods of generation, evaluation and control of these selections were different. The concept of a deep structure captured both the existing linear knowledge on change and emerging non-linear views on management practice.

From this viewpoint, then advanced systems thinking is appropriate for investigating structural change and the managerial stances adopted. The characteristics of the advanced systems paradigm thus provided the necessary philosophic base for ports research. Accordingly, this approach can be used for the international ports industry which has a long history of alternating stability and revolutionary periods.

However, the problem posed by following an advanced systems theory based approach was that, whilst a great deal of research into organisations had been undertaken from differing perspectives, there appeared to be little direct research on integrating future selection of strategy and organisational structure for self-organising systems that were open to the influences of the environment. There was no generally accepted methodological route to follow. The concerns over structural change identified in the Introduction suggested that the balance between public and private interests may be impaired because of an inappropriate application of theories and practices that were derived from differing contexts, e.g. private sector theories of emergent strategy in fast moving environments being applied to public sector activities requiring consensus in a slow moving environment. Consequently, methodologies used for testing these theories could only be used with extreme caution. It seemed that a more appropriate methodology was one in which social change was considered to be a dialectic process which influenced not only social, economic, political and cultural factors, but also intricate linkages of cause, effect and feedback patterns.

1.4 Advanced Systems Boundary-Spanning Philosophy

This implied the identification of an advanced systems boundary spanning philosophy for the research in order to guide methodological choice. Child (1995: 120) seemed to concur in considering that "there is a growing feeling that something must be done to pull together differing perspectives on organisations if progress in the subject is to be made. ... while differing perspectives or paradigms may be irreconcilable in their own philosophical terms they are not necessarily incommensurable ... a major contribution of strategic choice analysis today derives from its potential to integrate some of the perspectives. This integrative potential derives from the fact that strategic choice articulates a political process, which brings agency and structure into dynamic tension and locates them within a significant context."

Ports provided this context, but the question was how to integrate perspectives of strategy and organisation within a framework for research and model building. The literature from differing stances - e.g. Child (1995), Hassard (1991), Oliga (1988), Castrogiovanni (1991) and Whittington (1988) - all suggested that some form of multi-paradigm or Boundary-spanning between the paradigms was required for a sound philosophical base from which to conduct research.

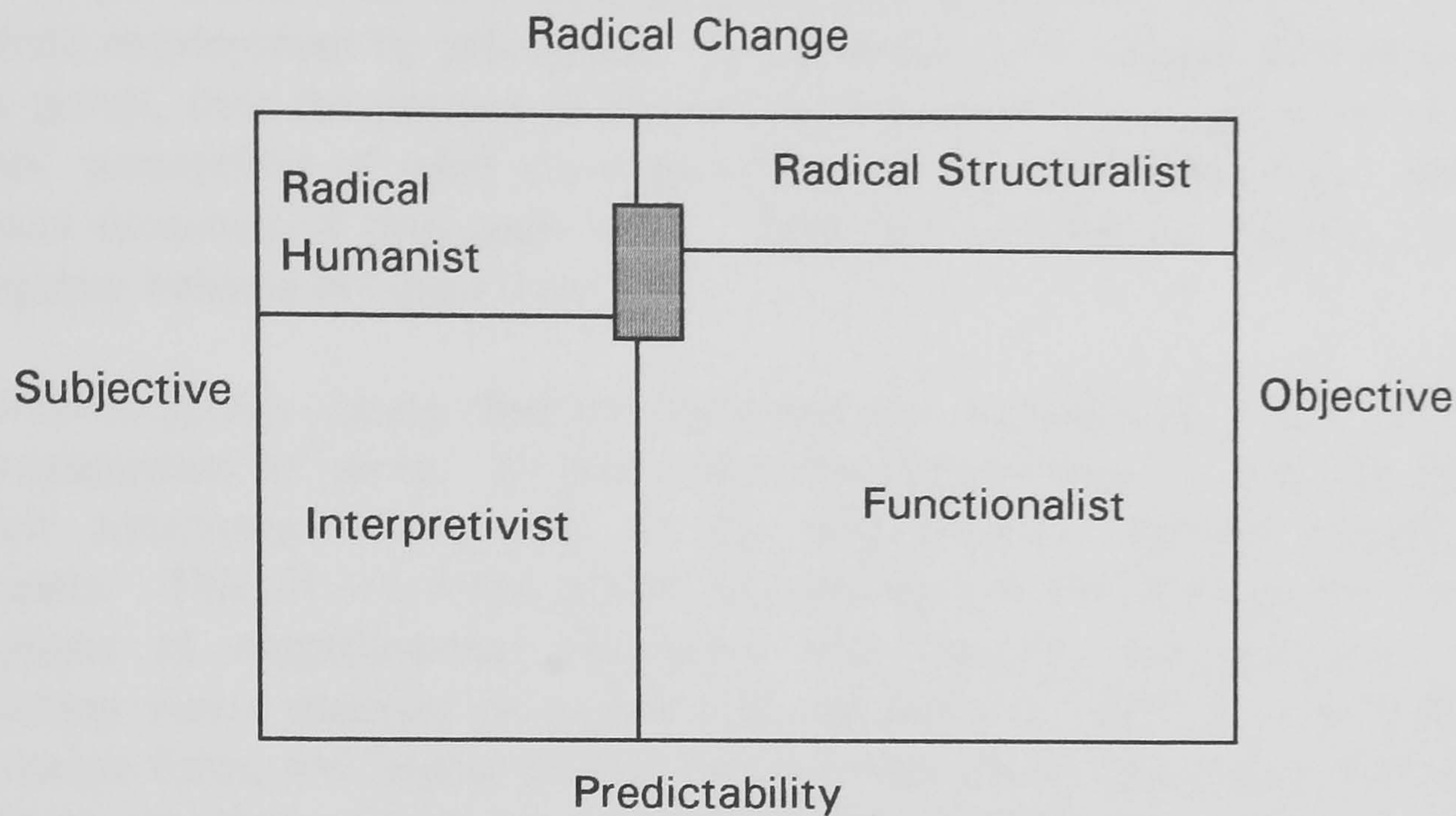
Gioia and Pitre (1990: 584), examined the implications of multi-paradigm approaches on theory building in organisational studies and believed that "... the use of any single research paradigm produces too narrow a view to reflect the multifaceted nature of organizational reality". Their conclusion was that the assumptions of the dominant functionalist paradigm (i.e. a deductive approach tested by hypothesis driven data via statistical analyses) became problematical when subjective views of organisations were considered or when there was a concern for transformational change, as was the case in privatisation and restructuring. In their judgement, a search for comprehensiveness stemming from differing perspectives was required.

The problems of assessing structural change in the ports from a single paradigm were immediately apparent - adopting a functionalist perspective implied that ports were stable (which geographically they are), consequently assessment would revolve on objective past events to predict future outcomes. However, a fundamental purpose for a port's existence was altered by changing the funding philosophy from cost recovery to profit driven attitudes, thus negating the prediction value of this paradigm. From an interpretative perspective the aim would be to generate current descriptions, insights and explanations of change from those responsible for implementation, through grounded theory methodology. Hence the element of future outcomes necessary for model building was understated in this paradigm.

But the radical humanist perspective would look at the ways management could influence the organisation's future ability to carry out its operations, which limited the hierarchical level of penetration, whereas a radical structuralist perspective would concentrate on macro industry structure that was constrained by societal forces involving historical, dialectical and critical inquiry methods. The inquiry into structural change suggested by the purpose of the research was primarily radical structuralist, since the thrust of the research was to understand and explain structural implications. Nevertheless, the purpose included perceptions of ambiguity and uncertainty in selection of strategy, which indicated a radical humanist perspective had something to offer.

In reaching an understanding of change, each paradigm had something to offer in developing conceptions of structures and proposing managerial actions to accommodate change. This raised the question as to what extent were these paradigms overlapping? Gioia and Pitre (1990: 591) argue "... that to a limited, but conceptually crucial extent, they are. Although the central assumptions of the paradigms are clearly at odds, the boundaries between them tend to be ill-defined and *blurred*... Indeed it is obvious that the paradigmatic dimensions (subjective/objective and stability/change) are actually continua, making it difficult, if not impossible, to establish exactly where one paradigm leaves off and another begins." This small overlap meant that the research did not necessarily have to be based in either one paradigm or another and hence be restricted to a classification system which constrained epistemology and methodology. For example, it was conceptually feasible to base the research on the borders of the radical structuralist paradigm such that it drew on ideas from other paradigms, i.e. it would be Boundary-spanning.

Gioia & Pitre (1990) took the stance that such a holistic perspective existed and this Boundary-spanning position is represented in Figure 3.2. The size of the boxes reflects the dominance of the functionalist paradigm in the literature. The reason for this dominance was expressed by Flood and Carson (1988: 271) as "... much of the agreement shared in Western society is via science itself, rather than being freely achieved. In fact, it is the result of the scientist's [or decision-makers'] mode of education. Agreement arises, not because it is inherent in the structure of physical reality itself, but because the scientist [or decision-maker] has been trained to look for agreement and seek an "objective" account of nature."



(adapted from Gioia & Pitre, 1990)

2/ ADVANCED SYSTEMS BOUNDARY-SPANNING

This idea of a Boundary-spanning perspective can be augmented by considering the strategy selection role of the decision-makers from the concept of stakeholder-agency theory (Hill and Jones, 1992). The dominant paradigm in the financial economics literature was agency theory which was primarily concerned with the relationship between managers and stockholders. An agency relationship was one in which the principal engaged another person to perform some service on his behalf, which involved delegating some decision-making authority. The key assumption in agency theory was that the interest of decision-makers and principals diverged, and this could be reduced by means of incentives, monitoring to reduce opportunistic actions by decision-makers and governance structures. However, this implied a limited number of active principals because the practicalities of command and control over decision-makers' actions. Too many principals exercising power from differing views of what was required for future survival led to confusion in the decision-makers' minds and was inherently unworkable.

Nevertheless, there were stakeholders in a port who were not principals in that they did not directly engage the decision-makers. These were groups who had a legitimate claim on the organisation through some form of relationship. Stakeholders included stockholders, creditors, managers, employees, customers, suppliers, local communities, and the general public. As such they had a relationship with decision-makers and possessed both a direct and influential power in some form over the actions of decision-makers. Thus decision-makers' actions were not only subject to review by principals (and the institution of corrective measures for perceived failures), but also to the same process by stakeholders. This raised the potential for conflict of priorities between decision-makers, principals and stakeholders. Resolution of conflict was by the decision-makers in the absence of any direct action

by either a principal or stakeholder who possessed sufficient power to dictate solutions (e.g. the government and the legal process for stakeholders, the power to engage or terminate employment by principals). In the absence of a direct exertion of power by either group, then the process of resolution of conflict was affected by the decision-makers' perceptions of what the expectations of all stakeholders were and what the potential demands of principals were. They had to form an opinion of where the appropriate balance between these lay.

Stakeholder-agency theory therefore admitted the existence of power differentials in the management of ports. In effect decision-makers were in both an implicit and explicit contractual relationship to the organisations' various stakeholders and principals. This ill-structured power relationship has implications for the academic disciplines of organisational behaviour and strategic management. Managing conflicting views between principals and stakeholders could lead to both a unique governance form, and unique criteria for decision-making and selection of strategy for the future operation of a 'Long-term Strategic Service Industry'.

2.1 Boundary-Spanning Strategy

This raised the question of what, according to the literature, was the appropriate strategy for decision-makers to select in a multi-operational port? In other words, where was the starting point for identifying the characteristics of a model of a 'Long-term Strategic Service Industry'? What were the appropriate strategy and organisational solutions if the either/or paradigm option generally presented in the strategic management and organisational literature was followed?

The problem area of structural change could be examined from differing perspectives, i.e. paradigms, which introduced superficially different concepts. The differing outcomes that this examination could lead to was demonstrated by the opposing views over voluntarism and determinism shown in literature debates on public/private sectors, and in the differing international forms of organisational and strategy choices. However, the similarities in voluntarism and determinism philosophies do not show through in the literature. Both views deal with structural change; but both were context specific and seemed to deny that the other view may be better suited to particular circumstances. Both seemed to view the organisation as a single system and not consider the possibility that either one, or the other, or both views could be appropriate for the component systems in a multi-system organisation. It seemed that extreme stances were being adopted and it appeared that following a generic perspective of strategy could result in a poorly specified model. From an advanced systems perspective therefore a Boundary-spanning strategy framework was required.

This problem had been identified by Whittington (1988) and he had identified relevant generic strategies as discussed in Chapter 1. However, he took the view that because of the assumptions of decision-makers on the nature of people; their particular culture or interests; and their perceptions of markets, competition, or complex social,

political and economic factors, the choice of generic strategy was clear. Each of the four generic approaches to strategy was derived from fundamentally different assumptions on these factors; hence selection of strategy was limited to that which was appropriate to decision-makers' inherent beliefs (Whittington, 1993).

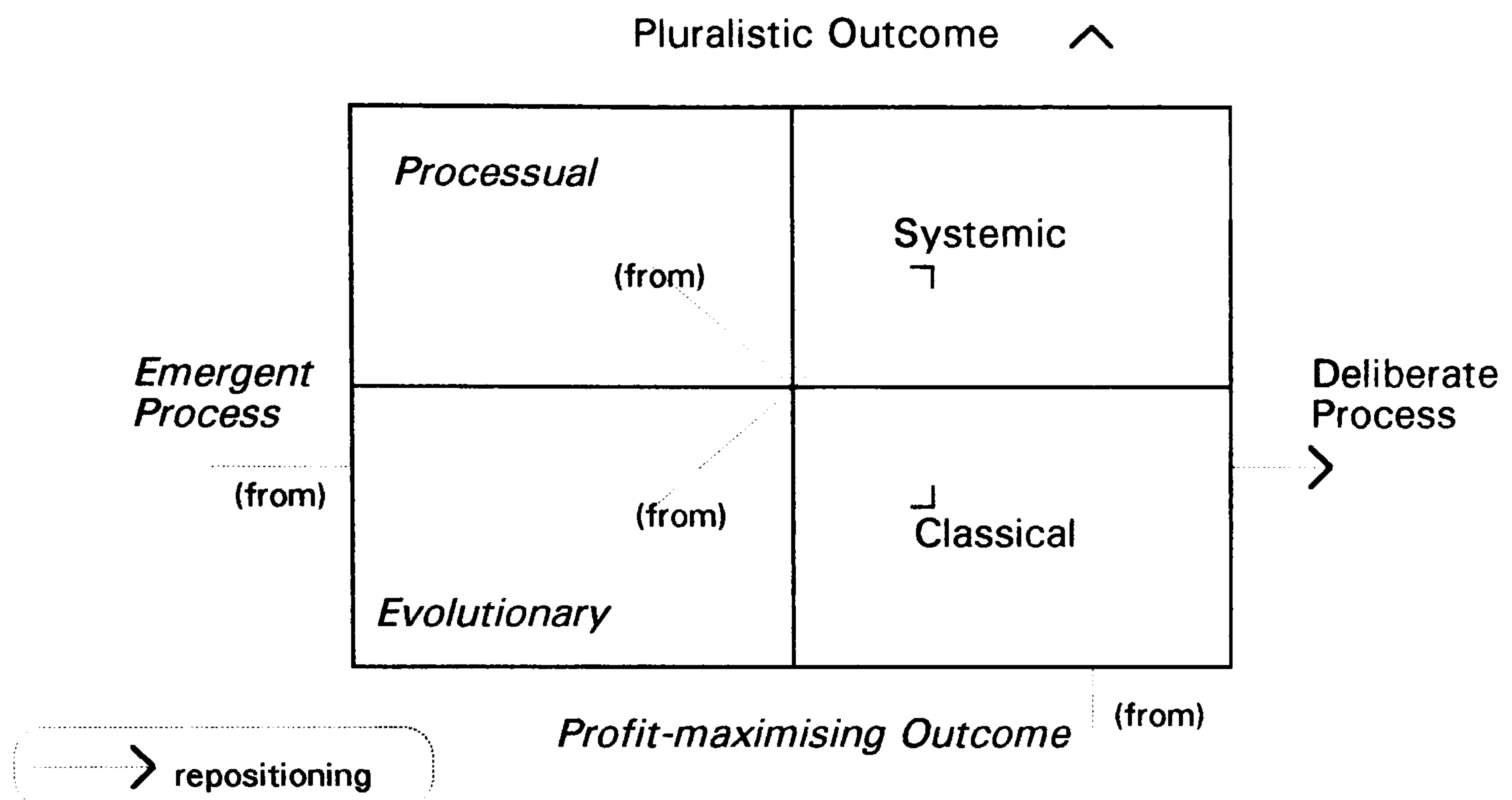
As identified in Chapter 5, ports exhibit three distinctive attributes to their operational sub-systems, each of which could be assessed from differing strategic perspectives. The result of these individual assessments was a distinctive selection as to which was the most appropriate strategy for the sub-system. But looking at the port as a whole made selection of overall strategy complex. It seemed that a free choice of any one of these perspectives was available to managers for strategic direction. This may be so for firms in the private sector, but not necessarily for organisations with 'public interest' responsibilities whose objectives and contexts are much more complex than profit maximisation, because "in particular, the Systemic sensitivity to sociological complexity and difference should be especially appropriate to the emergent quasi-privatized enterprises of the 1980s and 1990s." (Whittington, 1993: 145). The theoretical bases of private sector management philosophies were not necessarily wholly transportable to these organisations as maintained by some authors (e.g. Johnson and Scholes, 1993).

Hence for advanced systems analysis there was a need for a 'Boundary-spanning perspective that allowed elements of all these generic strategy options to be considered in the planning process. This would need to recognise the possibility that the appropriateness of various strategic perspectives may be dependent on the hierarchical level of analysis adopted, e.g. from an evolutionary perspective of the single organisation the future is too unpredictable and volatile to indulge in a rational process of long-term planning and the best strategy would be to concentrate on short-term responses to enhance competitiveness. However, from a systemic perspective of the industry, context is of greater influence in policy decision-making, e.g. a concentration on long-term survival for national economic reasons. This would allow for differing selections of strategy in the ports industries of the UK and SA.

To achieve a coherent base for a Boundary-spanning framework for advanced systems analysis, it was necessary to relate the presentations of dimensions of change in the economic literature (Chapter 4), and the strategy literature (Chapter 6) to the paradigms identified by Burrell and Morgan (1979), as amended by the boundary spanning perspective of Gioia and Pitre (1990). There was a logical match in underlying ideas about the nature of change and the methods of approach to meeting challenges this posed (as illustrated in Figure 2.1 of Chapter 2), but it involved modifying Whittington's (1993) presentation of generic strategy according to the outcomes and the processes by which it was made (shown in Figure 1.1 of Chapter 1). It appeared that a mirror image of his presentation was required in order to achieve congruency within the literature, which seemed to follow the earlier and well established Burrell and Morgan (1979) format. Since his concepts of the processes and outcomes were directly relevant, this was a purely presentational procedure to

show greater clarity of the linkages between ideas in the differing academic disciplines, and the revised presentation is shown in Figure 3.3.

MIRROR IMAGE OF GENERIC PERSPECTIVES OF STRATEGY Figure 3.3.



(adapted from Whittington, 1993)

Nevertheless, to justify a 'Long-term Strategic Service Industry' model it was necessary to demonstrate these links between the paradigms and their implicit generic strategies. Whittington (1993: 9) drew attention to the fundamental biases in approach to strategy which resulted from different perceptions of "what people are like and how they get on in the world that surrounds them". These biases led to the strategy dimensions which were firstly, the extent to which strategy selection was intended to produce a profit maximising outcome or allowed for other results such as social needs; and secondly, the processes of selection which reflected how far strategies were the result of deliberate calculation or whether they emerged by accident, muddle or inertia. Using this classification, then there are four basic approaches to strategy, which can be related to the paradigms identified by Burrell and Morgan (1979) where:

functionalist paradigm and congruent generic strategy

society is directed to order and regulation - a pragmatic orientation that is concerned with analysing society in a way which produces useful knowledge:

implicit decision-making bias - future is predictable and can be calculated by people with reasonable degree of accuracy; shareholders' expectations are that decision-makers can anticipate and plan long-term responses to events before they occur to enhance the system; characterised by similar occupational groups having complementary perceptions on the best course

of action, e.g. accountants' and investors' view of the world as a simple series of markets to be conquered;

Classical strategy (rational planning - a deliberate process concerned with profit maximisation as the natural outcome of strategy).

interpretative paradigm and congruent generic strategy

purely 'objective' social science is illusory - although possessing order and regulation, society does not possess an external concrete form:

implicit decision-making bias - future is unpredictable and cannot be calculated by people with reasonable degree of accuracy; shareholders' expectations are that decision-makers can anticipate events to some degree and respond through securing continuous short-term advantage to enhance the system; characterised by differing occupational groups having differing approach on risk taking and the best course of action in a world seen as a jungle of fierce competition, e.g. stockbrokers' and entrepreneurs' views;

Evolutionary strategy (the discipline of the market - an emergent process concerned with profit maximisation as the natural outcome of strategy).

radical humanist paradigm and congruent generic strategy

actors find themselves the prisoners of the social world they create, highlighting the alienating modes of thought in life in modern industrial societies:

implicit decision-making bias - future is unpredictable and cannot be calculated by people with reasonable degree of accuracy; stakeholders' expectations are that decision-makers can only react to events as they occur and must therefore correct any breaches to the system once these become apparent or seen as being likely to happen; characterised by differing groups having differing perceptions on the best course of action, e.g. decision-makers responding to stakeholders' views create short-term management 'fads' (Pascale, 1990);

Processual strategy (pragmatic accommodation strategy to the fallible processes of both organisations and markets.

radical structuralist paradigm and congruent generic strategy

the social world is characterised by intrinsic tensions and contradictions:

implicit decision-making bias - future is predictable in outline only and can be foreseen by people with some degree of accuracy; stakeholders' expectations are that decision-makers can anticipate and plan longer-term responses to events before they occur to prevent any breaches to the system; characterised by differing groups having common perceptions of desired outcomes of change, e.g. stakeholders' world views may be seen

by decision-makers as a particular product of their time or place, resulting from a complex interweaving of political, social, economic and technical facets and rational only according to their particular culture or interests;

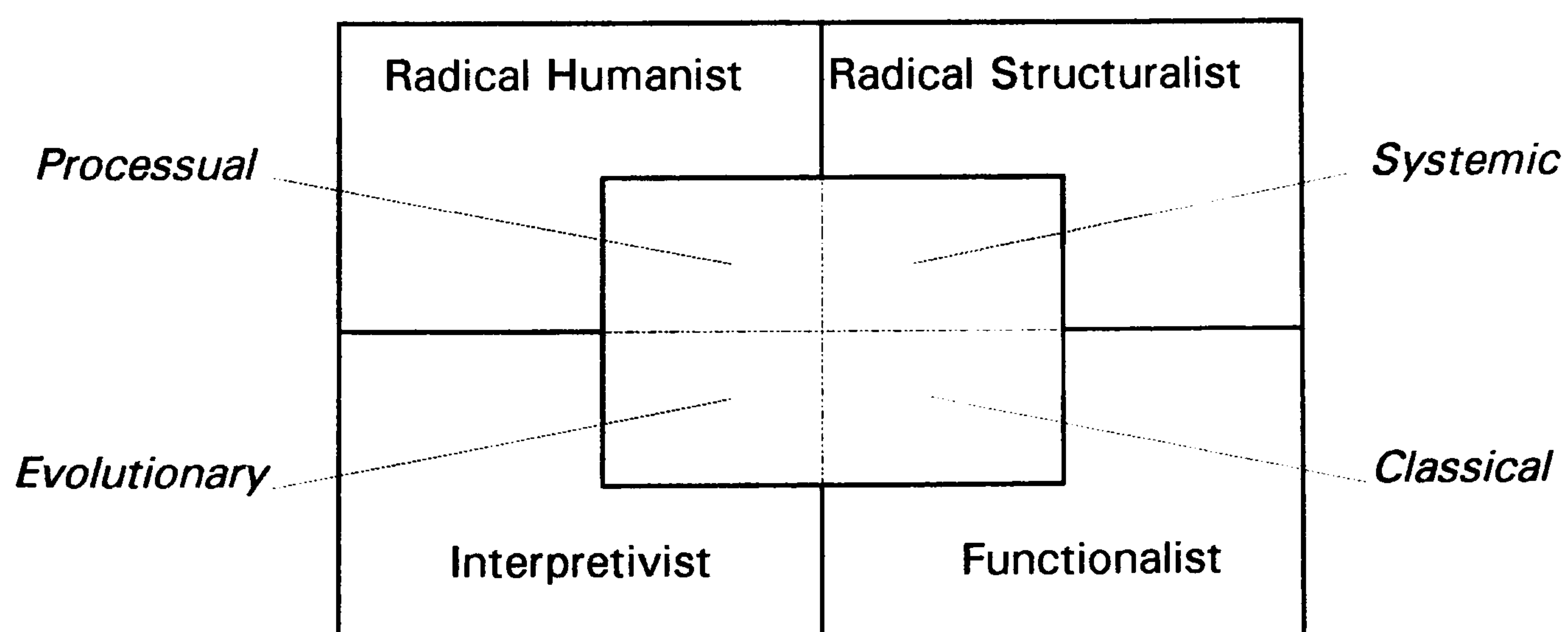
Systemic strategy (the ends and means of strategy is inescapably linked to the cultures and powers of local social systems).

In the international ports, 'public interest' considerations suggested a rational (Classical) strategy, but recognising local social systems (Systemic). Whereas cargo operations were subject to market forces (Evolutionary) and hinterland (Systemic), land utilisation decisions arose from internal needs of the organisation and what the market saw as the best use of surplus (Processual). The overall indication for selection of strategy in international ports was primarily Systemic, but it appeared necessary to blend in significant elements of other perspectives, in order to obtain a realistic view of selection of strategy for multi-national ports.

This requirement was approached by concentrating on the intersections of these strategy dimensions, following Gioia and Pitre's (1990) conclusions in Section 1.4 that although the central assumptions were at odds, the boundaries between them tended to be ill-defined and blurred and were actually continua, making it difficult, if not impossible, to establish exactly where one left off and another begins. This highlighted an overlap of logical and creative strategies (i.e. the process by which it was made), and purposes (i.e. the intended outcomes). Effectively, by superimposing the classifications of paradigm approach and generic strategies together, the four basic approaches to strategy coalesced to form a Boundary-spanning perspective of selection of strategy in a complex system. This Boundary-spanning philosophy and strategy relationship is illustrated in Figure 3.4.

Figure 3.4.

BOUNDARY-SPANNING PHILOSOPHY AND STRATEGY RELATIONSHIP

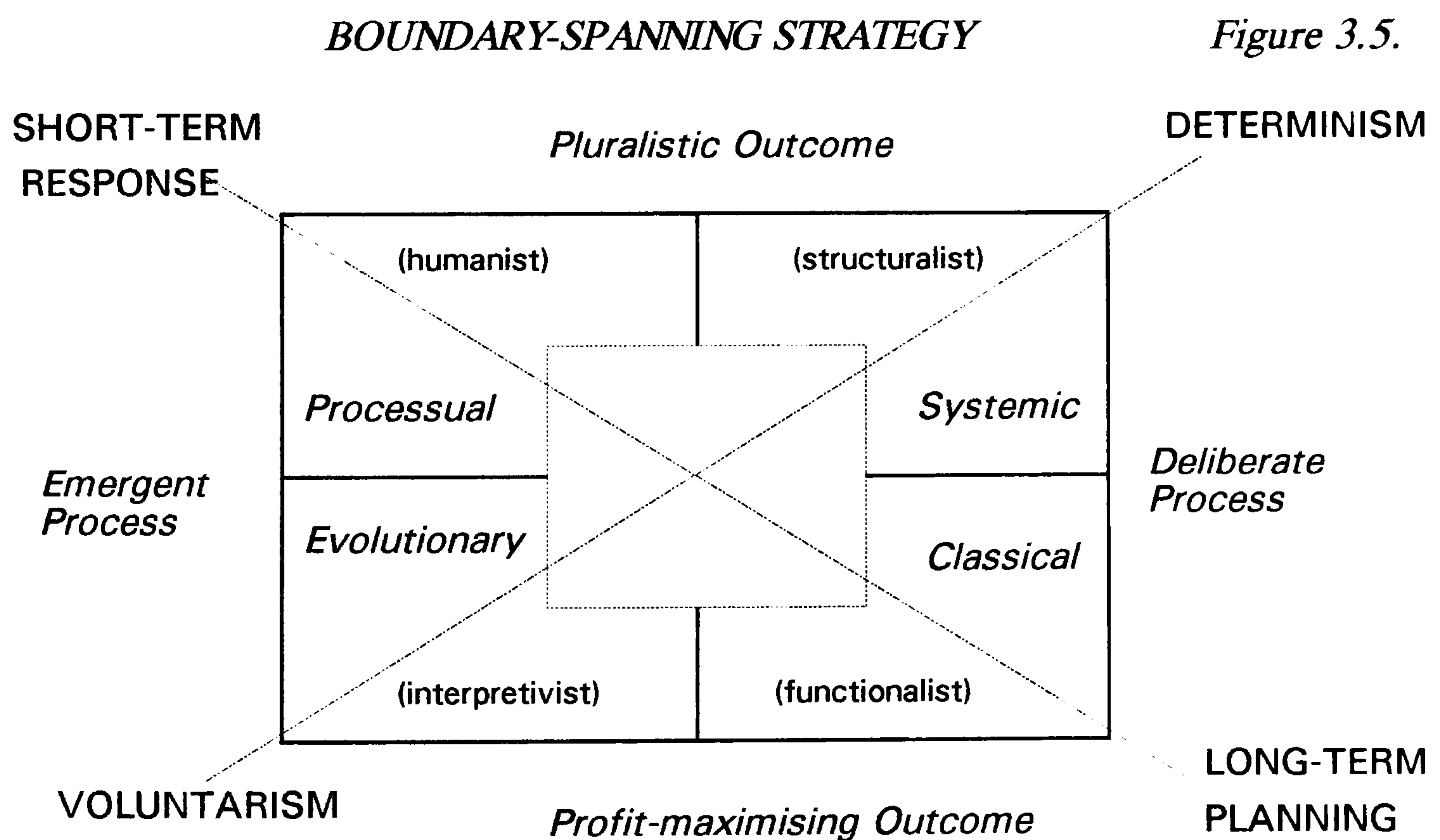


(adapted from Gioia & Pitre, 1990 and Whittington, 1993)

A conceptual base for advanced systems research was thus established. The advantage of this conceptualisation was that it diminished rigid either/or perceptions of strategy when discussing an advanced systems perspective of complex systems. From this base a researchable model of a 'Long-term Strategic Service Industry' could be developed, which was both multi-variate and multi-level, but soundly based within the literature. Wilson's (1992) views on the need for a perspective which overcame the either/or path were thus catered for.

2.2 Implications of Advanced Systems Boundary-Spanning

Following on from this process of classification mapping, the Systemic boundary was extended into the Evolutionary to reflect the dimension of voluntarism vs. determinism in freedom of decision-makers' selection of strategy; and the Classic into Processual to reflect the dimension of long-term rational planning vs. short-term reaction to environmental events in the strategic management literature (both discussed in Chapters 1 and 6). This created a Boundary-spanning strategy area within which decision-makers' reactions to perceptions of environmental change could be assessed, as illustrated in Figure 3.5.



As discussed in Chapter 1, the survival of the organisation depended on corporate planning which exhibited a balanced approach to the selection of long-term and short-term strategy for port administration in response to environmental changes. A concentration on short-term responses to predictable effects of current changes in a pursuit of profit (the commercial role) could compromise the future of the

organisation; whereas an over-commitment to long-term planning to secure the future of the port in order to serve 'public interest' needs (the statutory role) and meet anticipated future events could result in short-term cash crises. These can be equated to the two extremes of adaptation (identified by Chakravarthy and Lorange (1984) and repeated below for reference), where:

Adaptive Specialisation:

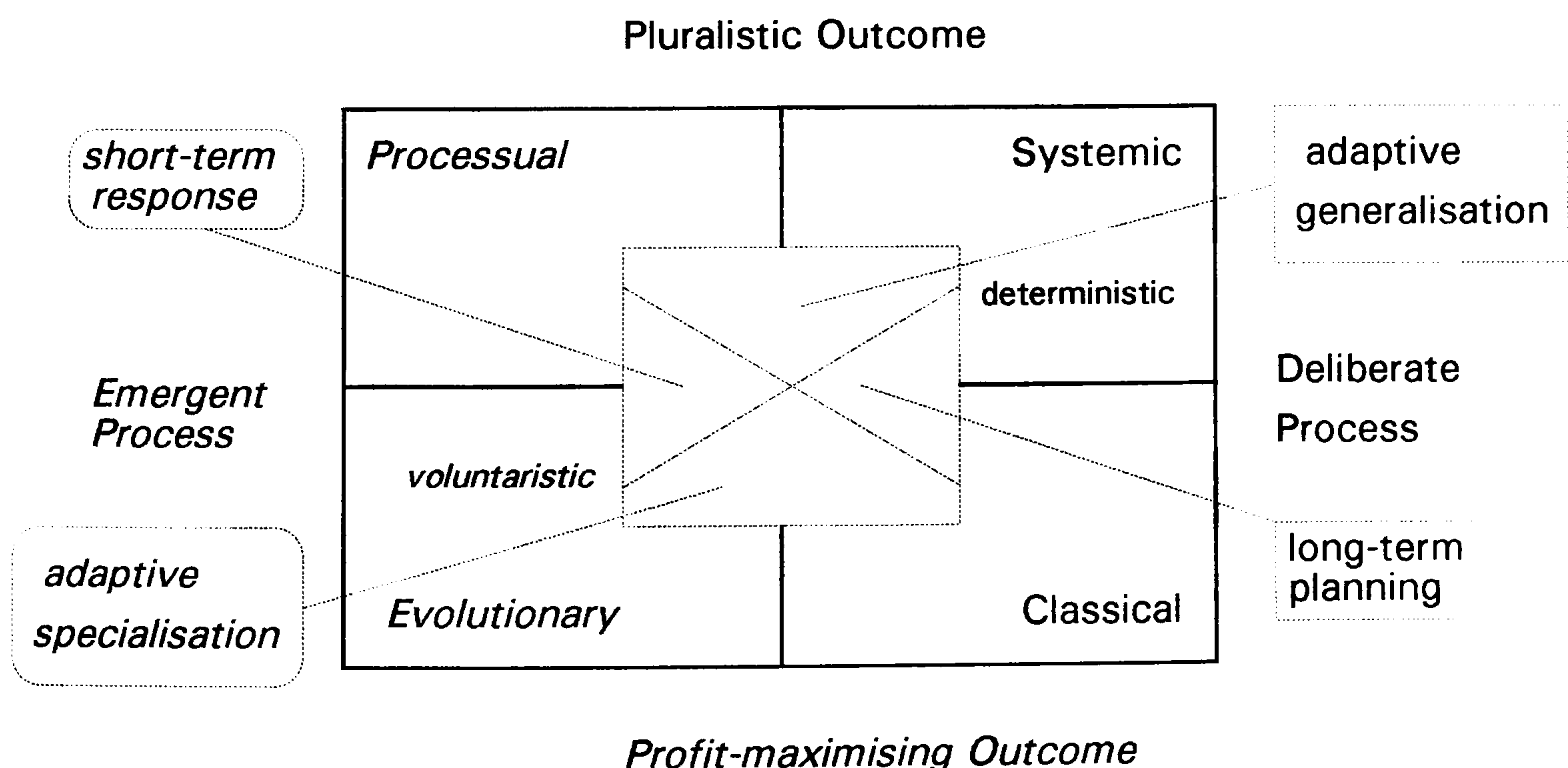
this process sought to fine tune the strategies of the organisation for a better fit with its environment, e.g. maximising the return in each of the businesses in the organisation's portfolio;

Adaptive Generalisation:

this process sought to prepare the organisation for strategic responses to future environments, e.g. the future businesses that the organisation should be involved in.

From a reading of the bulk of the strategic management literature it could be expected that the predominant response to structural change was adaptation to external events through *either* short-term response (evolutionary strategy) *or* long-term planning (classical strategy). This literature appears to be primarily geared towards profit maximising outcomes and seemed to be divided on whether a voluntarist or determinist view of managerial freedom of strategy selection was taken. However, when considering pluralistic outcomes and 'public interest' limits on managerial freedom of action, the distinctions between long and short-term reactions became blurred and overlapping areas were created. These are represented in Figure 3.6.

BOUNDARY-SPANNING STRATEGY AND ADAPTATION *Figure 3.6.*



(developed from Whittington, 1993)

This had implications for modelling. It seemed that a perfect balance could only be obtained at the intersection of the axis, but this was unlikely given the differing perceptions of structural change discussed in the Introduction and apparent in the strategic management literature. A perfect balance would be static, whereas the nature of the international ports industry was dynamic. In this case, Figure 3.6 implies that neither of the extremes is probable, but that a blend according to decision-makers' perceptions of environmental circumstances (and stakeholders' power to influence their perceptions) was the more likely consequence of structural change. In the absence of a track record on structural change, the problem was in identifying whereabouts on the continua this balance was likely to lie in the future.

2.3 Measuring Extent of Advanced Systems Boundary-Spanning

There was no obvious method of determining the boundaries of strategic stances given the differing approaches to structural change in UK and SA. It was probable that the emphasis of structural change would be towards the short-term response / adaptive specialisation area and away from the long-term planning / adaptive generalisation area. However, from the advanced systems perspective of a 'deep structure' (Gersick, 1991) operating in the ports industry because of 'public interest' considerations, structural change could be seen as being revolutionary. This implied that at some stage the revolutionary period would end with the system achieving a balance that was midway between one or other area. The workings of this effect were likely to mean that none of the extremes of the continua would be reached. But differing approaches to structural change implied that differing balances could occur in an international industry in the future depending on the societal considerations of a particular country (Whittington, 1993).

Hence the notion of measuring opportunity and threat outlined as Research Assumptions 1 and 2 in Chapter 1 were adopted provide a means of seeking decision-makers' perceptions of likely outcomes of structural change. If decision-makers are asked questions which reflect the nature of structural change, then their responses can be measured according to whether they clearly convey an opportunity or threat perception. However, if no clear perception emerged, then it could be inferred that decision-makers were in fact considering the characteristics of a Boundary-spanning area. This would indicate whereabouts the balance was likely to occur in a particular country.

This approach laid the foundation for the choice of an appropriate advanced systems methodology which explicitly considered and measured power relationships and disputed strategy choices. The next stage was to consider governance, i.e. how the implications of an advanced systems philosophy on Boundary-spanning strategy could impact on the organisational structure adopted to implement decision-makers' selection of strategy.

3/ **BOUNDARY-SPANNING ORGANISATIONS**

The research purpose involved modelling of nodes in a global transport system and was implicitly a contribution to organisation theory. Hence conceptual guidelines on its content were required. The difficulty in determining the relevant content from the literature sources lay in understanding the actions of decision-makers as to what they saw as the most appropriate governance structure. Handy (1985: 16) considered that:

"... action without analysis becomes mere impulse. In fact, very little behaviour is purely impulsive. Most individuals, by the time they reach maturity have built up an array of concepts which they use to interpret the data they observe. Many of these concepts are not part of our conscious awareness. Often they could more accurately be called beliefs, hunches or assumptions; sometimes even myths, stereotypes and superstitions. Organisation theory seeks to substitute a coherent set of conceptual frameworks for these collections of assumptions. These concepts, properly used and understood, should:

Help one to *explain* the Past which in turn Helps one to *understand* the Present and thus To *predict* the Future which leads to More *influence* over future events and Less *disturbance* from the Unexpected." (italics as original)

From this viewpoint, investigating organisation theory concepts for identifying attributes of structural change was necessary for modelling. Conceptual frameworks could then be built and tested against the perceptions of decision-makers. However, investigation was problematic, since in Handy's (1985: 15) view there was a temptation to focus on:

".... the dangers of the lure of the familiar. Because we know what to do about competition, for instance, or about unions, we selectively focus on that variable or group of variables in any problem situation. Unfortunately, selective focusing, if done by habit, also unfocuses a lot of other variables."

The starting point for the research of an experiential perspective of ports in an international transport system, raised the possibility of "the dangers of the lure of the familiar". Consequently, in order to overcome potential bias, there was a need to develop a rational organisational analysis method from a systemic perspective. In this sense, systemic means the activity of ports as a whole, whereas the word 'system' refers to one or more of the component processes in ports operations.

3.1 **Advanced Systems Organisations**

The first stage in this was a holistic focus on identifying *why* certain issues may emerge as being of fundamental strategic importance in the future, rather than *how* short-term changes in tactics and organisation may be implemented in an evolving environment. Hodge and Anthony (1988) noted that systems theory could appear too

abstract for practical use, and by implication, insufficiently clear for identifying organisational policy issues in structural change. In an organisational setting of evolving and conflicting social, legal and economic philosophies (Galbraith, 1987), this raised a query over whether developments in advanced systems theory gave a sufficiently encompassing perspective for understanding potential long-term effects of change on organisational structure.

Handy (1985) viewed the organisation as fitting into its environment, shaping its future, dealing with divergence and deciding its policies. To what extent did the organisation as a whole adapt to the environment when the purpose of its existence did not change (i.e. 'public interest'), but the control exerted was based on a different philosophy (i.e. 'private interest')? What did adaptation mean for the organisation of the sub-systems of a port?

An effective manager would plan in order to minimise risk and maximise opportunities. Planning thus implied a need to organise, direct and control. From a systemic perspective, planning was a continual governing activity involving feedback from the administrative processes of the organisation and from the external environment. The essential elements of administrative control were cybernetic, in that they established standards, measured performance against standards and took action on any discrepancy. Thus planning necessarily involved the establishment of organisational objectives and the design of a structure to carry out those objectives.

In essence, the queries concerning identification of organisational concepts regarding the sustainability of a change in the strategic direction were:

what role did advanced systems theory give to corporate planning within stable environments?

what role did advanced systems theory give to corporate planning for changes that produced instability in the environment?

The restructuring of ports had created a turbulent (or changing) environment. Turbulence could be equated to complexity (Emery and Trist, 1965). This raised the question - what was the nature of complexity faced by the ports in structural change: detail or dynamic? It seemed that because of the potential differing consequences of structural changes the answer was dynamic. Ports have been and always will be faced with detail complexity. Detail complexity produces evolutionary or incremental adaptive change, rather than revolutionary change. Since ports exist in a dynamic and complex environment with continual change, this presented opportunities for perceptive managers, although change also held many risks or threats, e.g. a 'flip flop' centralisation or decentralisation strategy for the organisation when adapting to predictable and unpredictable change. Organisational literature which could be viewed as having a systems base, was generally concerned with detail complexity, but was less forthcoming on dynamic complexity.

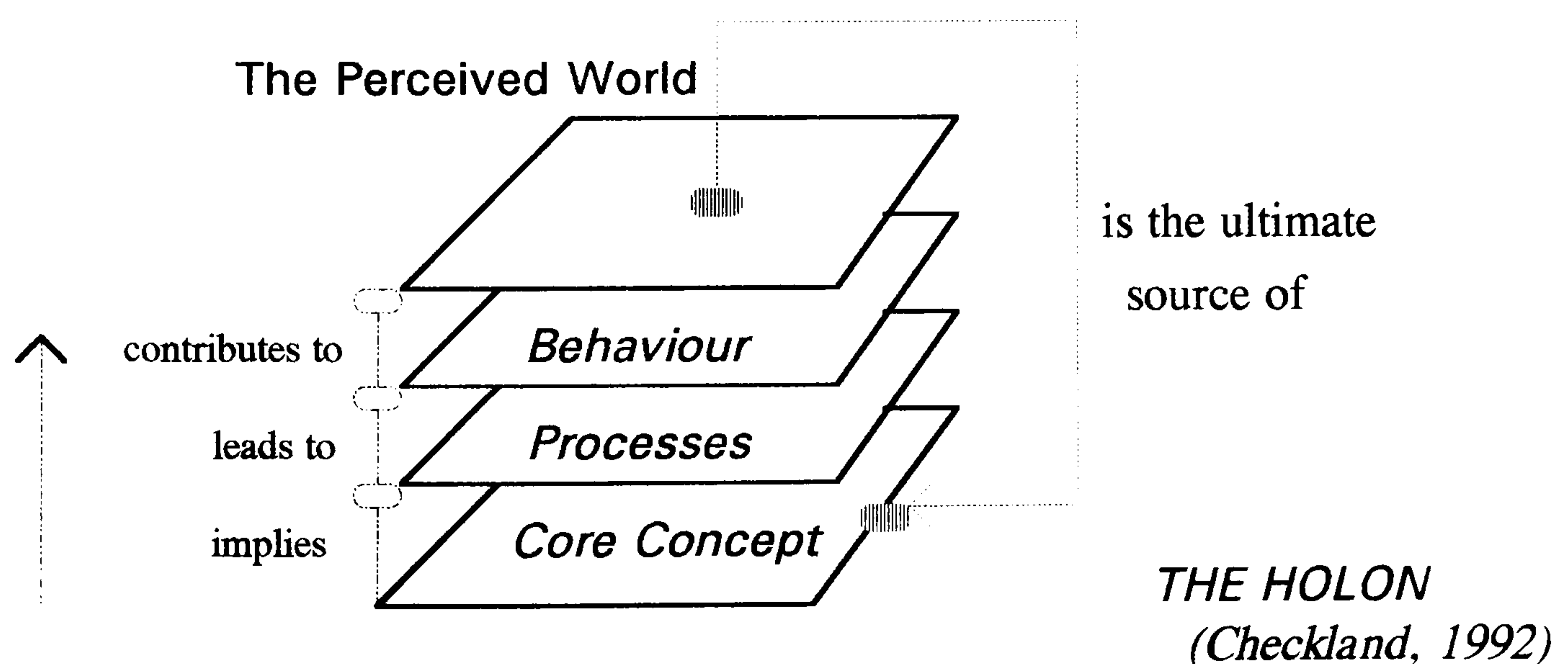
3.2 Systems as Holons

The problem posed for advanced systems theory with understanding dynamic complexity was identified by Checkland (1992). In reviewing the organisation literature he found that the presentation of the systemic characteristics of organisations was normally by lists of systems ideas with no rationale for the order of presentation, e.g.:

holism, goal seeking, inputs and outputs, transformation, entropy, regulation, hierarchy, differentiation, equi-finality; components, interactions, emergent properties, boundary.

Consequently, he thought that "we seem to be confused about the most basic of our ideas. Yet it not too difficult to escape the confusion revealed in these examples - but even this most basic thinking has barely been done. Lists of the kind illustrated do not map each other, though they partially overlap. Indeed if you examine commonalities it is possible to achieve a more coherent expression of system ideas fairly easily. The core notion is that of a whole in an environment which is delivering shocks to it. It may contain smaller wholes, and may itself be part of a larger whole. This gives us the idea of a layered or hierarchical structure. And if the whole has processes of communication and processes of control then it might, in principle, adapt and survive in a changing environment. That, it seems to me, extracted from the systems literature is the core set of systems ideas. Those are the four ideas you need to express the notion of *the adaptive whole* which is central in the systems literature, and is the idea which these various lists of systems ideas haltingly express.... 'Holon' is the abstract concept of a whole which could, in principle, adapt and survive..." Checkland (1992: 1025 - italics as original). This concept could be represented in a diagram as shown in Figure 3.7.

A COHERENT EPISTEMOLOGY FOR SYSTEMS THINKING *Figure 3.7.*



The diagram demonstrates "the *groundlessness* of systems thinking: there are no absolutes in our epistemology; as systems thinkers we are virtually driven to a process view of the world... Now, clarity demands that we be very careful about the difference between ontological statements of the form: the perceived world *is* something or other, and epistemological statements which are not about the perceived world but are about *knowing* the perceived world. Thus, in an epistemological statement we are only saying that the perceived world *may be taken to be* something or other. The difference between *is* and *may be taken to be* is very important.... [As a result of this distinction, he called for an] intellectually tough examination of the evidence that our systemic epistemology based on holons can map complex happenings in the real world. In doing that what we should carefully avoid, since they are not testable, is mere ideological statements and commitments. At the moment the systems field is very prone to stray from its prime task of establishing mappings between its concepts and real-world happenings." Checkland (1992: 1026 - italics as original).

The research was therefore governed by the dual need to identify in the literature concepts that considered organisational policy issues in structural change, and also to establish a method for the modelling (or mapping) of dynamic real world events in the global ports industry. Checkland's (1992) epistemological description of the perceived world as being '*may be taken to be*' thus set the nature for the proposed model of strategy and structure for a 'Long-term Strategic Service industry', and consequent testing of decision-makers' perceptions of this model.

3.3 Ports as Boundary-Spanning Organisations

Within the ports literature, little attention is paid to those concepts underlying the detailed organisational structures and management strategies adopted in times of dynamic change. Both Branch (1986) and Frankel (1987) provide illustrations of hierarchical organisation charts for example, but these are generalisations of cargo functions, suffering from an assumption of stability in the managerial environment in order to enable a reader to tailor the example to his own particular needs.

In previous organisational studies of transport deregulation (e.g. Guthrie, Grimm and Smith, 1991; Thomas and Ramaswamy, 1993) there was a presumption that dynamic changes in the regulatory environment had altered the purpose of the organisation. Consequently, they seemed to assume that a radical change in managerial philosophy and the qualities possessed by managers was required, and their studies sought to confirm this assumption. Hence a crucial intermediate step has been overlooked, i.e. *what has not changed* - those activities where it may not be appropriate to change the managerial philosophy, the organisational structure, and the qualities possessed by managers, in order to match new philosophies applicable to activities which have changed.

The implication is that two distinctive attitudes and management styles are required. The first is needed for commercial activities which seem to be addressed by behavioural models of organisation - the creation of innovative, trial and error learning and responsive organisations adaptable to change, such as those identified by Peters (1990, 1991), Pascale (1990), Senge (1990) and Stacey (1992). Strategy patterns for these types of organisations could be viewed as emphasising successive short and medium term tactical manoeuvring with the freedom to act creatively. This required early warning sensors to minimise the risks of picking the wrong tactics, once the primary decision (or strategy) on which industrial environment to work within had been taken.

By contrast, a second attitude and management style - disciplined with a high reliability as identified by Weick (1987) - was needed to undertake the statutory activities. These obligations can be seen as objectives (or strategy) having initially been set by external stakeholders and guided successive decisions, generally of a long-term nature, which involved a commitment to policies and routine decision making which was in accordance with these objectives. For example in the port industry Medway's conservancy (navigation) powers were recorded as being in existence in 1189. Thus a long-term planned strategy can be discerned in this managerial philosophy. This seems to be addressed by mechanistic models of organisation.

4/ MODELS OF ORGANISATIONS

According to Hodge and Anthony (1988), organisations have been studied from several different epistemological standpoints. These epistemological standpoints produced the following key concepts in models of organisations. The models were useful in understanding varied perspectives of the issues and tensions created by structural change, so long as the inherent dilemma between simplification for clarity of presentation and accurate portrayal of the complexity of strategic choice in restructuring organisations was recognised.

Mechanistic or Bureaucratic model - i.e. a dispassionate cybernetic approach representing the perceived world from a Functionalist Paradigm:

This was the traditional or classic model concentrating on predictability and stability of the organisation in a closed or semi-closed framework with little consideration to the environment of the organisation. For example, topics of study were principles of specialisation, hierarchical arrangements, delegation of authority and responsibility, and methods of control within the overall organisational structure. This is the generally perceived organisational structure for public sector organisations, being viewed as static and unresponsive to environmental change.

Economic model - i.e. a fundamental presumption of gain approach concerning processes leading to behaviour in the perceived world from a Functionalist Paradigm:

The foundation for this model was seen to be the economic rationality of a firm's decisions in maximising gain in using scarce resources. The way a particular firm operated was determined by its desire to maximise profits. The model was seen to be most appropriate for private sector businesses, but was also held to be useful for public sector organisations because of its emphasis on the efficient use of scarce resources.

Consequently, it was commonly used as the justification for privatisation, in order to overcome the perceived deficiencies of the mechanistic model.

Technological model - i.e. a technical operations development approach concerning processes leading to behaviour in the perceived world from a Structuralist Paradigm:

The emphasis on this model was on the technology employed within the organisation to explain past developments and operations. By implication, the guiding principle was that organisations structured themselves around the geography and technology within a particular industry, e.g. mass assembly line production, bulk cargo or container handling operations.

This could be seen as the historical location of a port and the reasons for development of its sub-systems of operation.

Human Relations or Group model - i.e. a collective social approach contributing to the perceived world from a Radical Humanist Paradigm:

This model was concerned with group intra- and inter-reaction processes and considered detailed areas of human behaviour such as the informal or de facto operation of the organisation, with little consideration of the formal framework of the organisation.

Individual Behaviour model - i.e. an individual social approach contributing to the perceived world from an Interpretivist Paradigm:

This model evolved from the human relations model and emphasised the individual (as opposed to group) behaviour and motivation, stressing factors such as individual personality traits.

Power model - i.e. implicit presumption of politics determining the selection of strategy for the organisation, effectively this provided a relatively holistic Boundary-spanning perspective of the paradigms for considering the nature of change:

The emphasis of this model was on control over external change, including the existence of some degree of power over environmental events; and internal power relationships and structure. Resource allocation, decision-making and performance were seen to be heavily influenced by internal and external power relationships leading to a series of power struggles, requiring the resolution of conflict.

The power model could be seen as a meta-model that drove the process of privatisation and restructuring in the ports. The existence of power to determine the direction of change, i.e. strategy, raised issues of managerial decision-making and tensions between the potentially conflicting desires of multiple stakeholders for the outcome of change. Resolution of these tensions through a process of strategic choice determined the overall shape of objectives and goals in the strategic corporate plan. From a Boundary-spanning perspective of strategy, the economic and technological models could be seen as identifying environmental factors to be addressed in the corporate plan, whilst the two behaviour models identify factors that affect the implementation of the strategic corporate plan. Strategic choice drew attention to the active role of leading groups who had the power to influence the structures of organizations through an essentially *political* process, i.e. through the power model.

In this respect, the models could be structured in a hierarchical order - Castrogiovanni (1991), as discussed in Chapter 1, and equated to the three key issues of the strategic choice process - Child (1995), discussed in Chapter 2, where:

the Economic model related to the macro environment and hence reflected the future role of agency and choice in organizational future analysis;

the Technological model related to the industry operational environment and hence reflected the future nature of the organizational environment;

the Mechanistic or Bureaucratic model, the Human Relations or Group model and the Individual Behaviour model all related to the corporate environment and hence reflected differing perceptions of the future relationship between organizational agents and the environment.

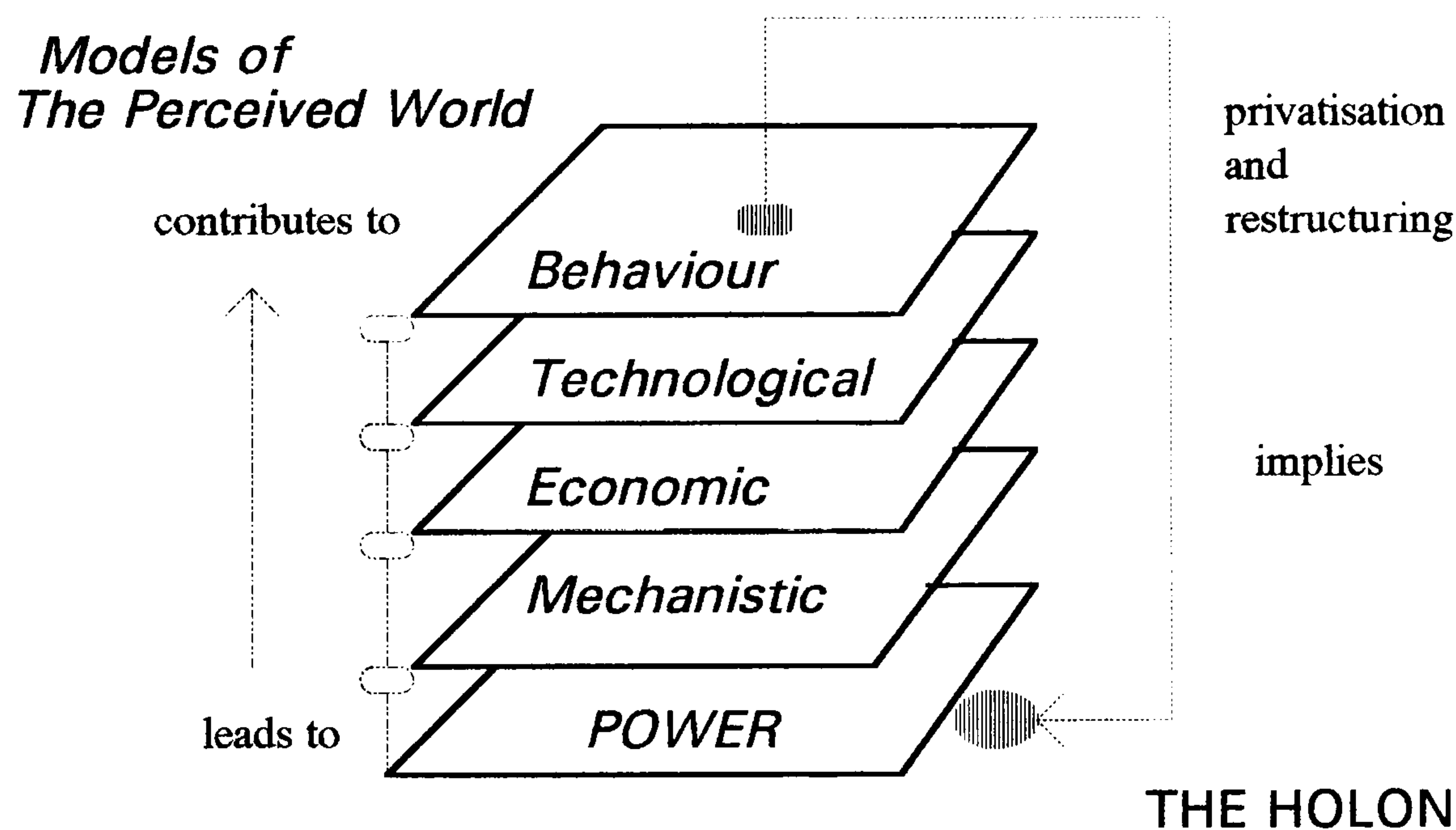
Individually, the models reflected an aspect of the strategic choice process. Structural change in the international ports industry (discussed in the Introduction) was presumed to be an event that would alter the existing mechanistic model of organisation, i.e. destroying the perceived 'public sector' world and creating a new perception of a 'private sector world'. The economic model could be seen as providing the rationale and means to correct a perceived 'failure' which would lead to a change. The implementation of this change could be analysed from both group and individual behavioural models, whereas the drivers of change could be assessed from the viewpoint of the power model. Each model appeared to reflect key cause-and-effect relationships, but the explanations of change they gave seemed to be mutually exclusive.

4.1 A Holon Model of Port Organisations

No model on its own fully explained the ramifications of organisational change that were experienced from working in the ports industry. However, if the organisational models were combined to create a holistic view, then they were useful in understanding the future issues and tensions created by structural change. Limitations to selection of strategy apply in one form or another - a framework for the identification of these limitations and methods of circumvention was provided by the strategic choice concept. Considering the implications of the organisational models collectively would clarify the future relationships and would further understanding of the strategic choice concept. From a systemic perspective each of these models contributed to identifying the long-term drivers of, and future potential impact of, structural change. Hence, analysis of a combination of key features from each organisational model would act as the content of the proposed model of a 'Long-term Strategic Service Industry'. This framework, based on Checkland's (1992) notion of holons, is shown in Figure 3.8.

A HOLON MODEL OF PORT ORGANISATIONS

Figure 3.8.



(adapted from Checkland, 1992)

The following chapters undertake an analysis of the linkages created by issues and tensions in structural change from the standpoint of their influence on a corporate plan, i.e. the literature is examined to extract matters that ought to influence decision-makers' selection of strategy. This process provides a strategic choice research framework, based on the Boundary-spanning strategy idea discussed in Section 2.

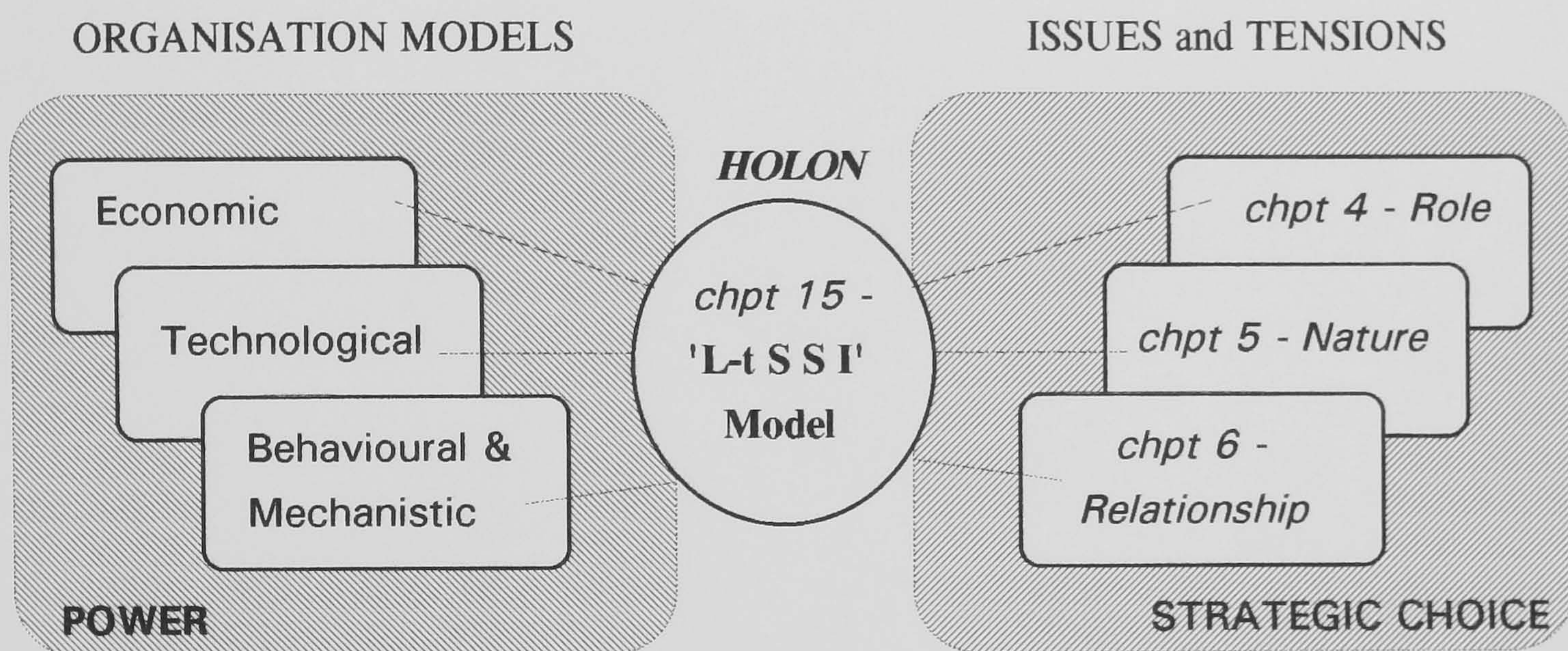
Figure 3.9 illustrates the relationship between the organisational models and strategic choice through the analysis of issues and tensions that are discussed in the next chapters (Chapter 4 from a power and economic perspective, Chapter 5 from a power

and technological perspective, Chapter 6 from a power and behavioural & mechanistic perspective). These chapters draw Research Expectations from the literature to distinguish the proposed 'Long-term Strategic Service Industry' model from the thrust of the literature, i.e. to 'highlight' the considerations of decision-makers in future selection of strategy where it both agreed and diverged.

Chapters 12, 13 and 14 draw inferences for strategic choice and organisational structure, and the model is presented in Chapter 15 by summarising these. This model thus represents a holon approached from an advanced systems perspective.

ORGANISATION AND STRATEGY ANALYSIS

Figure 3.9.



Chapter 7 considers the methodology required to investigate the holon, and raises the question of what the appropriate advanced systems data gathering technique is. This is identified in Chapter 8, whilst Chapter 9 specifies the construction and interpretation process adopted to test the technique.

5/ SUMMARY

In the Introduction it was stated that if a port is considered from a macro viewpoint as a node in a transport network, then the prime strategic consideration must be its survival in the 'public interest'. This presumed the existence of dynamic change in which previous policies and practices became the centre of attention, but where elements of the existing structure were carried over into a new structure to ensure survival.

This dynamic change governed how organisations evolved with, or adapted to, their environments. Concerns with single paradigm research into change were identified and an Advanced Systems Philosophy for investigating decision-makers' perceptions

of the outcome of structural change and selection of appropriate strategy developed. This included development of a Boundary-spanning approach for organisations that exhibit a blend of distinctive features in their operations. The initial part of the subject objective was "to identify or develop a systemic philosophy for assessing structural change in the international ports industry...." This particular aspect of the objective has been achieved in this chapter.

The next chapter discusses structural change from an economic and legal viewpoint of the holon in order to develop Research Expectation 1(a). This will form one aspect of the scenario theme from which scenario circumstances of potential conflict were derived (as outlined in Chapter 2).

CHAPTER 4 - ADVANCED SYSTEMS ANALYSIS OF THE ECONOMIC MODEL***1/ ECONOMIC RATIONALE FOR STRUCTURAL CHANGE***

There is an international trend for structural change in public sector organisations, fundamentally because of a general dissatisfaction with the cost and quality of service provided under public ownership. A perceived need for improvements in efficiency existed and the favoured method was through privatisation or commercially oriented approaches. Structural change was defined by Rowthorn and Chang (1993: 61) as "the transfer of resources from old to new sectors" i.e. from public sector to private sector. This impetus for transfer of resources was dependant on perspectives of what would be the appropriate governance and management regimes (e.g. laissez-faire - virtually no governance or market-based regulation; market regulation - effective market mechanisms with governance to uphold private property rights; communal governance - local level systems of common resource management).

The concept of governance was defined by McGlade (1995) as the patterns that emerge from the activities of social, political and administrative players that can be seen as purposeful efforts to guide, steer control or manage the sector, i.e. governing activities. These patterns are the outcome of a:

"balancing process of coming to grips with the tensions between governing needs on the one hand (problem situations or the grasp of new opportunities) and governing capacities (creating patterns of solutions or developing strategies). To have effective governance the expectations of the different participants of the system should be broadly convergent and at the same time consonant with the prevailing environmental setting"; but, "if people do not perceive that a balance exists they feel that they have lost control.... different types of instrument are required to meet different needs." (McGlade, 1995: 78, 80)

This raised the question as to what is the best method of achieving a balance.

1.1 Privatisation and Restructuring

The economic or financial rationale was presented by Pirie (1985: 3) as an:

"approach which recognizes that the regulation which the market imposes on economic activity is superior to any regulation which men can devise and operate by law. It is an approach which also recognizes that the market measures, and responds to, the choices and preferences of people more accurately than the political process.... The process of privatization requires policies to be tailor-made to deal with each particular issue. Each part of the public sector generates different interest groups and different political problems. Each distinct programme requires a distinct approach."

The economic approach thus emphasised that governance operated by financial instruments was preferable to governance by regulation, i.e. based on the formal authority of the state, or communicative governance, i.e. based on the force of argument. This presumed that there was sufficient understanding of the various controls exerted by the market to determine the objectives of an organisation when it was transferred to the private sector. However, the distinguishing feature of privatisation programmes is generally the appointment of a regulator to safeguard against monopolistic actions (practices which resembled the self interest of the organisation being imposed on customers in the absence of communicative governing), as discussed by Foster (1992), Beesley (1993), Beesley & Littlechild (1991) and Cowan (1993). From this perspective then, privatisation was a balanced approach - the prime instrument of control was the market, with checks provided by a delegated regulatory instrument (the state had delegated its powers to an appointed regulator). The assumption was that the regulator would have the role of formal control, and by informal consultation also achieve communicative governing. Hence it met McGlade's (1995) view of the need for a balance.

Despite the international privatisation trend and consequential widespread belief in its suitability for governance, there was no political consensus that a particular form of ownership, with its resulting management philosophy, was the most important influence on an organisation's performance. This dissension was illustrated by Fraser and Wilson (1988) who tracked the post war changes in attitude towards public ownership by both the Conservative and Labour parties. The Conservatives were generally staunch believers in market regulation, whilst Labour doubted whether the strategic importance of state controlled monopoly services and their accountability to Parliament could be replicated in the private sector. They believed that the social and economic consequences in a failure of market regulation could be severe. This implied that privatisation as a transfer instrument had not completely achieved the necessary balance in communicative governing, i.e. acceptance based on the force of argument.

The perceived opportunities and threats in privatisation were illustrated by the House of Lords (1991), when rejecting a private bill lodged by a port seeking to privatise, as discussed in the Introduction, that:

exposing the company to risks could endanger its ability to fulfil its statutory obligations and to carry on its core business of running the ports. That could have a detrimental impact on local industry and on the local economy.

These divergent views were not based on current or historical events, but were perceptions of potential future outcomes from a communal governance concern of absence of controls in a laissez-faire management regime. It was not surprising that the Lords were over-ruled by a subsequent enabling Act. As McGlade (1995) pointed out, although effective governance meant that the expectations of stakeholders should be balanced, the ultimate power lay with prevailing political views.

1.2 Considerations for Privatisation and Restructuring Policies

The prevailing environmental setting of political power and customer expectations favoured privatisation in the UK and organisational change in SA. Structural change could therefore be viewed as a managerial opportunity to achieve the perceived need for efficiency improvements. This should be reflected in the perceptions of decision-makers undertaking structural change, but some element of concern could also be expected if an overall balance was not seen to be maintained (McGlade, 1995).

The choice of which services to privatise and which services should remain in the public sector was largely influenced by political, economic and social considerations regarding the nature of the service. Meyers and Wijnholds (1990) viewed the choice as being determined by two dimensions:

the extent to which the service was public or private goods dominant (a continuum ranging from production of items or services which can only be done collectively by the state, e.g. defence, to those which can be done individually by companies, e.g. security guards);

the extent to which the service required decision-making and behaviours oriented to public policy and regulation (a continuum ranging from public professionalism and civic responsibility, e.g. judges, to implementation roles, e.g. clerical functions).

These dimensions produced four quadrants as shown in Figure 4.1. and the relative ease or difficulty of decisions regarding the appropriate form of governance depended on the location of a particular service within each quadrant. These quadrants could be labelled according to perceptions of the nature of the service, from either political, economic or social stances. These perceptions determined the extent to which services could be privatised, as well as the form of governance and controls likely to be required. They also indicated the likelihood of concern being raised over future outcomes of the structural change. Definition of the quadrants was by illustration:

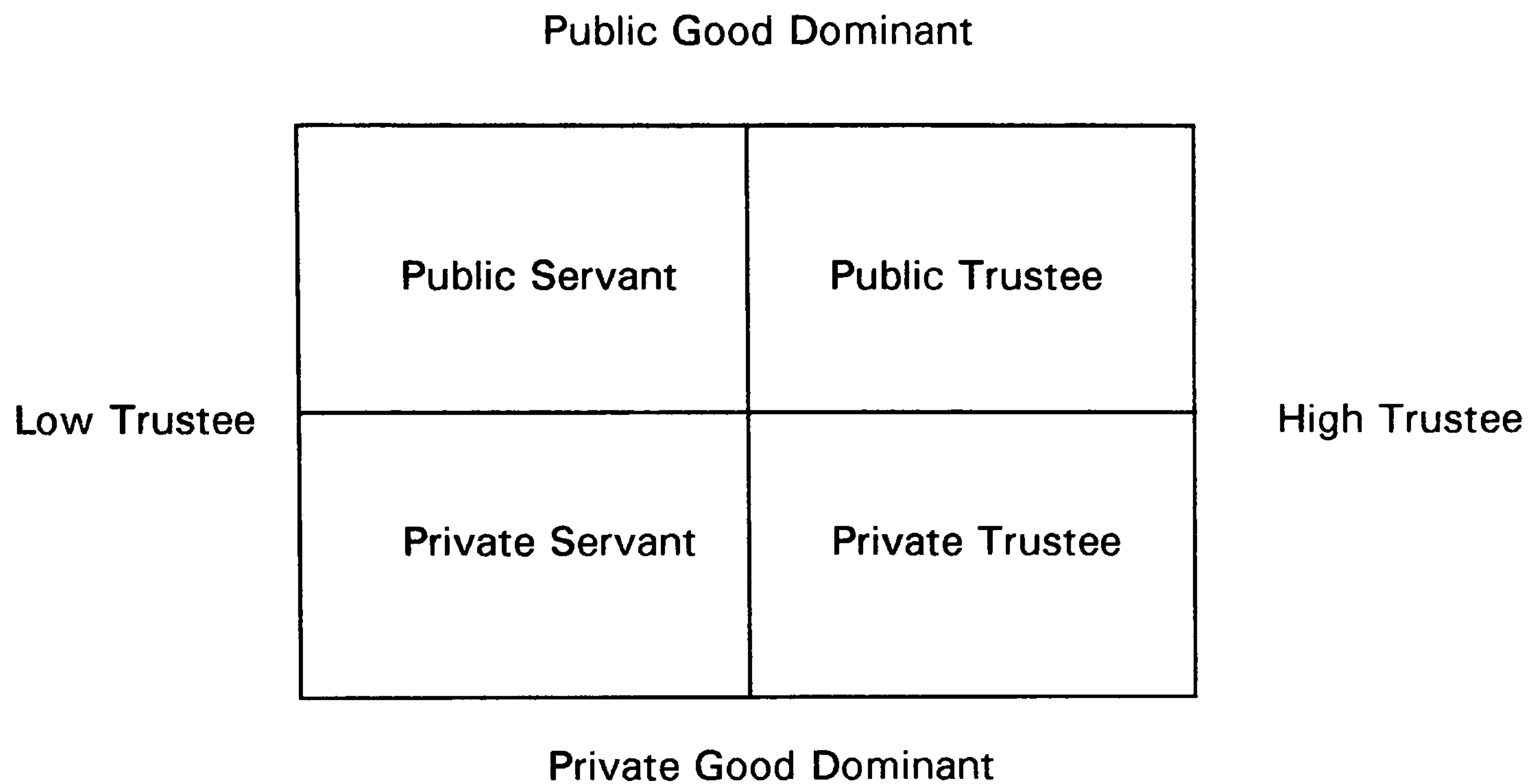
Public Trustee - social and political concerns over responsiveness, equity, susceptibility to self interest etc. in areas such as courts and judges made these services impossible to privatise (but support services could be contracted out);

Private Trustee - there was little economic reason to maintain these in the public sector unless accountability was required, e.g. lawyers and prosecutors, but some form of regulation may be required to avoid self-interest;

Private Servant - private sector opportunities existed to deliver services in parallel or instead of the state, e.g. manufacturing, road transport - relatively easy to privatise if sufficient competition was available;

Public Servant - provision of similar services to private servant in concept, except that they were large scale and were effectively monopolies - privatisation decisions and methods were complex and generally would not achieve consensus. Hence political power was exerted to resolve deadlocks in the structural change process.

PERCEPTIONS OF ORGANISATIONAL ROLES Figure 4.1



(Meyers and Wijnholds, 1990)

This approach was useful for decisions advocating privatisation or restructuring of services where the consensus was that they were clearly in the Private Servant quadrant, and to a lesser extent for services seen by the general public as being Private Trustees, provided adequate safeguards were present. It indicated caution for Public Servants, where distrust over future self interest actions could arise, particularly if adequate regulatory controls were not seen by users of the service to be introduced.

The problem with this approach occurred where the service may span the quadrants according to how it was viewed, e.g. from an political view it may be a Public Servant, from an economic view it may be a Private Servant, but from a social view it may be a Public Trustee, e.g. the Post Office, or ports (depending on which particular function of their role was considered and in which country).

From a purely economic perspective it appeared that most services could be fully privatised or restructured. If self-interest aspects were likely to arise then regulatory controls were needed. It was the role that was being performed, rather than the service that was provided, which was crucial in determining the method of privatisation or restructuring.

1.3 Effects of Privatisation and Restructuring Policies

A considerable body of literature has developed on the greater use of the private sector to deliver services formerly provided by the state. Generally the literature agreed that where there was like for like competition the private sector provided superior measures. However, in the absence of this Griffiths and Wall (1993) summarised the arguments as "it has not been convincingly demonstrated that the form of ownership of an organization is the most important influence on its performance. Of much greater importance would seem to be the degree of competition and the effectiveness of regulatory bodies." This qualification of ownership was supported by Vickers and Yarrow (1988, 1991) who added market structure and politics as variables; Beesley (1992) who emphasised the role of regulators and price controls; Kay and Thompson (1986) who stressed the role of competition and were sceptical about the value of privatisation outside a competitive environment. Hutchinson (1991) concluded that public ownership was found to correspond with higher levels of growth in labour productivity, while private ownership gave rise to higher levels of profits.

A major longitudinal study of privatised organisations in the UK was undertaken by Parker and others leading to somewhat different detailed conclusions, but overall the results agreed with the tone of these views. Parker and Hartley (1991a) concluded that organisational status changes did not appear to guarantee improved financial performance and that in general changes in organisational status led to improvements in employment efficiency (1991b). Essentially inconclusive findings for hypotheses on changes in internal management structure and philosophies producing an associated change in performance were reported by Dunsire (1991). Evans *et al* (1992) argued that collective labour institutions do not necessarily impair economic efficiency and pointed to enduring weaknesses in human capital and technology instead, thus implying that scope for sustainable improvements may be neither as great nor as enduring as could be expected from the literature.

1.4 Implications for Structural Change Policies

In considering politics and the economic role of ownership, Rowthorn and Chang (1993: 60-62) point out that "there are two concepts of economic efficiency in the literature: static and dynamic. Static efficiency is loosely defined as efficiency in the use of existing resources, whereas dynamic efficiency is loosely defined as efficiency in the generation of new resources through sustained innovation and structural change." According to them, major studies have concentrated on static efficiency aspects of privatisation on the assumption that this will "greatly weaken the political pressures for subsidization". With regard to dynamic efficiency they thought that "it is not only agents in the public sector that can block structural change but also private sector agents, because what matters here is political influence and not ownership *per se*.... If public enterprises are worse at structural change than private firms, this will be primarily because the state is, for one reason or another, less able to confront the

resistance from potentially redundant managers, workers and others related to public enterprises concerned (for example, suppliers, consumers) than it would be if these enterprises were private."

Both static and dynamic efficiency perspectives on ownership presumed freedom of private sector managerial action and gave insufficient consideration to the constraints on strategic choice imposed by continuing obligations to provide essential services. Essential services included those functions required to be provided by law, as well as social expectations for those services customarily provided under public ownership. Oversight and control of 'public interest' aspects was generally treated as part of the regulatory function on transfer of ownership to the private sector. The literature generally ignored the restrictions on freedom of managerial actions this could imply.

A partial explanation for the contradictory findings on productivity and management was offered by Colling and Ferner (1992) in their study of control and autonomy in privatised utilities as network organisations. They found that regulation exerted a strong centralising influence, since corporate management was aware of the damaging effects of variations in quality of service on public perceptions and on the attitude of the regulator, thus intensifying the conflict between the goals of the business unit and the centre.

Helm and Thompson (1991) looked at the longer-term effects of privatisation on transport infrastructure investment decisions, capacity levels and service quality on the assumption that an efficient level of investment depended on the interaction between a firm's strategies and regulatory pricing and quality constraints. Their conclusion on freedom of action was that for most transport infrastructure, competitive supply was either infeasible or highly imperfect, and allowing prices to follow the short run efficient path raised obvious problems of incentive compatibility. This raised the queries of what are the fundamental strategic goals of the privatised organisation?, and will long-term investment needs give way to short-term demands from investors for high returns on capital employed?

Commonly accepted benefits from the privatisation (or restructuring) process were reductions in cost and improvements in service levels arising from labour reform and associated cultural change in working practices and attitudes to the customer. The literature generally seemed to assume that these benefits to the customer would flow automatically from a change in management philosophy caused by the market (e.g. Pirie, 1985). United Research, supported by the Centre for Business Strategy at the London Business School (1990), carried out a series of interviews with fifty executives (of board rank) from privatised companies, those about to be privatised or government agencies adopting market based philosophies. They found that cultural change was believed to be the most important issue in the success of privatisation. The executives commented that after privatisation customers suddenly raised their expectations, often not appreciating the scale of internal changes being undertaken.

The effects of these expectations in influencing strategic choice was considered by Colling and Ferner (1992), who made the point that the political pressure to avoid industrial relations flare-ups in the approach to flotation was intense, implying that cultural change could take place only after privatisation. Anecdotal evidence of a rise in customer complaints in the electricity, water and gas industries after privatisation supported the raised customer expectations, but implied dissatisfaction with the extent of labour reductions and cultural change, suggesting that the balance between service and investor demands was too heavily swayed towards investors' expectations.

Could it be that a cause of inconsistencies in research findings lay in assumptions (or popular perceptions) that there was no conflict between a 'bottom line' results-driven managerial philosophy and a concentration on quality of output (i.e. 'professional' philosophy) when considering obligations in the public interest, e.g. maintenance of an existing transport infrastructure? This implied some imperfection in the efficiency of market forces, which was generally addressed by the powers of a regulator. Harrow and Willcocks (1990) provided a suggestion as to the causes of customer dissatisfaction when commenting that the differing organisational contexts of private and public service management demonstrated that efforts to close the gap between the managerial practices of the sectors was inappropriate at best, and at worst represented risk-taking on an extensive scale. Such efforts were likely to be thwarted by the possibility that, within the public services, 'management' took place in the professional or service spheres, and policy spheres, as well as in the management sphere.

This raised the query of what was the appropriate administrative regime for organisations. Perry and Rainey (1988) called for further research into the public-private distinction and the dimensionality and dynamics of public versus private influences on organisations. Voytek (1991) reviewed the literature and called for a serious rethinking of conventional wisdom surrounding public management to be undertaken, and a review made of the issues raised by privatisation and commercially oriented restructuring in terms of the standards of efficiency, equity, accountability, and authority.

The measurement criteria for the private sector was profits achieved. Charges to customers by regulated industries in the UK were controlled by the general regulatory formulae of $RPI - X\%$ (Beesley and Littlechild, 1991). For unregulated industries no such controls existed. Comparative privatisation studies of service industries have not split the level of return made on each activity undertaken by purpose for its delivery, e.g. for purely profit making reasons or because it was undertaken in the 'public interest'. Moreover, managements' freedom of action to take advantage of opportunities posed by structural change may have been tempered by the threat of regulatory controls.

A general belief has emerged that the public sector should not be involved in the operation of commercial businesses which required innovative private sector management philosophies, (e.g. National Freight Corporation in road transport where

strong competition exists). However, there was no academic consensus on the role of managerial philosophies concerned with professional service delivery in industries of strategic national importance, or where competition did not exist or was minimal. It seemed that an ambiguity of purpose was created by the distinction between public and private sectors (Perry and Rainey, 1988).

Effectively, for certain social functions there was a third bridging category, where services were seemingly carried out fundamentally to meet the demands of continuing obligations to the public interest, e.g. telephone call boxes in rural areas. These activities by former public sector organisations were apparently carried out primarily at a cost and investment recovery charge, i.e. with a nominal profit element, rather than being charged at a 'what the market will bear' profit (Nutt and Backoff, 1994).

These implications of public/private sector Boundary-spanning, i.e. the 'pseudo public/private sector' (Whittington, 1993), may have caused the lack of measurable success in various privatisations in differing industries (Dunsire, 1991; Parker and Hartley, 1991a). Managements' freedom of action may have been further curtailed by inherent tensions in structural change which prevented the achievement of an appropriate balance between the expectations of all stakeholders.

1.5 The Problem Area in Structural Change

The privatisation programmes did not appear to be as comparable as researchers hoped. There are tensions between expectations from designers of the programmes, stakeholders, and employees which arose from considerations of governance. These become sources of potential conflict and managers were expected to reconcile these tensions. Nutt & Backoff (1994: 135) held that distinguishing features of public sector organisations include "... constraints that limit flexibility and autonomy, goals that are vague and in dispute, limited leader authority, political interference and scrutiny by outsiders as strategy is formed, broad accountability, and continually shifting performance expectations."

They suggested that, since organisations are being pushed and pulled in several ways by important issues in structural change, these issues should be viewed in terms of the tensions generated. The basic character of these tensions could be expressed by two dimensions:

the extent to which the service was regulatory and controlled, or open and flexible:

this was similar to the concept of public or private goods dominant continuum (Meyers and Wijnholds, 1990), ranging from preservation of items or services which can only be done collectively by the state, e.g. defence, to those which can be contracted out to companies, e.g. security guards;

the tension is between maintenance of existing standards and innovation in service delivery;

the extent to which the service was internally or externally dominant:

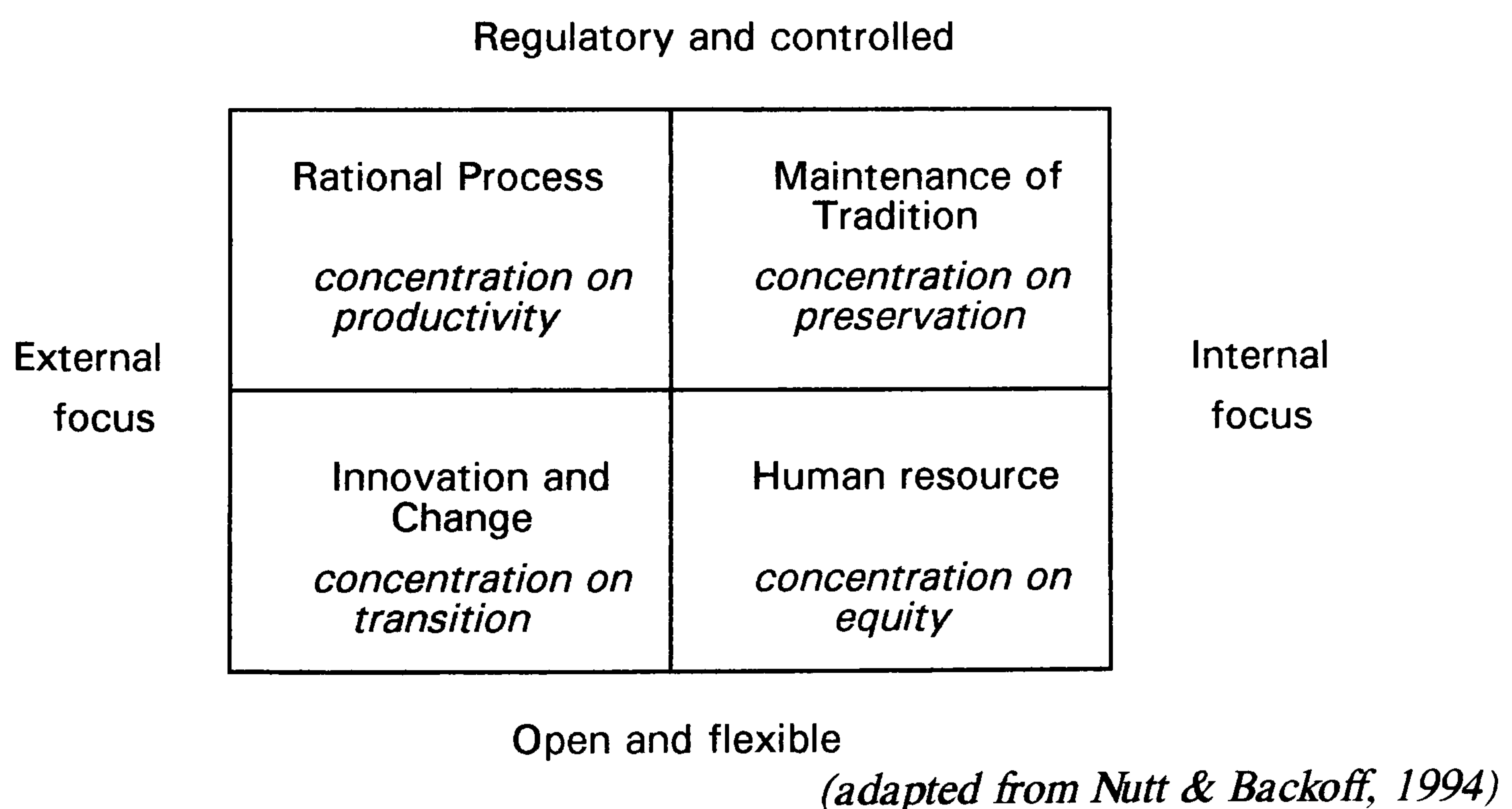
this was similar to the concept of decision-making and behaviours on a public policy and regulation continuum (Meyers and Wijnholds, 1990), ranging from public professionalism and civic responsibility, e.g. judges, to implementation roles requiring close contact with, and adaptation to, changing markets, e.g. customer service tasks;

the tension is between meeting customer demands for increasing productivity whilst maintaining minimum standards, and employee demands for professional freedom and secure employment conditions.

These dimensions produced four quadrants as shown in Figure 4.2, which has been adapted to reflect Meyers and Wijnholds' (1990) concept of structural change dimensions. The relative ease or difficulty of implementing decisions depended on inherent opposing tensions. The success of the outcome of change would depend on achieving balance between all opposing forces. Consequently if one or more tensions were unbalanced then expectations of stakeholders (e.g. customers, investors, staff, regulators) would be unfulfilled.

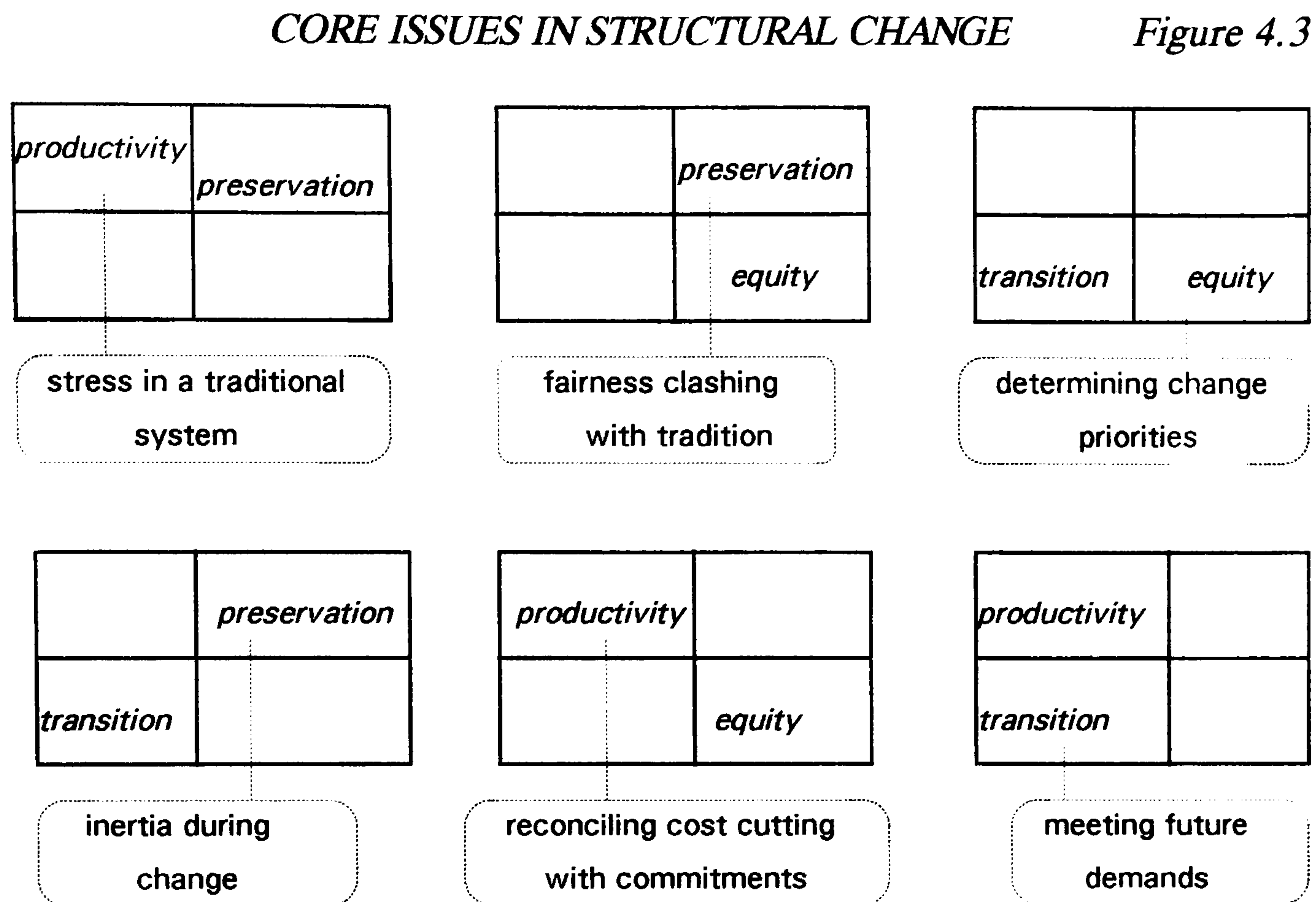
THE PROBLEM AREA IN STRUCTURAL CHANGE

Figure 4.2



An examination of the quadrants showed that there were potentially six core issues to consider in structural change, representing conflicting stakeholder expectations which could create opposing generic tensions.

Figure 4.3 shows that these six tensions could be depicted as:



(adapted from Nutt & Backoff, 1994)

The core issues and associated tensions were:

stress in the traditional public sector service delivery system leading to productivity / preservation tensions:

created by conflicting customer demands for increasing productivity whilst simultaneously increasing standards of service delivery; produced stress in the traditional organisation, leading to perceived inefficiency and need for structural change.

fairness clashing with tradition leading to preservation / equity tensions:

created by conflicting customer demands for increasing standards of service delivery, and employee demands for professional freedom and secure employment conditions; leading to perceived over-manning and need for structural change.

determining change priorities leading to transition / equity tensions:

created by conflicting investor demands for private sector style innovation in service delivery and employee demands for professional freedom and secure employment conditions; producing goals that were vague and in dispute.

inertia during change leading to preservation / transition tensions:

created by conflicting regulatory demands for the maintenance of minimum expected legal and professional standards of service delivery and investor demands for innovation in service delivery; produced an impression of inertia, leading to accusations that structural change has merely produced a private sector monopoly out of a public sector monopoly, but counter accusations of broad accountability, political interference and ill informed scrutiny by outsiders as strategy was formed.

reconciling cost cutting with commitments leading to productivity / equity tensions:

created by demands of investors for increasing returns on capital, plus regulators' and customers' demands for cost reductions whilst maintaining minimum legal and professional standards of service; placed pressure for reductions in employee numbers and benefits, which conflicted with employee demands for professional freedom and secure employment conditions.

meeting future demands leading to productivity / transition tensions:

created by continually shifting performance expectations and conflicting demands for maintaining minimum expected legal and professional standards of service delivery; produced constraints that limited flexibility and autonomy.

There was cause therefore to suspect that management's freedom of action in a 'pseudo public/private sector' (Whittington, 1993) could be affected in some way and the ultimate success of structural change could be compromised. This could arise from opposing viewpoints of public and private sector attributes. The inconsistencies in previously reported research results showed evidence of decision-making constraints in a complex area of changing structures.

2/ UNIQUENESS OF THE PORTS FROM AN ECONOMIC VIEW

There is a vast economic literature on privatisation in general and the utility industries in particular; however no studies of governance and economic trust in the ports' privatisations have been located. In the economics literature there are reports of the sale proceeds of Associated British Ports and Sealink (Bruce, 1986), whilst in the transport literature Eyre (1990) held the view that ports are best operated privately; Frankel (1992) treated the subject as a method for reducing public debt. Neither of these views reflects the complexities of ports restructuring.

This led to conjecture on what comparisons could be made between the privatised monopoly utility industries (gas, water, electricity, telephone) and the transport industry. The significant difference between these industries is in their governance (including scale of activities and economic regulation). In the UK the utility activities

are undertaken by (economic) regulated companies with local monopolies, whereas in SA they are mainly undertaken by parastatal organisations (i.e. a state owned organisation run on commercial lines) or municipalities, and there is no economic regulator. Major transport activities (air, rail and road) are organised along parastatal lines in SA with increasing use of private carriers (internal airlines, trucking and buses for example). In the UK transport is effectively laissez-faire for road, with bus and rail increasingly operated by franchise arrangements. There is an economic regulator for rail, but there is no regulator for the ports.

Comparisons between industries is complicated by the existence of varying regulatory actions and the differing influences on operational activities undertaken by privatised organisations. These complications are sufficiently major to preclude cross-industry comparisons unless the regulatory arrangements are essentially similar - unless 'like is compared to like' the validity of conclusions made must be heavily qualified. Thus 'within industry only' studies are preferable if the validity of conclusions is to be enhanced. Whilst comparisons can be made between the deregulated freight, bus and rail industries on competition or franchising grounds, there are distinct contrasts with ports, notably differing international views on structure and regulation; the differing ease with which new markets and new locations can be explored, as well as the incomparable barriers to entry and exit. Further, there is a fundamental difference in operational concepts between geographically static ports with substantial long-term investment needs and those for geographically mobile transport organisations with shorter-term requirements for lower levels of capital. The economic issues for ports with long lifespans (Stirling, 1990, commented that recent cargo terminal developments will have a life beyond the year 2050) and capital investment of hundreds of million pounds are different from those for a 5 year (or more) franchise with leased rolling stock in the current rail privatisations for example.

A comparison study of structural change should thus be limited to transport organisations with similar purposes and requirements. For the major privatised UK transport companies, British Airports Authority could conceptually be compared to Associated British Ports as both air and seaports share a similar purpose (an interchange of transport nodes). They are not constrained by an economic regulatory authority, but varying operational controlling influences are exerted, e.g. the Civil Aviation Authority acting as a direct central planning or co-ordinating body for airports, and a different form of indirect control being exercised by government on ports through statutory means, e.g. Harbours Act 1964. However, neither company is totally representative of its industry and their land utilisation and non-core activities vary in detail because of differing customer characteristics. This together with the differing control arrangements raised doubts over the validity of conclusions from such an economic study.

A global multi-national, multi-industry study would be beyond the scope of a PhD, thus research was restricted to a comparison of contrasting structural changes that were currently underway in the global ports industry. An international comparison of ports offered the best prospect of enhancing the validity of the research.

2.1 *Economic Trust*

Foreman-Peck and Millward (1994: 346) noted that "the strategic view of competition policy emphasizes low trust and regulation, rather than state ownership, for 'natural monopoly', but the regulator must still be worthy of trust if this policy is to be effective." The issue of 'economic trust' in the degree and extent of structural change was raised, ranging between the SA principle of splitting the referee and player roles, and the UK principle of full market competition, where there is *no* economic regulator for the ports. Hence the ports managers themselves are placed in a position of primary trust.

This places a different emphasis on the way strategic issues are identified and viewed by decision makers. The strategic and management problem area was identified by Handy (1994: 70) who stated "Organizations as well as individuals have come to realise that they have an essential core, a core of necessary jobs and necessary people, a core which is surrounded by an open flexible space, which they fill with flexible workers and flexible supply contracts. The strategic issue for organizations, nowadays, is to decide what activities and which people to put in which space. It is not always obvious. Looked at in another way, businesses have core obligations to their shareholders, but their responsibilities go much further. Finding the right balance between duty and a wider responsibility is a dilemma at the heart of capitalism."

The crucial factor in determining the balance of responsibilities is that in the UK there is no regulatory system for ports (in the economic sense, although there is the right of appeal to the Secretary of State over charges). Consequently, a vast proportion of the economics literature which depends on the existence of a regulator to curb monopolistic tendencies towards exploitation of a customer base is inappropriate for ports. The effective reason for absence of a regulatory system is summed up as:

"Does ports privatisation - UK style - mean an increase in competition? I do not think so. Publicly-owned ports compete for traffic too. A change of owner will not alter this." (UA - A).

In a conference speech, Thomas (1992) summarised the post war history of the ports and the privatisation process, and drew attention to intense competition in the industry because of over capacity.

"The risk and reward for the shippers, agents and shipowners is countered by their ability to relocate. If any port seeks to impose terms and conditions which threaten the port users then they are only too willing to exercise the right of relocation. This is a clear characteristic of UK and North West European ports industry and may not apply in countries such as South Africa or Australia where the 1,000 mile interval between major ports effectively grants a local monopoly." (UP - CB).

A group of priority stakeholders could be present, either explicitly or implicitly. For example, when considering conflicts of priority in an estuary, Booth (1994) argues the case for commercial shipping, whereas Bartlett (1995) counters with the case for recreational use. On a macro level:

"I believe that there is no single correct answer for all the countries in the world. In cases where you have ports close to each other, the structures and privatisation decisions will differ vastly from the situation where you have ports several hundred(s) of kilometres apart. In S.A., it is essential to keep Port Authority under public domain and to privatise Port Operations. In our case, the Ports are the lungs of the economy. Therefore they must be used to manipulate the traffic flows, the development of their hinterlands, as well as the growth of the economy of the whole country." (SP - T).

Goss (1992) dealt with general aspects of the public interest in the privatisation of ports. Although he accepted that there are likely to be disadvantages in any policy that is followed, he felt that:

- there was a strong case for the retention of public sector port authorities;
- ports should compete with one another;
- they should not receive subsidies;
- policies should be defined as securing the minimum generalised transport cost;
- ports should explore the use of the private sector as terminal operators;
- they should employ a small permanent staff of experts with a reasonable turnover;
- there should be no central (national) planning or co-ordinating body.

Thus another arrangement to central planning, regulation or retention of public sector port authorities to safeguard the "balance between duty and a wider responsibility" (Handy, 1994: 70) was required. This lay in the area of indirect checks and balances influencing decision-making by port managers.

3/ UNIQUENESS OF THE PORTS FROM A LEGAL VIEW

In a conference speech before the passage of the Ports Act enabling privatisation of the trust ports, the Secretary of State (1991) declared that the privatisation of Associated British Ports (ABP) and Sealink "has demonstrated too that we can confidently look to ports in the private sector to continue to discharge their duties as harbour authorities responsibly", as well as reiterating the benefits government saw for privatisation of access to share and loan capital; release for alternative development of land no longer wanted and the possibility of employee ownership or employees having a financial stake in the port. In addition he drew attention to the transformation in working practices that followed the abolition of the National Dock Labour Scheme. At the same conference, Finney (1991) pointed out that privatisation offered an opportunity to form viable independent trading groups competitive to ABP.

The uniqueness of public interest safeguards in the structural change of ports was in the concept of decision-making spanning a private/public sector divide, i.e. in:

"... the essential nature of most major ports. Harbour authorities are not like any other commercial businesses. Most combine the characteristics both of a commercial business and a public service body. A privatised harbour authority is obliged to comply with its statutory duties just as much as a port trust or a municipal harbour authority." (UB - A).

This meant that:

"It is not generally recognised that, even though they are privatised, UK ports are directly answerable to Parliament. The Acts relating to each port place certain public duties on port operators, while granting certain rights and privileges. If a port ignores these the public have, under certain conditions, direct redress to the Secretary of State." (UP - CB).

The legal implications of a business failure are onerous and in the UK an Act of Parliament is required to completely close a port (Douglas and Geen 1993), although existing legislation allows partial closure of facilities and services provided, e.g. drydocking. Lynch (1994: 121) pointed out that Mersey Docks and Harbour Company was as "nearly normal a public limited liability company as possible, having regard to the fact that it remains under a statutory duty to maintain, operate and improve the port of Liverpool of which it could be relieved only by an Act of Parliament." Since ports are bound by individual Acts their perceived freedom of action is constrained by the *ultra vires* doctrine, which means that "unlike a natural person [or company] who can in general do whatever he pleases so long as it is not forbidden by law or contrary to law, a statutory corporation can only do those things which it is authorised to do by statute, directly or by implication". (Cross and Bailey, 1986: 1-08).

These legal aspects of ports operations should therefore act to protect the customer in the absence of a regulator but two factors lessen the possible effect. Firstly, legal action generally begins after an event has taken place and is lengthy, whereas a regulator can act more effectively before the event occurs. Secondly, as one chief executive pointed out, "Many public ports have wide powers and can diversify anyway..." (UP - N), raising the possibility of diversification being a primary managerial effort after privatisation to satisfy investors' demands (Goold and Luchs, 1993). An indication of this potential major concern was given by the decision of the House of Lords (1991) to reject a private bill from a port seeking to leave the public sector as, amongst other reasons, there was no guarantee that the original shareholders would not sell to a predatory outsider which could endanger its ability to run the port. For example the potential future effects of structural change were seen by two participants as:

"There may be conflict where the port operator must decide between investors' interest or the public good. Safety could be compromised." (UA - A) and "The application of traditional shipping (commercial) and marine (public) law in a fully privatised harbour. An obvious example is the right of refuge that a distressed ship has versus the right of private operators to "keep the quays clear" for commercial ships." (SP - C).

Woods (1992), discussed the objectives set for the privatisation of the trust ports. Generally, there were three principal criteria - maximum proceeds; quality of the conservancy function; and the level of employee participation. "The first port to privatise, Tees & Hartlepool, included these three principal objectives of sale in its offering documents. In the event it found itself with a number of bids, one of which best satisfied the price objective, a second appeared to the board to best satisfy the conservancy objective, and a third best satisfied the employee participation objective. It is hardly surprising that its board felt best able to select the bidder who best satisfied the objective which had underlain the business for so long. [the decision was contentious, but supported by the government. No such conflicts occurred in the remaining privatisations] ...it is impossible for the authority to exact undertakings from the purchaser as to the future conduct of the conservancy which are enforceable by it after dissolution. The authority therefore has to pay particular regard to the quality of the assurance given to it on the conservancy by the purchaser and to seek ways and means of giving incentives to the purchaser to honour those assurances."

The potential conflict between investors and stakeholders was illustrated by ports privatised through the stock market, rather than through sales to other organisations or to management and employees. Two ports entered the market by placing - Forth Ports PLC in March 1992, and Clydeport PLC in December 1994. The placing documents are predominantly financially oriented and only one paragraph in each indicates contextual constraints:

Forth Ports PLC (page 17) - "Section 5 of the Forth Ports Authority Order Confirmation Act 1969 provides that the general duties of the company are:-

- (a) to provide, maintain, operate and improve such port and harbour services and facilities in, or in the vicinity of, the Estuary and its ports as it considers necessary or desirable and to take such action as it considers incidental to the provision of such services and facilities; and
- (b) to take such action as it considers necessary or desirable or incidental to the improvement and conservancy of the Estuary.

Forth Ports has an obligation to provide port facilities within the Estuary. Forth Ports is responsible for the provision of a pilotage service and for the granting of all tug, dredging and works licences in the Estuary. The Company is also responsible for the provision and maintenance of certain lights, buoys and beacons and is empowered to make byelaws on the use of the Estuary and the Company's ports."

Clydeport PLC (page 18) - "The principal duty of Clydeport Operations is imposed by Section 13 of the 1965 Order, namely "to take such steps from time to time as they may consider necessary for the maintenance or improvement of the port and the accommodation and facilities (including navigational facilities) afforded therein or connected therewith". The principal duty is accordingly set out in broad terms and whilst an element of discretion is afforded to Clydeport operations in terms of the Order, this discretion requires to be exercised reasonably. Section 33 of the Harbours, Docks & Piers Clauses Act 1847 is incorporated into the 1965 Order. This provision confirms that Clydeport Operations has a duty to keep the port open for persons wishing to use it, subject to their paying the appropriate dues and complying with the requirements of the Harbour Master. Clydeport Operations could not therefore utilise the discretion available to it under Section 13 of the 1965 Order to discontinue the port undertaking in its entirety."

Therefore, it is not until the Clydeport flotation that it can be said that investors and managers have had spelt out the legal implications for the existence of a port, the maintenance of the conservancy function and the potential constraints that these imposed on managerial freedom of action.

4/ EFFECT OF ECONOMIC AND LEGAL TENSIONS

The choice of which services to privatise and which services should remain in the public sector was largely influenced by political, economic and social considerations regarding the nature of the service. Following the Meyers and Wijnholds' (1990) view of choice being determined by two dimensions of the extent to which the service is public or private goods dominant, and the extent to which the service requires decision-making and behaviours oriented to public policy and regulation, then:

Public Trustee - in SA the social and political concerns over responsiveness, equity, susceptibility to self interest etc. made it necessary to separate statutory services and commercial services; in the UK this was not generally viewed as necessary as few ports retained trustee status, e.g. Harwich;

Private Trustee - in UK there was little political, economic or social reason to maintain statutory services in the public sector since accountability was provided by a right of appeal as a form of regulation to avoid self-interest;

Private Servant - in both SA and UK private sector opportunities existed to deliver commercial services in parallel or instead of the state; however only in the UK was it relatively easy to privatise all operations as sufficient competition was available;

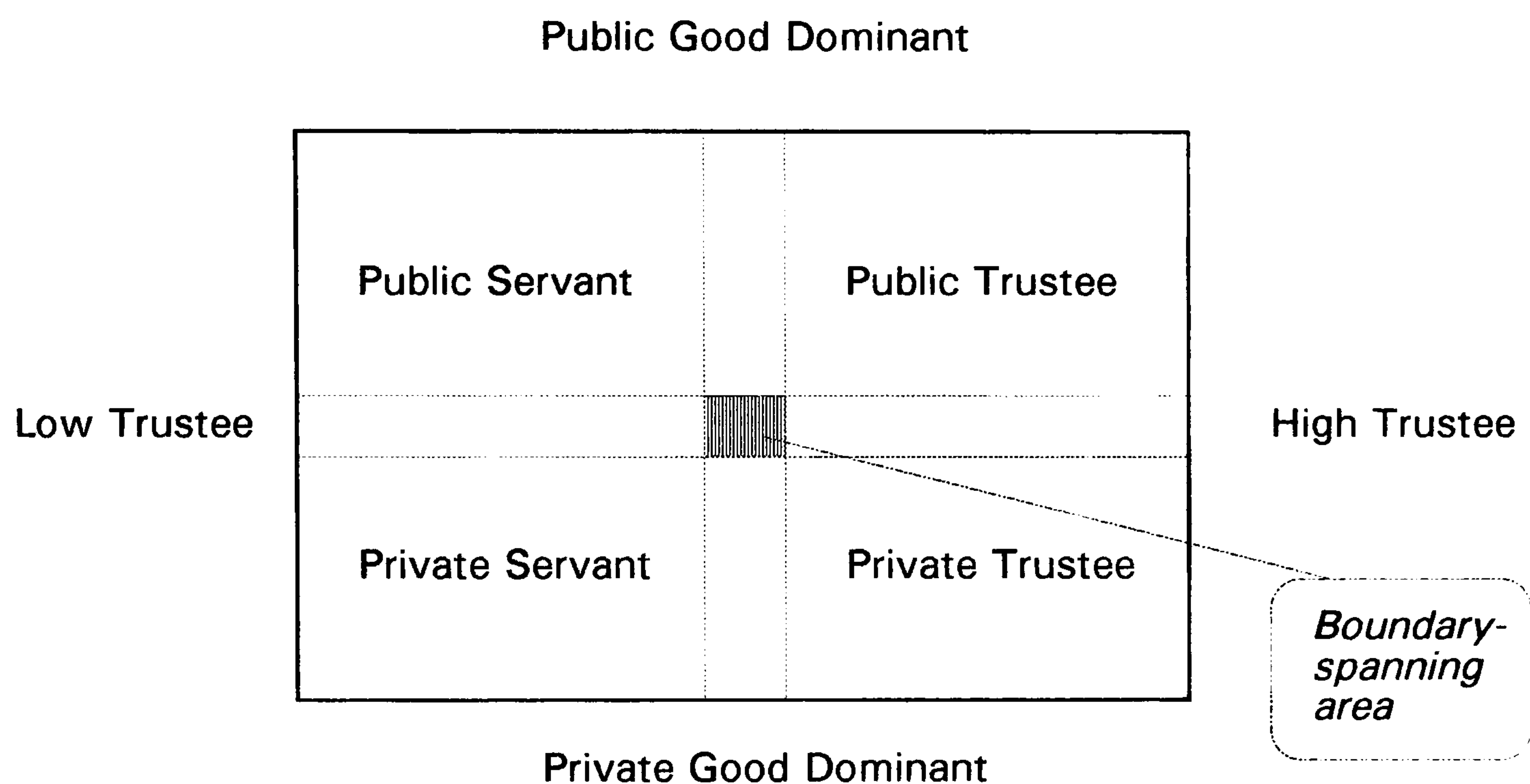
Public Servant - in SA because of the large scale and national strategic nature of the ports it made political, economic and social sense to retain the monopoly in

the public sector for the present; in the UK only certain ports retained public sector status (e.g. Dover) for economic reasons - but the privatisation decisions and methods of sale were complex and did not achieve consensus; political power was exerted to over-rule social objections.

The real problem seemed to be that the ports as a service spanned the divisions between quadrants according to how a particular function of the service was considered and in which country it was viewed, as shown in Figure 4.4.

PORTS SPANNING THE ORGANISATIONAL ROLES

Figure 4.4



(adapted from Meyers and Wijnholds, 1990)

There was distrust over future self interest actions in the UK since adequate regulatory controls were not seen by users of the service to be introduced:

"Management, i.e. the "Directing Minds" - by the 'public sector' has not often been in the 'public interest' so don't expect much change there! However, the 'Duty of Care', cannot be left to the private sector for the reasons you postulate.
- Let's hear it for OFPOT!! (UB - D)

It was the role that was being performed, rather than the service that was provided, which was crucial in determining privatisation or restructuring status and method of transfer.

5/ MULTIPLE SCENARIO THEME

As discussed in Chapter 2, the first subject Research Question:

(Key Question - 1)

Are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

was implicitly concerned with the *future role of agency* from a Strategic Choice Perspective. To explain the answer it would be necessary to ascertain if the literature would be supported by research participants. This would firstly establish whether or not the assumed Boundary-spanning research area existed (as discussed in Chapter 3), and secondly demonstrate the appropriateness of adopting the Strategic Choice Perspective to explain the research results.

The previous sections identified general tensions in structural change and the unique economic and legal nature of ports. The first essential element in using multiple scenarios as a research tool is for the researcher to construct a theme for evaluation from his perceptions of current or probable events (Schwartz, 1991). This theme is composed of superficially simple statements that capture the essence of a future state for an organisation. In order to have confidence in their ability to do this, these statements must firstly be derived from a supportable base (in this case from a holistic perspective of the multi-disciplinary literature), and secondly be provocative so that they challenge assumptions and generate thought about potential outcomes.

The Economic model of structural change was based on a fundamental presumption of the rationality of decisions to maximise the use of scarce resources. This assumed that the way a particular organisation was governed was determined by a desire to maximise profits. The model was seen to be most appropriate for private sector businesses, but was also held to be useful for public sector organisations because of its emphasis on the efficient use of assets. Consequently, it was commonly used as the justification for privatisation and restructuring.

Hence a substantial majority of research participants were likely to perceive that potential future conflict between 'public' and 'private' interests was containable within the strategic choice process. This could be tested by opposing opportunity/threat scenario narratives and measured by the numbers of participants favouring an opportunity scenario. This led to the multiple scenario theme of conflict and the Research Expectation that

(Research Expectation -1a)

Structural change ought to be perceived as improving 'public interest' governance.

If either the opportunity scenario or the treat scenario was strongly favoured by participants, this would indicate that the Boundary-spanning area did not exist. If

neither scenario was strongly favoured, this implied that decision-makers had an agency role in a Boundary-spanning area since in the Power model there was an implicit presumption that politics determined the strategic choice exercised in the organisation.

The emphasis of this model was on control over external constraints, internal power relationships and organisational structure. Resource allocation, decision-making and performance were seen to be heavily influenced by power struggles in internal and external relationships leading to tensions that required the exercise of power to resolve conflict. This model could be seen as the underlying driver for the process of privatisation and restructuring in the ports. The existence of power to influence the direction of change, i.e. strategy, raised tensions between the potentially conflicting desires of multiple stakeholders for the outcome of change. Resolution of these tensions determined the overall shape of objectives and goals in a strategic corporate plan. The Economic model could be seen as identifying the governance concepts to be addressed in the corporate plan, but previous sections identified a potential for conflict between 'public' and 'private' interests.

This led to the need to identify potential circumstances through which conflict could arise in order to construct detailed opposing opportunity/threat scenarios.

5.1 Conflict Between Structural Constraints and Freedom in Selection of Strategy

The starting point in identifying scenario circumstances of potential conflict was an experiential perception of current changes in policy in the global ports industry. This involved a conceptual framework of change - where will the differences lie? - what are the new performance drivers? - what are the manifestations of the problems involved with price competition based on an industry structure where not all the elements were included in general perceptions? An analysis of the contents of the Clyde placing and Forth flotation documents (see Section 3) revealed a surprisingly large proportion of financial business factors to other references, such as powers and duties, details of activities undertaken, etc. Little was said on the levels of trade, or rising transportation system costs leading to increased spending by organisations, or the active seeking of cuts in overall costs. This raised the question of the extent to which investors were aware of the long-term commitments of the business. An explicit or implicit subsidy could be present (in the sense of continuing to maintain some aspects of the business which could generate lower returns on investment other than cargo handling or land utilisation or other activities).

Investors might have a natural view of privatisation based on the experiences of large UK utility privatisations, e.g. a belief in the benefits of private sector management and control by market forces. This view would imply similar beliefs for when ports with differing policies and organisational structures competed in volatile trading conditions and on the outcome of competition for individual ports and the ports system as a whole. The nature of this belief could be along the lines of high

performance in the public sector leading to improved performance of the supply chain; high performance in the private sector leading to profitability. This was not to say a privatised port would automatically generate a better return on investment than a public sector port, but corporate activity that was based on economic principles would externalise those costs which did not benefit the individual organisation. Broadly, this trend towards externalising costs was demonstrated by the privatised UK utilities which adopted staffing reductions and contracting out as methods of cost control.

However, a major distinction between privatised utilities and ports existed - there is no economic regulatory system for the ports. As Foreman-Peck and Millward (1994) pointed out it was a question of economic trust - if this was poor then there was a specially appointed regulator for the industry; if this was good then there was no regulation with market forces acting as a referee on the activities of the organisation. The unregulated degree of economic trust in ports is as much a reflection of the ability of senior decision-makers and their strategy, as it is a reflection of the control influences of market forces. It is also a reflection of the societal controls (i.e. public interest embodied in legal and political actions) that are placed on ports. Thus there was a fundamental distinction between structural changes in the ports and the utilities industries - the explicit degree of competition that was already present in the ports industry before privatisation in the UK (as illustrated by the trade and financial statistics in the Introduction) and the implicit checks and balances on strategic choice in the UK and SA.

Structural change to private sector philosophies appeared to have altered objective controls on factors such as purchasing flexibility, freedom of investment, and financing the borrowing of money in order to reduce public debt. It appeared that where there was a political master in the public sector, the priorities were political value; adequately controlled budget; good cost control, etc., but with perceived bureaucratic interference and restrictive planning. Alternatively, where there was a shareholder, the subjective priorities changed to profitability; image; public relations; ethics of decision-making and top management rewards; etc. The subjective levels of strategic decision-making seemed to be increased by the change of ownership.

The underlying dialectic assumption was that achieving high performance objectives in the public sector led to improved performance of the transport network; whereas high performance objectives in the private sector led to being economically profitable. Thus a potential dilemma was envisaged. In terms of business performance these objectives could involve trade-offs leading to an increase or decrease in effectiveness/efficiency, environmental management, social responsibility, business ethics etc. These were not measures of success or failure, but implications of advantages or disadvantages of change.

Effectively then, the multiple scenarios circumstances should test perceptions of a fundamental commercial rationale for the existence of ports in an international transport system with its consequential effect on managerial motives. The presumption drawn from the multi-disciplinary literature was that constraints on

freedom of managerial choice of strategy existed which could lead to conflict that would have to be resolved by an exercise of power. This potential for conflict existed between the individual objectives of stakeholders in future sustainability of a port as an essential link in an international transport system.

This theme of conflict was tested in Sections 2.1 and 3.1 of the Multiple Scenario Questionnaire. Research Expectation 1(a) (below) arose from an identification of macro-level potential conflict. The circumstances of this conflict highlighted the role performed by decision-makers in resolving the differing needs of 'public' and 'private' interests. If this Research Expectation was supported by research participants, i.e. a Boundary-spanning area existed, then a further analysis of their perceptions would indicate the future role of agency and choice from a Strategic Choice Perspective. (This is discussed in Chapter 12.)

6/ SUMMARY

In the Introduction it was stated that if a port is considered from a macro viewpoint then the prime economic consideration was its survival in the 'public interest'. This statement was considered from an economic and legal perspective of the holon identified in Chapter 3 which illustrated that:

the economic model of structural change is potentially flawed;
power, in the form of strategic choice, will have to be exerted to resolve manifestations of these flaws.

This consideration led to a scenario theme of conflict for the research and circumstances leading to potential conflict were developed. In order to determine and measure research participants' perceptions of potential conflict the first Research Expectation was derived:

(Research Expectation -1a)

Structural change ought to be perceived as improving 'public interest' governance.

The result of testing this would help to explain the answer to the first Key Question from a Strategic Choice Perspective of the future role of agency.

The next chapter discusses structural change from an operational viewpoint of the technological aspect of the holon in order to develop Research Expectation 1(b). This will form a second aspect of the scenario theme from which scenario circumstances of potential conflict were derived (as outlined in Chapter 2).

**CHAPTER 5 - ADVANCED SYSTEMS ANALYSIS OF
THE TECHNOLOGICAL MODEL**
1/ MULTIPLE SCENARIO CONCEPTS IN STRUCTURAL CHANGE

The second stage in creating multiple scenarios is to identify those operational concepts of potential conflict in structural change that are either explicitly or implicitly addressed in a strategic corporate plan. These concepts may be affected by changing circumstances in the future: increasing in importance; staying the same; or decreasing in importance. Whatever the outcome, any choice of strategy or exercise of power will need to reflect these changing circumstances. The participants' perceptions of the importance of these concepts in the multiple scenarios provide a measure for whether or not they should be included in a 'Long-term Strategic Services Industry' model.

1.1 Identifying Concepts Underlying Structural Change

The analysis of structural constraints and the identification of concepts underlying the operation of pseudo public/private organisations is not an easy matter. It requires an overall assessment of the reasons for the original establishment of the organisation, which presumes that there is no change to the purposes for which it was established, but that detailed operational activities may have changed over time. Thus a strategic corporate plan for the long-term sustainability of a port as an essential link in an international transport system will require amending in some form. It is assumed that the key starting point in crafting such a corporate plan is to determine the legislative restraints (or business environment) for *what will not change*. Consideration can then be given to those areas of increased importance, e.g. the public attitude to the physical environment, or decreased importance, e.g. provision of terminals for labour intensive break-bulk cargo handling.

The Advanced Systems analysis approach for identifying the deep structure (discussed in Chapter 3) in various operational activities undertaken, and to long-term planning in a restrictive, but also competitive, environment involves:-

searching for *what has not changed* (hence existing organisation and managerial philosophies may continue to be appropriate for a particular aspect of the undertaking) and then assuming that other aspects of the undertaking may require the implementation of a new philosophy; rather than

searching for *what is currently changing* and instinctively assuming that new organisation and managerial philosophies are required which will apply equally to all aspects of the undertaking.

Adopting this analysis principle for the identification of key concepts to be tested by multiple scenarios meant that it was necessary to review the history and operations of ports, in order to determine what aspects have not changed. Hence a picture of structural constraints and areas of strategic choice could be built up.

The word "port" has differences in meaning according to the individual's perspective - Branch (1986: 2) defined a seaport as "a terminal and an area within which ships are loaded with and/or discharged of cargo and includes the usual places where ships wait for their turn or are ordered or obliged to wait their turn no matter what distance from that area. Usually it has an interface with other forms of transport and in so doing provides connecting services". There is the European philosophy of "The task of promoting the interests of a port knows almost no limitations in time or space. Its aim is to serve the prosperity and welfare of our regional or National community and beyond our borders to make a contribution to improving the quality of life." (Branch, 1986: 3) The Nautical Institute (1988: 9) detailed the various legal interpretations which state a harbour includes any port navigated by seagoing ships and "a harbour, in its ordinary sense, is a place to shelter ships from the violence of the sea and where ships are brought for commercial purposes to load and unload goods".

"Seaports, for all countries having a substantial coastline and for island economies in particular, represent vital points of transport activity. Despite the development of aviation, ports still handle a high proportion of world trade. In the UK, 92% of all imports and exports of commodities move through the seaports.... Modern transport technology, coupled with vastly changing patterns of world trade, have combined to bring substantial changes in the capital investment needs of ports, in their optimal geographic position and in their labour requirements. Yet basic infrastructure, such as harbour walls, quays, storage areas and warehousing are mainly long term investments. Although ship technology, coupled with economies of scale, have forced container ports to find deep water at estuarial entrances, many smaller cargo ports survive on the basic infrastructure bequeathed to them many years ago. This gives the historical port a head start." (Finney, 1991: 1).

Goss (1992) considered aspects of the national interest in the privatisation and restructuring of ports. His views were not limited to the UK, being a holistic opinion of general principles and policies which should be followed in structural change, although he recognised that there were likely to be disadvantages in any policy that was followed. These were that:

- there is a strong case for the retention of public sector port authorities;
- ports should compete with one another;
- they should not receive subsidies;
- policies should be defined as securing the minimum generalised transport cost;
- ports should explore the use of the private sector as terminal operators;
- they should employ a small permanent staff of experts with a reasonable turnover;
- there should be no central (national) planning or co-ordinating body.

The presumption was that general internationally applicable concepts could be identified - otherwise multiple scenarios for international research could not be created. These concepts would have to be at a high level of abstraction as the individual circumstances of each port differed:

"I feel that most of your premises are a fair reflection of some of the threats and opportunities facing traditional centralist government run ports today.... What the future holds for us is not clear at this time except that the structure will change again. There are many players involved with the big private corporations hoping to pick up some of the more lucrative parts of port operations. I enjoyed reading your questions and found them to be addressing universal problems, one shortcoming perhaps could be a generalisation of the problems. Is there really one answer for all ports?" (SP - P)

The most suitable history for identifying general concepts was from the UK since this displayed a wide variety of organisation structures, significant structural constraints and operational activities, and documents were relatively accessible.

2/ HISTORY OF THE UK PORTS INDUSTRY

Certain decisions made in the distant past still have a constraining effect on the freedom of decision-making by today's management, e.g. Thomas (1992), in summarising the post war history of the ports and the privatisation process, commented on the complex evolution of the controls and ownership structure of the ports and drew attention to an over capacity in the container handling sectors. This was equivalent to about half the throughput of the largest port in the country. He foresaw intense competition as ports strove to retain or attract traffic and remain profitable, leading to further price cutting and cut-throat competition. In order to understand the implications of concepts needed in a strategic corporate plan some key periods in the history of the industry need to be borne in mind. These key periods have generally been based on the Port of London Authority since:

"[London Passenger Transport Board]... Close ancestors were the Clyde Navigation Trust (1857), the Mersey Docks and Harbour Board (1858) and the Port of London Authority (1908). The last was the direct model for the Central Electricity Board and the BBC in 1926. It was the CEB for which Morrison had responsibility as Minister of Transport in the 1929-31 Labour government, and he used it as his blueprint for the London Passenger Transport Board. The same model of a public trust had been a leading part of the Liberal Party's 1928 programme for Britain's industrial future, where it was warmly supported by Lloyd George and J. M. Keynes. Morrison deliberately chose it as the model most likely to appeal to non-Socialists. And it was widely copied abroad for similar reasons." (Foster, 1992: 77).

The first period, covering AD 61 to AD 1559, shows the length of time that the natural geographic locations of ports have been used. It also illustrates how long ago certain functions were recognised as needing to be controlled, e.g. Medway indicates the importance of ensuring the safe navigation and shelter for ships, i.e. the conservancy function, and establishes a precedent for the statutory charging of port users for improvement and investment.

<i>FIRST PERIOD: AD 61 - 1695</i>	
61	Londinium - early Roman records of the port.
901	London - records exist of tolls on foreign vessels.
1189	Medway - conservancy (navigation) powers recorded.
1559	Formation of Legal Quays for customs and revenue purposes.

Jackson (1983) held that Customs legislation limited the number of ports dealing in foreign cargo and established the nature of the transport system from 1559 onwards.

<i>SECOND PERIOD: 1696 - 1908</i>	
1696	London - the first enclosed dock.
1800's	London - the era of the great docks and competition leading to crisis.
1857	London - the Thames Conservators inherited navigation powers and duties were expanded.
1902	London - Royal Commission recommended take-over of private docks and Thames Conservators by a new public body.

A significant technological change was the cessation of sail, leading to increased vessel sizes and developments in mechanised cargo handling techniques (e.g. cranes and rail transport within the docks). The major technological revolution was in long life civil engineering to accommodate the increasing numbers of ever larger ships (Stirling, 1990, commented that recent cargo terminal developments will have a life beyond the year 2050).

<i>THIRD PERIOD: 1909 - Present</i>	
1909	Port of London Authority (PLA) - formation.
1947	National Dock Labour Scheme - formation.
1960's	"Technological revolution" in cargo handling.
1980's	Associated British Ports and Sealink privatised.
1987	Pilotage transferred to ports, Dangerous Substances In Harbour Areas Regulations.
1989	National Dock Labour Scheme - abolition.
1990	Aviation and Maritime Security Act.
1991	Ports Act - trust ports can be voluntarily or compulsorily sold.
1992	Four trust ports privatised voluntarily.
1992	PLA - <i>split into commercial and statutory operations</i> , Port of Tilbury sold voluntarily.
1992	Transport and Works Act.

Competition amongst the private developers led to mergers after a series of ruinous trading practices, culminating in a Royal Commission to examine the serious state of the private sector cargo facilities. The PLA was set up as a public trust, rather than as a nationalised corporation, inheriting liabilities, duties and powers of the dock companies and the Thames Conservators to improve the river and facilities of the port. During the early part of the century, the railways developed their own ports to capture particular markets. On nationalisation of the railways these ports were administered by a succession of bodies until privatisation. Associated British Ports (ABP) made substantial profits in the private sector after privatisation from developing surplus land for non-port uses.

Prior to the formation of the National Dock Labour Scheme employment in the ports was substantially casual and full employment was not achieved until the 1960's - this led to jobs for life and many strikes. The major technological revolution was the introduction of containerisation. This led to a change in terminal facilities required; closure of outdated docks and revised operating methods; severe labour problems leading to massive redundancies and refusals to work with new technology. These problems encouraged the growth of non-dock labour scheme ports such as Felixstowe. The National Dock Labour Scheme was abolished in 1989 because of its perceived adverse effect on efficiency (Finney, 1990, Butler, 1991), but some contest this viewpoint (Turnbull, 1991 a, b). Medway was the only major port not to make a substantial reduction in the numbers of dock workers employed when it was abolished. A practice of self employment dating back to Tudor times for pilots ceased when pilotage became the responsibility of individual ports.

The Ports Act 1991 enabled the privatisation of the major trust ports, but these privatisations are subject to clawback provisions on land sales. If this Act is fully implemented then only the conservancy powers of Port of London will remain in the public sector, but still with trust status. It will thus be similar in organisational concepts to the SA and other overseas landlord port authorities. Municipal ports can be sold under local government legislation.

UK and SA port accounts do not show a split of the profits available from undertaking cargo operations and the costs of statutory operations (the conservancy role) for ensuring safe navigation. However, a surrogate measure indicating the maximum conservancy costs can be obtained from Port of London Authority figures, both before and after the privatisation of Port of Tilbury. Since Tilbury is a pure cargo handling organisation, with subsidiary activities, it can be seen to represent the rewards available to investors from the competitive commercial role of a port in a transport system. PLA can be seen to represent the overall 'public interest' role of limiting charges to cost plus investment, since it serves as the navigational authority for all users of the Thames, not only the cargo handling facilities of Tilbury. These rewards and charges are shown in Table 5.1. PLA is an extreme example because of its size and geographical factors; nevertheless in the absence of other data it serves to show that conservancy is a significant aspect of the total costs for shipping organisations.

**INDICATION OF SCOPE OF CARGO AND
STATUTORY OPERATIONS IN A PORT**

Table 5.1

	1990	1991	1992	1993
<i>Cargo Operations:</i>	<i>(£m)</i>	<i>(£m)</i>	<i>(£m)</i>	<i>(£m)</i>
<i>Port of Tilbury</i>		<i>(sold 1992 - figures not available)</i>		
Turnover (£m)	51.6	40.7	n/a	38.6
Expenditure	47.9	38.5	n/a	36.9
<i>Surplus</i>	<i>3.7</i>	<i>2.2</i>	<i>n/a</i>	<i>1.7</i>
No. of employees	874	888	878	792 <i>(est.)</i>
Cargo (million tonnes)	6.8	5.9	6.5	6.0
<i>Statutory Operations:</i>	<i>(£m)</i>	<i>(£m)</i>	<i>(£m)</i>	<i>(£m)</i>
<i>Port of London</i>				
Turnover (£m)	25.2	26.6	26.5	26.8
Expenditure	23.6	24.0	26.4	24.8
<i>Surplus</i>	<i>1.6</i>	<i>2.6</i>	<i>0.1</i>	<i>2.0</i>
No. of employees	567	486	461	464
vessel movements (000)	29.9	26.4	24.7	n/a
Total cargo handled in the Port (million tonnes) (excluding refuse)	54.0	49.5	48.7	50.5

(Source: PLA accounts; International Transport Limited accounts)

Under the Transport and Works Act 1992 the public sector ports' powers to form or acquire companies were considerably enhanced, providing diversification opportunities. The enhanced powers granted by this Act implied that privatisation became a less attractive option on legal and constitutional grounds (Douglas, 1993). However, Finney (1993) pointed out that the concept of extending the commercial range of a port's activities implied the adoption of a 'private sector' model and thus undermined arguments that certain functions of a port should remain administered by a 'public sector' model. He maintained this aspect of the debate on privatisation held good only for the pure conservancy authority.

2.1 Implications of the History

The overall impression from this review of the history of the UK port industry is that an economic threat of a hostile take-over or bankruptcy will not fully apply. This view is based on an understanding that inherited statutory activities cannot be shed without parliamentary approval, which is only likely to be granted if there are no socio-economic objections. Historically the public sector took over when the private

sector failed (London and Mersey), or was nationalised (ABP and Sealink-Stena). Closure may only be valid for the competitive cargo handling aspects of port operations leading to surplus resources (e.g. land). Medway was purchased by a MEBO at a cost of £13.2m. Following a reduction of more than 50% of its labour force and introduction of new flexible working practices it was sold to Mersey Docks and Harbour Co. Ltd some 18 months later for £103.7m. Ironically, a major shareholder of Mersey is the government. The sale implies the formation of an embryonic competitive group to ABP, but allegations of undervaluation on privatisation and pressure on the government to apply the clawback mechanism within the Ports Act 1991 appear to have been ignored. Will long-term investment needs give way to short-term demands from investors for commensurate returns on capital employed? The recent sale, at an inflated price, worried commentators since they found it difficult to see in the price paid where the incentive lay although the new owner is well versed in conservancy operations.

This leads to conjectures:

will there be a clash between 'commercial' and 'public' interests? - Forth Ports PLC issued a general direction forbidding navigation by large vessels in an area leading to the redundant docks at Alloa when the local council had recently granted planning permission for their reopening (Monitor, Lloyd's List, September 1, 1993);

what happens to the statutory conservancy role if a private sector port experiences financial difficulties? - can there be a repetition of history, i.e. 'nationalisation' and political policy reversals?

will there be problems when financiers want to sell ports? - the new terminal facility of Thamesport failed to meet its interest obligations and the banks had to refinance, but no such problems emerged with the Medway and Tilbury resales;

will there be mergers and acquisitions to create a competitive group to ABP? e.g. the new Medway and Mersey combination, or the Forth, Dundee, and Tilbury group;

will be new ports be developed?

Does this mean that once a geographically determined node in a transportation system has been created it must be maintained, or adapted, but it cannot be abandoned unless superseded by technological change of such a nature that there is no 'public interest' in its originally conceived use? Theoretically it is possible, but in practical terms will a port be closed? Historically, terminals have been closed and redeveloped but the port continued, facilities were modernised, recreational uses cultivated and new facilities opened (e.g. London, Liverpool and Cape Town). But the statutory requirements of conservancy have their own evolving life and the evidence is that this life span is particularly long. In order to extract key organisational concepts which are generally applicable internationally, it is necessary to consider briefly the purpose of activities carried out in a port from a systems perspective, i.e. beyond the normally perceived role of an interface between land and sea transport modes. Each aspect can be seen as having its own concerned stakeholder influencing strategic choice in a port.

3/ THE ACTIVITIES AND STRATEGIC ENVIRONMENT OF A PORT

In a conference speech before the passage of the Ports Act, the Secretary of State (1991) stated that the privatisation of ABP and Sealink demonstrated that the government could confidently look to ports in the private sector to continue to discharge their duties as harbour authorities responsibly, as well as reiterating the benefits government saw for privatisation of access to share and loan capital; release for alternative development of land no longer wanted and the possibility of employee ownership or employees having a financial stake in the port. In a series of articles on the economic aspects of seaports, Goss (1990, a; b; c; d) took the view that:

- (a) the economic functions of seaports are to benefit those whose trade passes through them in contrast to views that they should try to increase employment in their locality;
- (b) national, regional and local governments have interests in the efficiency of ports from various points of view and a remarkable variety of activities can be undertaken by port authorities;
- (c) port authorities can be either public or private according to the needs and resources of the countries in question, both forms have their drawbacks - 'government failure' contrasted with 'market failure';
- (d) particular circumstances may suit particular global strategies for port authorities - a 'minimalist' interference with the market, a 'pragmatic' consensus seeking, the 'public sector' taking over all port functions, a 'competitive' ideology including contracting out as much as possible; each strategy had its own advantages and disadvantages.

These views show that there is multitude of potential stakeholders in the privatisation and restructuring of a port, with a lack of agreement on its purpose and on constraints imposed which restrict freedom of choice of strategy. To investigate the impact of privatisation, restructuring and other legislative changes on each stakeholder is beyond the scope of multiple scenarios. However, expectations of the manner in which a change in the importance of key concepts on the role of ports could affect decisions on long-term strategic issues in a corporate plan can be discovered. In this process two fundamental assumptions will be made:

firstly, that there is no foreseeable major substitute to seaborne transport (capacity of airports and the Channel Tunnel in the UK being limited by practical considerations of the volume of cargo that can be carried). Durban has reached its capacity to handle container traffic and a new terminal will be required - this implies that there will be adequate land reserves available for expanding port operations to meet traffic demands arising from increases in overall global trade. In Russia extensive industrialisation and urban expansion on the fringes of ports has meant that the extension of existing port areas is not possible in most cases - hence existing facilities must be improved or new ports constructed (Lloyd's List, August 29, 1994);

secondly, the time delays involved in translating decisions into actions, the long life span of port structures and the lack of substitute technology, mean that management may be unaware of the way in which some of their decisions will bind successors, who will often have to work within differing environmental constraints. For example, the Victorian engineers building the London Docks did not foresee an increasing concern for the protection of the environment which will continue into the future. The redevelopment of ports increasingly requires a consensus between the local planning authority, the local population, local business and a wide variety of environmental pressure groups (Griffiths, 1990). Old port facilities cannot be redeveloped and expanded for modern needs by using the population clearance techniques through which they were created, consequently these facilities are converted for currently acceptable alternative uses (e.g. London Docklands and the Cape Town Waterfront development). Once converted, it is unlikely that they can be returned to their original port use without heavy social costs.

3.1 Systems in Ports

The literature emphasises different functions of a port as being the most important. Goss (1992) in giving an opinion on the future industry recommended a reconsideration and reappraisal of existing functions and activities. Accordingly, it is useful to represent the port operations by means of a soft systems analysis (Checkland and Scholes, 1990), with illustrations of the broad scope of the systems, as depicted in Figure 5.1. The characteristics of the port system as a whole, its sub-systems and the influences on decision-making in port operations follow. These identify the aspects of structural change for investigation by the multiple scenarios.

Port System = a modal transport interface, including support services with safety and recreational obligations, which is constrained by legislation, local considerations and tradition. It is a value added activity carried out mainly by local organisations, but has national and international benefits. Hilling (1984: 257) took a holistic view of port operations, believing that "the changing fortunes of individual ports and systems in which they combine must be appreciated within a broad framework of social, economic, technical, and political conditions in the immediate hinterland and also nationally and world-wide ... once created, a port's ability to respond to demand will in large measure be determined by geographical conditions. First, there is the site factor - the morphological characteristics of the port area on the land and seaward sides of the interface. Second, there is the port's location in the context of broader regional considerations, again with respect to land and sea space. Within the constraints provided by these geographical factors entrepreneurial enterprise and politics will play their part." The system as a whole comprises:

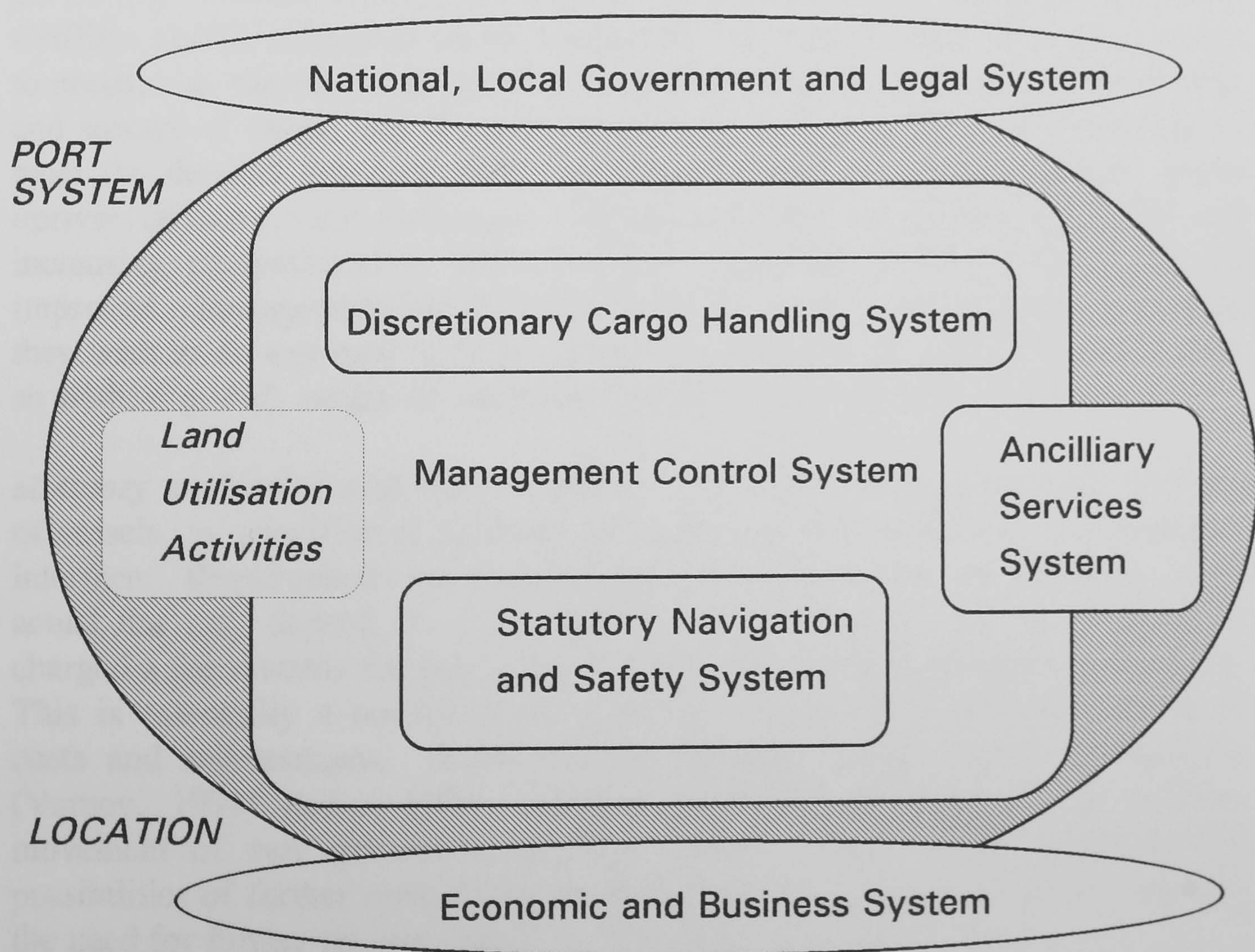
national, local government and legal system = a system to ensure through delegation that policies are carried out and adhered to, in order that society may

benefit in some desired way; and that a minimum standard of compliance with regulation and public opinion is maintained, so that a community may benefit in a chosen manner.

Thus a group of priority stakeholders could be present, either explicitly or implicitly. For example, when considering conflicts of priority in an estuary, Booth (1994) argued the case for commercial shipping, whereas Bartlett (1995) countered with the case for recreational use. Both private and public sector managements' discretion in choosing whether or not to provide a statutory function and the requisite level of service is severely limited (Douglas and Geen, 1993). In the UK legislation covers the provision of pilotage and delegates service levels to the ports, but with the right of appeal to the Secretary of State for port users dissatisfied with these levels and costs. Further, the choice of cargo to be handled may be constrained, e.g. at Dover facilities for the handling of live animal traffic were refused by management, but subsequently enforced by the courts against the wishes of management, port users and residents. Besides legal restrictions there are social restrictions on choice of traffic, e.g. at Saldanha it was proposed to handle Iranian oil storage and distribution in a sensitive ecological area - this raised considerable social concerns for the environment leading to conflict with wider commercial and economic needs.

SOFT SYSTEMS ILLUSTRATION OF PORTS

Figure 5.1



economic and business system = a commercial system, provided by importing and exporting parties outside the port environs. In commercially oriented studies, Charlier (1988) based a quantitative analysis of the structural changes in the Belgian ports system over a six year period and observed that change was a slow process. However, whilst available statistics were mediocre, there was a general trend towards increasing specialisation of ports in limited fields. This meant that they were more vulnerable to changes in economic circumstances affecting particular sectors and that the ports were "ruthless competitors". Flemming (1989) gave an American view of container port competition and considered that the customers set the tone and level of competition. Warf and Kleyn (1989: 172) studied the decline of US east coast ports and the ascendancy of west coast ports in the mid-1980's, finding that "intermodalism ... has significantly restructured the opportunities and constraints of individual ports, allowing some to take advantage of the new environment while others are degenerating helplessly".

discretionary cargo handling system = the transport interface for import, export and local cargo (including humans and livestock), which is undertaken by means of provision of facilities and services by the port. Essentially, this is for the transport of goods and passengers for profit.

Cargo handling operations and land usage are the most visible types of work carried out in a port and therefore these form most people's perceptions of the ports, e.g. Frankel (1987) and Hayuth (1984) both concentrate on this area. Griffiths (1990) elaborates on the reasons for operational land becoming surplus to needs, e.g. the advent of containerisation reducing the requirement for sorting and storage of cargo, and the moving of cargo handling facilities downriver to meet the demand for deep water for larger vessels meant that shallow water upriver facilities were redundant. Dowd and Leschine (1990) illustrated that increasing competitiveness demanded that container terminal productivity be improved. Management has the most discretion in these visible areas as to what they wish to do and how to do it. They can choose to abandon a sector if they so wish, e.g. bulk cargo, or can enter new fields through diversification.

statutory navigation and safety system = a public interest system for berthing of vessels, by provision of facilities and services, thus enabling a safe transport interface. Requirements are assessed and provision ensured by the port - their actual use may depend on a customer's needs, but they may nevertheless be charged a fee towards the cost of all facilities and services provided by the port. This is essentially a not-for-profit operation, funds being generated to cover costs and reinvestment. Examples are pilotage, vessel traffic management (Varney, 1991) and a £20m. dredging operation by Harwich to facilitate movement of new generation container ships. (Eyre, 1989, indicated the possibilities of further radical changes in hull forms in the next century creating the need for further reinvestment).

The traditional conservancy and berth operating responsibilities are arguably the least recognised but most onerous activities undertaken by the ports. Despite the considerable legislative attention given to creating statutory obligations regarding pilotage, security and dangerous substances, these aspects of port operations are generally viewed by the public with indifference. Ports handle the full range of the human, manufactured and raw cargoes carried by vessels, road and rail transport, including all types of hazardous cargoes. Consequently, in no other place is there such a concentration of potentially lethal products - particularly when accidents or collisions occur involving individual chemicals that are safe for transport separately but become dangerous when stored near to each other on board vessels or on land. Hazardous cargoes provide scope for massive environmental pollution, e.g. the recent grounding of the 'Sea Empress' in Milford Haven whilst under pilotage in the port area, or collision of a gas tanker with a light buoy in London whilst under pilotage. Couper (1992) highlighted the growing awareness of the physical environment in considerations by port management.

Following the voluntary sales of the first wave of trust ports a privatisation lawyer commented on the lessons to be drawn from the objectives set for the sale of each port. Generally, there were three principal criteria - maximum proceeds; quality of the conservancy function; and the level of employee participation. "The first port to privatise, Tees & Hartlepool, included these three principal objectives of sale in its offering documents. In the event it found itself with a number of bids, one of which best satisfied the price objective, a second appeared to the board to best satisfy the conservancy objective, and a third best satisfied the employee participation objective. It is hardly surprising that its board felt best able to select the bidder who best satisfied the [conservancy] objective which had underlain the business for so long." The decision was contentious, but supported by the government. No such conflicts occurred in the remaining privatisations. "...it is impossible for the authority to exact undertakings from the purchaser as to the future conduct of the conservancy which are enforceable by it after dissolution. The authority therefore has to pay particular regard to the quality of the assurance given to it on the conservancy by the purchaser and to seek ways and means of giving incentives to the purchaser to honour those assurances." (Woods, 1992, Lloyd's List, 12 June 1992).

ancillary services system = an ancillary support system for the mutual gain of the port and its customers which utilises the facilities and services provided by a port. It has two advantages for a port - profit generation and the strategic 'locking-in' of a customer. Contracted out operations fall into this category. It includes the other links in the transport chain and the suppliers of goods and services to the parties involved (Tilbury estimate that up to four times as many people depend on the port for their livelihood as are employed in the port - McNab, 1991). In studies of social benefits provided by ports,

Flemming (1987) found a complex community at work when investigating the interplay and levels of co-operation between the public and private sectors of US ports. Randall (1988) discussed the distinction between marine and non-marine roles and concluded that stereotypical perceptions disguised a much broader set of less visible activities. Le Blanc and Wyckoff (1988) assessed the strategic success of a US vessel traffic management system and determined that its mere presence rather than its utilisation rate provided measurable benefits.

management control system = a system of port management, by means of communication, command and control. Its purpose is to facilitate the profitable transport interface and ancillary activities. The organisational environment facing decision-makers is dynamic and complex in the short-term, but probably stable in the long-term once the effect of current major structural change has worked through the system. It appears dynamic because of:

- frequent legislative changes and over-capacity in some trading sectors;
- market growth and decline depends solely on frequently changing macro-economic factors, i.e. the volume of imports, exports and coastal transfer of goods from one region to another;
- the need to react to technological change in other links of the transport chain, e.g. intermodalism.

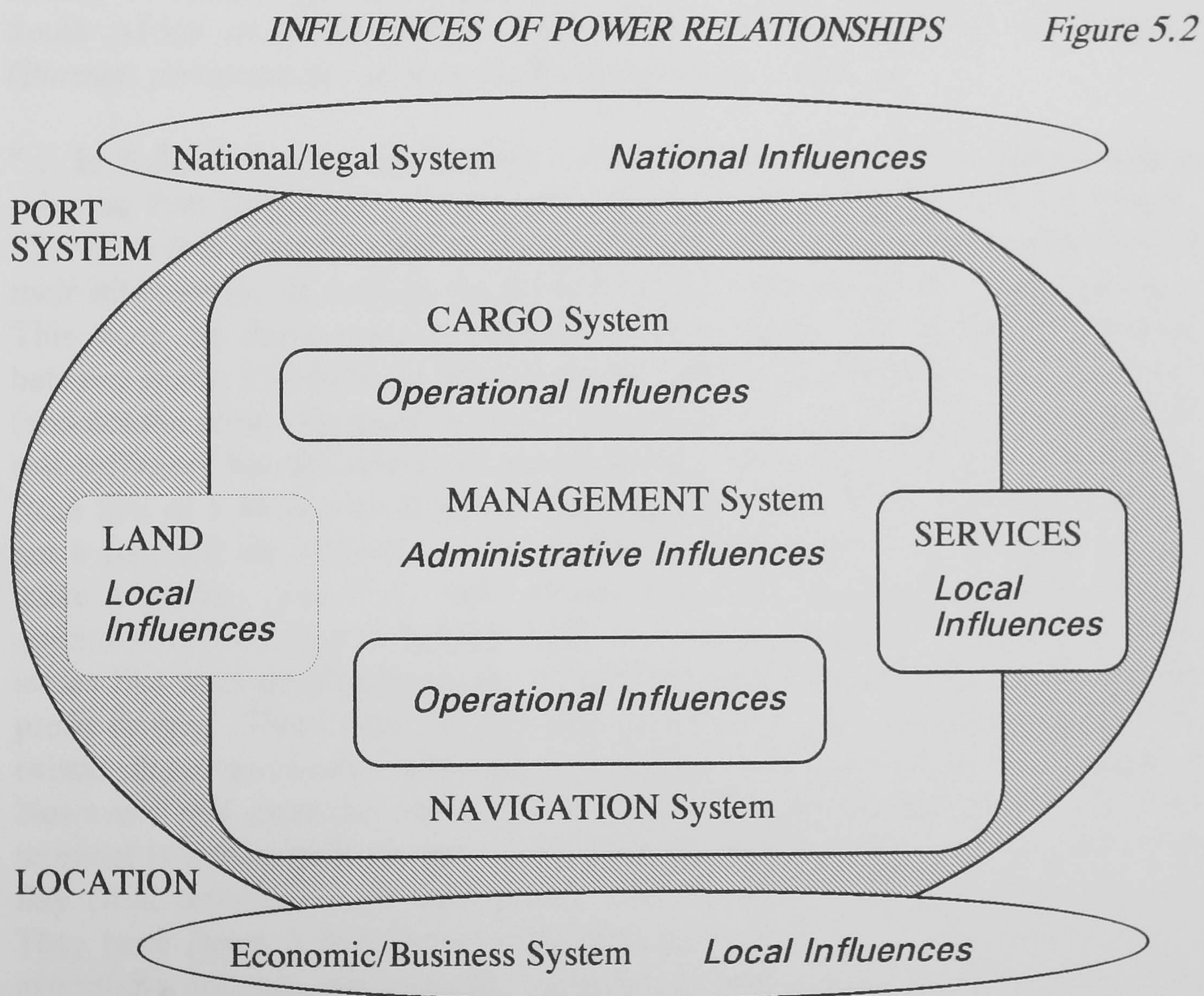
It is complex because of the interconnection of environmental influences. Management faces the task of operating a vital element of the economy with conflicting demands from stakeholders for efficiency and low cost; from financiers and shareholders for growth and profit; and from regulatory bodies for health, safety and security standards, as well as the 'green' issues of pollution and development control. Its discretion is hindered by public interest concerns such as the ongoing conservancy function and clawback rules on land sales in the UK designed to discourage asset stripping in the newly privatised ports. This implies that a high level of knowledge and skill is needed to handle these broad environmental influences that are unpredictable (in detail at least). The implication of handling dangerous cargoes is that traditional conservancy and berth operating activities require strong co-ordination between all parties involved in the transport chain. Managerial philosophies for these activities would thus appear to be based on cybernetic command and control principles, rather than entrepreneurial notions of freedom to pursue individual objectives.

From a corporate planning perspective, Bird (1984: 39) analysed previous studies and future developments of seaports, concluding that open-ended flexible planning was the most appropriate strategy for ports "so that open-ended development becomes the guiding theme as the seaport grows or changes over both spatial or temporal scales". Hawkins (1991) assessed the various conventional methods of port investment appraisal and argued for a holistic approach tailored to the requirements of specific investment problems, since

investments must be appraised in terms of their ability to contribute to the port's overall long-term success. Open-ended flexible planning is the aim of Interactive Planning (as discussed in Chapter 7) and presupposes an assessment of structural constraints and influences on strategic choice in order to create a corporate plan.

4/ INFLUENCES ON STRUCTURAL CONSTRAINTS

The presumption is that structural constraints are not physical manifestations, but are vaguer influences of power relationships which are implicitly recognised by decisions taken which shape the corporate plan. These influences can be categorised as follows and examples provided by participants are used to illustrate the categories. The influences are depicted in Figure 5.2.



National influences -

(a) *Political system* - national and local government philosophies;

"....I believe that 'privatisation' is merely the tool of change. Whether in the UK or without, the moribund state of public management is incapable of instituting change on its own initiative whatever the background. It has taken a

prime governmental instrument to dismantle the current regimes, and the most acceptable form has been 'privatisation' or 'commercialisation' In the UK that experiment went as far as the limits of public accountability and liability for larger ports. As yet there is no evidence that these enterprises would jeopardize their public liability by imprudent management of the marine environment.... The major difference, worldwide, in the approach to making Ports more commercially aware, or responsive, has been the question of degree; all, part (and which part), or nothing. In nearly every case ideology has been subservient to commercial effectiveness. In other words the customer is getting what he wanted." (UB - D)

"You no doubt appreciate that in the exceptional changing conditions prevailing in South Africa at the present time, and the general policy of the new government with regard to state owned institutions being unclear, a qualified answer in some instances is pure [conjecture]. The huge political changes in South Africa immediately subsequent to the commencement of the Transnet (Portnet) privatisation / commercialisation project." (SP - L)

"... In S.A., it is essential to keep Port Authority under public domain and to privatise Port Operations. In our case, the Ports are the lungs of the economy. Therefore they must be used to manipulate the traffic flows, the development of their hinterlands, as well as the growth of the economy of the whole country. This must be done via the National Port Authority by Cross-subsidisation between Ports, Provision of infrastructure with the interest of the whole country (and not the particular port) in mind. Matter of fact, the Port Authority must be self-sufficient but definitely not profit driven. (Its role does in no way differ from that of a local authority, i.e. municipality. The P.A. must invest, not to get a payback for himself, but to enable the Port-users to be competitive and make a profit. The P.A. must ensure that the infrastructure in the Port is optimally utilised, but it MUST NOT lose focus by getting involved in side-issues like land developments etc. Port Operations on the other hand must be profit driven. There must be adequate competition and, where no competition exists, those terminals, although privatised, must be effectively regulated. However, one must be careful, and wise, in deciding whether a particular terminal is a monopoly or not. Take Saldanha (iron-ore terminal) and Richards Bay (coal terminal). At first glance they are monopolies, but they are not. They have fierce competition in the global village!!! I firmly believe that everything that you can privatise, without compromising the well being of the country, must be privatised. Only those operations where infrastructure must be provided for others to compete should stay public." (SP - T)

"... The system of total control of the port operations in the past ensured work for a certain group of the total population. It could well be the same with the new government." (SP - C)

(b) *Legal system* - permissible activities and obligations relating to undertaking cargo handling, navigation, police and safety, discretionary activities;

"... There is no regulatory body for ports but all major ports, including privatised ones, operate within a statutory framework with duties and obligations which may be enforced by the Courts. I would mention in particular the statutory right which applies at nearly all significant UK ports for the public to use the port on payment of dues. I would also draw your attention to the right for port users (and some others) to object to the Secretary of State to the level of dues levied by a harbour authority and the powers of the Secretary of State under Section 31 of the Harbours Act 1964." (UB - A)

"The application of traditional shipping (commercial) and marine (public) law in a fully privatised harbour. An obvious example is the right of refuge that a distressed ship has versus the right of private operators to "keep the quays clear" for commercial ships...." (SP - C)

(c) *Economic system* - national influences of efficient transport and trade;

"...The post war history of the UK port industry with the Registered Dock Worker Scheme constraining the management of the major British ports, while non-scheme ports grew and flourished unhindered, was a major distortion of the national structure of the industry. Now that these impediments to competition have been swept away the overall efficiency of the industry must improve. The downside to this scenario is that in time some ports will not be able to compete and will be driven out of business This will lead to a concentration of monopoly power of the successful ports." (UP - I)

"Transnet will retain 'control' of the ports and their development. Portnet will seek joint venture management arrangements with the private sector for some existing facilities. Portnet will probably offer for lease new facilities, e.g. the new Container Terminal at Durban, although Portnet Terminals will also be free to tender for those same facilities. Transnet recognises the need to force Portnet to become more efficient and the plans to allow limited privatisation and commercialisation are intended to achieve this end." (SB - K)

(d) *Location system* - wider geographical factors, e.g. east/west coast markets;

"... take account of local circumstances and traffic opportunities. For example, at a macro level the strategy to be adopted by the ports on the West coast of the United Kingdom will be entirely different from that on the East coast with its close proximity to the heart of the European Community." (UP - CB)

"The situation in Southern Africa is different to Europe. Here ports have their natural hinterlands they serve with little direct competition between ports. Privatisation of port operations (not port authority functions) is desirable to keep business away from bureaucratic government functionaries." (SP - U)

Local influences -

(a) Commercial system - business users of the port, competitors and agents etc.;

"Commercial shipping pays [for] the majority of conservancy charges for navigational/regulatory services. Pleasure craft pay little or nothing, other than for direct services such as mooring etc. Thus if commercial trade reduces remaining commercial users may see charges rise sharply - with further trade reductions resulting. Central gov't subsidies for maintenance can be ruled out. Local authorities may subsidise, particularly a leisure port but the rate payers may have views on subsidising a commercial port. Shipowners, particularly those locked into a port through specialist terminals/facilities might well have reservations about port authorities using their money for speculative ventures - especially if failure results in higher port charges." (UB - B)

"Black businesses etc. are being encouraged to take on special maintenance tasks. Again it takes time for implementation, but the process must take place & an enormous culture change has to take place for all of these concepts to happen." (SP - N)

(b) Social system - Local interest groups' views on the operational, recreational and scientific issues, including land development and redevelopment aspects;

"It would seem that the remaining non Privatised UK Ports on the Minister's Shopping List are somewhat reluctant to proceed down the Privatisation Route, unless directed to do so. Being a Trust Port with vast areas of the Harbour covered by an English Nature SSSI Directive [Site of Special Scientific Interest], etc. the decision making processes in running the **Harbour** as opposed to the Port Area are in great measure conditioned by Environmental aspects and considerations. These clearly have an influence upon the manner in which the Harbour Authority can successfully, or not, manage its business." (UP - AH)

"Consideration could also be given to retaining the assets, and using them to allow future flexibility for expansion but letting private operators/developers develop the surrounding area. It is a known fact that a 'bona fide' working port is far more attractive to the public than redundant quay space. (SP - C)

"... refers to Walvis Bay. No special cargoes will be attracted due to the restricted opportunities in a very limited economy..." (SP - U)

Functional influences -

Operational systems - narrow geographical and environmental factors in ports operations, e.g. navigational and cargo handling restrictions or options; enclosed docks and deep water berths; conflicting recreational and cargo uses; physical environmental issues such as pollution, fisheries, birds.

"There may be conflict where the port operator must decide between investors' interest or the public good. Safety could be compromised. ... Regulatory functions are likely to revert to public sector. UK model of ports privatisation is unique and may be unworkable in the long term." (UA - A)

"Your choice of illustration is particularly poignant. There was total agreement among all European ports that the introduction of reduced port dues for segregated ballast vessels was inappropriate, ill-timed and ineffective. The fact that it was driven through and became a regulation illustrates the momentum which the environmental lobby have managed to establish." (UP - CB)

Administrative influences -

Managerial systems - Management, employees, owners and local service businesses, e.g. centralised/decentralised control, policy making and provision of facilities; unions and share ownership.

"....Harbour authorities are not like any other commercial businesses. Most combine the characteristics both of a commercial business and a public service body." (UB - A)

"... Because of the statutory nature of some obligations there may be constraints on contracting out of services, especially if the port cannot contract out its obligations. This is probably most apparent in a field such as pilotage although on one of our estuaries the pilots operate as a co-operative of self-employed individuals." (UP - CB)

"... As far as the centralised/decentralised question is concerned, I believe a mixture is required. Safety standards, R+D, acquisition of handling equipment, Port Authority tariff etc. must be centralised, Port Operations tariffs, personnel matters, etc., decentralised." (SP - T)

5/ IMPLICATIONS OF STRUCTURAL CONSTRAINTS CONCEPTS

Various aspects of public and private interest may influence the overall systems in which a port operates, and hence affect perceptions of the overall change brought about by privatisation or commercially oriented restructuring. These operational

influences on managerial decision-making are either unaffected or affected by changes in the Structural Constraints identified in the previous section. These operational influences can be expressed as concepts which can be directly appraised by multiple scenarios. The concepts are derived from a grounded theory analysis (Strauss and Corbin, 1990) of the technical and non-technical literature referred to for the background changes identified in the Introduction; the discussion in Chapter 1; and the discussion in the preceding sections. They can be categorised as follows, and examples provided by participants are used to illustrate the categories:

areas unaffected by changes in Structural Constraints:

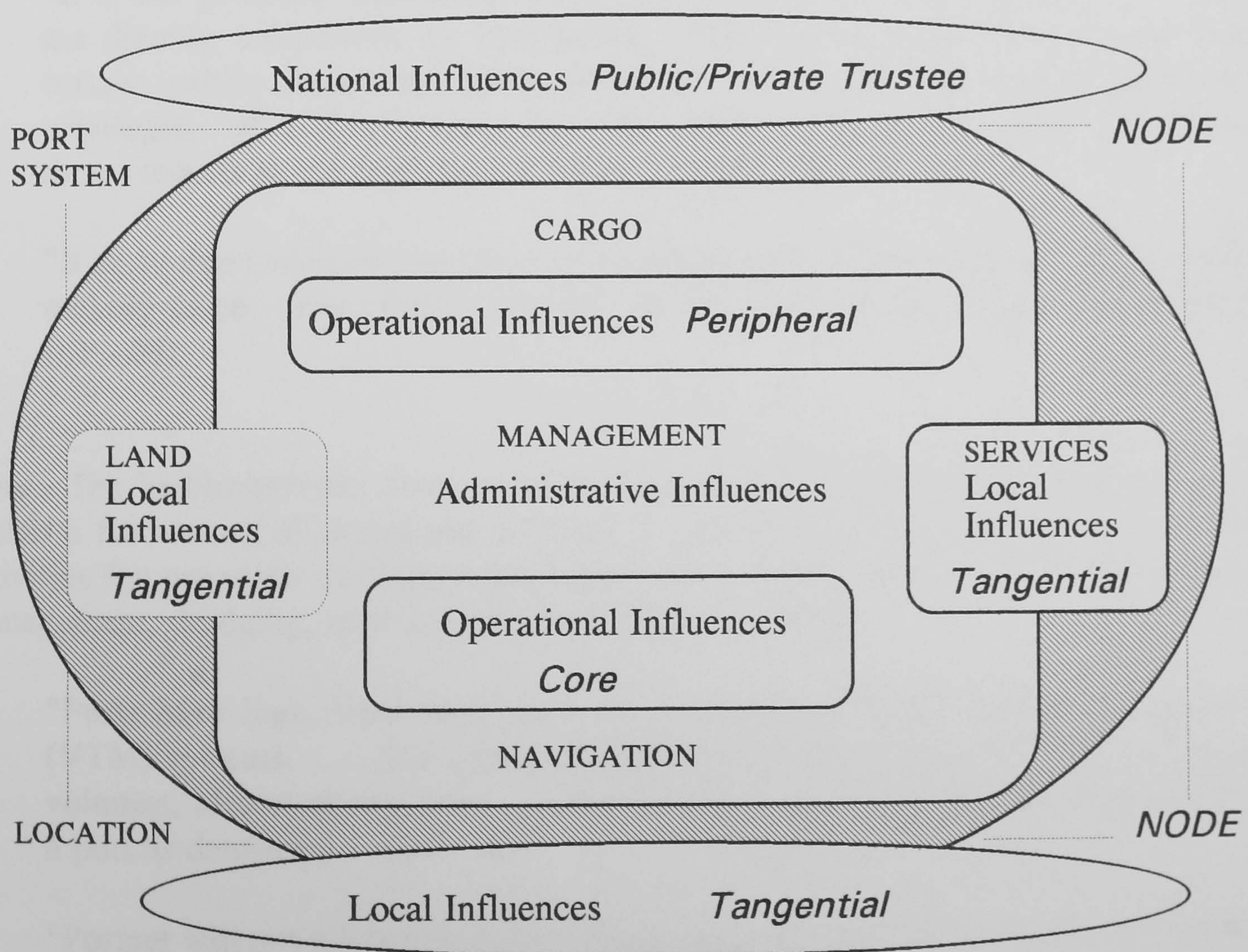
Node; Public/Private Trustee; Core; Peripheral; Tangential. These areas are depicted in Figure 5.3, and are illustrated as follows;

and considerations affected by changed Structural Constraints:

Environmental Management; Portfolio Pressure; Financial Pressure; Measurement. These considerations are discussed in Section 6.

Figure 5.3

**CONCEPTS OF ORGANISATION AREAS UNAFFECTED BY CHANGES
IN STRUCTURAL CONSTRAINTS**



Areas Unaffected by Changes in Structural Constraints

Node - Purpose of ports as a land/sea transport interchange; e.g. national imports/exports, local dedicated traffic; local occasional traffic and leisure.

"In some ports, e.g. Hamburg, port infrastructure is provided by a public sector organisation concerned inter alia with the benefit to the whole economy, not just to the port operator, of capital investment in the infrastructure..." (UB - F)

"... The port users are more concerned with efficiency of the ports than with public interests or even costs. S.A. ports are very profitable and also very inefficient, especially the container terminals." (SB - K)

Public/Private Trustee - The duties and 'public safeguards' as enshrined by the legal process creating the required purpose of a port; e.g. legislation specific a port - access to port and safe navigation; general ports legislation ports applicable to all organisations; subordinate legislation (promotion of bylaws).

"There is statutory regulation whether or not ports are in the public or private sectors - charges, dredging/dumping, environmental." (UP - N)

"It is not generally recognised that, even though they are privatised, UK ports are directly answerable to Parliament. The Acts relating to each port place certain public duties on port operators, while granting certain rights and privileges. If a port ignores these the public have, under certain conditions, direct redress to the Secretary of State." (UP - CB)

"It is doubted whether the investor's interest only will ever be the sole decision making force. The 'Public Interest' cannot be made to disappear altogether." (SP - M)

Core - The 'public/private' areas in which environmental management may take place within a framework of duties and policies of marine geography, e.g. land utilisation activities for provision of cargo interchange; local marine operations of vessel traffic management, dredging, civil engineering; pollution control.

"Ports have high fixed costs such as provision of Vessel Traffic Management (VTM) systems. The principal managerial commitment will be to maintain volumes, almost at any price, to provide some contribution to the fixed costs of a port as described." (UP - A)

"Portnet will not relinquish their statutory powers over the ports and will remain as the Port Authority in the foreseeable future. Therefore not much change likely in Port Management and regulation." (SB - K)

Peripheral - The areas in which powers are available for strategic choice, e.g. provision of terminals and related operations.

"...In certain situations - e.g. information technology - there are arguments for integration (in some cases on an industry-wide basis such as for Customs clearance). Contracting out or allowing independent operators such as stevedores may actually reduce the flexibility and the ability of a port to quote package deals to a customer." (UP - CB)

"This is essentially a port marketing problem - to get the right mix of flexibility to chase foot-loose traffics; and ... a secure base-line of business." (UB - F)

"Private sector control of terminals must benefit the shipowner and ultimately the cargo owner. If there are no benefits to the user he will go back to Portnet and the private sector terminal will fail." (SB - K)

Tangential - Discretionary activities undertaken as a result of powers, e.g. engineering maintenance, commercial and leisure ventures; or activities undertaken as a result of non-ports legislation, e.g. unrelated diversification.

".... The theory of short-term development and leasing is fine but it will bring little demand. Exploitation is likely to be far the greatest reward which may well be housing developments." (UP - A)

"... Encourage harbour bound industries!!" (SP - P) and "Successor company could acquire share in 'supplier' companies." (UA - A)

"... The P.A. must ensure that the infrastructure in the Port is optimally utilised, but it MUST NOT lose focus by getting involved in side-issues like land developments etc. ..." (SP - T)

6/ BALANCING STRUCTURAL CONSTRAINTS

Maintenance of the transport system imposed significant restraints on management discretion in strategic planning for the short-term and long-term interests of the organisation. Chakravarthy and Lorange (1984) held that the challenge for strategic planning was to provide a proper balance between these interests to ensure a continuous adaptation of the organisation to its environment. In their view successful adaptation was possible only if some of the current financial and human resources were channelled towards building strategic positions for the future. These 'slack resources' were effectively surplus contributions provided by stakeholders, i.e. in meeting the actual cost of the service provided plus future investments. The 'slack resources' could be generated only by efficiency in the organisation's operations in a competitive environment (as in the UK ports industry) or by introducing a commercially-oriented managerial philosophy (as in the SA ports industry).

This introduced three prime concepts in the process of strategic planning in a diversified organisation. These were broadly identified in Chapters 1 and 3, but can be specifically related to port operations:

Adaptive Specialisation:

this process sought to fine tune the strategies of the organisation for a better fit with its environment, e.g. maximising the return in each of the businesses in the organisation's portfolio - this relates to the core, peripheral and tangential port operations.

Adaptive Generalisation:

this process sought to prepare the organisation for strategic responses to future environments, e.g. the future businesses that the organisation should be involved in - again this relates to the core, peripheral and tangential port operations.

The long-term survival of the organisation depended on a balanced approach to both these processes; an over-commitment to adaptive specialisation could compromise the future of the organisation, whereas an over-commitment to adaptive generalisation could result in short-term cash crises. Clark, Varadarajan and Pride (1994) considered the extent to which organisations were proactive in managing their environments, i.e. in achieving a balanced approach to both these processes, from the perspective of:

Environmental Management:

the level of effort made to take advantage, or alter the effects, of external events within decision-makers' direct control or influence.

This perspective assumed that decision-makers have some capacity to shape or manage their environments, and could be seen as a method of reconciling the polarised environmental determinism vs. voluntarism theories (discussed in Chapter 1) with a practical understanding of constraints on selection of strategy. It was concerned with the degree to which there was freedom to act in an environment (Whittington, 1988) and the need to adapt to current and future change. It was thus addressing the 'reality' of balancing adaptive generalisation and adaptive specialisation faced by decision-makers in the ports. Both Chakravarthy and Lorange (1984), and Clark, Varadarajan and Pride (1994), made certain assumptions on the nature of organisations and management - these apply equally to this thesis with provisos:

"All organisations desire to influence and/or control their environments, particularly those sections of the environment that critically affect operations and performance.

Influencing and/or controlling the environment requires resources, and different facets of the environment require different types and/or amounts of resources.

Organisations will attempt to influence/control their environments when they view it as cost-efficient to do so.

Decision makers involved in environmental management act as rational decision makers.

Because different decision makers perceive environments differently, they also will respond in different ways. In other words, they respond to an enacted environment." (Clark, Varadarajan and Pride, 1994: 25).

It is the last two assumptions which have not been fully examined in both of these publications. Their writing conveys the impression that the environment provides an opportunity for strategic action - however, it could equally be seen as posing a threat by some decision-makers. Further, the assumption of rationality cannot be supported by considerations of the need for economic regulation in 'public interest' - this recognises the potential for actors' economic 'irrationality' when decision-making in pursuit of personal gain. Consequently, for multiple scenarios a threat element is required when assessing the environment, adaptive generalisation and specialisation, and environmental management.

6.1 Assessing Changed Structural Constraints

Clark, Varadarajan and Pride (1994) commented that much of the literature on organisational environments suggested that decision-makers reacted to environmental change according to abstract dimensions that characterised, or specified the boundaries of, the environment, e.g. public sector vs. private sector. These broad dimensions contained many common elements, e.g. links between turbulence and complexity, rate of change and turbulence, perceived threat levels and turbulence. However, in their view, characterising the environment by dimensions led to a situation where an infinite number of differences or shades of differences in characteristics could be identified and justified. This type of research approach would then become conceptually and methodologically intractable. They held that decision-makers responded to, and related to, sets of conceptually holistic environmental events (e.g. privatisation, structural change and competition). They did not do so for abstract dimensions, i.e. managers enact their environments - unless they attended to something, it did not exist as a decision-making concern for them (Weick, 1979). This meant that environmental events could be viewed as a transition from one state of affairs to another, e.g. public to private management philosophies, which were addressed by decision-makers, rather than purely abstract dimensions, e.g. environmental determinism versus strategic choice.

Viewing environmental events in this manner meant that:

- the complexities of the 'real world' could be broken down into manageable chunks according to the transition state they affected;
- methodological tractability was facilitated because the drivers of these environmental events were conceptually identifiable and measurable;
- decision-makers were more likely to give reliable judgements of environmental conditions if presented with events to evaluate rather than abstract dimensions.

However, this approach to considering environmental events from an 'enacted' stance presumed that decision-makers adopted a common perception to the risks of action or inaction in the transition from one state of affairs to another. Traditionally, financial performance is the definitive measure of success in risk-taking in uncertain environmental situations. Venkatraman and Ramanujam (1986) considered the use of different approaches to the measurement of business performance, suggesting that both financial and broader operational criteria be assessed. In a meta-analysis of 320 studies relating financial performance to environmental, strategic and organisational factors, Capon *et al* (1990) found that industry growth, concentration and capital investment all had a consistent impact, as did a strategy for growth and market share.

Financial performance variations may be more complex than these studies suggest. Sitkin & Pablo (1992) noted that past research into the effect of risk on decision-making behaviour produced contradictory findings and a decision-maker's attitude towards investment, strategy and growth was dependent on perceptions of risk. No single measure is likely to cover the complexity of risk-taking behaviour, but in a study of more than 500 top executives, MacCrimmon and Wehrung (1990) found that success was always positively associated with risk-taking and that the most successful executives were the biggest risk-takers; the more mature executives were the most risk-averse. Decision-making should deal with these biases simultaneously since bold forecasts and timid attitudes to risk tended to give opposite perceptions of the implications of failure (Kahneman and Lovallo, 1993).

Usually the ports are administered by mature executives which would imply a risk-averse selection of strategy. An expectation of one outcome of structural change is that younger risk-taking executives would be increasingly employed, but where would the responsibility lie for correcting mistakes in selection of strategy? These studies did not show whether the mature executives, with presumably longer tenure and expectations of job security until retirement, undertook responsibility for correction and were hence more cautious than younger executives with less tenure, but with expectations of promotion either within the organisation or elsewhere. A related area of risk behaviour is the time span of decision-making and the difference in speed of response to environmental changes between an organisation with a dominant Chief Executive Officer (such as the MEBO ports where creative thinking and intuition is more likely to occur), and a committee-administered organisation (such as non-executive dominated Port of London, where there is likely to be a longer search for a planned response). This difference is an indication of the strength of the power bases of the individuals concerned and the extent to which their decisions are questioned by others, as well as the openness of the decision-making process.

Chakravarthy and Lorange (1984) identified the drivers of risk-taking as being:

Financial pressure - this is a function of investor (or stakeholder) dissatisfaction with the organisation's overall profitability (or costs) and the riskiness of its financial position and operating activities. It relates to their expectations of the costs and returns in port operations and discretionary activities, e.g.

"The market will win in the end. Price is set by "what the market will bear". Within a port cross-subsidisation is only a matter of presentation, except where statutory duties dictate otherwise. Capital rationing is dictated by an overall view of the options on offer. ... The risk and reward for the shippers, agents and shipowners is countered by their ability to relocate. If any port seeks to impose terms and conditions which threaten the port users then they are only too willing to exercise the right of relocation." (UP - CB)

"... In any diversification or re-use the aim should be to provide future income stream not one-off profit from disposal. Ports have fluctuating income levels and therefore increasing stable future income stream is essential." (UP - AL)

"The wharfage system of taxing the cargo owners to generate income for Portnet (Transnet) is highly profitable. We understand that this income will provide the capital for development by the Port Authority - if the Transnet Pension Fund doesn't get it first." (SB - K)

Portfolio pressure - this refers to the severity of the imbalances in an organisation's business portfolio, e.g. if there is limited diversification and most of the businesses are mature it experiences high portfolio pressure. It relates to investors' and stakeholders' expectations of growth or decline in the operations of a port and discretionary activities, creating a challenge that promotes decentralisation and unrestricted evolution in search of growth; alternatively promoting centralisation of decision-making and tight cost controls to reduce decline, e.g.

"There are clear differences between port authority (= landlord) and port operations (= profit driven businesses) ... " (SP - O)

"Commercial shipping pays the majority of conservancy charges for navigational/regulatory services. Pleasure craft pay little or nothing, other than for direct services such as mooring etc. Thus if commercial trade reduces remaining commercial users may see charges rise sharply - with further trade reductions resulting." (UB - B)

"... the aspect of Associated British Ports and British Airports Authority diversifying into property development may lead to management becoming less focused on transport business. If the property interests become highly profitable there could be a risk that available financial resources could be channelled to it at the expense of the port business and port investment would be curtailed. Conversely if property returns collapse (as it did during 1991/92) there could be a temptation for the company to divert profits from port operations to maintain dividends to shareholders at the expense of ploughing resources back for port investment." (UP - I)

"The Port of East London is a case where cargo volumes do not justify dredging costs, but it serves a business community that would probably suffer negatively should the port shut down." (SP - P)

The participants' perceptions of the importance of these drivers of selection of strategy can be measured in the multiple scenarios. This would demonstrate whether or not they determined the overall shape of a 'Long-term Strategic Services Industry' model.

7/ SCENARIO CIRCUMSTANCES OF POTENTIAL CONFLICT

The Technological model of structural change was based on a technical operations approach to understanding change. The emphasis on this model was on the technology employed within the organisation to explain past developments and operations. By implication, the guiding principle was that organisations structured themselves around the geography and technology within a particular industry, e.g. mass assembly line production, bulk cargo or container handling operations. The historical location of a port, the legal powers granted and mechanisation could be seen as being prime reasons for the development of a port and its sub-systems of operation. The technological model could be seen as identifying operational concepts to be addressed in a strategic corporate plan.

However, in the Power model there was an implicit presumption that politics determined the strategic choice exercised in the organisation. The emphasis of this model was on control over external constraints, internal power relationships and organisational structure. Resource allocation, decision-making and performance were seen to be heavily influenced by power struggles in internal and external relationships leading to tensions that required the exercise of power to resolve conflict. This model could be seen as the underlying driver for the process of structural change in the ports. The existence of power to determine the direction of change, i.e. strategy, raised tensions between the potentially conflicting desires of multiple stakeholders for the outcome of change. Resolution of these tensions determined the overall shape of objectives and goals in a corporate plan.

The tensions arising from structural change in ports change were categorised according to the holistic dimensions (Nutt and Backoff, 1994) of opposing tensions in Chapter 4. An outline of circumstances which could cause conflict was drawn from the following manifestations of tensions that might arise by considering the operational implications of the Key Question:

(Key Question - 1)

Are 'public' interest obligations perceived by decision-makers in a Boundary - spanning industry as imposing constraints on future selection of strategy?

- Implying:

stress in the traditional public sector service delivery system leading to productivity / preservation tensions:

created by conflicting customer demands for increasing productivity whilst simultaneously increasing standards of service delivery, leading to perceived inefficiency and need for structural change.

Multiple scenario circumstance:

The absence of a formal regulator implies that the level of competition is acceptable to the government and no public interest conflicts will occur in the management of economically unregulated structural change. But dynamic trading conditions may be recurrent in some form, with relatively short periods of unpredictable complexity and relatively long periods of predictable stability. Therefore short-term corporate plan choices to meet the impact of external events on differing aspects of port functions create long-term 'public interest' conflicts.

- Implying:

determining change priorities leading to transition / equity tensions:

created by conflicting investor demands for private sector style innovation and employee demands for professional freedom and secure employment conditions which produced goals that were vague and in dispute.

Multiple scenario circumstance:

Alternating pressures between 'public interest' in a port's survival and 'private interest' for commercial rewards lead to frequent changes in decision-making perceptions of the importance of the statutory and commercial roles in the organisation.

- Implying:

inertia during change leading to preservation / transition tensions:

created by conflicting regulatory demands for the maintenance of minimum expected legal and professional standards of service delivery and investor demands for innovation in service delivery. This produced an impression of inertia, leading to accusations that structural change has merely produced a private sector monopoly out of a public sector monopoly; but counter accusations of broad accountability, political interference and ill informed scrutiny by outsiders as strategy was formed.

Multiple scenario circumstance:

The choice of appropriate structure and managerial philosophy in corporate planning is influenced by shifting power relationships between opposing customer and investor demands. This leads to a potential conflict in priorities in the organisation of a restructured port for the operation of statutory and commercial roles.

This particular tension encapsulates customers' expectations for efficiency, cost reductions and speed of response to their demands both in UK and SA. It raises the consequential question of balancing conflicting interests, resources and priorities which is addressed in Chapter 6.

These circumstances form the outline of opposing opportunity / threat multiple scenarios. From a holistic perspective these can be expressed as being uncertainty over the future effect of management actions in response to structural change, as a consequence of an over-riding concern for a balance between adaptive generalisation and adaptive specialisation. This involve considerations of both short and long-term planning in a Boundary-spanning organisation (as discussed in Chapter 3). Achieving an operational balance between 'public' and 'private' interests and resolving inherent conflict was the assumed task of decision-makers. This need for a balance formed the second aspect of the scenario theme of potential conflict.

It was anticipated that a substantial majority of research participants were likely to perceive that achieving a balance between adaptive specialisation and adaptive generalisation would be a major consideration in selection of strategy.

This led to the Research Expectation that:

(Research Expectation -1b)

Achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as necessary to meet 'public interest' considerations in a port.

This could be tested by opposing opportunity/threat scenario narratives and measured by the number of participants favouring an opportunity scenario. If either the opportunity scenario or the threat scenario was strongly favoured by participants this would indicate the Boundary-spanning area did not exist. If neither scenario was strongly favoured this could be inferred as being that decision-makers were performing an agency role in a Boundary-spanning area, since the presence of opposing perceptions implied conflicting pressures on them. Hence neither 'private interest' nor 'public interest' would dominate their selection of strategy. Thus a balance was achieved which would reflect 'public interest' considerations, i.e. these were seen as being necessary.

This Research Expectation arose from an identification of operational level potential conflict. These circumstances of conflict highlighted concepts of environmental determinism that reflected the differing needs of 'public' and 'private' interests. If this Research Expectation was supported by data from research participants, i.e. a Boundary-spanning area existed, then a further analysis of the data relating to these concepts would indicate perceptions of the future nature of the organisational environment from a Strategic Choice Perspective. (This is discussed in Chapter 13.)

8/ SUMMARY

An element of ambiguity in the purpose of structural change was created by considering ports as pseudo public/private sector organisations. This raised the query of a conflict between 'public interest' and 'private interest' in the purpose of a port. The possibility of conflict was considered from an operational perspective of the holon identified in Chapter 3, which illustrated that:

the technological model of structural change is potentially flawed; and

power, in the form of strategic choice, is likely to be exerted to resolve manifestations of these flaws.

This consideration led to identifying the key concepts in port operations for testing by multiple scenarios, and the general outline of the content of the multiple scenarios was identified. In order to determine and measure participants' perceptions of these concepts Research Expectation 1(b) was derived.

The result of testing this would help explain the answer to Key Question-1, from the Strategic Choice Perspective of the future role of agency.

The next chapter discusses structural change from the strategic management viewpoint of the Behavioural and Mechanistic aspects of the holon in order to develop Research Expectations 2(a) and 2(b). These will form the final aspects of the scenario theme from which scenario circumstances of potential conflict were derived (as outlined in Chapter 2).

**CHAPTER 6 - ADVANCED SYSTEMS ANALYSIS OF
THE BEHAVIOURAL AND MECHANISTIC MODELS**
1/ ADAPTATION TO, AND MANAGEMENT OF, STRUCTURAL CHANGE

The final stage in creating multiple scenarios is to identify how those concepts of structural constraints identified in Chapter 5 may, either explicitly or implicitly, affect selection of strategy for a strategic corporate plan. These concepts may increase in importance, stay the same or decrease in importance, according to decision-makers' perceptions of the effects of future circumstances. Hence, any selection of strategy or exercise of power to resolve conflict will need to consider environmental change. Consequently, the organisations' administrative systems to implement a chosen strategy will also need to be re-evaluated in the corporate plan.

Structural change in the organisational environment entails the restructuring of an organisation's working practices in order to meet future stakeholder demands. Baden-Fuller and Stopford (1992) examined the strategic problems of slow moving, mature industries from the stance that it was not necessarily the environment that determined performance, but managerial attitudes to perceived problems which restricted success. They believed that it was possible for firms to 'rejuvenate' by concentrating on processes in order to achieve a change to an entrepreneurial outlook. According to advocates of the 'business re-engineering' approach, industry leadership and returns comparable to other less mature industries should be available if this route was followed.

"In the commercial world a port makes money or dies. There would in practice be no-one left to provide a public service." (UP - BY)

This approach required the creation of a new managerial mindset, but the process of change was not quick, since it "requires both radical and incremental moves - radical in the sense that beliefs are altered, structures torn down, skills modified and new technology introduced. It is also incremental in the sense that for any organisation which has limited resources, change must be undertaken from within and in a way that does not take any necessary risks" Baden-Fuller and Stopford (1992: 11).

The path they proposed for the process comprised four stages:

- galvanise - create a top team dedicated to renewal;
- simplify - cut complexity;
- build - develop new capabilities;
- leverage - maintain momentum and extend the advantages.

Structural change for the ports industries could be related to their work - galvanisation has been achieved by the legislation in the UK and restructuring in SA. In SA the split of functions between landlord activities and commercial operations (for possible

private sector involvement) does seem to simplify matters. However, simplification of responsibilities has not occurred in the UK (except for London) because of total privatisation of the statutory and commercial port operations. A building of entrepreneurial attitudes was nevertheless likely in both countries, through diversification and exposure to market forces, as a result of structural change. This applied equally to public and private sector ports - except that private sector ports were subject to increased pressure from investors for financial returns comparable to other less mature industries. The maintenance of momentum was entrusted to decision-makers through their role in selection of strategy and the organisations' administrative systems.

The 'business re-engineering' approach thus appeared to be concerned with mature commercial industries that were seen to be failing, or ripe for take-over and rationalisation, but not for service industries with ongoing obligations, such as ports. Baden-Fuller and Stopford (1992: 11) contended that the innovating firm influences the environment, rather than the environment influences the firm - this is not wholly true for leading ports in favourable geographic locations, and even less so for unfavoured ports which will experience stakeholder pressure to catch up and/or overtake them. The influence of constraining factors - such as existing resources, current competitive positions in a particular trade, power of customers and consequent investment needs, geographical limits, local and national stakeholders as well as statutory requirements - all have to be taken into consideration for transport networks. Thus, whilst their work was relevant, and acknowledged the influence of time taken to achieve change, it did not capture fully the key long-term strategic issues facing ports. It relied on theory that was prescriptive for situations where a need for change was perceived, but the emphasis was on relatively short-term competitive advantage in a production industry, rather than on the long-term strategic issues of maintaining an international transport system.

1.1 Strategic Adaptation

A different approach to implementing structural change was therefore required in order to meet the uncertain future effects of structural constraints. Chakravarthy and Lorange (1984) considered that there were four basic models of organisation to balance the conflicting demands of adaptive specialisation, adaptive generalisation, financial pressure, and portfolio pressure in a diversified firm (these concepts are identified in Chapter 5). Three were appropriate to the core peripheral and tangential operations of ports and are outlined below. The fourth - a matrix management structure - is inappropriate because of the wide disparity in the purpose of 'public interest' activities (the conservancy function) and 'private interest' activities (the commercial operations). The extent of this disparity was recognised in SA by restructuring the organisation into landlord and port operations.

Model 1 - Centralised Strategic Planning:

Top management assumed responsibility for all strategic moves, whilst operational managers focused on implementing the strategy. Hence adaptive specialisation was predominantly carried out at the operational level, whereas adaptive generalisation was predominantly undertaken at the corporate level. However it was possible that business opportunities at the operational level would not receive the attention that customers and managers felt was warranted:

"We see improving performance only happening if decision-making and planning are DE-centralised." (SB - K)

Model 2 - Decentralised Strategic Planning:

Adaptive generalisation and specialisation was delegated to lower management levels and the role of top management was one of control of the organisational structure and sanction of strategic proposals. Operational managers were encouraged to seek new opportunities and risk-taking was nourished. Considerations of problems of control meant that this model rarely existed in a pure form.

"If centralisation is limited to setting criteria then it follows that local solutions are acceptable provided others satisfy the criteria. Centralised decisions only come into play when:

- (a) the customer is very large and/or uses more than one port:
- (b) ports in the same group seek to compete for the same business." (UP - CB)

Model 3 - Decentralised Decision-Making (Guided By Corporate Portfolio Planning):

This model in effect bridges Models 1 and 2. Whilst adaptive generalisation and specialisation were delegated to lower management levels, the degree of delegation was dependant on the corporate portfolio plan. The operational managers may have a dominant goal of either adaptive generalisation or specialisation according to the nature of the activities performed and corporate guidelines. These guidelines were based on multiple influences and changing circumstances - hence their content and degree of delegation was not necessarily constant. In order to avoid problems arising from a static design being inappropriate for evolutionary stages of growth, these guidelines were frequently reviewed.

All these models were administered through a hierarchical structure. In Model 1, planning had a heavy emphasis on budgeting with a top-down focus, and lower emphasis on strategic programming; in Model 2 a greater emphasis was placed on strategy development so long as financial objectives were met; in Model 3 equal emphasis was placed on budgeting and strategy development. Consequently, Models 1 and 2 would both be suitable for situations of high portfolio pressure.

Model 1 would be particularly suitable if financial pressure was high as well, since control was more predictable than in Model 2, which was better suited to situations of low financial pressure. If financial pressure was high, but portfolio pressure was relatively low, then Model 3 was appropriate. Choice of model was heavily influenced by stakeholder power, including the CEO's and board's management style, the capability of the managers and the predominant organisational culture.

These structural models appeared suitable for ports in times of relative stability, or evolutionary change, but Chakravarthy and Lorange (1984) did not indicate their appropriateness during periods of revolutionary change. They could be seen as reflecting the voluntaristic principles underlying the Behavioural model and the deterministic principles underlying the Mechanistic model of organisation.

2/ CONSTRAINTS ON SELECTION OF STRATEGY

Strategic planning for port activities involved the development and implementation of strategy for both the obligations of a port (identified in Chapter 5), and the discretionary activities in pursuit of financial rewards. However, there is a problem in relating the strategic choice literature to the ports industry. In a meta-analysis Dess, Ireland and Hitt (1990: 7) found that "adequate controls for potential industry effects have not been used in many strategic management studies. Similarly, strategy researchers have not consistently used adequate conceptualizations of industrial environments in the design of their empirical work. Findings derived from research with such design and execution deficiencies may result in misleading interpretations". This study raised a query over the effectiveness of strategic recommendations resulting from research across industries that had differing environments - they may be counter-productive if a large proportion of the conclusions on selection of strategy arose from unrecognised industry effects.

This study implied the need for a cautionary perspective of strategy options, suggesting the selection and tailoring of specific environmental management strategies for unique situations, rather than following success factors identified in differing industries. There is a common belief in a need for a universal method of managing for growth in turbulent times. A large proportion of the strategy literature has advocated, and discarded, various techniques to this end. Pascale (1990: 13) charted this trend (calling them fads), and pointed out that "when the competitive environment pushes an organization to its limits, the old mindset no longer holds....we keep trying to apply the *tools* of transformation without a corresponding shift in our managerial mindset". Thus there is a danger of unwittingly applying inappropriate solutions in an attempt to achieve a sustainable competitive advantage.

2.1 Dynamic Constraints

Ghemawat (1991) believed that theories of strategic choice had come to focus on 'success factors', i.e. a hunt for expedient reactions to changes in the business environment that ensured a sustainable competitive advantage leading to success. He criticised the success factor approach for failing to explain why 'losers' did not simply close the gap with 'winners' by adopting the same success factors. In assessing the long-term strategic implications of the organisational environment, these did "not adequately account for the constraints imposed by past decisions on current ones, and by current ones on those yet to come. Ignoring dynamic constraints undermines the case for ever taking a deep look into the future, for thinking strategically as opposed to myopically. The reason is that in the assumed absence of dynamic constraints, myopic policies will afford as much value as far-sighted ones, and greater ease of operation ... Strategy cannot, as a result, be reduced to a matter of identifying and chasing success factors" (Ghemawat, 1991: 9).

In response to this concern, he proposed a concept of a dynamic constraint on strategy that had a cumulative outcome, rather than a series of short self-contained effects. He termed this 'commitment' - defining it as the tendency of strategies to persist over time. "Commitment seems, unlike the swarm of success factors, to be both sufficient *and* necessary to explain sustained differences in the performance of organizations when history matters, competitors that start out with different stocks of sticky factors may pursue different trajectories that partially insulate them from each other *even* if all of them remain perfectly alert to all market opportunities at all times" (Ghemawat, 1991: 25) This resulted from the processes of:

lock-in - the difficulty of disposing of 'sticky' investment factors which were durable, specialised and non-tradable on the market (otherwise they could be released, e.g. buyer and supplier power, interdependent links between organisational activities that were difficult to unravel, extra costs of negotiating replacement contracts, and imperfect information on available options);

lock-out - the opposite of lock-in; previous disinvestment created heavy investment costs in reacquiring assets or subsequent difficulties in redeploying the factors;

lags - the inability to act on opportunities as they presented themselves because of the effects of constraints on existing investments, the time and costs required to release assets and accumulate any additional factors that were necessary;

inertia - this could take the form of managerial or stakeholder bias, stubborn organisational cultures and structures. Each of these could have a differing threshold resistance to change, thus delaying or preventing new strategies.

Ghemawat (1991) has captured the essence of key long-term strategic issues facing the ports. However, he has not fully addressed the issue of external power relationships creating turbulent changes in the environment, e.g. legislation and stakeholder pressure restricting freedom of decision-making, but nevertheless producing a situation requiring a strategic response.

2.2 Growth

Greiner (1972) examined models of organisational structure from the perspective of evolution and revolution as organisations grew. He identified five phases of evolutionary growth, each phase ending in a crisis of 'revolution' as the structure of the next phase emerged. These phases depend on: the age of the organisation, the size of the organisation, the stages of evolution, the stages of revolution, and the growth rate of the industry. He categorised the phases and revolution crises as:

- (1) growth through creativity, followed by crisis of leadership;
- (2) growth through direction, followed by crisis of autonomy;
- (3) growth through delegation, followed by crisis of control;
- (4) growth through co-ordination, followed by crisis of red tape;
- (5) growth through collaboration, followed by crisis with variable causes.

Tushman, Newman & Romanelli (1986: 31) examined these periods of incremental growth that were punctuated by unavoidable discontinuous changes throughout an organisation, finding that these patterns were not unique since "upheaval, sooner or later, follows convergence if a company is to survive; only a farsighted minority of firms initiate upheaval prior to incurring performance declines. The task of managing incremental change, or convergence, differs sharply from managing frame-breaking change." They found that structural change occurred as a response to major environmental changes, these being one or a combination of industry-wide changes, product life-cycle shifts and internal company dynamics.

For the ports these major changes arose from privatisation and commercially-oriented restructuring. Prior to these events, ports could be considered to be at the end of stage 4 of the growth cycle, i.e. having reached maturity through co-ordination and commonly being seen to be suffering from a bureaucracy that limited effectiveness:

"Privatisation of port operations (not port authority functions) is desirable to keep business away from bureaucratic government functionaries." (SP - U)

Structural change has thus introduced a period of 'crisis'. This meant that decision-makers had to reassess the balance between adaptive specialisation and generalisation, as well as the demands of portfolio and financial pressure. Will the outcome of this re-evaluation be a return to stages 1 to 3, or a move to stage 5? The rate of growth depended on the level of environmental uncertainty and scarcity of critical resources in the industry (Koberg, 1987).

The interesting conjectures for multiple scenarios are that, given knowledge of these phases, can decision-makers avoid a particular crisis by refusing to grow to the next phase? Or has environmental change forced an organisation up/down the scale into a new growth phase? Or, if it is in a phase of collaboration which does not succeed, will it need to move down the scale again to grow?

"... major investment is made in close collaboration with customers and is closely tailored to market demands." (UP - CB)

Is the organisation as a whole in one stage, or are the various constituent parts at differing growth and/or revolution stages? (i.e. the core/peripheral/tangential functions identified in Chapter 5). If so, how should the organisation be structured? These conjectures can be resolved only by the exercise of judgement and power.

2.3 Hostility

The purpose of structural change was to alter management philosophies to produce new methods of meeting customer demand. An innovatory or entrepreneurial approach would meet this aim in the ports. However, the unique factors of growth or decline that were solely dependant on changes in the level of international trade are not necessarily catered for by managerial philosophies imported from fast-moving consumer production and personal service industries. These have differing capital intensity needs, decision horizons and barriers to entry or exit. In these industries growth becomes a prime objective, not only to satisfy financial stakeholders but also to counter hostile competition.

In a study covering over 40 industries with data periods ranging from 15 to 30 years, Potter (1991) found that over a very long period:

hostility was caused by a fall in demand and an expansion of aggressive competition;

the phases of hostility followed the trends of pressure on margins, leading to shifts in market shares. This generated product proliferation which caused self-defeating cost reductions that forced consolidation and shakeout;

the final phase relied on demand to rescue most industries from hostility, where consolidation ultimately resulted in a small number of key players emerging who have given up trying to win share through price discounting;

most companies failed in a hostile market because of bad management policies - bigger was better for survival not only because of economies of scale but also for the customer relationship that could be created (lock-in).

A managerial philosophy of customer retention through activities that were hard for competitors to copy was advocated. This supported Prahalad and Hamel's (1990) views on identifying and nurturing the core competence of the organisation to ensure its competitive advantage over a long period of time. Consequently, the best way to combat hostility and ensure success was seen as leading the opposition. Whilst this may be a successful tactic in an evolving and growing domestic, or international, market it may not be the best strategy for a mature transport network. A port can not

generate more imports or exports by creative means, as throughput is linked to the economy. Hence it can only poach a limited amount of non-destination-specific traffic. Further, product proliferation (i.e. diversification for the ports) may not be sustainable since the life-cycles of diversified activities are shorter than their conservancy and commercial activities.

2.4 Mutual Co-operation Strategies

An assumption of aggressive competition in a mature industry is not the only option available to decision-makers - why not implicit or explicit co-operation for long-term economies of scale, for example? In this case managers in the UK and SA ports industries could be competitive, but not necessarily act in a hostile manner. This could be because the environment discouraged such behaviour, or because the managers believed that they had learnt through experience (or from the lessons of history, e.g. in London) that such behaviour was ultimately self-defeating in a high cost industry with high entry and exit barriers, and whose survival is essential to the national interest. Co-operation could take the form of joint ventures between port authorities and terminals to handle specific traffic, e.g. for the large new generation container ships where the port authority improves access by dredging specifically for these vessels and the terminal provides the handling facilities. Not all port users would benefit directly from these arrangements. However, the increased vessel traffic could have the effect of lowering overall port dues, thus meeting the views of Foreman-Peck and Millward (1994) on economic trust and Goss (1992) on minimum generalised transport cost - but how realistic a strategy is it? Three studies point to the feasibility of this course of action:

- (a) Miles, Snow, and Sharfman (1993: 163) examined the beneficial effects of competition in an industry as distinct from the traditional view of competition as rivalry. They found broad evidence that "benefits are most feasible in industries characterized by diversity among firms' competitive strategies. Second, as industries move through the life cycle, variety decreases, implying that both strategists and policy-makers need to consider the impact on aggregate variety when evaluating prescriptions for the revitalization of declining industries ... However, it was not possible to determine when the benefits of variety began or whether these benefits extended indefinitely. It is possible, for example, that there is a U-shaped relationship between industry variety and performance, whereby performance increases with variety up to some level, then drops off if variety is increased."
- (b) Dollinger (1990) considered highly dynamic environments impeded development of co-operation; moderately dynamic environments supported co-operative behaviour; whilst very stable environments removed many of the motivations to co-operate;

- (c) Nielsen (1988) contended that, once public policy considerations had been satisfied, then in most, but not all cases, co-operative strategy appeared to improve value-added efficiency in a wide variety of environments and situations.

A recent example of co-operation in the UK was the £20 million dredging of sea approaches by Harwich for a new container terminal at Felixstowe. Funding was made available by banks, with repayments being made from an anticipated growth in the level of port dues from greater frequency of calls by large vessels which were no longer restricted by tidal considerations. Dredged material was used for sea defence works, thus benefiting the community. The higher income from port dues meant that port users in Ipswich and Harwich benefited indirectly from a lessening of the need to raise charges to meet costs of ongoing commitments. (Interview notes - UP - N).

Likewise, a £2 million investment in river training works in London to enhance depths of water at low tides benefited the SA container trade directly and led to indirect benefits for other port users. This could be seen as a further example of co-operation between the public and private sectors.

3/ ENVIRONMENTAL MANAGEMENT

Ports decision-makers are assumed to be pragmatic, and exhibit a predominantly systemic approach to strategy formulation and planning with overtones of classical, evolutionary and processualist strategic thinking (these approaches were identified in Chapter 3):

"Because of the statutory nature of some obligations there may be constraints on contracting out of services, especially if the port cannot contract out its obligations. This is probably most apparent in a field such as pilotage although on one of our estuaries the pilots operate as a co-operative of self-employed individuals. Where growth is likely managerial effort is concentrated on matching customer demand as well as satisfying legislative constraints. Where the port is static or declining, positive attitudes to investment for achieving savings will be dominant. Note also that ports, within limits, have the opportunity to reassign their assets to more profitable uses." (UP - CB)

The environmental management perspective assumed that decision-makers had some capacity to manage their changing external constraints - these might be outside the direct control of management but might be influenced by managerial action. The level of effort made to take advantage of, or alter the effects of, external events within decision-makers' direct control or influence (e.g. structural change), involved a process of both generalised and specialised adaptation.

Clark, Varadarajan & Pride (1994) carried out a holistic review of the similarities in concepts of environmental management in the marketing strategy, strategic choice,

environmental determinism, organisation and behaviour literatures. From this review, they developed three groups of issues to be considered when assessing the level of environmental management undertaken by decision-makers:

Environmental Issues - these led to perceptions of:

uncertainty over effect and response;
threat regarding complexity, instability, resource scarcity and resource concentration.

Organisational Issues - these led to concerns about:

size; resource slack; centralisation of decision-making; dominance of Boundary-spanning functions.

Decision-maker Attributes - these were the personal characteristics of:

Need to achieve; flexibility; locus of control.

From these issues they developed a series of research propositions regarding the nature of environmental management that was likely to occur as a result of an environmental event, e.g. structural change. These propositions could be interpreted as addressing key decision-making factors in creating a corporate plan to achieve a balance between adaptive specialisation and adaptive generalisation in the selection of strategy and organisational structure.

The following sections of this chapter utilise these propositions of environmental management as a means of assessing the implications of the second Key Question:

(Key Question - 2)

So what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

The propositions thus serve to structure the content of multiple scenarios and can be viewed as surrogate measures for the requisite structure and managerial philosophy. They are not being tested as formal research propositions; consequently, the comprehensive literature justification that was used to develop the propositions is not repeated in this chapter. The propositions have been adapted to reflect the need to construct both opportunity and threat scenarios. The original numbering system of the propositions is retained, but presented in the following categories to reflect their relevance to the ports and the Strategic Choice Perspective of the future relationship between organisational agents and the environment:

- P 1 - 4 extent of uncertainty in managing environmental events
- P 5 - 8 adaptive specialisation in managing environmental events
- P 9 - 12 adaptive generalisation in managing environmental events
- P13 - 17 expected decision-maker attributes

3.1 *Uncertainty in Managing Environmental Events*

Milliken (1987) considered the nature of uncertainty over the best course of action to take in coping with changes in the environment (discussed in Chapter 1). These changes introduced a degree of uncertainty depending on the extent to which the changes were understood (state uncertainty). For the ports it was assumed that this did not apply because of the hierarchical level of the participants. The level of environmental management was dependent on decision-makers' perceptions of the extent to which they could be confident that their efforts would succeed (future effect uncertainty). This assumed that all available choices were known and understood (response uncertainty). Thus the total degree of uncertainty amongst decision-makers posed either a perceived opportunity or threat to the organisation's survival.

Accordingly, the level of environmental management displayed by decision-makers could be viewed in terms of command (freedom granted to managers to carry out the normal operations of a port) and control (freedom granted to managers to set and pursue financial and growth objectives). The environmental management levels were:

- P1 LOW - when response and future effect uncertainty are both high - decision-makers were 'adrift' with adaptation determined externally. This implied a *threat scenario* since there was a possibility that any change in selection of strategy may be seen by stakeholders to remove safety constraints and provoke decline, thus creating centralisation pressure to reduce undesirable evolution - appropriate for situations when tight centralised command and control in the interests of survival was preferred to speed of decision-making.
- P2 MODERATE - when response uncertainty was low and future effect uncertainty was high - decision-makers were 'hedging' with paradoxical selection of strategy. This implied a *mixed opportunity/threat scenario* since an innovative selection of strategy was seen to be desirable, but a completely unrestricted selection of strategy might be seen by stakeholders to remove safety constraints and reduce growth. Therefore some decentralisation was allowed and thus a greater degree of evolution was exhibited - appropriate for situations where delegated command and control was seen to enhance growth and secure long-term success, but with centralised financial control and monitoring of growth.
- P3 LOW - when response uncertainty was high and future effect uncertainty was low - decision-makers were 'passive' with adaptation by chance. This implied a *threat scenario* because little change in purposes of port operations was set by key stakeholders and hence there was little incentive to acquire knowledge of options in selection of strategy. This increased uncertainty over implementing changes in selection of strategy in case these led to decline. This created some centralisation pressure for both command and control, thus restricting evolution - appropriate for survival in the 'public interest', where well established staff and line procedures existed for routine limited delegation of command and control to absorb growth/decline pressures.

- P4 HIGH - when response and future effect uncertainty were both low - decision-makers were 'aggressive' with adaptation by design. This implied an *opportunity scenario* where stakeholder constraints were low, as were limitations over selection of strategy - this led to expectations of growth and financial success, thus creating a managerial challenge that promoted decentralisation and evolution. There was minimal centralised monitoring and high delegation of command and control - appropriate for port operations where demonstrable success was a driving force and was seen to secure survival through competitive advantage.

These propositions can be used as surrogate measures to test perceptions of the future desirability of the Chakravarthy and Lorange (1984) models of organisation where:

- Proposition P1 can be seen as a surrogate measure for Model 1;
- Proposition P2 can be seen as a surrogate measure for Model 3;
- Proposition P3 can be seen as a surrogate measure for Model 1. (This was the commonly perceived UK and SA organisation before structural change);
- Proposition P4 can be seen as a surrogate measure for Model 2.

4/ ADAPTIVE SPECIALISATION

In the 'planned strategy' versus 'emergent strategy' debate, there appeared to be some overlap in the strategic philosophies advocated for ensuring survival and success during periods of environmental change. These philosophies comprised the traditional linear logical methods of change management (unfreeze, change, refreeze, e.g. Baden-Fuller and Stopford, 1992) and emerging creative methods of change management which are essentially non-linear (a continuous trial and error search for tactical advantage, e.g. Stacey, 1993). From a holistic perspective both could be viewed as primarily being concerned with adaptive specialisation, and the fundamental difference between them lay in the assumptions on the degree of foresight available (predictable versus unpredictable) and on the duration of change (short-term versus long-term). The underlying rationale for both philosophies appeared to be that by continual adaptation (including taking and maintaining a leading posture in the industry) survival could be ensured. Consequently, both philosophies tended to assume that a fundamentally Model 2 organisational design was the type best suited to coping with change.

However, it might be that future patterns of organisational transformation in highly complex environments could be understood through emerging thinking on non-linear dynamics. This challenged traditional assumptions on the nature of change, viewing it as an alternation between long periods of stable structures with only incremental adaptations to environmental events being required, and relatively brief periods of revolutionary change requiring major structural adaptation. The duration of change had not been established in the literature. By implication this depended on

environmental events acting as a control on the pressures for change, e.g. the 'public interest' element in the sustained operation of the ports might be a sufficient control to prevent selection of strategies that have high potential short-term rewards, but also high potential long-term risks. Thus the fundamental concept was that environmental determinism created an underlying stability in the selection of strategy. This tended to ensure that an organisation survived these revolutionary periods.

Structural change in the international ports had created a turbulent environment, which can be equated to complexity (Emery and Trist, 1965). The multi-disciplinary literature can be interpreted as considering non-linear dynamical systems and the complexity entailed by these systems. Authors appeared to be attempting to establish the applicability of non-linear dynamics to strategy, for example by re-interpreting and/or reviewing other writers - Freedman (1992), Sungaila (1990), Turner (1993), Vinten (1993) - or by relating specific examples of Japanese practices - Nonaka (1988 and 1990) - or by incorporating it as an aid to understanding a specific topic - Smilor and Feeser (1991). Whilst the majority seemed to over-generalise conclusions on freedom of selection of strategy (when related to the unique structural constraints in the ports), the thrust of each was the same - how to create a structure and managerial philosophy to deal with change. The value of past experiences and their usefulness in the future was not discounted, but there was an acknowledgement that "today's problems come from yesterday's solutions" (Senge, 1990: 58).

An emphasis on growth and turbulence in structural change highlighted the role of managers' perceptions of the environment and the long-term effect of creative or logical decisions taken in response to these perceptions. Senge (1990), when discussing why doing the obvious thing did not produce the obvious, desired outcome believed that dramatically different effects in the short run and the long run arose from dynamic complexity. Schutzenberger (1954) was amongst the first writers to recognise the complex pattern of goal seeking behaviour and that relying solely on feedback of results was inadequate in organisational decision-making. He considered that there was a need to know more about how much efficiency was lost when the span of foresight and degree of flexibility were not ideal. In these situations he believed that the optimal strategy was the simple tactic of attempting to do one's best on a purely local basis.

The problem is identifying what 'best' is - generally this is seen by the later Behavioural writers as being trial and error and learning from the results of efforts. For example: Mintzberg and Waters (1985) found a continuum of deliberate and emergent strategies; Mintzberg (1985) identified organisations as being political arenas; Schwenk (1990) looked at executives' perceptions of conflict in organisations and found that those executives in not-for-profit organisations thought that it produced higher quality decisions than did their counterparts in for-profit organisations; and in studying decision-making, Kriger and Barnes (1992) found a hierarchy of interactive decision levels.

Recent writers, such as Peters (1991, 1992a, b), express this as the evolving, learning and adapting organisation, and provide guiding principles on coping with dynamic change. These principles include rapid innovation as a competitive advantage and suggestions that organisational size and structures be designed solely to generate this result. They assume dynamism in the market, generally recommending relatively small, but nimble and responsive, organisations with an entrepreneurial approach that permeates through the organisation. They convey the impression that environmental change will continue to be dynamic, that a period of stability will not exist when the dynamic organisation may no longer be required and when the need may be for a less complex organisation. This impression may be caused by their need to address a target audience whose attitudes are biased towards short-term goals and 'winning' rather than taking a long-term view of survival.

Not all the literature conveys this impression. Senge (1990) questions the type of environmental change present and Pascale (1990: 53 - italics as original) states that "neither 'planned' nor 'opportunistic' *extremes* alone provide the long term answer. Organizations need both. The answer lies in a 'dynamic synthesis' - not a compromise or mathematical halfway house of strategic, tactical and opportunistic tendencies, but a *paradoxical embrace* that contains both poles". This view is also discernible in recent international studies of Mechanistic models of organisation. Bahlmann (1990) reported on the organisational behaviour of top management before, during and after crisis in the early 1980's in the Netherlands using 'the second generation system theory' focusing on adaptation to the environment by self-organisation; Zuijderhout (1990) took the principle of self-organisation further by illustrating how it applied to traffic congestion and change management; an 'accidental' discovery of evidence of non-linear systems in the growth of entrepreneurial firms was reported by Eisenhardt and Schoonhoven (1990) in the US semi-conductor industry.

These writers advocate techniques of self-organisation and self-management as being the best available methods for managing complex situations. They can be interpreted as methods providing the requisite variety to deal with simultaneous order and disorder in a system, as identified by Ashby in 1956 (Beer 1979, 1981; Checkland 1981, Weick 1979), so as to develop a span of foresight and degree of flexibility in managerial control. This means that to be able to adapt to the environment, there must be sufficient organisational sensors available to detect and respond to changes. This led to recommendations for simplifying issues and building political support, and changing managerial mindsets. In essence, the authors were identifying the characteristics of a Model 2 organisation (i.e. decentralised) to achieve adaptive specialisation. The choice of this form of organisation model appeared to depend primarily on the extent of differing managerial perceptions regarding the statutory (conservancy) and commercial roles of a port:

P5 environmental complexity - the more stakeholder demands increased the pressure to respond in some form, the greater the incidence of linear expansion (statutory role) or non-linear aggression and unrelated diversification

(commercial role); but protection responses and withdrawal or contracting out were also an option in risk management (for both the statutory and commercial roles if these were seen as threatening survival).

P6 environmental dynamism - the higher the rate of change in stakeholder demands, the more this increased pressure to respond in some form to stabilise effects, leading to a greater incidence of decentralisation (statutory and commercial roles), but centralised command and control was also an option in risk management (for both the statutory and commercial roles if these were seen as threatening survival).

P7 resource scarcity - when important resources were scarce, vigorous competition would help to ensure organisational survival. This created financial and portfolio pressures, thus encouraging opportunity behaviour, but could also force threat behaviour depending on constraints on selection of strategy to pursue resources.

P8 resource concentration - this referred to the clustering of resources and the ease of securing resources, e.g. skills (managers) and assets (land). This was dependent on geographical and organisational circumstances, which promoted either opportunity or threat behaviour depending on the perceived need to acquire new resources or safeguard existing resources.

Participants' perceptions of the strength of these factors could be measured in multiple scenarios, on the assumption that choice of an overall opportunity or threat scenario would indicate a favoured organisational design to reflect anticipated managerial behaviour - Model 2 (opportunity) if high, Model 3 (mixed) if moderate, Model 1 (threat) if low.

5/ ADAPTIVE GENERALISATION

The adaptive specialisation recommendations in the literature involved a change in managerial attitude and organisational structure from existing Mechanistic models to encourage rapid response to a turbulent environment.

An entrepreneurial or innovatory organisation structure may be appropriate for dealing with relatively short-term complexity, but will it mean the loss of long-term core competence (Prahalad and Hamel, 1990) or the reliable organisation (Weick, 1986)? Is it better to have an organisation which is best suited for an average linear growth (Potter, 1991), with reasonably predictable phases of growth and reasonably predictable problems? The implication was that the traditional linear mechanistic organisation might be appropriate for long-term survival and this form is well recorded in the literature, e.g. Handy (1985), Morgan (1986).

In essence this is the Model 1 organisation that was best suited to high portfolio and financial pressures, with long-term planning processes designed to achieve adaptive generalisation. The choice of this form of organisation model appeared to depend primarily on the extent of managerial perceptions regarding:

- P9* organisational size - the power to dictate events by sheer dominance reduces entrepreneurial behaviour.
- P10* organisational slack - the existence of surplus (capacity, funds etc.) reduces entrepreneurial behaviour as survival is of less concern than investing for future success.
- P11* centralisation of decision making - the location of command and control influences resource allocation and the speed of response. Speed is enhanced by decentralisation, implying opportunity structuring. Strategic resource allocation is enhanced by centralisation, but implies threat structuring.

Participants' perceptions of the strength of these factors could be measured in multiple scenarios, on the assumption that choice of an overall opportunity or threat scenario would indicate a favoured organisational design to reflect anticipated managerial behaviour - Model 1 (threat) if high, Model 3 (mixed) if moderate, Model 2 (opportunity) if low.

6/ BLENDING ADAPTIVE SPECIALISATION AND GENERALISATION

How relevant are Models 1, 2 and 3 to managing differing parts of an organisation with differing degrees of complexity at the same time? The differing structural constraints imposed by 'public' and 'private' interest considerations in port operations imply that several management strategies may be required for core, peripheral and tangential port operations, thus acting as an example of Pascale's (1990) concept of a paradoxical strategy and organisation.

"Some, however, also contract out crucial service functions. ... Others turn over their strategy formulation to consultants. There is no limit to what you can do, if you want to... It is the balance that is crucial.... Short-term savings may result in long-term damage... There is no neat general answer. It is always a question of finding the appropriate balance." (Handy, 1994: 80).

Consequently port operations bridge the traditional hard Mechanistic models of command and control and the soft Behavioural models in selection of strategy and evolutionary organisational development. Handy (1989) identified the concept of a Federal organisation as being a future organisational form which could cope with the differing strategic requirements arising from the local priorities of distinct businesses. In a Federal organisation the initiative, drive and energy came from the distinct businesses, with a small centre acting as a guiding and influencing force with a

relatively low profile. The centre held certain decisions to itself, e.g. investment, which gave it the means to shape long-term strategy, whilst the component businesses were responsible for all other matters. In effect this was a minimal adaptive generalisation strategy for the centre with a maximum adaptive generalisation and specialisation strategy for the component businesses.

It could be seen as embodying the principles of a Model 3 organisation, where the extent of adaptation accorded to the businesses was dependent on the nature of activities undertaken and context of structural constraints. This was in contrast to a Model 2 decentralised organisation where the centre *delegated* certain functions whilst remaining in overall control, initiating change and directing the flow of information to and from it in order to monitor activities, i.e. overall responsibility for adaptive generalisation remained with the centre, whilst the component businesses were responsible for adaptive specialisation.

The evolution of this form of organisation was a lengthy process of learning and "Federalism misunderstood becomes inefficient decentralization, leading to talk of the headless corporation or the hollow company ..." (Handy, 1989: 99). A common commencing route in the evolutionary process was decentralisation and contracting out of functions to reduce spans of control and costs, thus promoting efficiency.

"I have found that if a "portion" of port management is contracted out e.g. private pilots etc. this always has positive implications as private companies tend to want to show a good face and you will then end up with a lot of private departments running on maximum efficiency which has very positive implications for the port as a whole." (SP - C)

Decentralisation and contracting out of functions led to smaller staffs both in the centre and in the businesses. It then became impossible to control in detail the operations of numerous businesses and contractors, so "small [centres] make federalism ultimately inevitable and large [centres] make decentralization ultimately too expensive. The slow imperative of economic reality pushes larger organizations into a new kind of world." (Handy, 1989: 96). In essence, he was identifying the characteristics of a Model 3 organisation that is best suited to high financial pressure and low portfolio pressure, with long-term and short-term planning processes designed to achieve adaptive generalisation and adaptive specialisation. The choice of this form of organisation model appeared to depend primarily on the extent of managerial perceptions regarding:

P12 dominance of Boundary-spanning functions - the key decision-making power tended to reside in those functional areas best suited to cope with the dominant environmental requirement. This referred to the concept of core, peripheral and tangential structures to undertake functions where both command and speed of response were critical factors. Hence there could be a shifting of power bases between the statutory/commercial areas in response to portfolio

(diversification) pressure, financial pressure or stakeholder pressure, which could promote either opportunity or threat behaviour.

Participants' perceptions of the strength of this factor could be measured in multiple scenarios, on the assumption that choice of an overall opportunity or threat scenario would indicate a favoured organisational design to reflect anticipated managerial behaviour - Model 3 (mixed) if moderate, Model 2 (opportunity) if high, Model 1 (threat) if low.

7/ EXPECTED DECISION-MAKER ATTRIBUTES

The problem in implementing structural change was that it created a turbulent and complex period whilst a new organisational form evolved. Gemmill and Smith (1985) studied non-linear organisational adaptation to turbulent environments, concluding that organisations went through a process of symmetry breaking, experimentation and reformation. In drawing a distinction between the complexity of a system and the system's ability to deal with complexity, they held that evolving organisations had experience of coping with change, thereby acquiring unique knowledge. Hence consideration was needed in restructuring an organisation as to whether this knowledge would be lost. Attempts by competitors to replicate the structure as it appeared after evolution may not capture this knowledge, thus Miles and Snow's (1986) descriptions of the evolution of dynamic network organisations had inevitably to be followed by their study on the causes of failure in these organisations through not understanding the logic of the form adopted (Miles and Snow, 1992).

Knowles and Saxberg (1988: 252) considered the problem of retaining and developing unique knowledge. From a systems perspective of the nature of change and organisations, they suggested that "the leadership at the top must ensure flexibility and fluidity in the organization. By using temporary and parallel organizations as adjuncts to its bureaucratic systems, the leadership can retain creativity and provide for its periodic renewal. In this effort the involvement and contribution of all members are critical and hinge on the management's ability to function in organic or open-system relationships". They drew attention to the misgivings that have been expressed about the success of parallel organisations in the long-run, but it was their temporary nature which made them feasible when "innovation, adaptation, and adaptability become a stage in the life cycle of the organization, followed by increasing pressure to move towards the features of stability and security exemplified by the bureaucratic organization". It seemed that this approach was suitable for situations of structural change where there was a high level of specific environmental constraints on selection of strategy.

Boschken (1990: 136) identified this approach to coping with a turbulent environment in the ports industry when assessing the relationship between strategy, structure and creation of a long-term strategic corporate plan in the ports. In a retrospective study of data for 1965 - 1980 covering the turbulent transition period of the US west coast

ports container revolution, he found qualitative evidence of a micro-structure. He defined this as "a set of coordinated subunits assigned the critical tasks of designing strategy for the whole organisation and creating appropriate implementation policies and changes in operational structure the underlying logic is simple proactive behaviour towards an unknown transitional future depends on informed speculation. Early awareness of fundamental industry changes by ports is explained in part by the design and inclusion of organizational subunits having authority to strategize about change at the dawn of containerization. ... One would expect such speculation to be less spurious if people with competencies in analyzing and constructing future scenarios are employed in conducive environments and proper decisional capacities."

This micro-structure helped to explain the design and implementation of an organisational strategy that led to performance leadership in the industry. Clear differences were visible in how each port authority 'structured-up' to discern and take advantage of tactical opportunities in the container revolution. This historical study was limited to commercial activities in only part of an organisation, in a different country with different environmental circumstances, thus it cannot be taken as conclusive evidence of a workable method to deal with all potential organisational issues arising from structural change in UK and SA ports. However, it does indicate possible management reaction during to a turbulent period in the ports industry and the managerial attributes required for the process of structural change.

Participants' perceptions of the strength of the following managerial attributes could therefore be measured in multiple scenarios, on the assumption that choice of an overall opportunity or threat scenario would indicate a favoured organisational design:

P13 related to decision-maker flexibility for dynamic environments - this represented a risk-taking attitude when change emerged and developed quickly. It was suited to 'success' oriented decentralisation with short-term planning horizons.

Model 2 (opportunity) if high, Model 3 (mixed) if moderate, Model 1 (threat) if low.

P14 related to decision-maker flexibility for stable environments - this represented a risk-averse attitude when change emerged and developed slowly. It was suited to 'survival' oriented centralisation with long-term planning horizons.

Model 1 (threat) if high, Model 3 (mixed) if moderate, Model 2 (opportunity) if low.

P15 related to the need to achieve among decision-makers for stable environmental events (the desire for control over events was probably more realisable in predictable environments). This created a sense of accomplishment for those with responsibility for the long-term effects of their actions in centralised

structures, but frustration for those with an appetite for change and short-term results in decentralised structures.

Model 1 (threat) if high, Model 3 (mixed) if moderate, Model 2 (opportunity) if low.

P16 related to the need to achieve among decision-makers for dynamic environmental events (the desire to see success was probably less realisable in unstable unpredictable environments). This created a sense of challenge for those with responsibility for the short-term effects of their actions in decentralised structures, but frustration for those with a risk-averse attitude in centralised structures.

Model 2 (opportunity) if high, Model 3 (mixed) if moderate, Model 1 (threat) if low.

P17 related to the locus of control of the decision-maker - the extent of the individual's perception of control he could exercise over his life and the world, i.e. a proactive, risk-taking decision-maker, or the extent of the individual's perceptions of being at the mercy of events, i.e. a reactive, risk-averse decision-maker. An opportunity choice could be interpreted as being an 'entrepreneurial' manager concerned with success. A threat choice could be interpreted as a 'bureaucratic' manager concerned with survival.

Model 2 (opportunity) if high, Model 3 (mixed) if moderate, Model 1 (threat) if low.

8/ SCENARIO CIRCUMSTANCES OF POTENTIAL CONFLICT

The Human Relations or Group model was based on a collective social approach to managing change. This model was concerned with group intra- and inter-reaction processes, considering detailed areas of human behaviour such as the informal or *de facto* operation of the organisation, with little consideration for the formal hierarchical framework for the organisation. In contrast, the Individual Behaviour model was based on a distinctive personal approach to managing change. It evolved from the Human Relations model and emphasised the individual (as opposed to group) behaviour and motivation, stressing factors such as individual personality traits. Both of these models were concerned with a voluntaristic perspective of managing environmental change, i.e. it was held that management had the ability to exert substantial control over the organisational environment. This was achieved through a selection of strategy in response to environmental events. It followed an emergent process, since a planned strategy could not respond to rapid changes in the environment (Mintzberg, 1994). The emphasis was on decentralised decision-making and command, but with overseeing and control remaining with a small central co-ordinating body. These models could be viewed as methods of obtaining adaptive specialisation in dynamic environments.

In contrast, the Mechanistic or Bureaucratic model was based on a dispassionate cybernetic approach to controlling organisational response to structural changes in the environment. This was the traditional or classic model of the organisation in a closed or semi-closed framework, concentrating on predictability and stability in the environment. The environment was seen to exert a substantial influence on the options open to decision-makers, and hence strategy could be planned to accommodate a limited number of options in response. It was concerned with a deterministic approach to management, with little consideration for unpredictable dynamic changes in the environment of the organisation. For example, topics of study were principles of administration, formal strategic planning methods such as long-term budgets, hierarchical arrangements, delegation of authority and responsibility, and methods of control within the overall organisational structure. This is the generally perceived organisational structure for public sector organisations, being viewed as static and unresponsive to changing circumstances. The emphasis was on centralised decision-making, command and control (Johnson and Scholes, 1993). This model could be viewed as a method of obtaining adaptive generalisation in static environments.

The tensions between voluntarism and determinism affected the design and implementation of the strategic corporate plan, and determined the choice of Behavioural or Mechanistic organisational models, or a compromise between them. However, in the Power model there was an implicit presumption that politics determined the strategic choice exercised in the organisation. The emphasis of this model was on control over external constraints, internal power relationships and organisational structure. Resource allocation, decision-making and performance were seen to be heavily influenced by power struggles in internal and external relationships, leading to tensions that required the exercise of power to resolve conflict (Morgan, 1986). This model could be seen as the underlying driver for the process of privatisation and restructuring in the ports. The existence of power to determine the direction of change, i.e. strategy, raised tensions between the potentially conflicting desires of multiple stakeholders for the outcome of change. Resolution of these tensions determined the overall shape of objectives and goals in a strategic corporate plan.

These models could be seen as identifying concepts from different perspectives of management freedom to resolve conflict. The tensions arising from structural change in ports were categorised according to the holistic dimensions (Nutt and Backoff, 1994) of opposing tensions in Chapter 4. An outline of circumstances which could cause conflict was drawn from the following manifestations of tensions that might arise by considering the strategic management implications in balancing conflicting interests, resources and priorities of the Key Question:

(Key Question - 2)

So what do decision-makers in a Boundary-spanning industry perceive as the most likely managerial philosophy and organisational structure to safeguard the 'public interest'?

- Implying:

meeting future demands leading to productivity / transition tensions:

created by continually shifting performance expectations and conflicting demands for maintaining minimum expected legal and professional standards of service delivery. These produced constraints that limited flexibility and autonomy.

Multiple scenario circumstance:

Differing corporate planning assumptions on statutory and commercial roles may lead to the application of indiscriminate voluntaristic / deterministic managerial philosophies leading to alternating centralisation / decentralisation pressures. Corporate planning to maximise foreseen commercial benefits may be influenced by perceptions of linear and non-linear short-term predictability. Managerial perceptions of the permanence of dynamic external events may create pressure for restructuring of the organisation.

- Implying:

reconciling cost cutting with commitments leading to productivity / equity tensions:

created by investors' demands for increasing returns on capital, plus demands of regulators/customers for cost reductions whilst maintaining minimum legal and professional standards of service. These placed pressure for a reduction in employee numbers and benefits. This conflicted with employee demands for professional freedom and secure employment conditions.

Multiple scenario circumstance:

Managerial philosophies in the corporate plan influence assumptions on investment priorities. Differing managerial attributes will be sought to resolve potential conflicts arising from corporate planning assumptions. The measures of success for the statutory and commercial roles will be judged by market forces criteria.

- Implying:

fairness clashing with tradition leading to preservation / equity tensions:

created by conflicting customer demands for increasing standards of service delivery, and employee demands for professional freedom and secure employment conditions, leading to perceived over-manning.

Multiple scenario circumstance:

Stakeholder expectations and power held by them will lead to attitude changes of employees in the differing aspects of port functions. The extent of change will vary according to the nature of the public or private role performed.

These circumstances form the outline of opposing opportunity / threat multiple scenarios. From a holistic perspective these can be expressed as uncertainty over the future effect of management actions in response to structural change, as the consequence of:

perceptions of voluntarism or determinism as the appropriate managerial philosophy for selection of strategy and the process by which it is developed;

perceptions of centralisation or decentralisation as the appropriate organisational structure;

concern for a balance between adaptive specialisation and generalisation in order to achieve a balance between a profit-maximising and a pluralistic outcome of selection of strategy.

These involve considerations of both short- and long-term planning in a Boundary-spanning organisation (as discussed in Chapter 3). Achieving a balance between 'public' and 'private' interests and resolving inherent conflict is the assumed task of decision-makers in strategic management. This forms the final aspect of the scenario theme of potential conflict. The current thrust of the literature appeared to be towards recommending voluntaristic management philosophies and decentralised organisational structures to implement these. This led to the Research Expectation that:

(Research Expectation-2a)

a voluntaristic managerial philosophy and decentralised organisational structure ought to be perceived as being able to meet 'public interest' considerations in a port.

By implication, therefore, the 'public interest' concern for a pluralistic outcome of strategy would be addressed by operational managers in a decentralised structure, rather than by corporate decision-makers, on a day-to-day basis. This led to the Research Expectation that:

(Research Expectation-2b)

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

These could be tested by opposing opportunity/threat scenario narratives and measured by the number of participants favouring an opportunity scenario. If either the opportunity scenario or the threat scenario was strongly favoured, this would indicate that the Boundary-spanning area did not exist. If neither scenario was strongly favoured, this could be inferred as meaning that decision-makers were performing a role in selection of a strategy that reconciled conflicting views in order to balance 'public' and 'private' interests for adaptive specialisation/generalisation.

These research expectations arose from an identification of strategic management level resolution of potential conflict. These circumstances of conflict highlighted propositions of environmental management that reflected the differing needs of 'public' and 'private' interests. If these Research Expectations were supported by data from research participants, i.e. a Boundary-spanning area existed, then a further analysis of the data relating to these propositions would indicate perceptions of the future relationship between organisational agents and the environment from a Strategic Choice Perspective. This is discussed in Chapter 14.

9/ SUMMARY

The multiple scenario theme of potential conflict was considered from the strategic management perspective of the holon identified in Chapter 3. This showed that the Behavioural and Mechanistic organisational models did not on their own fully reflect the need to balance adaptive specialisation and adaptive generalisation in ports. Power, in the form of conflict resolution, was likely to be exerted to achieve this balance.

This led to identifying key propositions of environmental management for testing by multiple scenarios. In order to determine and measure participants' perceptions of these propositions, Research Expectations 2(a) and (b) were derived.

The result of testing these would help to explain Key Question-2, from the Strategic Choice Perspective of the future relationship between organisational agents and the environment.

This chapter marks the end of the theoretical development of the subject matter of the research. Over the course of Chapters 4, 5 and this chapter, the inherent characteristics of a 'Long-term Strategic Service Industry' have been identified for testing from a Strategic Choice Perspective. This represents the achievement of the initial part of the subject objective. If there are endorsed they will reflect the considerations that decision-makers ought to make in selection of a Boundary-spanning strategy. These can then be modelled to achieve the final part of the subject Research Objective.

The next chapter examines the available systemic methodologies for implementing the subject objective of the research. The identification or development of a congruent systemic methodology formed the Methodological Objective of the research.

CHAPTER 7 - ADVANCED SYSTEMS METHODOLOGY
1/ SYSTEMS METHODOLOGY OPTIONS

A systems research approach to problem situations displays systemic (holistic rather than piecemeal) and/or rational (step-by-step rather than intuitive) features. Oliga (1988) drew attention to current debates over perceived inadequacies and inappropriateness of the traditional hard systems approaches to the study of social systems. In consequence, new soft systems approaches have been developed to further management science research.

Flood and Carson (1988) traced the history of systems theory in management and discovered that it was possible to draw out a 'systems component' of cybernetic (control) processes in the classical, scientific, administrative and organisational schools of managerial thought if a holistic view of the bridges between the philosophies was taken. In their view, social systems theory was moving towards interpretative reasoning and associated methodologies, such as Soft Systems Methodology (Checkland, 1981, Checkland and Scholes, 1990), and away from hard system methodologies such as systems analysis and engineering.

1.1 Methodology Assessment

According to Oliga (1988: 88) "... the validity of differing modes of inquiry and problem solving approaches (i.e. methods) needs to be evaluated against a set of higher-order criteria (i.e. methodology) that lie outside these methods... methodology as opposed to method is viewed as representing a higher-order construct: a method of methods that examines logically the aptness of all research tools, varying from basic assumptions to special research techniques... methodology relates to the consideration of the general grounds for the validity of scientific procedures, while methods are best identified with research techniques employed in a particular research activity (e.g. case study, interview, questionnaire, statistical methods)." Underlying philosophies and methodologies thus serve to guide the choice of research technique.

This view was echoed by Flood and Carson (1988: 106) who commented that these words are used interchangeably in a variety of contexts, leading to confusion in the research process and suggested the following working definitions for research choices:

- "Philosophy - a broad non-specific guideline for action;
- Technique - a specific programme of action that will produce a standard result;
- Methodology - lacks the precision of a technique, but will be a firmer guide to action than a philosophy."

1.2 Distinction between Hard and Soft Systems Methodologies

In classic hard systems approaches to problem solving (e.g. operations research and systems analysis) the explicit belief was that any problem could be solved by setting objectives, assessing a range of potential solutions and finding the one solution that would be optimal in satisfying the objectives. Thus hard system methodologies were systematic in their execution, but also included some systemic thinking by holistic modelling, e.g. the system, subsystem, wider system and environment. In soft systems approaches it was recognised that there were many possible perceptions to a problem which meant that both the boundaries of the problem and the objectives were difficult to define. The choice between hard and soft systems methodologies depended on assumptions made which led to perceptions of the real world. Consequently, it was necessary to determine which would be the appropriate methodological stance for the research - hard or soft - in order to select the most appropriate technique for research into structural change in international ports.

The basic assumption of hard systems thinking was that the world could be viewed objectively, and knowledge about the world could be validated by empirical means. Hence the purpose of research was seen to be goal seeking, i.e. objectives could be defined in advance. The emphasis was on reductionist ideas of seeking valid knowledge and analysis was used to gain understanding of the world. Models were used to represent the real world in order to identify what changes needed to be made. Consequently, methodologies in hard systems placed great emphasis on modelling and the validation process, since this was central to reproducing behaviour in the system being considered. An implicit assumption was that agreement on objectives could be reached by consensus of the participants in the inquiry. Hence equally great emphasis was placed on definition of objectives and provision of ways of reaching consensus. The underlying paradigm was functionalist and the overall methodological stance of these approaches was therefore empiricism.

In contrast, soft systems approaches assumed that the nature of the world could not be completely understood; thus models did not represent the real world, but captured the underlying logic of a perceived world instead. Their purpose was therefore to assist discussion and consideration, since it was accepted that there needed to be scope for different explanations and perceptions of the same phenomena. Consequently, the emphasis was on learning about the world via models and, on the basis of this learning, reaching conclusions on how to proceed in resolving issues. The underlying paradigm was interpretive and the overall methodological stance of these approaches was thus hermeneutics.

These stances therefore represented the two extremes of established systems methodologies. The problem was to determine which particular methodology and consequent research technique best suited the subject matter of the ports and the research objectives. Established management science techniques seemed to be categorised solely as being either hard or soft. Structural change in the ports was complex in nature, with opposing views (pluralism) generating different solutions to

perceived need for structural change, and was also influenced by power relationships. Consequently, it was necessary to review the principles underpinning these techniques to determine the extent to which they accommodated a critical management science perspective of complexity and power relationships. Since the literature did not clearly identify an appropriate advanced systems technique, the next sections briefly review current systems techniques for their suitability for dealing with the exercise of power.

2/ PRACTICAL HARD SYSTEMS METHODOLOGIES

Keys (1991) held that by assessing the assumptions required in applying particular systems techniques then it could be established whether a particular methodology was underpinned by predominantly hard or soft systems thinking. Using this criteria he categorised the following potential techniques for ports research as hard system methodologies:

Operational Research (OR) and Systems Engineering (SE) - models were representations of parts of the perceived world and subject to validation by comparison with real world behaviour and little problem was seen in defining and reaching consensus on objectives. OR was concerned with operational procedures in organisations and SE with the production processes. Hence neither methodology was suitable for the research context of structural divergence in the international ports industry.

Systems Analysis (SA) - had a looser and less well defined scope than OR and SE, being concerned with strategic issues at high managerial levels. It involved formulation of a problem, identifying and screening alternatives, and seeking likely future states of the world. This involved building and using models to predict the consequences of each alternative, which were then compared by means of a suitable technique. This comparison could be achieved by objective quantitative measures or a judgmental process. The knowledge generated by the procedure, involving iterative loops and feedback mechanisms, was then passed to decision-makers for use as a problem solution. The approach relied on models, implicitly assuming there would be objectives, consensus and that the type of information provided to decision-makers would be useful. It was therefore a higher level development of OR and SE, with a lower emphasis on quantitative modelling and the introduction of a subjective ranking of alternatives.

Systems Dynamics (SD) - this computer based technique shared its base assumptions that a quantitative representation of the situation under consideration could be built and manipulated with OR, SE and SA. The implicit assumption was that the models reflected real world behaviour and, because of the complexity of that behaviour, could not be particularly accurate. This approach took the view that a partial analysis was preferable to no analysis and that modelling could indicate the direction and magnitude of change. Models

were thus seen to be useful tools to help decision-makers explore consequences of different actions to achieve desired results. The methodology presumed consensus on objectives and aspects of research such as what type of change was required. Choosing between alternative international approaches to structural change was not considered.

SA and SD held promise of being useful techniques for the research, but their basic approaches to complexity, i.e. the ability to construct a model, posed problems. The level of complexity in the research was determined by the number of elements to be modelled, extent of their interaction, the potential for non-linear behaviour, different time-scales and extent of autonomy. The degree of this complexity, which is discussed in detail in Chapters 4, 5 and 6, posed problems in obtaining measurable results. Further, the research context was in the process of constant change, affecting relationships between the political, economic and social elements. Behavioural factors were also significant and difficult to represent in a model. The net effect was to create severe limitations on the cause/effect relationships inherent in the modelling approaches of these hard systems techniques, and consequently reduce their practical usefulness for the research. These limitation on their usefulness were expressed by Keys (1991: 183) as being that "Hard systems thinking cannot embrace a situation where more than one worldview is present when there is a need to reach agreement or accommodation over the different perspectives which are taken."

2.1 Practical Softened Systems Approaches to Complexity

The assumptions and limitations of hard systems methodologies effectively created a barrier to their usefulness as research methodologies because of the complexity of the situation under study. Complexity was often likely to imply pluralism since situations which were inherently difficult to comprehend were prone to differing perceptions and were also influenced by the implications of power relationships within the situation (Keys, 1991). In these situations, other softened methodologies were required.

The methodological research stance to be adopted depended on a rational identification of the nature of the problematic situation - simple or complex? Flood and Carson (1988: 131) characterised simple situations as "... a small number of elements as opposed to a large number, and few (or regular) interactions between the elements as opposed to many... [whereas];

1. Complex situations are often partly or wholly unobservable, that is, measurements are noisy or unachievable (any attempt may destroy the integrity of the system).
2. It is difficult to establish laws from theory in complex situations as there are often not enough data, or the data are unreliable so that only probabilistic laws may be achievable.
3. Complex situations are often soft and incorporate value systems that are abundant, different, and extremely difficult to observe (measure)....
4. Complex situations are open and thus evolve over time."

The measurement of complexity was difficult as it was the result of many different subjective factors. The more complex the situation, the more uncertain would be the future of that situation. Predictability arose from the ability to establish cause/effect relationships, but because of the nature of complex situations, it was difficult to trace rigorously the ultimate effects of an initial event. Thus methodologies for confronting complex situations would have to cope with uncertainty.

One approach was to accept that the extent of complexity was such that there was little likelihood of significant reduction. Consequently, techniques were developed which described change from an Management Cybernetic viewpoint that allowed adaptation of a system to unexpected future events. The objective for the system was frequently determined by forces outside that system, and disturbances within the system were controlled by managerial action. "Cybernetics uses the notion of transformation to provide a representation of the dynamic behaviour of complex systems... transformations correspond to a set of rules which prescribe how a system will move from one state to its successor. The process underlying the change are not important, for they cannot, because of complexity, be fully understood. Transformations, then, are descriptions of change, not explanations of change. Use of the black-box technique allows transformation rules to be acquired by examining the input-output behaviour of a system rather than probing into it to discover how inputs are changed into outputs." (Keys 1991: 196).

This methodological approach to researching complexity was appropriate to the mechanistic, economic and technological models identified in Chapter 3, but did not reflect the influence of the behavioural models. Jackson (1987) commented that a new direction of cybernetic thought had emerged which gave more attention to human actions and the role of the researcher. This was termed Organisational Cybernetics and viewed organisations as comprising five prime systems with differing functions:

- System 1 -absorbing the massive demands of the environment that would otherwise flood higher management levels;
- System 2 -co-ordination to ensure that the various elements of System 1 acted in harmony;
- System 3 -controlling Systems 1 and 2 in the interest of the internal stability of the organisation;
- System 4 -environmental monitoring and communication between different system levels, thereby co-ordinating all internal and external information;
- System 5 -policy and decision-making.

This was a highly structured methodological approach to dealing with complexity and presumed total consensus in the objectives of the system. It was geared towards depth of study in a single organisation rather than breadth of study across international industries. The ports research was centred on the System 5 level since this level represented the essential qualities of the whole system and the wider systemic aspects. Consequently the usefulness of cybernetics as a methodological approach for dealing with uncertainty in outcomes of ports restructuring was limited.

A less rigid view of dealing with complexity was to construct qualitative models when some structure in the problem situation could be identified. "These can be manipulated and explored in order to increase the understanding of a situation and, possibly, allow quantitative models to be constructed subsequently." (Keys, 1991: 188). Two approaches have been developed according to Keys (1991):

Qualitative System Dynamics (QSD) - this process of systems description consisted of a qualitative analysis phase and a quantitative analysis phase. The purpose of the qualitative phase was to provide a perspective on the observed problem on which to base recommendations for change. The quantitative aspect followed hard systems rigorous assessments of alternative courses of action. The increased focus and greater depth of inquiry were accompanied by the need for precision in the analysis. It was therefore more appropriate for investigating poorly defined and understood situations since it did not require the extent of quantitative analysis required in SD. The QSD approach was capable of yielding and analysing a model that captured complex situations which could not be represented in hard systems models. It required consensus on objectives and definitions.

Sociotechnical Systems Design (STSD) - this approach attempted to overcome problems QSD experienced when the extent of complexity was such that it was difficult to define relevant variables and relationships between them. In these situations, the concept of modelling systems so that their response to change could be predicted would not yield useful planning information. Instead, modelling took the form of provision of information which could guide adaptation to external events in the environment of an organisation. STSD took the view that organisations consisted of social and technical systems acting in relationship to each other and the environment. The role of a highly complex environment was given particular importance since organisational success was seen as being dependent on the ability to be effective in adaptation. Consequently, STSD was concerned with understanding the nature of organisations within their environment. The techniques involved a set of stages establishing the boundaries in organisational terms, scanning the environment for future impacts on the organisation, redesign of social and technical systems, implementation and re-evaluation. However, the open-systems concepts of this approach to modelling retained the need for consensus in a perceived world.

These methodological approaches to researching the mechanistic, economic, technological and behavioural models could not cope with pluralism in perceptions of the world. The implicit assumption of softened approaches was that an objective could be identified and agreed by all parties; if there was disagreement then pluralism existed. Pluralism could not be accommodated in these approaches which required objectives to be stated and supported by all parties. If the values, attitudes, perspectives and knowledge of the actors involved were broadly equal, then it was possible that each actor (or group) would have their own objectives that were derived from differing viewpoints and at variance.

The Introduction showed that there was no international agreement on the one best method of change, although there could be a degree of consensus on the objectives of change. When an assumption of total agreement was not justifiable then these softened approaches were inappropriate and other even softer approaches for resolving the different beliefs were required. Otherwise the differing views of some stakeholders would be subjected to the arbitrary exercise of power to resolve conflict.

3/ PRACTICAL SOFTER SYSTEMS APPROACHES TO PLURALISM

Recent developments in systems theory have given a more prominent role to the nature of change. These developments arose, according to Flood and Carson (1988: 106) because "many complex "problems" have been, and continue to be, tackled using a piecemeal, non-rational approach. This approach has led to a failure to deal effectively with the "problem issues", so that inevitably the totality of the "problem" is not considered. In these cases, some crucial elements may be excluded from the formation of "a solution". Furthermore if a non-rational approach is adopted, then a reasonable range of alternatives or perspectives will rarely be considered. In such cases extreme solutions are often chosen as they are the more obvious."

Pluralism was an expression of subjective individual views on change which increased complexity, and Keys (1991) identified the following approach to reducing this complexity by overcoming pluralism and generating a consensus:

Strategic Assumption Surfacing and Testing (SAST) - this approach assumed that although there was a large number of variables which generated pluralism, there was an underlying yet elusive structure in the relationships between them. There was a presumption of organised complexity in that changes in one area had both direct and indirect impacts in other areas. Consequently, both desired and unwelcome effects could result from instituting change. This created uncertainty, leading to risks to which decision-makers had to react in a flexible and responsive way. These risks could be perceived differently by different actors, and were subjective since empirical evidence was not available.

The methodology involved active participation of many individuals working in groups. These groups developed opposing arguments since it was assumed that a dialectical approach was most likely to generate the best judgements on a complicated situation. The result was an expansion of knowledge, which was then synthesised. The emphasis was on understanding the situation more fully, rather than providing information. Hence the thinking process was supported, rather than the decision-making process. The procedure comprised five phases - group formation; assumption surfacing and stakeholder identification; dialectic analysis; between group dialectic debates; followed by synthesis of the arguments to achieve a consensus. SAST was therefore built on a combination of Hegelian dialectic and systems theory.

3.1 *Practical Soft Systems Approaches to Pluralism*

Flood and Carson (1988) commented that an apparent bias of classical (or hard systems) social theory towards the functionalist paradigm was explained by its concentration on regulation and control in a consensus view of the world. The tenets of the interpretative paradigm were being endorsed in later methodological developments, e.g. soft systems theory (Checkland and Scholes, 1990), where an appreciation of the intuition provided by different perceptions of the world was proposed. They noted that there was a strand of commonality between the interpretative and functionalist paradigms in that there was an overlap in the concern for regulation.

Because of this overlap, the interpretative paradigm could contribute to the functionalist paradigm by the transfer of recognition of the role of individuals. However, both these paradigms presumed stability in the environment, rather than dramatic change as assumed by the radical humanist and radical structuralist paradigms. The following approaches specifically recognise the role of the individual in deriving a consensus:

Strategic Options Development and Analysis (SODA) - this approach concentrated on the interpretations or constraints through which individuals viewed the world so as to give it order and meaning. The techniques involved (e.g. repertory grids and interviewing) were designed to yield cognitive maps showing connections between statements, visions and beliefs about the world. These statements were usually expressed as opposing pairs in order to clarify meaning. The maps are systemic in nature, using systems concepts of hierarchy and connectivity. The approach was thus at a deeper level of penetration into a problem situation than SAST, concentrating on the phases of assumption surfacing and stakeholder identification, and dialectic analysis. It aimed to promote constructive debate leading to consensus, and was thus effective in dealing with pluralism. It did not address indirect complexities of a situation, since it was based on identifying and simplifying cause/effect relationships.

Strategic Choice (SC) - this approach was also at a deeper level of penetration into a problem situation than SAST and concentrated on the phase of inter-group dialectic debates, followed by synthesis of the arguments to achieve a consensus. It was a way of working with groups to reflect the view that planning was a continuous process of strategic choice. It recognised that dilemmas were regularly confronted by decision-makers in the public sector when faced with complex cases. Consequently, balances needed to be struck when working in situations of cyclicity, subjectivity, uncertainty and selectivity. Indirect effects were analysed in this approach by means of interactive group participation whose members crossed organisational boundaries. The complexity of situations being considered and the ever changing nature of factors influencing decisions meant a continual revision and updating of plans. The emphasis on individuals being brought together to form an outward looking (or systemic) view of a problem

situation meant that this approach dealt with pluralism. SC concentrated on the present, but with regard to the future. In contrast to SAST and SODA there was no belief that once agreement had been reached then the problem was solved, but that future problems could arise from current agreements.

Interactive Planning (IP) - this approach took the concept of continuous future planning further than SC. It was based on the notion that soft systems thinking, implying participation, dynamism and holism, was preferable to hard systems thinking of objectivity, stability and reductionism. There were five continuous and interrelated phases in coping with unexpected occurrences - formulating the problem situation through scenarios of what could occur if changes were not made; achieving consensus on scenarios and thus agreement between stakeholders on desired changes; defining what resources were necessary to achieve the desired state; specification of organisational and management systems required; implementation and institution of control mechanisms. This methodology thus brought together the principles of SAST and SC in an overarching practical format for decision-making in situations of complexity and pluralism.

Soft Systems Methodology (SSM) - this approach attempted to overcome limitations of systems methodologies where the problem exhibited a high degree of complexity due to pluralism and could not be structured. SSM was a process designed to facilitate the stage of progression from finding out about a problem situation to taking action. It was explicitly concerned with those problems where an objective could not be taken as given. The process involved constructing different conceptual models of human activity systems from a variety of perceptions of the problem situation, thereby enabling a deep understanding of the context to be gained. The purpose was to explore how the same problem could be seen from different worldviews. These conceptual models were then compared in order to generate debate about possible changes which could lead to an improvement. The outcome was consensus on formulating the problem enabling agreement on what action to take. SSM thus helped to improve the effectiveness of the decision-making process through participation and interaction.

4/ METHODOLOGY CHOICE

There was thus a family of systems methodologies available to guide research techniques based on the basic ideas of emergence, hierarchy, control and communication. Both hard and soft systems involved the use of such ideas, the difference being the way in which the problem was viewed. Hard systems approaches treated these ideas as enabling permanent problem solutions, whereas soft systems approaches treated them as identification and clarification stages in the process of adaptation to, and temporary resolution of, problem situations. A common theme in soft systems was the use of a form of Hegelian dialect to bring to the surface individuals' views of the world. This raised the question as to which methodological base was appropriate for the research? The choice revolved on the notions of the:

extent of complexity - assumptions of permanence in the environment (hard systems) versus adaptation to changing environment (soft systems);

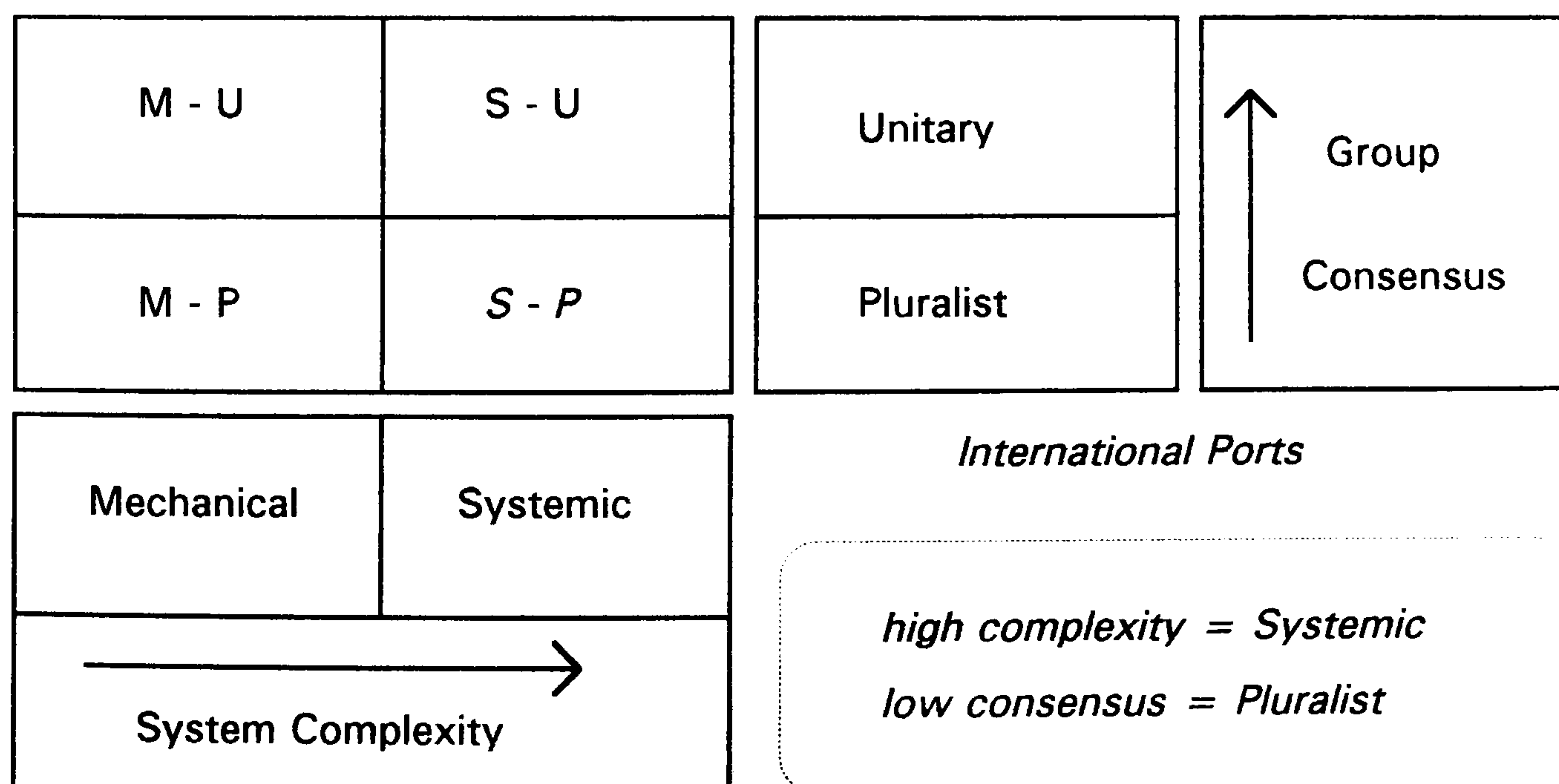
extent of consensus - assumptions of total agreement over objectives of change (hard systems) versus disagreement requiring reconciliation to achieve consensus over objectives for change (soft systems).

4.1 Theoretical Classification of Systems Methodologies

Keys (1991) noted that classification schemes form a central part of many disciplines, where they serve to structure those different characteristics exhibited that indicated something about the purpose and behaviour of the world. This principle could be applied to methods of interacting with the world for data collection purposes. Jackson and Keys (1984) developed a grid into which system methodologies could be classified, depending on the degree of consensus on whether the problem was simple or complex. The first dimension of the grid was a continuum ranging from Mechanical (simple functioning in a machine-like way) to Systemic (complex functioning best understood through concepts such as holism, hierarchy and emergent properties). The second dimension of the grid reflected the nature of the decision-makers in the problem area and the degree of group consensus. If there was total agreement amongst the decision-makers then they were labelled unitary; if there was disagreement then they were labelled pluralist. The second dimension was thus a continuum ranging from Unitary to Pluralist. This creates the grid in Figure 7.1.

PROBLEM CONTEXT GRID

Figure 7.1.



(adapted from Flood and Carson, 1988)

On the presumption that systems boundaries and objectives could be defined, then this problem context grid indicated the core assumptions required from each systems methodology. Thus for research purposes, an appropriate methodology for the problem context could be identified, rather than adoption of a favourite approach. Flood and Carson (1988) pointed out the problem context grid did pose difficulties of identifying problem contexts and perceptions of the real world correctly, since some problem contexts would not fit exactly into any one of the four categories. Hence some debate was bound to occur over the pigeonholing of methodologies. Flood and Carson (1988), Jackson (1987), Keys (1991) and Oliga (1988) reviewed the philosophical base and attributes of each systems methodology for location within the grid. From their views it appeared that these could be broadly allocated as shown in Table 7.1 - Mechanical Methodologies and Table 7.2 - Systemic Methodologies.

<i>MECHANICAL METHODOLOGIES</i>		<i>Table 7.1.</i>
<i>Mechanical-Unitary</i> Strong Functionalist paradigm: traditional <i>hard</i> management science control methodologies	<i>Mechanical-Pluralist</i> Weaker Functionalist paradigm: <i>softer</i> control and heuristic learning methodologies	
<i>Operations Research</i> <i>Systems Engineering</i> <i>Systems Analysis</i> <i>Systems Dynamics</i>	<i>Strategic Assumption Surfacing and Testing</i> <i>Strategic Options Development and Analysis</i> <i>Management Cybernetics</i>	

<i>SYSTEMIC METHODOLOGIES</i>		<i>Table 7.2.</i>
<i>Systemic-Unitary</i> Weak Structuralist paradigm: <i>softer</i> adaptive organisation methodologies	<i>Systemic-Pluralist</i> Weak Interpretative paradigm: <i>soft</i> purpose seeking and learning methodologies	
<i>Qualitative System Dynamics</i> <i>Sociotechnical Systems Design</i> <i>Organisational Cybernetics</i>	<i>Strategic Choice</i> <i>Interactive Planning</i> <i>Soft Systems Methodology</i>	

These allocations were not definitive, since methodologies that were systems based could be used outside the classes in which they were seen as being particularly effective. These allocations highlighted the links between the interpretative and

functionalist paradigms in the overlap of a concern for regulation, whereby the interpretative paradigm contributed to the functionalist paradigm by a recognition of the role of individuals. Thus methodologies that would not normally be considered in one paradigm could be appropriate in some problem situations. These paradigms presumed stability in the environment, rather than dramatic change as assumed by the radical humanist and radical structuralist paradigms. The grid, if interpreted and used flexibly, had been found to be useful according to Keys (1991).

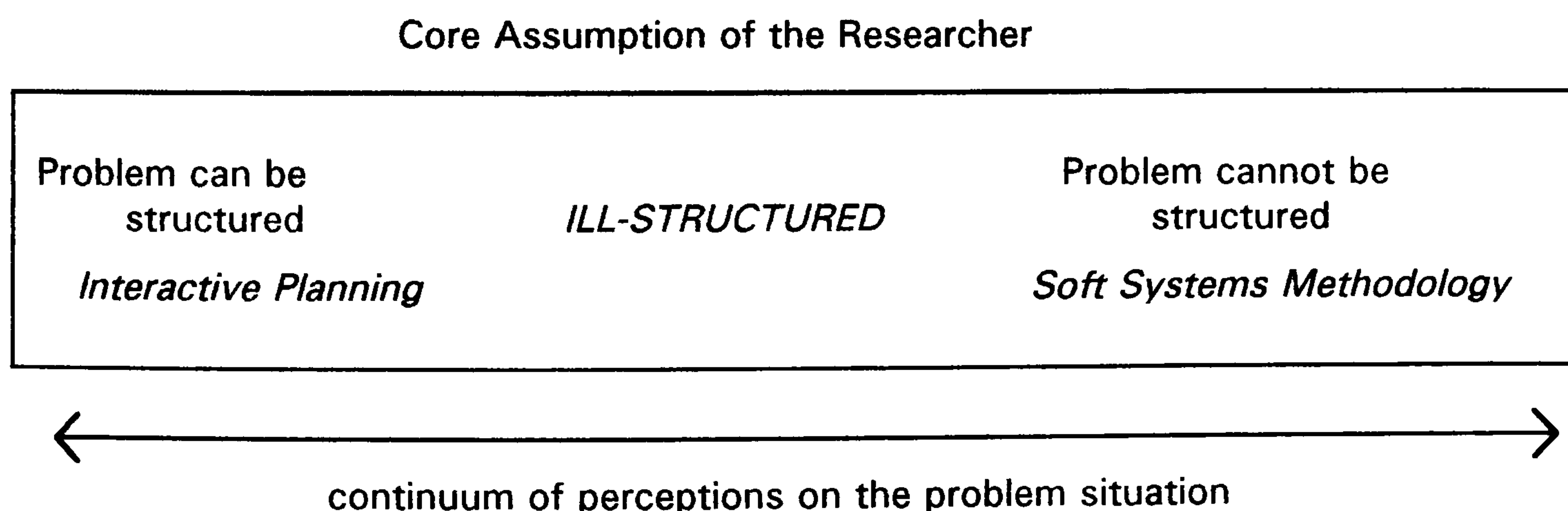
4.2 Methodology for Ports Research

The aspects to running a port discussed in Chapters 4, 5 and 6 indicated the complex problems involved in implementing structural change and the uncertain future effects of actions. A high degree of complexity and low degree of consensus was exhibited and the net effect was to categorise ports in the process of radical change as Systemic-Pluralist. Flood and Carson (1988: 134), suggested for this context "... interactive planning with its three operating principles of participation, continuity, and holism.... Appropriate use allows full consideration of factors relating to, and between, subsystems, the system itself, and the wider system."

Interactive planning assumes that a problem can be structured in such a manner that there is consensus on what constitutes the mess. According to Checkland and Scholes' (1992) reasoning on soft systems methodology, problematic situations only arise when a sense of unease is experienced with actors having differing perceptions of the boundaries of the situation and the objectives for correcting perceived failings. Thus there can be no assumed initial structure to the problematic situation, which therefore has to be created through a process of generating consensus from diverse world views. The literature therefore addressed two extremes of a continuum of systemic-pluralist problematic situations as shown in Figure 7.2. below.

BOUNDARY-SPANNING CONTEXT

Figure 7.2.



This created a methodologically ill-structured Boundary-spanning area. In searching for a systemic methodology for investigating international structural change in the ports, it appeared from the economic literature in Chapter 4 that the problem area could be structured. However, no international consensus was apparent on the best

route to implement structural change, implying that the problem area could not be structured. From an operational level (discussed in Chapter 5), and a strategic management level (discussed in Chapter 6), it appeared that power was exerted to resolve conflict. The net effect was to create an ill-structured problem area for choice of technique for the research. Ports thus represented a problem situation which illustrated that "... a continued concern with its [the grid's] theoretical base has led to a deeper consideration of the way in which power relationships can be incorporated into the analysis." (Keys, 1991: 220).

5/ EFFECT OF POWER ON METHODOLOGY CHOICE

In many cases systems were seen to be complex and difficult to understand because they involved human behaviour. The hard systems approaches presumed a predetermined objective that would not change over time, whilst both hard and soft systems approaches found difficulty in modelling the behavioural aspects of a system. The actions of a decision-maker must be seen in the context of the actions of many other decision-makers in the public and quasi-private sectors.

These methodological approaches presumed that the superiority of one individual or group over the other actors involved was not a significant issue. If however this superiority became a major factor in a problem situation then the methodological assumptions of consensus were not justified, particularly when those who possessed power chose to exert it. There was therefore a need to consider the social and political aspects of problem-solving. Power could be seen as a continuum ranging from a relationship between people implying a dependency, e.g. the exercise of control in allocation of resources or over-ruling disagreement, to a resource to be used to overcome an inability to reach consensus (Keys, 1991). There was no clear definition of power. The first extreme implied an emphasis on hard systems thinking of hierarchy and control, and the second extreme implied an emphasis on soft systems thinking of emergence and communication.

5.1 Soft Systems Approaches to Pluralism and Power

The soft systems assumption that consensus could be generated did not apply in situations where there were fixed and significant differences between the objectives of the actors, but because of the relationships involved, some would have to accept that their objectives would be seen as secondary by those holding power. If consensus could not be generated, then this power was likely to be exercised in due course. Power was likely to be present in situations where more than one person was involved with resources that were unequally distributed. This led to complex superior-inferior relationships, and the superior could choose whether or not to exercise power. If power was exercised, then pluralism was reduced and hard and soft systems methodology assumptions of agreement on objectives could be presumed, but the complexity of the system was increased by the unknown future effects of the exercise of that power.

Any exercise of absolute power prevented the free exchange of views and the reaching of agreement. However, the use of power in relationships did not necessarily imply that no accommodation of differing objectives had been reached. The final nature of the objectives may have been influenced by a need to be seen to exercise power wisely in the face of opposition, i.e. a compromise may have been reached. This compromise could lie somewhere between completely changed objectives that achieved somewhat reluctant support of all parties to the imposition of the unchanged objectives of the superior. The execution of those objectives could be unproblematic in the first case, or hindered by resentment or continued disagreement in the second. Because of the apparent consensus, a unitary context was brought into the methodology consideration.

Power was therefore a difficult concept to define. When considering real world situations involving political and social perceptions, and the exercise of power, then hard systems thinking would appear to be a special case of soft systems thinking. Hard system methodologies were appropriate only when a consensus over objectives had been achieved. This was not the case for the ports. The problem situation posed by the ports was systemic in nature, and the exercise of power appeared to be applied in order to simplify problem situations for decision-makers. This created a coercive context. Because decision-making appeared to reduce complexity a mechanical element was brought into the methodology consideration, i.e. the problem was simplified by choices made. The exercise of power appeared to move a problem situation from a systemic pluralist towards a systemic unitary or mechanical pluralist methodology choice. The extent and direction of this move depended on what stage in the consensus-seeking process power was exercised and also on what compromise solution was found, or viewpoint imposed, in the decision-making process.

The literature showed two directions in exploring the issue of power - extending the unitary-pluralist dimension of the grid to incorporate coercive power (Jackson, 1987), or by retaining "the dichotomy of unitary-pluralist and emphasizes the role of the problem solver [or researcher] in determining which actors to include as decision makers and by doing so making judgements on power and its effect on the situation." (Keys, 1991: 221).

The first option appeared the more impartial and unbiased course for solo PhD research originating from an experiential perspective of structural change.

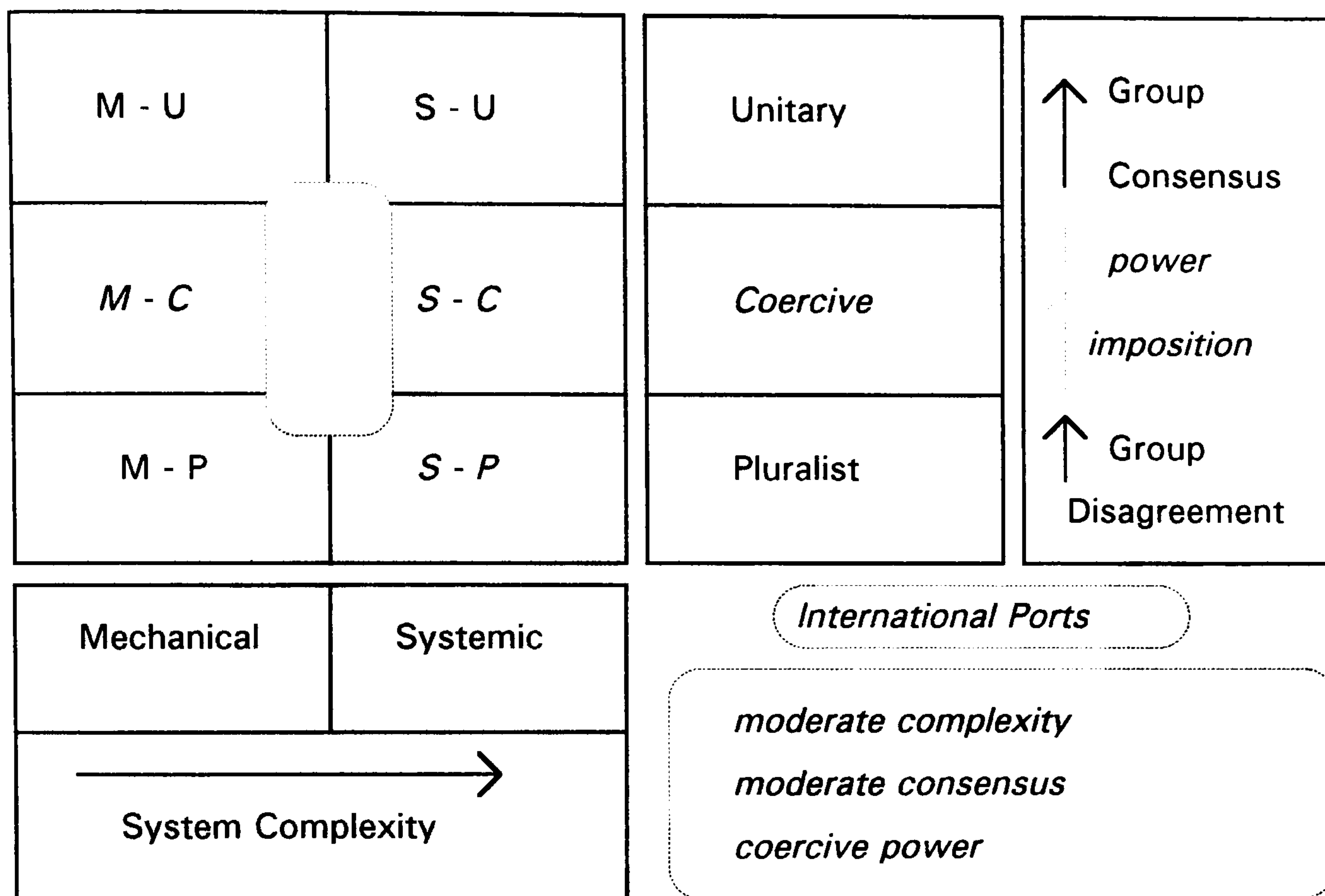
5.2 Coercive Situations

Jackson (1987: 155) commented that "If, however, any consensus that exists is only achieved through the exercise of power and by domination (overt or more or less concealed) of one or more groups of participants over others [in a problem context], then the problem context will be called *coercive*. Participants can therefore be in a unitary, a pluralist or coercive relationship to each other." The enhanced classification of systems and participants thus yielded a six-celled matrix, with the

additional cells being Mechanical-Coercive and Systemic-Coercive, as shown in Figure 7.3. The expanded grid implied the need for six types of problem-solving methodology since important differences between problem contexts should be reflected by different types of methodology.

ENHANCED PROBLEM CONTEXT GRID

Figure 7.3.



(adapted from Flood and Carson, 1988 and Jackson, 1987)

The established systems methodologies and techniques were classified into four groups as described earlier. The systems literature did not identify methodologies or techniques for coercive situations. Jackson (1987), Oliga (1988) and Keys (1991) all confirmed that *mechanical coercive and systemic coercive methodologies had yet to emerge*.

A dead end had been reached in the research into the ports subject matter.

It seemed that the pragmatic course of developing an Advanced Systems Methodology and Technique specifically for this subject matter concerning consensus and power was the only option available.

6/ COERCIVE METHODOLOGY

The key issue of the preceding discussion was to decide what the appropriate data collection technique was for the ports problem context. The literature did not specify the appropriate systems methodologies for research into ill-structured problems where the exercise of power was apparent. A researcher using this extended framework for methodological choice was presented with a means of classifying a problem context which suggested clear distinctions could be drawn between systems methodologies. In practice, the choice of a coercive methodology did not exist. Thus the best data collection technique could not be discovered from the literature.

Consequently, an alternative mode of inquiry into the coercive dimension within a systemic framework was required. The requirements were that it should recognise the importance of the researcher's experiential and subjective views, it should incorporate methods of assessing the degree of pluralism and complexity of a problem situation, and it should reflect the dynamic nature of the problem (Keys, 1991). The appropriate methodology appeared to be one based on the critical concerns of radical structuralist approach, i.e. an advanced systems perspective.

The criteria for coercive methodologies was stated by Jackson (1987: 157) to be "If the problem-context is mechanical-coercive the problem is clearly less than if it is systemic-coercive. In mechanical-coercive contexts the system is relatively simple and the sources of power will be relatively easy to identify. In systemic-coercive contexts the complexity of the system of concern is likely to hide the true sources of power and domination.... In either case an approach based upon critical management science will be required. It is tempting to suggest that ... [a] critical perspective is most suited to mechanical-coercive contexts, while an approach based on radical-structuralism is more apt in systemic-coercive contexts".

A critical management science perspective was, according to Jackson (1987), most commonly encountered in a form concerned with uncovering and understanding the underlying structures or systems of relationships in the world which generated the perceived surface phenomena. In contrast to positivism, which encouraged empirical observation and analysis in the hard system methodologies, a radical structuralist approach encouraged an explanation of the underlying, and generally unobservable, mechanisms that generated the surface phenomena. This approach attempted to model the causal processes in the underlying structural level, in order to explain the relationships in the surface phenomena, and the relationships between underlying and surface levels. A link between structuralism and organisational cybernetics could be established in the shared systemic concepts of organised complexity, auto-regulation, transformation, equilibrium, information exchange and feedback and control. It seemed to Jackson (1987: 145) that organisational cybernetics was based on structuralist assumptions, since it "... develop[ed] explanations of observable occurrences in social systems based on principles and laws governing the behaviour of all systems under control."

The radical structuralist perspective was concerned with the users of the systems, since the emphasis was on helping decision-makers to decide on 'what ought to be done'. This purpose of assisting decision-making was not specifically addressed in hard systems thinking, but tended to be implicit in softer systems thinking. It was assumed in hard systems thinking that decision-makers were well aware of the options for decision-making. For the ports the decisions on 'what ought to be done' were expressed by a senior manager as:

"Where growth is likely managerial effort is concentrated on matching customer demand as well as satisfying legislative constraints. Where the port is static or declining, positive attitudes to investment for achieving savings will be dominant. Note also that ports, within limits, have the opportunity to reassign their assets to more profitable uses." (UP - CB).

These comments reflected a hard systems thinking on decision-making options for operational planning. A contrast was the soft systems thinking on the wider aspects of operational planning expressed by a representative of a shipowners association:

"Minimum bureaucratic control to ensure essential regulatory and safety services; Commercial operations should be handled by private undertakings; Common marketing body - working in [tandem] but possibly (although not necessarily) independent of port management; User representation to ensure that port keeps in touch with 'customer requirements'." (UB - B).

According to Jackson (1987: 157) "... [the] dialectical solution, therefore, is to bring systems rationality of the planners directly into contact with the 'social rationality' of those who have to live in and experience the social system designs." However, the literature was not forthcoming on how to set about achieving a coercive methodology for research purposes.

6.1 Guidelines for Coercive Methodologies

Nevertheless, some guidelines did exist. A direction mentioned in the systems literature for recognising the use of power was to retain the extremes of the unitary-pluralist dimension, and consider the use of systems methodologies according to the superficial nature of the problem situation (Keys, 1991). In deciding the character of the problem context, the researcher had to choose the means of interpreting the perceptions of a set of decision-makers, since the exercise of power may result in an appearance of agreement over objectives, or an apparent willingness to work towards acceptance of a consensus view. This involved the researcher recognising that problem situations appeared only superficially unitary or pluralist, because there was an underlying power relationship. By doing so judgements on power and its effect on the situation would be made by the researcher. Hence researchers needed to be able to identify and expose these power relationships.

These judgements would need to be made explicit, since in coercive situations the use of established systems methodologies disguised the fundamental characteristics of any imposition of power. The role of the researcher was thus seen by Keys (1991) as determining which actors to include as decision-makers and ensuring that the debate over objectives was not biased by existing power relationships. Consequently, established methodologies would need to be tailored to the demands of the problem situation.

6.2 Explicit Recognition of Power

This tailoring process could be done in two ways. Firstly, an established methodology could be modified to recognise that selection of decision-makers from only one organisation could result in a situation of implicit power relationships. The modification would take the form of identifying sources of potential power exertion (e.g. hierarchical status in the organisation and perceived departmental power bases such as line managers' desire for expansion versus head office managers' power of financial veto - Goold and Campbell, 1987), and limiting claims for the achievement of any consensus result accordingly.

In Keys' (1991: 213) view "A crucial aspect of any attempt to develop a critical (i.e. self reflective) approach is undistorted communication between those involved in the situation. This allows the maximum chance for rational argument to be successful". He noted that the pluralist methodologies of SAST, IP and SSM were subject to biases arising from the imposition of power, and suggested that some means of removing or reducing the biasing effects of power be made before these methodologies were used. It was impossible to remove the effects of power completely, but an attempt had to be made to identify where the exercise of power began. To this end, he devised the following questions for exposing the exercise of power in methodological design:

- sources of motivation - who contributes and owns the purpose of the design?
- sources of control - who contributes and has the power to decide?
- sources of expertise - who has the appropriate skills to implement the design?
- sources of legitimisation- who represents the varying concerns and how is this done?

This approach was suitable only for problems within a sole organisation, whereas the research problem of the ports was both international and across organisations. The systems methodologies in the above discussion were all designed for use within a sole organisation. This approach therefore offered only limited scope as an inquiry method into international organisations.

7/ PHILOSOPHY UNDERLYING THE ADVANCED SYSTEMS METHODOLOGY

A new form of inquiry method suited to international ports research was therefore needed. The more complex second method was to blend the common inquiry features of hard and soft methodologies and incorporate Keys' (1991) views on explicitly recognising power. The rationale for this approach was that an exercise of power had the apparent effect of locating the ports problem context on the boundaries of the unitary-pluralist and mechanical-systemic dimensions, as shown in Figure 7.3.

This meant developing a Boundary-spanning inquiry method within a systems framework. Flood and Carson, (1988: 267) held that "there is universal agreement among the systems movement that systems thinking is at least "a good idea" worth exploring and developing in order to ascertain whether a coherent body of knowledge can be developed under the overall umbrella of systems science." They also commented that "the point is that a mix of tools, as is frequently said, offers a great diversity of ways to deal with problems and problematic situations inside or outside their respective methodological parent.... in short, the pragmatist would phase or switch between methodological approaches... Systems researchers could continue to contribute to this tool kit." (Flood and Carson, 1988: 137)

The philosophy for adopting a Boundary-spanning approach was discussed in Chapter 3. From a systems methodology perspective, Oliga (1988) supported Gioia and Pitre's (1991) view of overcoming the limitations in the Burrell and Morgan (1979) framework by considering Boundary-spanning aspects. He commented that whilst the functional and interpretative paradigms shared a common concern for explanations of the status quo of consensus and social order, the radical humanist and radical structuralist paradigms shared a concern for seeking explanations of deep-seated structural conflict, modes of domination or the exercise of power and structural contradictions in modern society. As a result, objective or subjective explanations from a single paradigm base did not provide a complete picture of a problem area. In other words, instead of adopting the either/or stance of these ontology, epistemology and human nature debates identified by Burrell and Morgan (1979), a reconciling 'either-and-or' stance would be necessary for a holistic methodology.

It seemed that in structural change there was limited agreement on restructuring methods for international ports since there was no common agreement on formulation of the problem situation and no single answer was apparent. Further, the apparent exercise of power implied a concern for the maintenance of tradition and authority. Consequently a soft ideographic methodology was indicated as opposed to a hard nomothetic methodology (as defined in Chapter 3). However, the justification for restructuring in the political and economic literature was functionalist in tone, since it concerned predictability and regulation in the interest of maintaining the status quo of access to ports. This implied a hard nomothetic methodology. The process of restructuring was designed to bring about greater managerial decision-making freedom, which in turn pointed to a soft ideographic methodology.

These opposing implications for methodological choice suggested that there may be barriers to understanding without either the actors or the researcher being aware of them. The methodology research objective involved choosing an appropriate concept which reconciled these conflicting implications.

The adoption of a Boundary-spanning philosophy implied that the hard nomothetic and soft ideographic views of the world coalesced to form a new softer perspective of the world for research. This perspective would need to cater for any barriers to understanding that may be operative. The systems literature hinted at, but did not specify, what the appropriate methodological approach should be for identifying research techniques from such a perspective. Both hard nomothetic and soft ideographic methodologies were criticised in the literature as being unable to fully reflect the effects of domination of, and shifts in, the motives of various actors in a problem situation (Oliga, 1988):

hard nomothetic on the grounds that by implying empirical knowledge was objective, neutral and rational it misrepresented socially created, historically specific phenomena as being natural, eternal and unalterable. A false picture of reality was created which concealed the underlying forces of power in a historical system;

soft ideographic on the grounds that it was uncritical of the content of its inquiry, i.e. it accepted without question the traditions and authority of its data subjects presuming that distortion free communication had taken place. A false interpretation was created which likewise concealed the underlying forces of power in a historical system.

Consequently a methodological approach was required which overcame these difficulties. Oliga (1988: 101) commented that the critique (or critical hermeneutics) sought "... the combined use of 'causal explanation and deepened self understanding'. The task is therefore directed at rendering individual and social processes transparent to the actors concerned so that they can 'pursue their further development with consciousness and will - rather than remaining the end product of a causal chain operative behind their backs.' By incorporating both the explanatory and the interpretative tasks, critique articulates the critical concerns of both the radical-humanist and radical-structuralist paradigms. Communicative distortions, false consciousness, and other ideological distortions are placed in the wider political, social-structural, and material conditions of existence."

However, critique was an approach that was deeply concerned with ideology, rather than being a systems based approach to researching a particular structural subject matter, since "... prevailing power relations become the ultimate arbiter of interests Related to this is the view that a theory of truth must somehow provide a conception of reason and rational action in terms of which certain forms of consciousness can be said to be ideological and judged irrational." (Oliga, 1988: 102)

This led to the problem critique had with validation of its claims to truth. It did not have the grounds on which to assert its own *a priori* criteria for truth. It only questioned claims to discovering the truth in a research problem by other methodologies. As such, its benefit was to guide interpretation of research outcomes by relating results to their contexts and realities, i.e. raising the researcher's consciousness of the effects of boundaries imposed on the research, and the effects of resolution of multiple views by the imposition of power to create the impression of a common perception of reality.

The principles of critique seemed to help in providing guidelines on the nature of, or criteria for, a Boundary spanning methodology that catered for the effects of power. Drawing on these principles and on the definitions of hard nomothetic and soft ideographic approaches in Chapter 3, then the criteria for an advanced systems methodological approach to investigating the subject matter of structural change in the ports would appear be:

Advanced systems approaches - an experiential subjective view was held in which the principal concern was the way in which an individual perceived, interpreted and modified relationships and regularities in an objective world. The individual's experiences were seen as being unique rather than general and universal, and the concern was for identification and definition of the elements comprising that perceived world.

Although the existence of an external reality was uncertain, measurements could be made, analysed and underlying themes identified in order to seek out any generally accepted laws that governed the perceived world which was being observed. No assumption of stability in the environment during observation was implicit, nor could the hidden effects of power within and outside that perceived world be ignored.

Consequently, techniques were based on acquiring both objective and subjective first-hand knowledge of the topic under investigation, and on a systematic process of measurements for control purposes, since no observation or description was free from the observer's interpretation (based on his/her presuppositions or values, theories and views of power relationships).

Therefore, it appeared that systemic components which implicitly acknowledged the effects of power in established consensus-seeking systems methodologies could be identified. Following the principles of critique these could then be assessed in order to choose the best aspects of the hard and soft techniques for the levels of penetration envisaged by the subject research objectives.

In effect a critical advanced systems management science approach was adopted. This critical perspective was proposed for coercive methodologies and techniques by Jackson (1987).

8/ GUIDELINES FOR PRACTICAL ADVANCED SYSTEMS METHODOLOGY

Although a strong theoretical case could be made for the Advanced Systems Methodology and its supporting philosophy, it was primarily a practical research tool for investigating change to international systems. Its value could be assessed only by its success in actual situations. The problem was in converting theory into practice.

8.1 Derivation of Advanced Systems Concepts

The concepts required in a practical advanced systems approach could be derived from existing systems methodology principles, since it would be effectively a blend of hard and soft methodologies. An analysis of the principles of the following systems methodologies provided the concepts required:

Practical Hard Systems Methodologies

Operational Research and Systems Engineering - none.

Systems Analysis - prediction of the consequences of strategic issues at high managerial levels by an iterative judgmental process, involving formulation of a problem, identifying likely future states of the world and screening alternatives.

Systems Dynamics - models reflected real world behaviour but, because of the complexity of that behaviour, could not be particularly accurate. Hence a partial analysis was preferable to no analysis and modelling could indicate the direction and magnitude of change.

Practical Softened Systems Approaches to Complexity

Organisational Cybernetics - organisations as systems absorbing demands of the environment (System 1); co-ordination for harmony (System 2); controlling for internal stability of the organisation (System 3); co-ordinating all internal and external information (System 4); policy and decision-making (System 5).

Qualitative System Dynamics - systems description consisted of a qualitative analysis phase and a quantitative analysis phase. The qualitative phase provided a perspective and the quantitative followed hard systems rigorous assessments.

Sociotechnical Systems Design - organisations consisted of social and technical systems acting in relationship to each other in a highly complex environment. Success was dependent on the ability to be effective in adaptation and modelling could guide adaptation. The techniques involved establishing the boundaries in organisational terms, scanning the environment for future impacts, redesign of social and technical systems, implementation and re-evaluation.

Practical Softer Systems Approaches to Pluralism

Strategic Assumption Surfacing and Testing - presumption of organised complexity, where changes in one area had both desired and unwelcome effects in other areas since there was an underlying yet elusive structure in the relationships between them. Subjective risks were perceived differently by different actors, and involved the active participation of many individuals. A Hegelian dialectic approach was most likely to generate the best judgements on a complicated situation, which was then synthesised. The procedure comprised phases of group formation, assumption surfacing and stakeholder identification, and dialectic analysis

Practical Soft Systems Approaches to Pluralism

Strategic Options Development and Analysis - dialectic analysis of assumptions and stakeholder identification.

Strategic Choice - dilemmas were regularly confronted by decision-makers in the public sector when faced with complex cases, and planning was a continuous process of strategic choice where balances needed to be struck in situations of cyclicity, subjectivity, uncertainty and selectivity. Dialectic debates by an interactive group whose members crossed organisational boundaries to expose beliefs that future problems could arise from current strategic choices, followed by synthesis of arguments.

Interactive Planning - inter-related phases in coping with unexpected occurrences - formulating the problem situation through scenarios of what could occur if changes were not made; achieving agreement between stakeholders on scenarios; defining what resources were necessary to achieve the desired state; specification of organisational and management systems required.

Soft Systems Methodology - constructing different conceptual models of human activity systems from a variety of perceptions of the problem situation, thereby enabling a deep understanding of the context to be gained. Comparison of conceptual models in order to generate debate about possible changes.

8.2 Validity in an Advanced Systems Approach

The validity of any results obtained through the use of an advanced systems approach depended on several aspects of the technique used. These were the content validity, the face validity and the sampling validity (Flood and Carson, 1988). In an advanced systems approach, these were met by:

content (or construct) validity - referred to the relationship between a measuring instrument and a theoretical framework specifying the nominal world. The closeness of the instrument in reflecting perceptions of the world was assessed by judges (if either consensus or pluralism was present then the measuring instrument should reflect this). If there was a discernible trend in opinions among the judges (which is subjective and not necessarily replicable), then the measuring instrument can be said to have content validity.

face validity - a group of experts assessed whether the measuring instrument related to the attribute of interest. If there was a consensus among the judges (which is subjective and not necessarily replicable), then the measuring instrument could be said to have face validity.

sampling validity - a representative sample of the attribute being measured could be achieved only if a representative set of statements, questions, or indicators (from the assumed infinite set of these) was achieved *a priori* and assessed by a representative sample of the actors' concerned with the problem situation. If there was a consensus among the judges (which was subjective and not necessarily replicable), then the measuring instrument could be said to have sampling validity.

The construction of a questionnaire (as an example of an advanced systems measurement instrument) was therefore an iterative process that was ultimately judged by experts for validity.

9/ GUIDELINES FOR ADVANCED SYSTEMS TECHNIQUES

The previous section identified guidelines for an advanced systems methodology. The following guidelines for selection of, and for the conduct of, advanced systems techniques draws heavily on Keys (1991: 228 - 230), whose views on attributes and conduct of practical systems techniques were found to be especially useful.

9.1 Criteria for Selection of a Blend of Hard and Soft Techniques

The first stage in developing a research design using advanced system techniques in a rigorous systematic manner was to specify the individuals and other elements that may be involved. Two separate roles may be identified for individuals in the research design. The first is that of the researcher. A person filling the research role has to be able to use a set of procedures in order to collect valid data. The procedures by which this task was accomplished formed the research design. The second role was that of the participants in the research process. These people, once identified, were assumed to have equal footing in the research. However, if various groups of people were involved then their views might be weighted according to their level of expertise.

The research technique acts upon an individual's understanding of parts of the world. Part of this understanding consists of an appreciation of how other people perceive the same part of the world. Thus the understanding held by any individual consisted of his or her own view of a problem, together with an idea of how other people viewed the same problem.

The perception of the researcher was crucial to the way in which the problem would be tackled. The view held by the researcher was influenced not only by his own perceptions, but also by those of the participants. The researcher's understanding of a situation was developed from his understanding of how the participants viewed it. The choice of a set of participants could have a dramatic influence upon how the researcher perceived a situation and how he tackled it. Central to this choice was the attitude taken towards power by a researcher. The approach emphasised the importance of decisions made by the researcher in relation to determining the relationships which could exist between the participants. It was necessary to make issues of power explicit so that they could be controlled.

The researcher needed to consider two factors in order to decide the type of technique. Firstly, the objectives in helping with the research held by each participant might or might not be in conflict, some might do it out of kindness, others because they wished to see the research outcome, some because they had been pressurised into responding. Secondly, the systemic and recursive nature of the problem meant that individual perceptions of the problem under study would be highly fluid.

The degree of uncertainty over how a situation behaved was an indication of its complexity. A change in one person's view could influence everyone else's view and this influence could lead to further changes. Thus the researcher needed to be continually aware of how the participants' views were changing. Any development might require a researcher to change the technique he was using. Cohesion might be lost as a group fragmented into different factions, agreement might be reached and might move a problem context from pluralist to unitary.

Thus a choice of technique should:

- recognise the importance of the researcher's subjectivity;

- incorporate methods of assessing degrees of pluralism;

- represent the dynamic nature of the problem situation.

These guidelines can be formalised into a specification of a process for implementing an advanced system technique, as discussed in the next chapter.

10/ SUMMARY

The advanced systems philosophy appropriate for research in the ports was discussed in Chapter 3. This chapter related contemporary hard and soft systems modes of inquiry and problem-solving approaches to their implicit methodological foundations, so as to identify the appropriate advanced systems technique for this research. A classification of systems methodologies was developed from assessing established practical systems techniques as modes of inquiry for producing knowledge. The classification served as the basis for determining the characteristics of the inquiry technique required for the research and for the final choice of technique. Because of the unique aspects of the exercise of power in the ports, it was concluded that an advanced systems methodology and research technique had not emerged in contemporary systems work.

A new methodology and technique was required for investigating potential future effects of structural change in the international ports industry.

However, guidelines for an advanced systems methodology and technique could be identified from the literature. This chapter identified the criteria for an Advanced Systems Methodology according to the Flood and Carson (1988) working definition:

- "Philosophy - a broad non-specific guideline for action;
- Technique - a specific programme of action that will produce a standard result;
- Methodology - lacks the precision of a technique, but will be a firmer guide to action than a philosophy."

This represented the achievement of the first part of the methodology objective. The characteristics for an advanced systems technique appropriate to the subject matter of the ports are developed in the next chapter and represent the achievement of the final part of the methodology objective.

CHAPTER 8 - MULTIPLE SCENARIO TECHNIQUE

1/ *SELECTION OF AN ADVANCED SYSTEMS TECHNIQUE*

In the absence of stable, quantitatively predictable environments the generally accepted method was eliciting the judgements of experts. It seemed therefore that a blend of existing futures forecasting and judgmental techniques would be needed to minimise drawbacks in an advanced systems methodology at an international level. Schoemaker (1993) reviewed futures techniques for understanding complex strategic choice problems that used experts' judgement. He considered the essential attributes needed to enhance thinking about a problem area (i.e. those prime qualities which were required from participants in the ports research and listed in Table 8.1) were:

<i>STRATEGIC THINKING IN FUTURES TECHNIQUES</i> <i>Table 8.1</i>			
	<i>Delphi technique</i>	<i>Dialectic reasoning</i>	<i>Multiple Scenarios</i>
Systematic thinking tool?	high	perhaps	medium
Internal communication?	yes	perhaps	yes
Identifier of strategic issues?	no	yes	yes
Problem scope?	narrow	broad	broad
Uncertainty bounding?	yes	perhaps	yes
<i>(adapted from Schoemaker, 1993)</i>			

This tabulation shows that no one technique met all the requirements of pluralistic holistic research, but that a blend of the Delphi and multiple scenarios techniques underpinned by Dialectic reasoning could form the basis of an advanced systems technique. The strengths of each technique would complement each other. However, this assumed that these techniques had a common approach to uncertainty. This was a difficult concept to accommodate in a research technique.

As identified in Chapter 1, the research specifically sought knowledge of future effect uncertainty (Milliken, 1987). An advanced systems technique which attained both a depth and breadth of understanding in a pluralistic and coercive futures environment was extremely difficult to achieve, particularly in a replicable structured format. A qualitative postal questionnaire sent to very high level international decision-makers

for their judgement of a précis of the dynamic problem area posed by ports, and seeking other pluralist viewpoints, seemed to be the best pragmatic solution: particularly if this questionnaire could be modified in the light of their responses, returned and further assessed by them until an overall agreement had been reached. Consequently, the techniques of Delphi and Multiple Scenarios were blended into a single advanced systems technique, in which multiple scenarios of the differing potential effects structural change could have in the international ports were presented to a Delphi for iterative judgmental assessment. The scenarios would be based on the pluralistic principles of Dialectic reasoning to accommodate differing perceptions of potential outcomes of the ports restructuring. However, practising experts in this field, such as decision-makers (or influencers of policy), were very busy and would respond only if a means of access could be found. This relied on contacts from the researcher's former employment.

1.1 The Delphi Technique

The Delphi Technique is widely accepted in futures research as a judgmental forecasting tool for structuring a group communication process, so that a complex problem can be assessed (Turoff, 1975). The advantage of the Delphi is seen to be that a group's predictions will be right more often than they are wrong. Its use is indicated when a problem does not lend itself to precise analytical techniques but can benefit from the subjective judgements of a group of individuals with diverse backgrounds, experience and expertise.

The Delphi technique was straightforward in concept. A series of propositions was placed before a group of experts, generally by means of a postal questionnaire. Their responses to the questions were aggregated and the results returned to them for review of their individual opinions, and possible revision, in the light of the consensus view of the group. The process was repeated until there was no change in the group's consensus opinion on the propositions. This process is summarised in Figure 8.1.

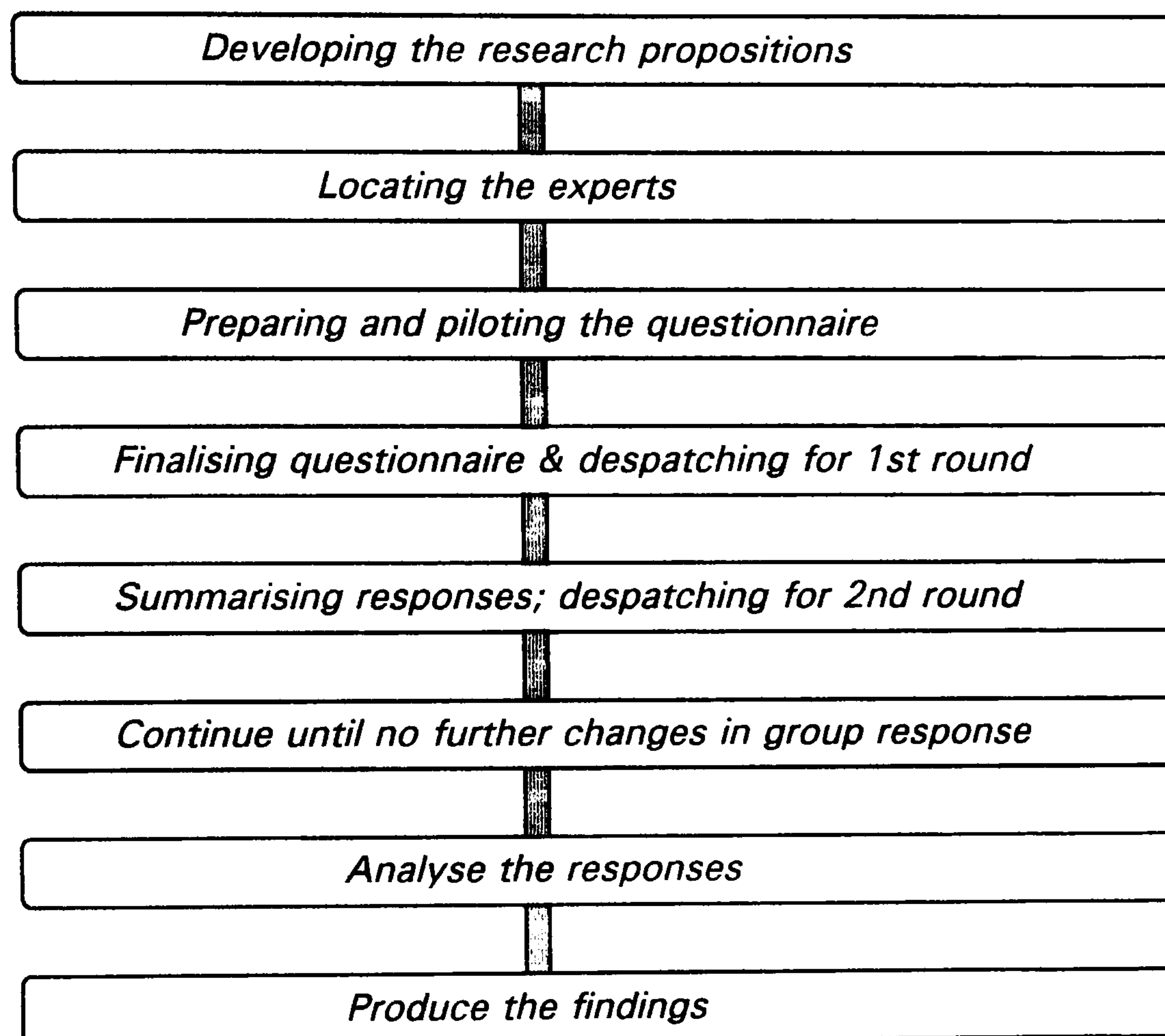
This was a qualitative forecasting technique which was particularly appropriate in dynamic situations such as international ports restructuring where no trends existed and quantitative methods on their own were inappropriate. According to Jenkins and Theole (1991) the success in practice of a technique can be equated to its popularity in the literature. They charted the spread of Delphi across a wide variety of fields and concluded that "the Delphi technique appears to be increasing in popularity as we enter a period of greater environmental uncertainty" (Jenkins and Theole, 1991: 31).

The Delphi process enhances objectivity by incorporating some feedback of individual contributions, some assessment of group judgement or view, some opportunity for individuals to revise views and some degree of anonymity for the individual responses. The opportunity for dialectic debate in responses was generally denied to participants. There are usually four distinct phases - exploration of the subject, reaching an understanding of how the group views the issue, exploration of

disagreement and reasons for differences, and final evaluation after feedback of information for consideration. Godet (1987) identified it as a natural method of assessing scenarios, Bijl (1992) drew attention to its characteristics of anonymity, iteration and feedback, remarking that the strength of Delphi was in its capacity to generate new options and to enhance consciousness of the future in order to reinforce the decision processes.

DELPHI RESEARCH STAGES

Figure 8.1



(Jenkins and Theole, 1991)

The importance of informed judgement was demonstrated by Sengupta and Abdel-Hamid (1993) who, in a laboratory experiment, found that subjects provided with cognitive feedback performed best - subjects provided with only outcomes of actions performed poorly. Delphi minimises the inherent personal bias of the researcher in providing cognitive feedback, since this is part of an automatic structured process rather than a subjective interpretation of events. The implicit power of the dominant individual (participant or researcher) was reduced, but not removed in the technique because of choices in questionnaire design, content and participants (Rowe, Wright and Bolger (1991). The key pitfalls in Delphi thus appeared to be in the initial stages of designing a questionnaire and in selecting well respected experts. The questionnaire had to be tailored to interest these participants for a good response.

Some writers have pointed out other drawbacks in Delphi which can usually be traced to design faults, e.g. the questionnaire imposing views and preconceptions of a

problem, not allowing for the contribution of other perspectives, poor techniques of summarising and ensuring common interpretations, false feedback, ignoring and not exploring disagreements, and underestimating the demanding nature of a Delphi (Gartner, 1990; Linstone, 1975). It has been criticised for predictions that are unable to be verified because of their time scales and for failure to select panels according to a premeditated sampling procedure. There are concerns over a test/retest reliability, but failure to achieve identical results was an inherent aspect of the composition of a panel, since different experts produced different opinions on different occasions. Despite these criticisms Parente and Anderson-Parente (1987) contended that an evaluation of futures techniques failed to provide any reasonable alternative to Delphi for long-range forecasting.

The literature provides guidelines for conducting a consensus-seeking Delphi. It appeared that events were treated as discrete predictable problem areas, for which propositions could be identified that were amenable to generating a single range of answers. Generally, issues were presented as short self-contained statements, with self assessment scales on which to indicate the strength of opinions held. Techniques for the interpretation of results were generally limited to counting participants' responses to determine consensus levels, although some studies did adopt forms of cross-impact analyses (such as Godet, Chapuy and Comyn (1994) in France) when problems could be seen as having discernible and measurable effects in other areas. Caution in reporting results has been advocated because of participants' discounting of the future, prediction urge, tendency towards simplistic judgement and understanding of language used in the questionnaire and feedback of consensus opinions (Linstone, 1975).

The literature implied that the feedback stages were relatively straightforward for gathering research data, once questionnaire design and participant selection stages had been completed. Jenkins and Theole (1991) summarised the strengths and weaknesses of Delphi as:

strengths

- allows data collection from diverse sources to develop a consensus view
- formal process is cost effective
- anonymity of experts reduces influence of dominant individuals
- central tendencies can be easily observed
- technique can be used for ongoing or longitudinal studies
- can operate in conditions of high uncertainty with little prior data

weaknesses

- potentially low response rates
- no direct pressure on experts to provide responses
- danger of different interpretations to the propositions with no opportunity for clarification
- experts are only advised of the consensus view without knowing the reasons for differing viewpoints

These weaknesses are crucial for multi-cultural international research. The aim of the Delphi sought consensus and thus the collation and feedback of dialectic responses was geared towards achieving this aim. A principle of exposing strongly held differences was not part of the Delphi process, but a by-product. In situations of known differences of opinion which were resolved by coercion, e.g. the international ports, this raised questions over the validity and reliability of forecasts, unless these were specifically addressed in the research design. The standard process of presentation of propositions and analysis of results was thus unsuitable for surfacing the inherently differing pluralistic perspectives in international policy. The low response rates experienced could also be a manifestation of implicit power relationships (e.g. questionnaire content being tailored to suit a dominant party or view resulting in disinterest or suppression of other views; potential participants not wishing to be seen to be involved for career reasons; participants losing interest because of dilatory behaviour of key members; participants' views not being passed to other members creating an impression of hidden agendas in the research etc.).

1.2 Policy Delphi as an Advanced Systems Technique

Futures research is a notoriously problematical area for validity and reliability assessment. In unstable, unpredictable environments the only feasible method was eliciting the judgements of experts and obtaining a consensus opinion. This implied an advance objective of seeking agreement on 'the best way' solutions to problem areas. In situations where divergent policies were adopted, as in ports in the UK and SA, there may be a national consensus from experts within these countries, but not necessarily a 'global' consensus.

In situations where differing solutions were apparent, a provision for pluralism, or dialectic 'disagreement' between perceptions was necessary. This provision needed to be based on a correspondence theory of truth ("A notion that the truthfulness of an account or a theory is determinable by direct comparison with the facts [or perceptions] of an external and accessible reality. If they fail to correspond the theory or account must be rejected." Gill and Johnson, 1991: 164). A judgmental technique accommodating pluralism was a variant of Delphi which, rather than solely seeking consensus, sought also to expose differences and generate agreement on whether these differences between perceptions were resolvable or fundamentally insoluble. This was the Policy Delphi (Turoff, 1975). Mitroff and Turoff (1975) identified the Policy Delphi as a Hegelian Inquiry System. Standard forms of Delphi concerned with obtaining consensus do not share this philosophy. Parente and Anderson-Parente (1987) concurred, believing that dialectic systems were applicable to poorly structured situations where instinctively there was no better tool than the opinion of experts.

The Hegelian philosophical foundation is described by Mitroff & Turoff (1975: 29 - italics as original) as being:

"(1) Truth is *conflictual*; i.e. the truth content of a system is the result of a highly complicated process which depends on the existence of a *plan* and a diametrically opposed *counterplan*. The plan and the counterplan represent strongly divergent and opposing conceptions of the whole system. The function of the plan and counterplan is to engage each other in an unremitting debate over the "true" nature of the whole system, in order to draw forth a new plan that will, one hopes, reconcile (synthesize, encompass) the plan and the counterplan.

(2) A corollary to (1) is that by itself the data input sector is totally meaningless and only becomes meaningful, i.e. "information", by being coupled to the plan and the counterplan. Further, it is postulated that there is a particular input data set which can be shown to be consistent with both the plan and the counterplan, i.e. by itself this data set supports neither naturally, but there is an interpretation of the data such that it is consistent with both the plan and the counterplan. It is also postulated that without both the plan and the counterplan the meaning of the data is incomplete, i.e., partial. Thus, under this system of inquiry, the plan and the counterplan which constitute the theory sector are prior to the input sector and indeed constitute opposing conceptions of the whole system. Finally, it is also assumed that *on every issue of importance, there can be found or constructed a plan and a counterplan; i.e., a dialectical debate can be formulated with respect to any issue.* On any issue of importance there will be an intense division of opinion or feeling."

The Hegelian philosophy is therefore a dialectic reasoning approach which underpins the softer systems methods such as Interactive Planning. These dialectic methods were used as the base in developing the advanced systems methodology. Dialectic reasoning was identified by Schoemaker (1993) as being a judgmental approach to help strategic decision-making and choice in situations which could be seen to pose either an opportunity for the organisation, a threat to the organisation, or both opportunity and threat.

Thus the only difference between a Policy Delphi and a standard Delphi appeared to be in its underlying philosophy - in other respects the conduct of the technique seemed to be the same (i.e. as illustrated in Figure 8.1). It therefore met the needs of an advanced systems technique identified in Chapter 7.

However, the futures literature was silent on rigorous techniques for the derivation of the content for a Policy Delphi seeking to measure international perceptions of the potential outcomes of structural change. No reported study could be located. Generally, in other studies, dialectic issues were presented for judgement as opposing short self-contained statements, with self assessment scales to record favoured choices between two extremes. Procedures for the interpretation of dialectic results were generally limited to counting participant responses to determine levels of consensus or favoured choices.

To a large extent, the analysis and interpretation procedure adopted depended on the subject matter, and no studies were located which asked participants to review outcomes of combining various potential effects of structural change and response options to determine a balanced strategy. The effect of external longitudinal developments during a Policy Delphi process was not reported. These current events might bias the participants' judgements on the futures subject matter (as distinct from the effect of changing their opinions in the light of other experts' views). This would severely affect the validity of results. It could also raise concerns that the participants were exhibiting a tendency for simplistic judgement and discounting the future in their responses.

Insufficient evidence was provided therefore to replicate previous techniques in which these factors were addressed and controlled in international research. For the purposes of this PhD research, the literature was sparse concerning the presentation to participants of pluralist views of interacting futures issues, and reserved on techniques for determining the validity iterative judgement of results. Thus the key aspects in an advanced systems technique remaining to be determined were firstly, the method for obtaining a rigorous derivation of the content of a Policy Delphi, and secondly, the means of presenting this content to participants, i.e. the design of the questionnaire.

2/ MULTIPLE SCENARIOS

No reported use of multiple scenarios for international research into future effects of structural change by means of a Policy Delphi has been located in the literature. Thus a gap exists in the knowledge of the usefulness or otherwise of the multiple scenario technique as a rigorous part of an advanced systems methodology. Using the multiple scenarios as an academic procedure for international research meant that the scenario technique had to be further developed and tested. The presumption was that by developing an advanced systems data collection technique where qualitative issues were supported by quantitative assessment, then inadequacies in hard or soft methodologies would be, to an extent, overcome.

The procedures for deriving multiple scenarios were judgmental. Authors had differing methods of creating scenarios according to context, but once created they were treated as being a single forecasting entity, not as a multi-faceted, multi-level research technique. They had not reported the usefulness of scenarios when combined with other judgmental assessment methods (e.g. Delphi). Neither have they reported on how the scenario derivation procedure can aid the analysis of judgmental assessment, nor how a favoured scenario can be validated by this analysis.

Decision-making issues arising from stakeholder power are rarely referred to in the futures literature. Hence the process of balancing the differing power bases of stakeholders in determining strategy is overlooked as a factor influencing the favoured scenario. Thus the use of multiple scenarios for capturing the full range of influences

on perceptions of potential outcomes, strategy selection and organisational design for implementing this choice, is unexplored.

By developing a rigorous construction technique for scenario derivation, presentation and dialectic assessment, the confidence in the content and results of a Policy Delphi could be enhanced. Effectively, the scenarios would form the first questionnaire stage, with subsequent stages following accepted Delphi procedures of feedback of results, with the number of iterations, and especially their timing, dependent on the degree of turbulence or stability present in the international ports environment.

The first use of multiple scenarios in the ports was demonstrated in the House of Lords' (1991) verdict, which was based on the Lords' own judgmental views. Opposing holistic perceptions of potential outcomes were presented to them for judgement by both the proposers of, and objectors to, change. This meant that the underlying rationale for testing propositions by means of scenarios had been accepted as a prime legislative tool, i.e. at the macro level of Chapter 4. At the organisational level of Chapter 5, multiple scenarios have been used for strategy selection purposes in the practical systems methodology of Interactive Planning. The futures literature regarding conduct of a standard Delphi contains references to multiple scenarios being used in research at the strategic management level of Chapter 6, e.g. Godet (1987).

2.1 Multiple Scenarios as an Advanced Systems Technique

Multiple scenarios were initially a practitioner-developed method of assessing possible future outcomes (Wack, 1985 (a) and (b); De Geus, 1988), rather than a rigorous academic developed methodology. Scenario assessment is based on the notion that "To operate in an uncertain world, people need to be able to *reperceive* - to question their assumptions about the way the world works, so that they could see the world more clearly. The purpose of scenarios is to help yourself change your view of reality - to match it up more closely with reality as it is, and reality as it is going to be. *The end result, is not an accurate picture of tomorrow, but better decisions about the future*". (Schwartz, 1991: 9 - italics as original).

Multiple scenarios as a research tool are therefore restricted to the perceptions of a particular level of decision-maker, where it has the strong merit of surfacing differing perspectives and assumptions. Its use has been progressively refined and is advocated in recent strategic management literature for futures assessment (e.g. Linneman and Klein, 1985; Malaska, 1985; Godet, 1987 and 1990; Schnaars, 1987; Schwartz, 1991; Schoemaker, 1993). The Delphi process itself was a practitioner-developed methodology which has received widespread academic use.

The emphasis of the research was on viewing ports as open systems undergoing 'second-order' change (i.e. a radical change in the environment which is "discontinuous with the past, sudden and unpredictable in its ramifications" - Campbell, Coldicott and Kinsella, 1994: 23). The presentation of 'futures' questions

was commonly carried out by scenarios asking 'what if?' as a method of generating awareness which led to decision-making on which directions to follow. However, scenarios depend on the fundamental concept that the 'right' questions are found. The problem was in identifying what were the 'right' questions and how to present them in a manner that enabled judgement on the direction and context of organisational change.

The purpose of asking the 'right' questions was to challenge existing assumptions. "People often do not realise that their decision agendas are usually unconscious. Thus, the first step of the scenario process is making it conscious. Each of us responds, not to the world, but to our image of the world." (Schwartz, 1991: 9). Various procedures for addressing how to generate the 'right' questions have been advocated in futures research. These have a common underlying theme in environmental change:

- use of experts or literature trawls identifying a range of futures themes;
- consolidation into plausible events;
- proposal of response options;
- determining favoured response.

The rigorous generation of multiple scenarios asking the 'right' questions is not an easy matter. In recent reported studies, Coyle, Crawshaw and Sutton (1994) observed that "futures research includes the problem of generating reasonably exhaustive and plausible scenarios for a given topic, a problem for which there are no truly satisfactory solutions." As part of an ongoing methodological research process into Field Anomaly Relaxation techniques of scenario generation, they discussed a possible process for assessing visualisations of the future written by experts in various degrees of depth. These created a multitude of factors which were condensed by a small team into narrative scenarios by a process of identifying and discarding anomalies.

Coyle and McGlone (1995) further developed this process in a military strategy setting, as an example of a practical application. The essence of the process was a judgmental team systematically reviewing the likelihood of events and time-scales. Godet, Chapuy and Comyn (1994) adopted a different procedure in an international context of information technological change where a large group of experts identified and grouped variables to form scenarios. The likelihood of the scenarios was then subjected to probability calculations using specialist software.

The trends of current scenario research are towards a team-based approach to issue identification and consolidation, but there are differences in underlying linear/non-linear philosophy. These trends presume the existence of a group of people with like-minded views to create a consensus on items. Coyle and McGlone (1995) refer to the ease of the process in these situations believing that this may have been because they

were not working with decision-makers. They thought that there could be improvements to the methodology, although care would be needed not to push judgement too far.

These reported processes of scenario generation are of limited help for PhD research into systemic futures, unless adapted for a lone researcher. Thus there was a need to take the process of multiple scenario generation further in strategic research. This considered the practical aspects of:

specification of circumstances of potential conflict that led to the identification of the 'right' questions for multiple scenarios (this procedure has been addressed in Chapters 4, 5 and 6);

consolidation of these questions into descriptive opportunity/threat multiple scenarios for a postal questionnaire for judgement by a Policy Delphi;

a method of recording and analysing a judgmental assessment of scenarios;

a procedure for seeking and analysing participants' pluralistic views;

a method of consolidation of quantitative and qualitative results for feedback to participants;

construction of a model from the outcome of the multiple scenario/Policy Delphi research.

Although the literature was not helpful for determining the content of a Policy Delphi, there were guidelines on team-based approaches to futures research which could be adapted to utilise the Multiple Scenarios Technique for a solo researcher. From a reading of this literature the following procedure was devised.

2.2 Conduct of the Multiple Scenario Technique

The first aspect was the specification by the researcher of a set of participants. The researcher then created a set of multiple scenarios, which defined how the researcher perceived an actor might see future effect uncertainty in structural change. The perceptions held by each participant were surfaced by a questionnaire describing the multiple scenarios which participants were asked to assess, and comment on. The researcher would thereby capture the variety of views held by the participants on the potential problems in structural change.

The second aspect was developing a means of assessing degrees of pluralism and complexity. The degree of pluralism was a measure of the disagreement between the perceptions held by different participants. The degree of complexity was a measure of the uncertainty in the behaviour of the situation under study. In effect, if

participants were able to form a judgmental assessment this would act as a surrogate measure of the accuracy of the multiple scenarios created. If they were unable to form a view, then this would indicate that the multiple scenarios were not addressing the uncertainty in a situation as it was perceived by participants.

The third aspect involved consideration of the dynamic aspects of a Policy Delphi. As the multiple scenario data collection technique was used and the information gained fed back to participants for the next iterative round of the Policy Delphi, the perspectives of each participant would alter. Thus the measures for the degrees of pluralism and complexity would also change, and should be qualified by some indicator of time to reflect the extent of current changes in the environment which might influence judgements. It should also be possible to alter the set of participants over time to allow the researcher to expand or contract the number of people being considered.

This led to a five step process for implementing the Advanced Systems Technique of Multiple Scenarios assessed by a Policy Delphi:

- 1/ This step was the identification of actors with experience of the problem situation and the ramifications of the implicit and explicit power held by stakeholders. (The researcher thus explicitly made a decision as to how to treat an implicit power structure in the problem situation.)
- 2/ This step involved the researcher identifying the key issues of future effect uncertainty in structural change which were then used to construct multiple scenarios that were assessed by participants. The next two steps involve questionnaire design.
- 3/ This step consisted of assessing the degrees of pluralism and complexity - ranging from informal assessment to quantitative indicators. It involved considering sources of potential bias which could affect judgements.
- 4/ This step was the actual procedure adopted for the rigorous construction of the Multiple Scenario Questionnaire and the methods of analyses of responses this would generate.
- 5/ This step was the design of a process for the feedback of perceptions to participants. This process would be repeated until there was no significant change in how each participant felt about the problem, i.e. until the Policy Delphi process was completed. (As discussed in Chapter 10, longitudinal events prevented the accomplishment of this step).

These steps were restricted by the initial choice of actors. They could be biased to some extent by the presentation of the multiple scenarios which would influence the actors unless some means was provided for them to modify these, i.e. comment on other factors which they felt ought to be included in the scenarios. The procedure

adopted offered a chance for any influence of the researcher's choice of scenario elements to be balanced by a later analysis of differing viewpoints. It allowed for the inclusion of key people previously omitted, but not for the effects of further changes in the environment.

2.3 Selection of Participants

As discussed in Chapter 1, the research sought knowledge of decision-makers' future effect uncertainty over the outcomes of, and potential conflict in, structural change. This meant that the research concentrated on key decision-makers at the level of chief executive of a single port organisation, or chief executive and senior port official of a multi-port organisation, in the UK and SA. These people are responsible for the successful implementation of structural change. This group was most likely to:

- have experience of assessing and responding to future effect uncertainty;

- have opinions based on a wider holistic appreciation of varied expectations of the role of ports;

- be most likely to have experience of the implicit and explicit power held by stakeholders, e.g. commercial pressure and lobbying influences;

- be most likely to be amenable to changing opinions if an argument was presented based on sound reasoning;

- be most likely to have foresight of the outcomes of seemingly good changes;

- be most likely to react to and revise their opinions in the light of longitudinal events;

- be the least likely to generate a consensus because of the strength of their views and convictions;

- be the least likely to have time for consideration of seemingly non-essential research, particularly if undertaking policy-making in response to structural change events.

To this category of key decision-makers must be added the category of statutory decision-makers, i.e. the senior official responsible for the public right of access to, and control of, the harbour (the Harbour Master in the UK and Port Captain in SA). In the UK at least, their personal legal responsibilities mean that they have a very large influence on policy decisions. Ultimately, however, they report to the chief executive or the senior port official (unless they hold these positions as well), but it is the nature of their *additional* legal responsibilities that differentiates them from commercial line managers.

Generally, the independence of their position is such that, dependent on the particular administrative arrangements of the organisation, they may attend board meetings as advisers on policy, or may hold executive or committee membership as marine experts.

It would be useful for the research to have a comparative group of stakeholders. Any divergence in their views from those of the decision-makers could be surfaced in a Policy Delphi. This might cause decision-makers to re-evaluate their views in the iterative rounds, if stakeholders raised valid points that might not have been given sufficient weight in their judgements of scenario elements. In other words, a different perspective could act as a challenge to the 'taken for granted' beliefs and assumptions of ports decision-makers.

Consequently, it was decided to check the questionnaire outside the target group with a small non-random selection of senior ports stakeholders in both countries (i.e. line managers in ports strategy, administration, commercial, navigational and engineering areas), business users of ports (a major liner service between the two countries at chairman and senior marine officer level in SA), consultants (port and legal in UK) and academics (whose work is quoted in this thesis at professor, senior lecturer and lecturer level in the UK).

These people thus formed a non-random Stakeholder group whose purpose was to test the general usability of the questionnaire, as well as bringing different perspectives to the research, i.e. in Castrogiovanni's (1991) terms adding 'richness'.

The hierarchical level of the research identified in Chapter 1 meant that the selection of participants was restricted to a high level of decision-maker. This had the following implications for the content of multiple scenarios and the design of a questionnaire:

the content must be appropriate to the level of work they performed, i.e. it must address decision-making issues of policy, rather than operational issues of day-to-day routine activities;

the style of the questions asked should be challenging to their beliefs and assumptions in order to generate interest and a response, i.e. it should clearly be seeking their views rather than merely asking for a rating;

The design of the questionnaire should allow for reflection, provision of their own comments and recognise the limited time they have available.

2.4 Multiple Scenario Derivation

There are various stages to the design and construction of scenarios. These have been summarised by Schoemaker (1993) and Schnaars (1987) as guidelines:

- 1/ Review past events in terms of time frame, scope and decisions to identify degrees of uncertainty and volatility;
- 2/ Identify major stakeholders and actors who are affected and who could influence outcomes, and their roles, concerns and power relationships;
- 3/ Identify trends and predetermined elements that will affect future events;
- 4/ Identify key uncertainties or factors whose resolution will significantly affect the outcome;

(Stages 1 to 4 of multiple scenario construction have been addressed in the Introduction, and Chapters 1, 2, 4, 5, and 6.)

- 5/ Construct two forced scenarios by placing all positive outcomes of key uncertainties in one scenario and negative outcomes in another;
- 6/ Assess the internal consistency and plausibility of these scenarios, identifying where and why they may be inconsistent;
- 7/ Eliminate combinations that are not credible or impossible, recreating the scenarios covering a wide range of outcomes until internal consistency has been achieved;

(These stages relate to the Multiple Scenario Questionnaire. The construction and analysis of coherent scenarios derived from stages 1 to 4 is the topic of the next chapter.)

- 8/ Assess the revised scenarios in terms of how key stakeholders would behave in them. Where appropriate, identify topics for further study that would provide stronger support for the scenarios;
- 9/ Assess whether certain interactions should be formalised in a qualitative and/or quantitative model;
- 10/ Reassess the ranges of uncertainty to arrive at decision scenarios that might be given to others to enhance their decision-making under uncertainty.

(These stages relate to the analysis of responses to meet these assessments, which are reported in Chapter 10. From this analysis (including tests of the Research Expectations - Chapter 2) and further analyses of data and comments, a model was constructed as discussed in Chapter 15. The conclusions of the research in Chapter 16 provide suggestions for further research into the practical benefit of the Multiple Scenario Technique and subject areas that were highlighted by its development and use.)

Schnaars (1987) emphasised that the most difficult issue in scenario analysis was how to reduce a large number of potential future outcomes to a few plausible scenarios.

This depends on setting the tone of the scenarios and then deductively proceeding to the factors that described them. The literature did not give sufficient information on the technical process of Stages 5 to 7 in order to construct and analyse perceptions of multiple scenarios dealing with the unique facets of structural change in the international ports industry. Consequently the guidelines specified in the literature had to be significantly adapted for rigorous international research into the complex nature of structural change.

Although the research emphasis was on fundamental decisions required in the overall corporate plan, it was possible in constructing multiple scenarios to be attracted to a particular issue and to be tempted to follow its implications through in ever greater detail. The possible variations in interpretations meant that there was a need to control scenario content by maintaining a relationship with the government's stated aims of UK port privatisation (as identified by Thomas, 1992) of:-

- 1/ access capital;
- 2/ develop surplus land;
- 3/ diversify business;
- 4/ accountability and profitability.

This set the parameters for the content of multiple scenarios, which depended on reducing a large number of potential influences into a few plausible statements that captured the essence of future uncertainty. The scenarios needed to be constructed in such a way that all interpretations were logically derived from the multi-disciplinary literature quoted in Chapters 1, 4, 5 and 6.

It addressed the following 27 concepts and propositions, from:

Thrust of the Research:

Chapter 1

Structural constraints (environmental determinism); Selection of strategy.

Areas Unaffected by Structural Changes:

Chapter 4

Public/Private trustee role.

Chapter 5

Node, i.e. the transport interface; Core; Peripheral; Tangential.

Areas Affected by Structural Changes

Chapter 5

Financial pressure; Portfolio pressure; Environmental management.

Chapter 6

- P 1 - 4 extent of uncertainty in managing environmental events;
- P 5 - 8 adaptive specialisation in managing environmental events;
- P 9 - 11 adaptive generalisation in managing environmental events;
- P12 blending adaptive specialisation and generalisation;
- P13 - 17 expected managerial attributes.

The difficulty of multiple scenario construction was exacerbated by the need to create a single document for an international audience, but which was also suitable for generating information for analysis and modelling in Stages 8 and 9. The construction and analysis principles developed to meet this need are described in the next chapter.

3/ UNDERLYING CONSIDERATIONS FOR USING MULTIPLE SCENARIOS

These construction and analysis principles were dependant on the assumption that it ought to be possible to obtain holistic judgements from participants. This core presumption needed to be examined.

Schoemaker (1993) held that people related best to concrete causally coherent narratives, which catered to their preference for keeping matters manageable and relatively simple by specifying *uncertainty across rather than within* the multiple scenarios.

Schnaars (1987: 164) recommended avoiding assigning probabilities as "they convey a sense of precision that is not there ... [instead generate an] *optimistic/pessimistic format* (with or without a 'surprise-free' [scenario]) ... two to four scenarios should suffice, a greater number tends to be confusing (and unworkable)" (*italics added*).

In view of the quantity of concepts and propositions to be tested (as listed above), it was decided to simplify the international postal questionnaire by following these recommendations and creating an opportunity (optimistic) and a threat (pessimistic) scenario.

This meant that the questionnaire was dependant on the following key presumptions:

1/ The questionnaire would presume that provided that the narrative avoided internal uncertainty, participants would make a judgement on a question according to the whole scenario information presented with that question;

2/ Uncertainty could thus be examined by creating opposing scenarios, where the overall favoured future situation could be measured by the net opportunity/threat judgements of participants (as identified by subject Research Assumption 2 of Chapter 2).

This meant that it was presumed that participants would work through the complete questionnaire in order of questions and fairly judge each question, expressing no views if they disagreed with a particular statement, or would make a judgement but indicate by comments any points which affected their judgement. Uncertainty could thus be measured by considering its components of state, effect and response (Milliken, 1987 - see Chapter 1) in opposing opportunity or threat questions.

3.1 Cognitive Considerations

These presumptions depended on human nature. Jungermann and Thuring (1987) examined the cognitive and psychological aspects of scenario generation and use. They found that its characteristics of being hypothetical and selective (describing some possible or potential future state that was complex, interdependent, dynamic and opaque) meant that care was required in creating scenarios that reflected the abilities of participants and their knowledge. They held that scenarios could be classified as:

Exploratory - Anticipatory

where exploratory scenarios start with some known or assumed states and explore the consequences, whilst anticipatory scenarios start with some assumed final state and work backwards to identify possible causes;

Descriptive - Normative

where descriptive scenarios present potential futures irrespective of their desirability or undesirability, whilst normative scenarios take values and goals explicitly into account;

Trend - Peripheral

where trend scenarios extrapolate the normal surprise-free course of events that could be expected if nothing spectacular happened, whilst peripheral scenarios consider trend breaking, surprising or improbable developments.

Most scenarios represented mixtures of the various types. An explicit consideration of the function of the scenario would identify the areas of knowledge sought, and the limitations imposed by the cognitive process.

The function of the scenarios was to expose uncertainty which implied a Boundary-spanning area for decision-making (discussed in Chapter 2). Expressing this assumed Boundary-spanning uncertainty in its component parts identified the basic requirements for the scenario narrative and questions, i.e.:

State: potential for conflict?
 are core business conditions changing?
 *(testing Research Expectation 1(a) - inferences on future
 role of agency and choice);*

Effect: is diversification likely?
is freedom of decision-making restricted?
(testing Research Expectation 1(b) - inferences on the future nature of the organisational environment):

Response: implications for strategic choice?
implications for decision-making?
decentralised organisation structure?
(testing Research Expectations 2(a) & (b) - inferences on the future relationship between organisational agents and the environment).

Consequently, the multiple scenarios were exploratory, being a blend of descriptive and normative, and peripheral. This mixture meant that the multiple scenario content and assessment process would be difficult to design in order to ensure that the participants' knowledge would be surfaced by the research.

There are several aspects to tapping knowledge - these are effectively 'what is knowledge?' and 'how is it used?'

According to Jugermann and Thuring (1987), the following steps in the cognitive activity of a person considering scenarios exist:

- 1/ depending on the context, then relevant knowledge of the problem area will be extracted from an individual's overall bank of knowledge;
- 2/ a mental model will be constructed on the basis of the relevant knowledge;
- 3/ inferences will be drawn if the mental model is stimulated;
- 4/ the scenario is assessed by selecting those inferences that seem to be the most relevant and probable - these are then compared to the scenario and a judgement made.

This process is not simple and is subject to many incorrect assumptions when the individual determines what is relevant knowledge and draws inferences that may also be incorrect (Beach, Christensen-Szalanski and Barnes, 1987). Consequently, the presentation of multiple scenarios to participants in the research process must be sufficiently challenging to activate as wide a mental model as possible to minimise incorrect assumptions. However, the mental model activated should also be within the individual's grasp, i.e. the scope should not be so large that the selection of inferences becomes too difficult to manage. The problem is therefore finding the 'right questions' to activate the mental process and the best method of presentation to avoid overload and generation of incorrect inferences.

The activation of mental models is influenced by a number of experiential and personal factors. Experiential factors reflect the degree of expertise and relevant knowledge acquired regarding the problem area of the scenario. If there is insufficient knowledge, or a lack of confidence by the individual that his bank of knowledge is relevant, the mental model will not be activated. The intended purpose of multiple scenarios was to stretch as well as focus the individual's thinking. Since people tended to undervalue matters which were hard to imagine or recall from memory, the scenario method of presentation of a problem area encouraged a search for relevant knowledge and enhanced the chance of a mental model forming.

Personal factors reflect the aspect of how knowledge is used (Sengupta and Abdel-Hamid, 1993) which relates to the biases held by an individual. For example, negative scenarios are usually hard to envisage and accept. Schoemaker (1993) believed that acceptance was influenced by source credibility, i.e. who developed them, content credibility, i.e. what they say, and channel credibility, i.e. by whom and how they are presented.

(The postal Multiple Scenario Questionnaire is attached at Appendix A, and the Supplementary Questionnaire attached at Appendix B, addressed these aspects of credibility. A covering letter requesting assistance in the PhD research stressed the researcher's background and reason for contact to enhance channel credibility. The introduction to the postal questionnaire was aimed at enhancing source and content credibility. The Supplementary Questionnaire had a dual purpose - firstly to understand methodological failings, and secondly to exert pressure for acceptance of content and channel credibility.)

The plausibility of scenarios is also affected by their coherence and the quality of reasoning that people use to assess them. "The more detail the scenario provides, the less probable it becomes statistically, however, more cohesive and detailed scenarios are often perceived as more credible ... people often fall prey to ... the conjunction fallacy. ... Ironically, the conjunction fallacy may help people take seriously unlikely scenarios that normally would have been ignored. Thus, scenarios may use one bias (e.g. the conjunction fallacy) to counter another bias such as overconfidence." (Schoemaker, 1993: 201).

Besides over-confidence, the following biases and methods of avoidance were relevant to the Delphi process (Linstone, 1975) and had to be considered in the questionnaire design:

1/ Discounting the future:

Most people have a short planning horizon and short memory, thus evaluation is more strongly influenced by recent events than those in the distant past or future potential occurrences. This may be avoided by extending the participant's planning horizon, or by moving the scenario within the participant's current planning horizon. The multiple scenarios sought to counter this by utilising both methods, since no similar studies could be located which gave guidelines

on addressing this bias. This was done firstly by a scenario of conflict arising from current events which led towards potential future outcomes, and secondly by subsequent scenarios that moved consideration from the long-term strategic planning horizon back towards a short-term tactical planning horizon. The purpose of adopting this method was to facilitate counters for the following biases.

2/ The prediction urge:

Most people have a strong inclination for certainty and dislike of uncertainty. A suppression of uncertainty can mask the real significance of results. If the Delphi technique is viewed as a device to produce consensus, then the results that exhibit a high degree of convergence are often accepted, whilst those that involve wide differences are considered suspect. The multiple scenarios sought to counter this by testing plausibility of opposing scenarios, and demonstrating the extent of uncertainty in decision-making.

3/ The simplification urge:

As certainty is preferred to uncertainty, so simplicity is preferred to complexity. An individual asked to list his preferred solutions to a problem may act differently when faced with that problem in real life. Most people exhibit a tenacious tendency to simplistic misjudgements, therefore it is difficult to compare two persons' estimates of a future event when each views the past, present, and future in his own subjective way. The multiple scenarios sought to counter this by splitting the opposing scenarios into 'chunks' for evaluation, thus meeting the urge for simplicity, and requesting explanatory comments, thus forcing a reasoned opinion. These elements could then be consolidated by the analysis method adopted. This would have the effect of suppressing misjudgement. The hierarchical level of participants also minimised any tendency for simplistic misjudgements.

4/ Illusory expertise:

A specialist is not necessarily the best forecaster, and a group of experts, each knowledgeable about one aspect of a complex system, does not necessarily comprise expertise about the total system. Neither layman nor expert should be expected to be free of bias. The 'tyranny of the majority' sometimes threatens to swamp the single maverick who may actually have better insight than the rest of the 'experts' who all agree with each other. However, no satisfactory counter was found in the futures literature and this is a recognised problem in futures research. Accuracy of forecasts can only be proved by longitudinal studies. The multiple scenarios sought to surface this aspect by incorporating self-ranking of expertise from the differing groups of participants.

5/ Optimism - Pessimism bias:

A common occurrence is a bias towards over-pessimism in long-range forecasts and over-optimism in short-range forecasts, since people tend to project their experiential data base onto the scenario elements selectively. These tendencies

are complicated by individual characteristics. The multiple scenarios sought to surface the extent of this bias by separating the assessment of the opportunity/threat scenarios. However, multiple scenarios could not test individual characteristics as there were no elements testing psychological aspects. A comparison of trends in answering the scenarios may indicate a conscious attempt to suppress bias or may reflect unconscious bias. This bias was therefore relatively uncontrolled.

6/ Presentation:

A poor selection of participants and poor interaction between participant and researcher could give the impression to participants that they would receive nothing of value and were being used. This would be exacerbated by excessive specification or vagueness of statements, and a seemingly endless scenario weighted down with complex, superficially unrelated, or repetitious statements. The multiple scenarios overcame this by attempting to demonstrate the complicated nature of reality where decision-makers were required to consider a combination of many aspects of port operations. The use of opportunity/threat scenarios introduced an element of unavoidable repetition, and the quantity of concepts and propositions to be tested made for a long document. Interest can be generated through the brief wording of the scenarios and specification of reasons for research. (The Supplementary Questionnaire sought to measure the extent of this bias.)

Hence the format of multiple scenarios should explicitly take account of cognitive factors. This meant that the multiple scenarios were dependant on the following key presumption:

3/ Scenario presentation and assessment styles may use one set of biases to counter another set.

As discussed in the next chapter, the questionnaire sought to follow this route by providing fairly detailed multiple scenarios with examples to enhance plausibility, but striking a balance by not quoting trends or numerical factors to avoid giving a false semblance of accuracy. Furthermore the layout, question style and the invitation to provide comments were all geared towards countering various biases.

4/ SUMMARY

The best way to identify concerns over the outcome of structural change was through creating opposing opportunity/threat scenarios. Scenarios include anticipated events and are suited to situations where the future is affected by factors that have no direct historical precedent. They are a tool for generating thinking about future events, rather than a tool for enhancing predictable outcomes. Guidelines for the construction and use of the Multiple Scenario Technique were developed from the literature. The status of the participants and implications of participants' judgements in the research process were also identified.

The previous chapter identified guidelines for an Advanced Systems Methodology. These were used to identify a congruent technique for the research of Multiple Scenarios assessed by a Policy Delphi.

This chapter represents the achievement of the final part of the methodological research objective which was:

to identify or develop a congruent methodology that accommodates power relationships to assess perceptions of the future effect uncertainty in selection of strategy.

The next chapter discusses the principles adopted for the construction and analysis of the prime data collection tool which was a Multiple Scenario Questionnaire. The derivation of the methodological Research Assumption and Research Expectation that bias-free holistic judgements of scenarios would be obtained from the questionnaire is also discussed.

**CHAPTER 9 - MULTIPLE SCENARIO QUESTIONNAIRE
(CONSTRUCTION AND ANALYSIS PRINCIPLES)**

The subject aspects of the research drove the identification of the appropriate methodology. The preceding chapters addressed the Advanced Systems Philosophy underpinning the research from a methodological perspective and the identification and development of the congruent Multiple Scenario Technique. The purpose of this chapter is to address the practical data collection implications of:

(Key Question - 3)

How can decision-makers' perceptions of the potential future outcomes of structural change be gathered and analysed to demonstrate the characteristics of a 'Long-term Strategic Service Industry' model?

Issues and tensions in structural change and circumstances where these could cause conflict with the objectives of stakeholders had been identified. The intention of the Multiple Scenario Technique was to outline these potential effects for the judgement of participants by means of an international postal questionnaire. There are two distinct parts to this process, firstly the creation of multiple scenarios, and secondly, the assessment of them by participants. Integral to the process is the problem of how to analyse responses to test the subject Research Assumptions and Expectations.

Consequently, this chapter covers the rigorous procedure adopted for the development and analysis of the postal Multiple Scenario Questionnaire for international research that measured perceptions of the potential effects of structural change.

1/ SCENARIO CONTENT SPECIFICATION

The broad scenario theme of conflict and the circumstances which could lead to this were discussed in Chapters 4, 5 and 6 - the challenge was to convert this into a focused document that both aroused participants' interest and challenged their views in such a way that they were provoked into exposing their assumptions and their implicit biases. Controls for biases could be applied (as discussed in Chapter 7) and thus 'truthful' perceptions of structural change and future strategic responses could be captured.

The outcome of structural change relied on the planning activities of broad groupings of actors in the UK and SA at:

macro level - the ports industry representing a branch of international trade
this concerned common structural matters relating to ports as a node in a network - these are treated in decision-making as structural (environmental) constraints where individual corporate planning responses can have a consequential effect on the efficiency of the transport system as a whole;

operational level - the corporate port as any group of people working together

this concerned individual operational matters relating to the functions undertaken by an individual port - corporate planning takes these matters as being a mixture between unalterable structural constraints on activities (e.g. meeting legal demands) and alterable discretionary activities (e.g. pursuit of specific traffic);

strategic management level - port governance practices of decision-makers

this concerned individual decision matters and horizons relating to the governance of an individual port, i.e. those decisions which affect the efficiency and destiny of the organisation - corporate planning takes these as being administrative matters of resourcing and allocation.

Thus the content of the scenarios ought to reflect:

the extent to which structural change in ports to meet stakeholder expectations could affect the operation of the transport network;

the extent, reflecting local and national constraints, to which legislation and stakeholder expectations could determine freedom in choice of enterprise undertaken and the pattern of organisational development - the scope over the long term;

the design of the strategic corporate plan and the managerial philosophy adopted in order to make crucial decisions for survival and success, as well as the methods chosen to execute these decisions - the direction over the long term.

These concerns have been expressed in previous chapters in the form of a sequence of cascading concepts and propositions which should be considered in order to assess the appropriateness of proposing a 'Long-term Strategic Service Industry' model. The goal of the questionnaire was to express these concepts and propositions as coherent descriptions of possible alternative future events, i.e. opposing scenarios for evaluation.

1.2 Scenario Development Procedure

The research assessed two broad classifications of systemic effects of structural change in ports - the economic, legal and operational facets; and managing change in the ports - the decision-making and centralisation / decentralisation facets. These facets were identified as scenario circumstances of potential conflict. They provided a broad outline of the content of the scenario according to the literature. However, a crucial aspect of the research design was that these facets would reflect fundamentally dialectic future effect uncertainty in structural change, i.e. two people could view the effects of change in totally opposing ways and consequently create different plans to

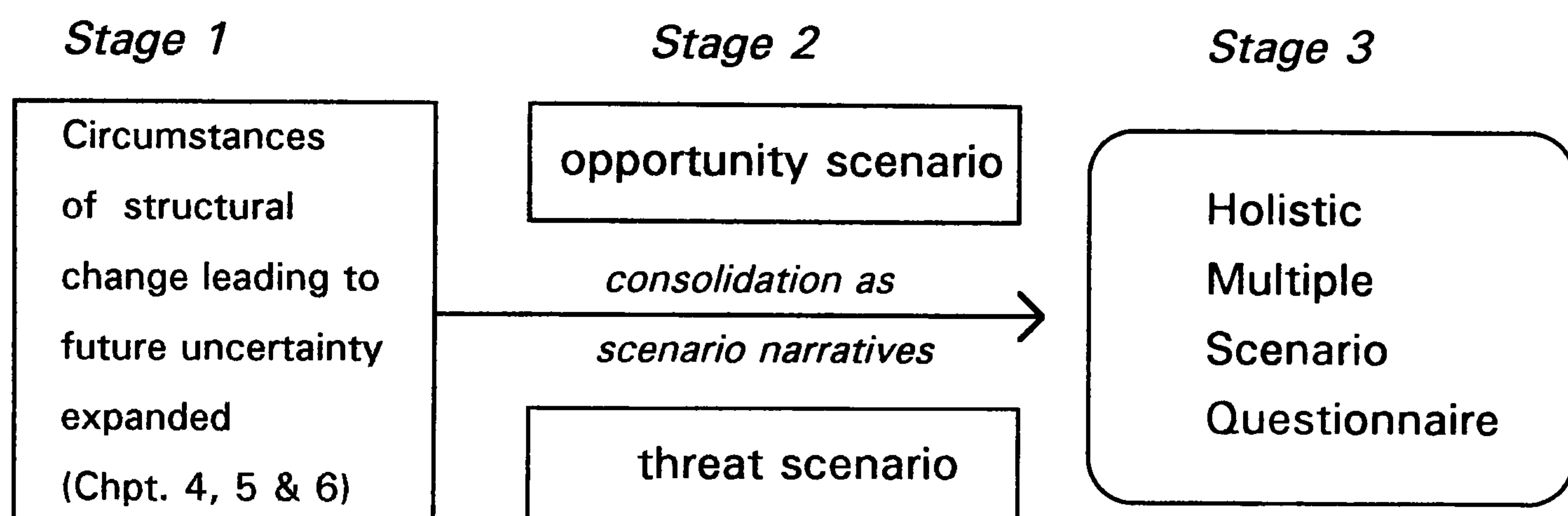
respond to these effects. These ways could be described through a series of short statements (or scenario narratives, Schoemaker, 1993, Schwartz, 1991) on each facet and assessed by each person. This meant that the questionnaire was dependant on the following key presumption:

1/ Scenario narratives and questions would produce dialectic views demonstrating strength of perceptions of uncertainty.

In effect, these statements were the issues and tensions in structural change. These acted as examples of the concepts and propositions identified in Chapters 4, 5 and 6. Hence before constructing the scenario questionnaire, it was necessary to check that these facets were in fact capable of generating polarised results, i.e. replicating the processes two notional observers would go through if faced with an actual situation of uncertainty in the future. Thus the issues, tensions and circumstances were expanded to create a series of short descriptive statements that illustrated the potential effect of a conflict situation. When consolidated into narratives to reduce their bulk to an acceptable level, these narratives would result in two opposing scenarios that could be put to participants for their judgement. This procedure is illustrated in Figure 9.1.

Scenario Development Procedure

Figure 9.1



As discussed in Chapter 1, uncertainty (state, effect and response) arose from governance concerns over whether change posed broadly either an opportunity or a threat in decision-makers' governance of a port, where:

opportunity - referred to the idea of a favourable or advantageous combination of circumstances which resulted in a greater freedom of choice of strategy;

threat - referred to the idea of the impending arrival or occurrence of a combination of circumstances which limited freedom of choice of strategy.

The scenario circumstances were assessed deductively, involving a series of cross-checking operations to ensure that not only was each facet of structural change reflected, but also that it was possible to explain results obtained by supplementary data (participants' comments). The aim was to ensure that firstly, a coherent and

logical research structure had in fact been created for investigation of participants' beliefs on structural change, and secondly, the concepts and propositions identified could be tested in practice for model construction.

This required substantial development work in order to create a rigorous questionnaire for testing concepts and propositions. The process was lengthy and split into distinct stages because of:

the need to provide a fixed measurement framework for the potentially polarised issues and their implications, but which also allowed for the introduction of unforeseen factors if raised by participants;

the need to keep the amount of scenario points to a minimum for clarity and for questionnaire size in order to encourage participation;

the need to limit effects of experiential bias and the comfort of creating an audit trail.

The process of development commenced with an initial grouping of the issues and tensions into the uncertainty categories of state, effect and response (discussed in Chapter 7), and numbering. These were then expanded into descriptive statements of potential events, based on actual occurrences derived from a reading of the general literature and specialist trade publications (Schwartz, 1991). Each statement was then classified according to the concept or proposition it illustrated. This meant that the scenario was dependant on the following key presumption:

2/ actual worldwide events can act as pointers to future opportunities and threats - these are contained in participants' mental models and are used in their judgement of scenarios

This process is depicted in Figure 9.2 and was controlled by subjecting each statement to a searching examination to enhance confidence in its objectivity, i.e. what are the sources of conflict? what areas will they affect? what are the likely response options? The following assessment criteria were used in order to document the process identifying the potential impact of structural change (thus creating an audit trail):

base category

industry, port, strategic management.

functional areas

statutory operations, commercial operations.

importance to corporate plan

core businesses, peripheral business, tangential business.

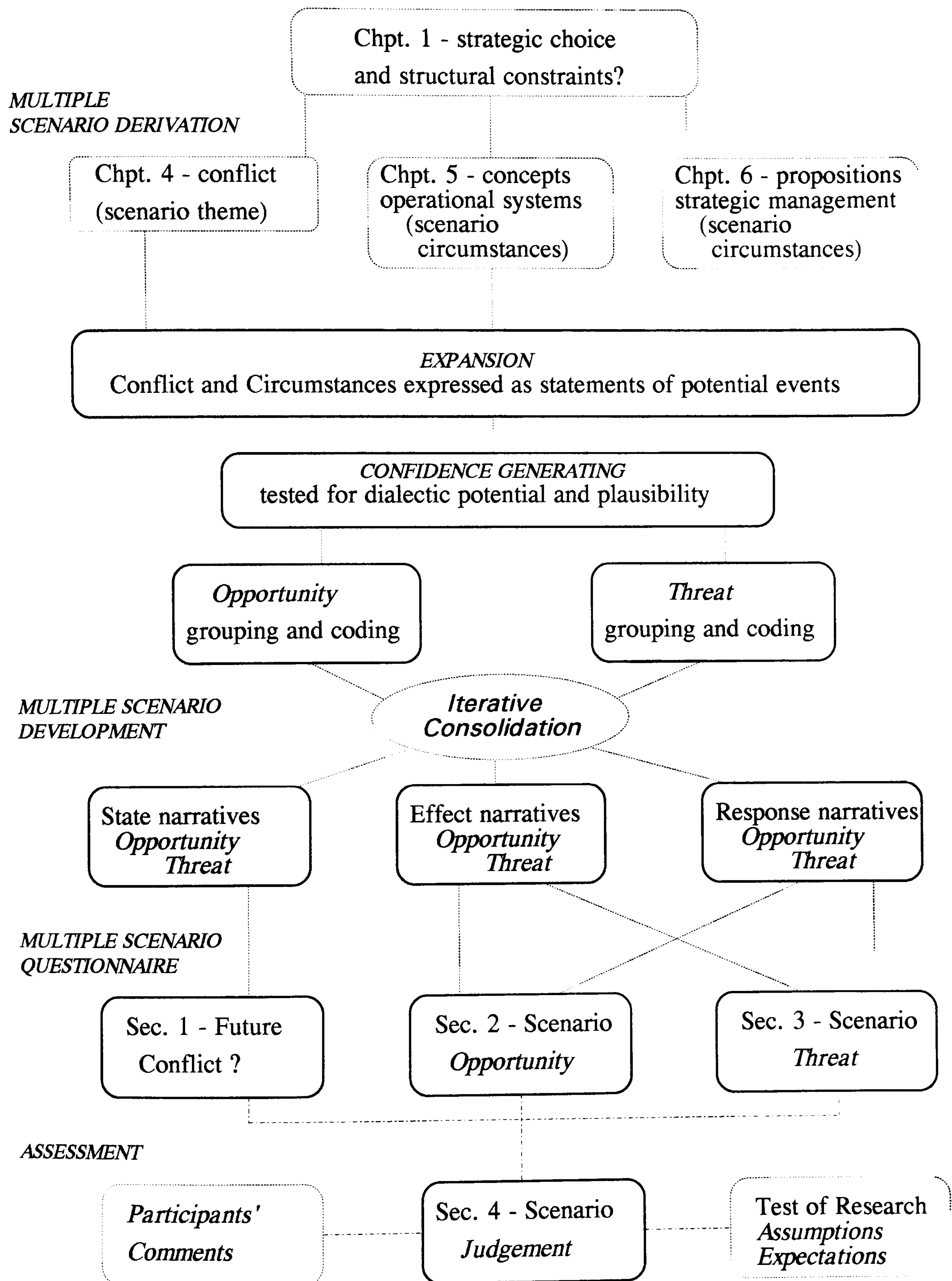
thrust of corporate plan

adaptive generalisation, adaptive specialisation.

effect on management response

voluntaristic or deterministic strategy; centralisation or decentralisation.

QUESTIONNAIRE DEVELOPMENT PROCEDURE *Figure 9.2*



The outcome of this examination was a very large number of short focused statements which described both an optimistic and pessimistic view of the potential effects of structural change. These would present either an opportunity or a threat to decision-makers. They were split into two groups of anticipated effects on commercial operations, and on statutory 'public interest' activities - detail differences occurred only at the business unit level (Castrogiovanni, 1991), i.e. below the hierarchical levels of the research identified in Chapter 1. Since the subject Key Questions identified the 'public interest' considerations (statutory area) as being the primary area for investigation, the commercial set of statements was discarded. These 'public interest' statements formed the base for the scenarios. This was effectively a refinement process, at the end of which the statements were coded as tests (questions) identifying the optimistic (opportunity) or pessimistic (threat) view of the concept or proposition to be investigated.

The statements were then progressively consolidated through a series of draft questionnaires into scenario narratives of state, effect and response that would seem logical to participants (as described in Chapter 7 - Sec. 3), whilst still being able to generate a measure of participants' perceptions that would enable the Research Assumptions and Expectations to be answered. As each statement was consolidated with another to reduce bulk, checks were made to ensure that a new consolidated statement could still be inferred as addressing a particular concept or proposition, i.e. that there had been no over-consolidation; that the new consolidated statement could be tracked back to its source; and that it was still testing a characteristic of a potential future effect of structural change. This procedure was controlled and documented through the audit trail.

The outcome of this consolidation process was the final multiple scenarios. As far as possible, these balanced the problem of achieving breadth of content (i.e. testing Research Assumptions and Expectations; having the ability to draw inferences on the concepts and propositions listed in Chapter 7), with a short questionnaire to meet the need of limited time available for participants to assess the scenarios, to make judgements and to comment. The principle underlying this procedure for derivation of scenarios and their presentation to participants was that, by asking participants to make holistic judgements, then the net favoured scenario could be measured, as described in Chapter 2.

Within this process of the derivation of the holistic content of the multiple scenarios, there were several considerations in producing the questionnaire.

1.3 Questionnaire Development Considerations

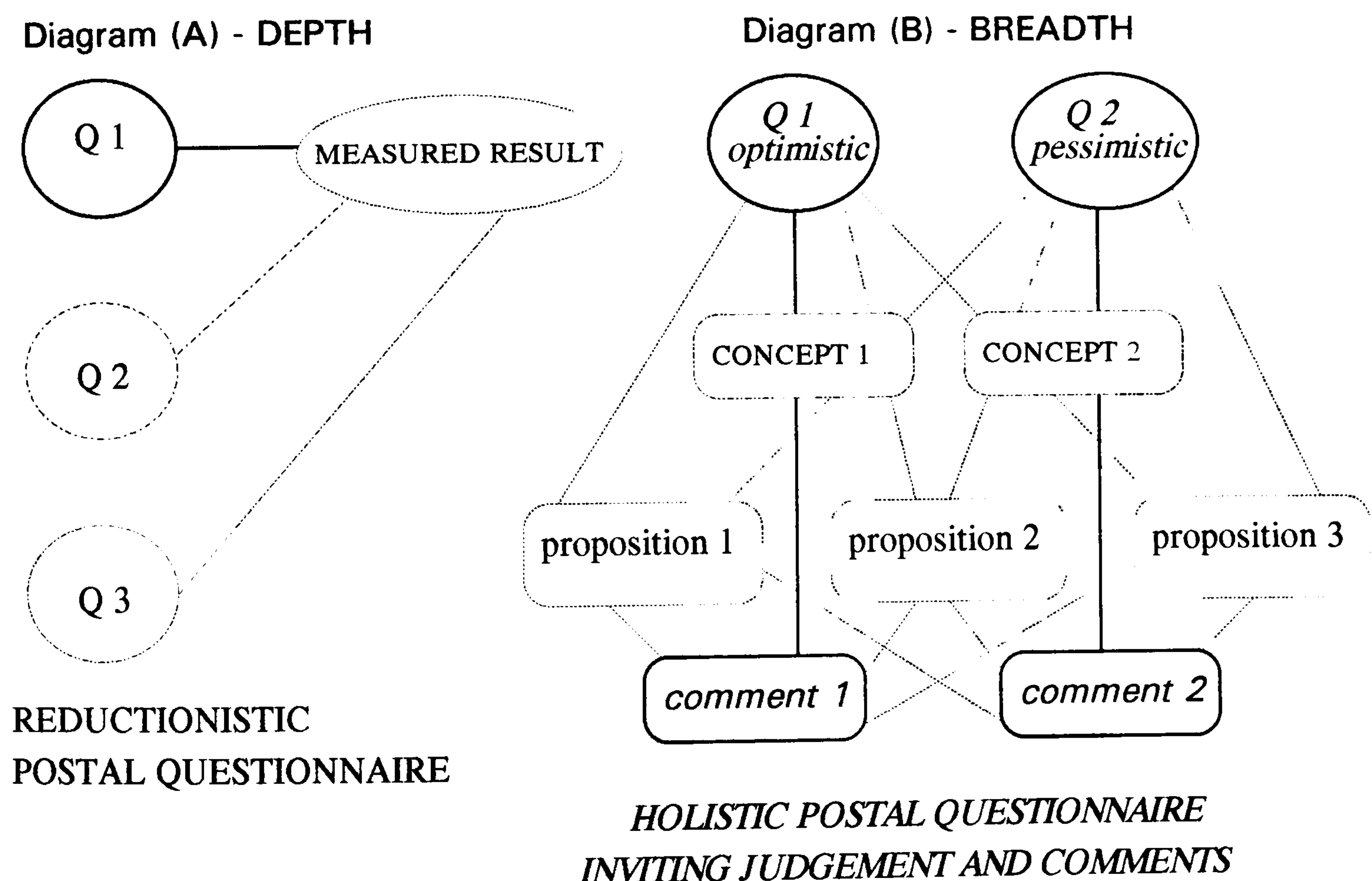
Given the iterative nature of the Delphi process, the layout needs to be clear and attractive, to convey the confidential nature and be amenable to simple presentation statistics for the results of previous rounds. Above all it should be brief and easy to complete, since the thought processes involved in reaching a considered judgement are

complicated. There is a need for a small number of scenario questions (a maximum of 25 according to Parente and Anderson-Parente, 1987), otherwise participants can be put off by the size and layout of a questionnaire. Consequently, from a research perspective, the chances increase that the quality of their judgement will falter from irritation, boredom and confusion if this is exceeded.

An initial draft of the questionnaire confirmed a perception that the full list of scenario points (i.e. the statements developed in Section 1.2) would be unwieldy for participants. The wording of the scenario points as developed by the statements was staccato and the content of the multiple scenarios was complex. Consequently, the size of the questionnaire needed to be reduced, its flow improved, but its scope undiminished in order to meet the Research Objectives and maintain confidence in the results achieved. This created practical problems in designing an acceptably brief questionnaire for participants since it meant developing a system of cross-linking prime and supporting questions to ensure the integrity of the research. There were two possible ways of achieving this, as depicted in Figure 9.3.

LINKING QUESTIONS TO ENHANCE RESULTS

Figure 9.3



The favoured route is shown in Diagram A where a single concept or proposition can be assessed by three different questions, each asking about the same matter, but from slightly different stances which are then consolidated (Oppenheim, 1992). In this way the measured result obtained is likely to be an accurate representation of the concept or proposition. A single question is open to various errors in construction by a researcher and also understanding by a participant, whereas with multiple questions

the chances of errors affecting the result are reduced. However, with the Research Assumptions, Research Expectations, 10 concepts and 17 propositions to test, this route was not feasible; the questionnaire was simply too long and difficult for participants to complete. The risks of a nil response were too great.

So as to obtain the best possible result, the process in Diagram B was adopted. Each statement was consolidated to form a description of a future event, as recommended in the scenarios literature (Linneman and Klein, 1985; Schoemaker, 1993; Schnaars, 1987; Schwartz, 1991). These descriptions were arranged so that they included various phrases which tested certain concepts and propositions. The phrases were extracted from the original statements discussed in Section 1.2.

This created three levels of analysis of participants' responses. The first level of direct questioning would address the Research Assumptions and provide answers to the Research Questions. If the judgmental answers met certain tests (described in Chapter 11), then the data obtained could be re-analysed to obtain inferences on the concepts and propositions that were being indirectly tested by the questions. In this way a holistic judgement of an overall opportunity/threat scenario would be presumed to reflect perceptions of the *underlying concepts and propositions that made up the scenario*. Since the scenario as a whole was being judged, it was reasonable to presume that if participants agreed or disagreed with the scenario, then they agreed or disagreed with the implications of the concepts or propositions that led to future effect uncertainty depicted by the scenario, i.e. these would be *endorsed or refuted*.

By encouraging participants to comment on elements of the scenario, it ought to be possible to assess whether or not this assumption was supported in practice. The target level of participants meant that they were experienced at making holistic judgements of the overall effect of several strands of complicating implications, i.e. the differing effects of concepts and propositions in the same question.

The underlying principle adopted was that a *net average result* would be obtained in which support for a optimistic description meant that the pessimistic description would be refuted, and vice versa. If this was not the case then a mixed perception had been surfaced. Thus the extent of support could be measured. Further, any unexpected result could potentially be explained by participants' comments in this approach.

This meant that the questionnaire was dependant on the following key presumption:

3/ Holistic judgements of scenario narratives incorporating multiple concepts and propositions effectively provide an overall perception of each individual concept or proposition

In successive iterations of the questionnaire the scenario points were progressively consolidated to reduce bulk until an effective limit was reached. At this point, the combined analysis categories and available interpretations had been spread across various opportunity and threat questions. The compression process had meant that

some direct questions were added together if there was sufficient similarity and it was reasonable to infer a participant's response when answering a scenario element in conjunction with answers to another element. In effect this followed the principle of surrogate measures. The process of changing from initial full statements as scenario points to abridged statements and joint interpretations was controlled by firstly an experiential view of port operations, which meant that it was possible to 'read' participants' likely perceptions of activities (i.e. mental models) if triggered by a 'global' description, and secondly by the statement coding which provided an essential part of the audit trail. The extent of consolidation, and use of coding as a control, is illustrated by the following extracts from the Multiple Scenario Questionnaire (where OT = optimistic test and PT = pessimistic test):

2.4 Implications for strategic choice (opportunity scenario):

Objectives may include contracting out maintenance or support services to enhance efficiency [Q4 OT], thereby reducing uncertainty over predicting effects of change on the resources of the organisation [Q5 OT]. Returns may be enhanced by ensuring that capital investment costs have short payback periods [Q8 OT] and port/cargo dues are charged according to marketing considerations in attracting and retaining traffic [Q6 & Q7 OT]. These measures will give scope for cost reductions/improved facilities [Q9 & Q10], thereby both satisfying customers and meeting 'public interest' demands for minimum overall transport costs [Q11 OT].

3.4 Implications for strategic choice (threat scenario):

These assumptions imply that the scope to reduce staffing levels and expenditure [Q3 PT & Q5 PT] to ensure survival is limited [Q4 PT]. Consequently, port dues and cargo dues may be unrelated to cost of provision of a particular service [Q6 PT], e.g. pilotage either subsidising or being subsidised by marketing decisions to attract trades [Q7 PT]. Payback periods for capital investment costs of dredging may increase because of declining deep draught vessels [Q8 PT], but investors still demand market returns leading to further cross subsidy pressures [Q9 PT]. Thus investment in navigational facilities may take a secondary role in capital rationing [Q10 PT], unless the returns can match returns from the commercial operations [Q12 PT].

1.4 Language of the Questionnaire

The Multiple Scenario Technique assessed potential effects of structural change in a complex international postal questionnaire sent to selected executives, managers and academics for evaluation. These were not physical occurrences, but abstract circumstances derived by the researcher. They were based on the principle that events were more likely to occur from a combination of factors, rather than a single isolated

factor (Schwartz, 1991). Themes of potential business conditions were developed since many of the events that could affect business in the coming years were not discernible from manipulation of historical data.

Wording of the multiple scenarios could be slanted towards many viewpoints, e.g. economic justification, cultural change, business development or management action, to encourage participants to appraise the potential effect of structural change on prime activities in the operation of international ports. A provocative stance was taken in the multiple scenarios in order to generate a considered judgement (Schoemaker, 1993), i.e. one that challenged the deeply held beliefs of the participants. The stance taken was that structural change would only work in Boundary-spanning organisations *because managers will make it work, and not necessarily because structural change in the absence of economic regulation is theoretically sound*. This is a finite area involving the differing decision-making criteria of both public and private sectors; hence it had dialectic potential outcomes which the research sought to expose. The method of approach was through identification of fundamental decisions required in the design and implementation of a long-term corporate plan.

For this reason 'open wording' was used in describing multiple scenario circumstances in the questionnaire, i.e. tight definitions of terms used (e.g. 'opportunity and threat') were not imposed in the multiple scenarios, since it was the participants' views and their usage of these terms that were being sought. Hence these were 'open' to participants' own interpretations. It was assumed that different participants, in different organisations with different local circumstances in different countries, would have subtly different perceptions of the circumstances that constituted either an opportunity or a threat. In order to identify the strength of concepts and propositions in managing structural change these differences had to be exposed and captured. This could not be done by providing detailed definitions of the terms used in the multiple scenarios, as this would unduly bias responses towards merely agreeing or disagreeing with the researcher's perceptions. Consequently, the words used in the multiple scenarios were intended to have a general international dictionary meaning. This was seen as being the best method of safeguarding the emergence of a dialectic outcome, particularly where English was a second language to some participants.

The conundrum in open wording is that 'anything and everything' can be interpreted when identifying a particular circumstance of structural change. This had potential advantages and disadvantages which were recognised at the design stage, particularly for the analysis of the participants' responses.

1.5 Methodological Research Assumption

The presumptions (detailed above) underlying the construction of the questionnaire can be expressed in the form of a methodological Research Assumption that underpinned the Multiple Scenario Questionnaire:

it ought to be possible to obtain holistic judgements of holistic scenarios - if research participants were unable to form a judgement then this would imply that the proposed characteristics of the model did not reflect their perceptions of future effect uncertainty.

If an *a priori* analysis specification could be developed then it would be possible to test whether or not holistic judgements on the multiple scenarios were obtained from the participants. The considerations in achieving this specification follow.

2/ EFFECT OF CONSOLIDATION OF CONCEPTS AND PROPOSITIONS

The scenario construction process adopted resulted in a rigorous questionnaire, which is attached at Appendix A. However, in the creation of a questionnaire suitable for participants which covered as much of the complexity of structural change as possible, there was a concern that the process of consolidating concepts and propositions could result in over-inference. Were these adequately covered? Was the balance of opportunity and threat questions right when compared to the organisational environment? How would participants' responses be finally analysed?

This concern could not be assessed from the tone of responses received. The final design of the questionnaire seemed to be balanced, and participant choice could be measured. The design would expose dialectic viewpoints and thus strength of perceptions on concepts and propositions could be measured by analysing responses to the interlocking questions. The difficulty with the interlocking design of the scenarios was that it could be possible to lose track of the initial statements that tested the various concepts and propositions. Without a logical *a priori* analysis specification, confidence in results obtained was decreased.

2.1 Rigour in Content of Multiple Scenario Questionnaire

The audit trail provided the answer to specifying which questions related to which concept or proposition for analysis purposes, and the overall balance achieved. The extent of consolidation, the concepts and propositions tested, and use of coding as a control, is illustrated by the following extracts from the Multiple Scenario Questionnaire (where OT = optimistic test and PT = pessimistic test):

2.4 Implications for strategic choice (opportunity scenario):

Objectives may include contracting out maintenance or support services to enhance efficiency [Q4 OT], = *strategic choice & peripheral*
thereby reducing uncertainty over predicting effects of change on the resources of the organisation [Q5 OT]. = *environmental management & P2*
Returns may be enhanced by ensuring that capital investment costs have short payback periods [Q8 OT] = *financial pressure & peripheral & P10*

and port/cargo dues are charged according to marketing considerations in attracting and retaining traffic [Q6 & Q7 OT]. = *financial pressure & portfolio pressure*

These measures will give scope for cost reductions/improved facilities [Q9 & Q10], = *strategic choice & portfolio pressure & P4*

thereby both satisfying customers and meeting 'public interest' demands for minimum overall transport costs [Q11 OT]. = *environmental determinism & P2*

3.4 *Implications for strategic choice (threat scenario):*

These assumptions imply that the scope to reduce staffing levels and expenditure [Q3 PT & Q5 PT] = *strategic choice & peripheral & P10 & P3*

to ensure survival is limited [Q4 PT]. = *strategic choice & P10 & P3*

Consequently, port dues and cargo dues may be unrelated to cost of provision of a particular service [Q6 PT], = *portfolio pressure*

e.g. pilotage either subsidising or being subsidised by marketing decisions to attract trades [Q7 PT]. = *core & P10*

Payback periods for capital investment costs of dredging may increase because of declining deep draught vessels [Q8 PT], = *financial pressure*

but investors still demand market returns leading to further cross subsidy pressures [Q9 PT]. = *financial pressure & portfolio pressure*

Thus investment in navigational facilities may take a secondary role in capital rationing [Q10 PT], = *core & P10 & P3*

unless the returns can match returns from the commercial operations [Q12 PT]. = *financial pressure & P10*

From the audit trail an overall specification was drawn up to enable analysis of participants' responses. Each phrase of the questionnaire arose from compression of the statements encapsulating the issues identified in Chapters 4, 5 and 6. These phrases were re-examined to confirm that the interpretation which could be placed on them still reflected facets of the ideas underlying the concepts and propositions. Following this confidence testing procedure, they were then listed in order of concept or proposition to enable consolidation and analysis of the data generated by the multiple scenario technique. This listing specified the following analysis categories, the number of interpretations incorporated, the direct testing spread and the areas of indirect testing where consolidation had resulted in inference of concepts or propositions from the tone of a particular scenario question.

2.2 *Analysis Specification*

The specification is organised to show on the first line the number of direct tests for a particular concept or proposition after consolidation (these describe an aspect of structural change); on the second line the relevant scenario question and the testing spread achieved; on the third line (in italics) the systemic influences of stakeholder

power identified in Chapter 6 which are relevant to a particular concept or proposition for analysing participants' comments in Chapters 12, 13 and 14.

	No. of direct tests
Chapter 1 - CONCEPTS - Nature of organisational environment:	
Structural constraints (environmental determinism)	= 11
[Q1/2.1/2.3/2.4/3.1/3.3/3.4 = 7 elements of the scenarios]	
<i>Political, Legal, Economic, Location, Commercial, Social and Operational systemic influences of power</i>	
Strategic choice	= 7
[Q2.2/2.4/3.2/3.4 = 4 elements of the scenarios]	
<i>Operational and Managerial systemic influences of power</i>	
Chapter 4 - PROBLEM SITUATION - Assessing presence of conflict:	
Ports - Testing for the existence of conflict	[Q1 plus all comments received]
<i>Testing for the existence of all systemic influences of power</i>	
Chapter 5 - CONCEPTS - Areas unaffected by changes in structural constraints:	
Node	= 3
[Q1/2.5/3.5 = 3 elements of the scenarios]	
<i>Economic, Location, Commercial and Operational systemic influences of power</i>	
Public/Private trustee	= 16
[Q1/2.1/2.3/2.5/3.1/3.3/3.5 = 7 elements of the scenarios]	
<i>Political, Legal, Economic, Location, Commercial and Social systemic influences of power</i>	
Core	= 12
[Q2.1/2.4/2.6/3.1/3.4/3.6 = 6 elements of the scenarios]	
<i>Legal, Location, Commercial, Social, Operational (navigational) and Managerial systemic influences of power</i>	
Peripheral	= 9
[Q2.1/2.5/2.6/3.1/3.5/3.6 = 6 elements of the scenarios]	
<i>Commercial, Operational (cargo) and Managerial systemic influences of power</i>	
Tangential	cross interpretation only
[infer 2.2/infer 2.5/infer 2.6/infer 3.2/infer 3.5/infer 3.6 = 6 elements of the scenarios]	
<i>Commercial, Social and Managerial systemic influences of power</i>	

No. of direct tests

Chapter 5 - CONCEPTS - Areas affected by changes in structural constraints:

Financial pressure = 7
 [Q2.4/2.5/3.4/3.5 = 4 elements of the scenarios]
Commercial, Social, Operational and Managerial systemic influences of power

Portfolio pressure = 5
 [Q2.3/2.4/3.3/3.4 = 4 elements of the scenarios]
Commercial, Social, Operational, Managerial systemic influences of power

Environmental management - concept interpretation cross interpretation only
 [infer Q2.2/infer 2.3/infer 3.2/infer 3.3 = 4 elements of the scenarios]
Managerial systemic influences of power

Chapter 6 - PROPOSITIONS - Uncertainty in managing environmental events:

P1 - LOW level of 'proactive' management - perceived threat = 1
 [infer Q2.2/infer 3.2/4.1 - no views = 3 elements of the scenarios]
Commercial, Social and Managerial systemic influences of power - Threat Interpretations Only

P2 - MODERATE level of 'proactive' management - mixed opportunity/threat = 6
 [Q2.4/2.5/2.6/3.6/infer 4.1 - mixture = 5 elements of the scenarios]
Commercial, Operational and Managerial systemic influences of power - Mixture Interpretations Only

P3 - LOW level of 'proactive' management - perceived threat = 5
 [Q3.4/3.5/3.6/infer 4.1 - threat = 4 elements of the scenarios]
Social, Operational and Managerial systemic influences of power - Threat Interpretations Only

P4 - HIGH level of 'proactive' management - perceived opportunity = 3
 [Q2.2/2.4/2.6/infer 3.2/infer 4.1 - opportunity = 5 elements of the scenarios]
Commercial, Social, Operational and Managerial systemic influences of power - Opportunity Interpretations Only

Chapter 6 - PROPOSITIONS - Adaptive specialisation:

P5 - environmental complexity = 3
 [Q2.2/2.3/3.1/infer 4.1 - threat and no views = 4 elements of the scenarios]
All systemic influences of power

P6 - environmental dynamism = 1
 [Q1/infer 4.1 - opportunity = 2 elements of the scenarios]
All systemic influences of power

Chapter 9 - Multiple Scenario Questionnaire (Construction and Analysis Principles)

P7 - resource scarcity cross interpretation only
 [infer Q1/infer 4.1 - mixture and threat = 2 elements of the scenarios]
Operational and Managerial systemic influences of power

P8 - resource concentration = 1
 [Q1/infer 4.1 - mixture = 2 elements of the scenarios]
Operational and Managerial systemic influences of power

Chapter 6 - PROPOSITIONS - Adaptive generalisation:

P9 - organisational size = 1
 [Q1/infer 4.1 - opportunity = 2 elements of the scenarios]
Operational and Managerial systemic influences of power

P10 - organisational slack = 10
 [Q2.4/3.4/infer 4.1 - opportunity and mixture = 3 elements of the scenarios]
Operational and Managerial systemic influences of power

P11 - centralisation of decision making = 2
 [Q2.3/3.3/infer 4.1 - opportunity and mixture = 3 elements of the scenarios]
Operational and Managerial systemic influences of power

Chapter 6 - PROPOSITIONS - Blending adaptive specialisation & generalisation:

P12 - dominance of boundary spanning function = 4
 [Q2.2/2.3/3.2/3.3/infer 4.1 - mixture = 5 elements of the scenarios]
Operational and Managerial systemic influences of power

Chapter 6 - PROPOSITIONS - Expected decision-maker attributes:

P13 - related to decision-maker flexibility for dynamic environments = 1
 [Q2.2/infer 2.6/infer 4.1 - opportunity and mixture = 3 elements of the scenarios]
Managerial systemic influences of power - Opportunity and Mixture Interpretations Only

P14 - related to decision-maker flexibility for stable environmental events = 1
 [Q3.2/infer 3.6/infer 4.1 - mixture and threat = 3 elements of the scenarios]
Managerial systemic influences of power - Mixture / Threat Interpretations Only

P15 - related to need to achieve for cross interpretation only
 dynamic environmental events
 [infer 2.2/infer 2.5/infer 4.1 - opportunity = 3 elements of the scenarios]
Managerial systemic influences of power - Opportunity Interpretations Only

No. of direct tests

P16 - related to need to achieve for stable environmental events cross interpretation only
[infer 3.2/infer 3.5/infer 4.1 - mixture and threat = 3 elements of the scenarios]
Managerial systemic influences of power - Mixture and Threat Interpretations Only

P17 - related to the locus of control of the decision-maker = 2
 [Q2.6/3.6/infer 4.1 - mixture and threat = 3 elements of the scenarios]
Managerial systemic influences of power - Mixture and Threat Interpretations Only

This listing shows that the key areas of the organisational environment - concepts of structural constraints, strategic choice, public/private trustee and core port operations - are well represented but not overly so given the spread of questions.

With regard to the propositions, P1 is seemingly under-represented, but this is the antithesis of privatisation. It was not expected that there would be any substantial choice for a threat scenario, given the current impetus for structural reform. It is, however, effectively matched by P3, which has a higher number of tests.

The number of interpretations for Tangential, and P6, P7 & P8 is also seemingly low. These are effectively concerned with the tactical implementation of strategic decisions, relating to short-term commercially oriented factors, rather than long-term statutory (public trustee) factors. They are of a lower hierarchical level than the main thrust of the research.

Apparently under-represented concepts and propositions thus effectively depend on other factors for their interpretation. Environmental Management is a concept that encompasses all the propositions; therefore it is reliable to interpret this from these tests. Although P9 seems low, it refers to market place power being obtained through growth and is not representative of SA ports - in the UK only ABP can be said to exert power through its size, but even this is tempered by the large number of competing ports. Hence it is not as seriously under-represented as it may appear.

This listing shows an acceptable spread of tests through utilising cross-interpretation from other concepts and propositions concerning strategic decisions.

This means that the analysis of the questionnaire was dependant on the following key presumption:

4/ the number of tests for concepts and propositions, and their spread over scenario narratives, enables strength of support to be determined from holistic judgements of the scenarios.

Generation of this analysis chart was a necessary final step in the creation and use of multiple scenarios in practice. There is a workable balance which served as the basis for creating analysis spreadsheets for the participants' responses, although it does require some qualification for reporting results. The procedure adopted ensured that the attributes of each scenario question met the research objectives and a method of logically checking the concepts and propositions was created, whilst at the same time providing an audit trail for validation purposes.

The question spread facilitates interpretations and in use the questionnaire format was successful in producing confirmatory and conflicting measures. These promote thought over the message being imparted by the results. The format encourages participants to express differing points of view, which makes understanding a seemingly adverse result an exercise in replicating their logic. It is an intrinsically self-controlling design, giving an inherently reliable picture of the participants' views.

However, whilst balanced scenario elements were created, some caution in interpretation was required. This applies especially to interpretations P13 - P17 which are culturally specific and can only be indicative - a pointer towards future research. These represent the point at which the methodology began to struggle in analysing participants' comments, since it was found that there was a subtle change in the thrust of the analysis, from searching for reasons to exclude a particular comment, as for earlier propositions, to seeking reasons to include a comment.

3/ ASSESSMENT PRINCIPLES - PARTICIPANTS' PERCEPTIONS

The final postal questionnaire format followed the order of:

scenario theme - a statement of the context as an introduction followed by a perception-testing question;

specification and testing of the scenario - more detailed statements of the opposing scenarios, followed by a variety of perception-testing questions;

scenario choice - a request for a considered judgement.

There is one key aspect to using scenarios - this is countering a prevalent 'expectation' that it is possible to quantify *beliefs* on future outcomes in terms of linear predictability. Accepting the principles of advanced systems thinking discussed in Chapter 3 meant that the future was uncertain, and the best rating of future events that could be achieved was likelihood of occurrence. The solution adopted to this problem of forecasting was 'surprise factor'. Participants were asked to state the extent of their surprise at the scenario theme, or a particular element that had been included in a scenario in relation to the tone of the other elements of that scenario, by means of '*interesting*', '*absurd*', '*irrelevant*', or '*obvious*'. These categories were defined by Weick (1989: 525 - italics as original) as being:

"... the equivalent of significance tests, and they serve as substitutes for validity ... [because an] assumption is a distillation of past experience [of the participant]. When that assumption [by the participant] is applied to a specific conjecture, the assumption tests the conjecture just as if an experiment had been run. When a conjecture is tested against an assumption, the outcome of that test is signified by one of four reactions:

that's interesting (an assumption of moderate strength is disconfirmed),

that's absurd (strong assumption is disconfirmed [i.e. denial of an alternative viewpoint has taken place]),

that's irrelevant (no assumption is activated),

that's obvious (a strong assumption is confirmed)."

Rating a question as 'interesting' means that the challenge to assumptions has been successful and an intervention in attitudes held has taken place, i.e. the participant was forced to re-examine his perspectives on future events. This may imply a subsequent permanent alteration of opinion, or may mean that a previously held opinion is modified on reflection. In either case, mixed perceptions of future events have surfaced at the time of challenge. This testing of potential future events by challenge results in a rating of scenarios that is analogous to beliefs on the likelihood of occurrence. Consequently, these ratings can be measured and analysed. The participants may choose to support either the opportunity or threat scenario, or a blend of both, depending on the overall effect of challenges to their existing assumptions. Participants were also invited to comment on a scenario element, or provide their own scenario element if they felt one was better suited to the context.

This meant that the questionnaire was dependant on the following key presumptions:

5/ the use of the notion of 'surprise factors' for overall assessment of scenario narratives encouraged holistic judgements;

6/ the encouragement of participants' comments to explain judgements on scenario narratives when specific elements of the scenario were disagreed with avoids forcing judgements into unrepresentative categories;

7/ for analysis of judgements, strong disagreement with a particular element of a scenario narrative may be recorded as 'no views' for the whole scenario narrative - this avoided error in recording strength of endorsement for concepts and propositions since there were a sufficient number of tests to compensate

The notion of 'surprise factor' implied a simple 'yes' or 'no' result for beliefs of potential future states. This ignored the differing viewpoints decision-makers may have on actual response to these states. A dialectic 'perhaps in some circumstances'

answer may surface when implementation of responses was considered. Thus care was taken to avoid forcing a particular result through the style of the question asked, and by inviting comments that explained the judgements made. For example, an 'agree/disagree' style of question would suppress a qualified judgement.

In the Delphi procedure a balance was required between determining support for one or both scenarios, encouraging the generation of additional scenario elements, and being able to assess which managerial philosophy was emerging as dominant, whilst avoiding an inconclusive result. An inconclusive result could be interpreted as weak evidence for a particular managerial philosophy, but could also be a manifestation of participants' confusion in interpreting the questionnaire and questions asked.

A detailed design problem addressed in the drafting stages was the wording of questions to avoid irritating counter-productive conflicts in a participant's mind. The style of the questions asked reflected the biases (discussed in Chapter 8) that could affect answers given. The final wording of the multiple scenarios was geared towards surfacing an *anticipated* result which was capable of being disconfirmed (subject Research Expectations 1 and 2), and this was reflected by the style of the conflict questions asked. Consequently, when testing the areas of the scenarios dealing with response to future effects of structural change, a different question style was adopted.

Thus the multiple scenarios could be answered in the following ways:

- 1/ context surprise (interesting, obvious, irrelevant, or absurd);
- 2/ provision of own scenario element (especially useful if the provided element is categorised as irrelevant or absurd);
- 3/ plausibility of occurrence rating (short-term, medium-term, and long-term);
- 4/ expressed confidence in answers based on participants' self assessment of their own expertise (low, medium or high).

The following section discusses question style and interpretation of answers in detail. The question styles are related to the sources of potential participant bias identified in Chapter 8 to demonstrate how bias was recognised and controlled.

4/ INTERPRETATION OF ANSWERS TO QUESTIONS

The questions in the multiple scenarios were designed to assess the level of support that could be inferred for the Research Assumptions, Research Expectations, the concepts and propositions for model building. When the respective judgements favouring the opportunity and threat questions were compared, this would show the net level of support. Each answer indicated the favoured element of the overall

scenario theme of potential conflict - this formed the first stage of analysis: the feedback of results to a Delphi. The tests for level of support were:

The first subject Research Assumption:

it was assumed that decision-makers in a 'Long-term Strategic Service Industry' operate within a complex managerial area that spanned the boundary between 'public' and 'private' interests, implying that the boundary between voluntaristic and deterministic approaches to strategy was also spanned.

(This was measured in Question 1 only but implied in Question 4.)

The second subject Research Assumption:

it was assumed that the complex influences operating on decision-makers in a 'Long-term Strategic Service Industry' could be measured by the strength of their perceptions of the 'opportunity' or 'threat' posed by structural change.

(This was measured in Question 4 only but implied in Question 1.)

The answers to the following two Research Expectations would act as a guide to explaining the answer to the first Research Question:

Are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

(Research Expectation - 1a)

structural change ought to be perceived as improving 'public interest' governance.

(as measured by the number of participants favouring a net opportunity scenario element)

(This was tested in Questions 2.1; 3.1 only.)

(Research Expectation - 1b)

achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being necessary to meet 'public interest' considerations in a port.

(as measured by the number of participants favouring a net opportunity scenario element)

(This was tested in Questions 2.2, 2.3; 3.2, 3.3 only.)

The second key question covered perceptions of conflict and perceptions of likely responses to structural change. This involved testing a wide range of aspects of the future role of choice, hence it was not possible within the practical constraints of the Multiple Scenario Questionnaire design to create individual 'mini' scenarios for testing as was achieved for the first key question. The second Research Expectations were tested by a blend of Sections in the questionnaire and would act as a guide to explaining the answer to the second key Research Question:

So what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

(Research Expectation - 2a)

a voluntaristic managerial philosophy and decentralised organisational structure ought to be perceived as being able to meet 'public interest' considerations in a port;

(as measured by the number of participants favouring a net opportunity scenario element)

(This was tested in Questions 1; 2.1, 2.2, 2.3, 2.6; 3.1, 3.2, 3.3, 3.6; & 4 only.)

(Research Expectation - 2b)

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

(as measured by the number of participants favouring a net opportunity scenario element)

(This was tested in Questions 2.4, 2.5, 2.6; 3.4, 3.5 3.6; & 4 only.)

Measurement depended on the question styles adopted. Each of the multiple cross-interpretations indicated the degree of endorsement that could be inferred for a particular concept or proposition.

4.1 Question Type - Challenging Assumptions

Optimism / Pessimism bias - The questionnaire sought to surface the extent of this bias by forced ranking to encourage rationality in assessing the opportunity/threat scenarios. The basis of interpretation for opposing opportunity and threat multiple scenario questions (where relevant) was:

interesting = mild scenario support (and hence for concepts and propositions).
The challenge to assumptions has produced a mixed opportunity and threat response implying caution for Research Expectations 1 and 2;

- obvious = strong scenario support - opportunity or threat as appropriate (and hence for concepts and propositions). The challenge to assumptions has produced a strong response implying Research Expectations 1 and 2 are confirmed or refuted;
- irrelevant = mild scenario refutation (and hence for concepts and propositions). The challenge to assumptions has produced little response implying caution for Research Expectations 1 and 2;
- absurd = strong scenario refutation - opportunity or threat as appropriate (and hence for concepts and propositions). The challenge to assumptions has produced a strong response implying Research Expectations 1 and 2 are confirmed or refuted;
- no views = challenge to assumptions was ambiguous (and hence for concepts and propositions). The cause must be inferred from response to other questions and comments made.

4.2 Question Type - Strategic Choice and Decision-Making Opinions

The basis of interpretation in the opposing opportunity and threat scenarios for these questions was:

Discounting the future - The multiple scenarios sought to counter this by including questions that moved from a long-term strategic planning horizon to a short-term tactical planning horizon, interpreting the responses as:

short-term = discounting the future is high;

medium-term = discounting the future is moderate;

long-term = discounting the future is low.

The prediction urge - In the futures literature Schnaars (1987) recommended avoiding assigning probabilities as they conveyed a sense of precision that did not actually exist. This view was supported by Linneman and Klein (1985), but the systems literature on methodology (Chapter 7) appeared to favour assessing probability. Avoiding probabilities may have the effect of discounting this bias, i.e. not recognising the influence of certainty or uncertainty on judgement. A suppression of feelings of certainty or uncertainty can mask the real significance of results. The questionnaire sought to reconcile the conflicting literature views and counter this bias by testing qualitative bands of plausibility of opposing scenarios (as distinct from quantitative assessments of probability) on the basis that:

plausibility level 1	= improbable - implying Research Expectation 2 refuted (and hence for concepts and propositions);
plausibility level 2	= unlikely - implying Research Expectation 2 unsupported (and hence for concepts and propositions);
plausibility level 3	= feasible - implying some support for Research Expectation 2 (and hence for concepts and propositions);
plausibility level 4	= likely - implying Research Expectation 2 supported (and hence for concepts and propositions);
plausibility level 5	= probable - implying Research Expectation 2 confirmed (and hence for concepts and propositions).

(The Research Expectation 2 quoted for these bands referred to the opportunity scenario - for the threat scenario this was reversed.)

Illusory expertise - The questionnaire sought to surface this aspect by a forced self-ranking of expertise from the differing groups of participants. Analysing answers depended on participants' experience in a relevant area (but participants may also be indicating their reservations in the quality of forecasts they have given):

low	an expectation of business practice based on expertise in areas generally related to the particular factors discussed.
medium	a considered view based on expertise in areas closely related to the particular factors discussed.
high	direct expertise in the particular factors discussed.

The prediction urge - unable to form an opinion on the scenario elements provided:

no views	= challenge to assumptions was ambiguous (and hence for concepts and propositions). The cause must be inferred from response to other questions and comments made.
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4.3 Question Type - Scenario Assessment

The simplification urge - The questionnaire sought to counter this by splitting the opposing scenarios into 'chunks' for evaluation, thus meeting the urge for simplicity, and requesting explanatory comments, thus forcing a reasoned opinion. An overall opinion was then requested to counteract this urge and force a holistic judgement:

opportunity	= Research Assumption 2 supported implying concept of Model 2 justified for ports administration implying Research Expectations (a) and (b) supported;
threat	= Research Assumption 2 supported implying concept of Model 1 justified for ports administration implying Research Expectations (a) and (b) refuted;

mixture of both = Research Assumption 1 supported; 2 refuted
 implying concept of Model 3 justified for ports administration
 implying Research Expectations (a) refuted; (b) supported.

no views = in the participants' judgement there are other factors more
 significant than those presented in the multiple scenarios to be
 considered.

4.4 Methodological Research Expectation

The presumptions and Research Assumption underlying the conduct of the Multiple Scenario Technique detailed above (and the presumptions on Bias of Chapter 7 that were applied to the question styles) could be coalesced to form a methodological Research Expectation.

Testing this would indicate the quality of the results obtained through an analysis and interpretation of participants' judgements of the multiple scenarios:

decision-makers' judgements of opportunity/threat scenarios that address future effect uncertainty ought to be the outcome of their bias-free holistic perceptions.

The tests of this Research Expectation are discussed in Chapter 11 (after the report of participants' responses to the Multiple Scenario Questionnaire in Chapter 10).

These responses were consolidated in order to test the subject Research Assumptions and hence achieve the subject Goals 1 (a) and (b) as discussed below.

5/ REPORTING PARTICIPANTS' PERCEPTIONS

Participants' judgements of the multiple scenario questions and their supplementary comments were grouped for analysis and interpretation. These judgements could be further evaluated by a Policy Delphi to enhance validity.

There were two aspects to this:

a 'hard' numerical analysis of the participants' judgements of the multiple scenarios which form the base data (reported in Chapter 10), together with a 'hard' numerical analysis of the inferred endorsement for the concepts and propositions that were built into the questionnaire (reported in Chapters 12, 13 and 14); and

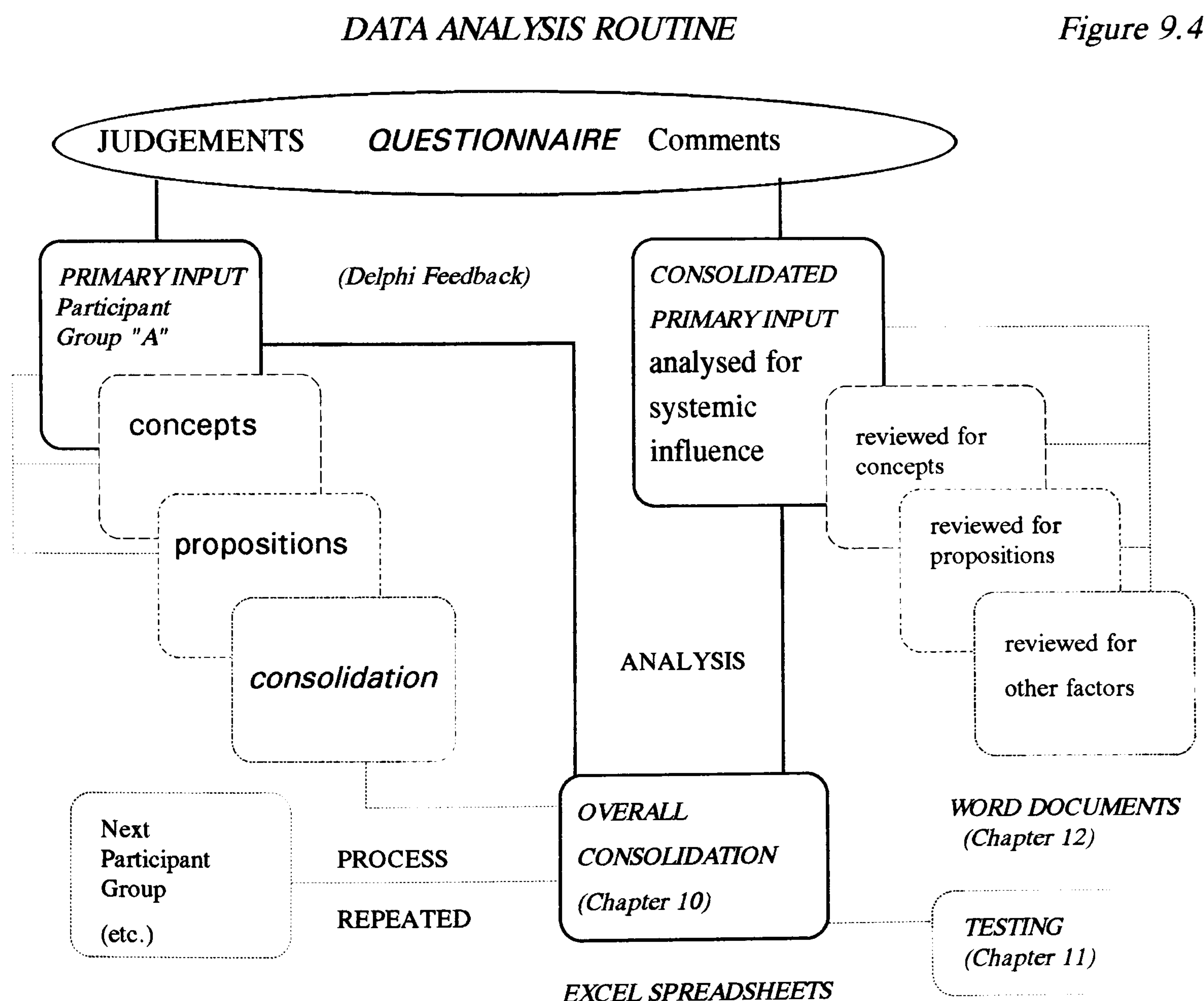
a 'soft' numerical analysis of participants' comments according to the systemic influences identified in Chapter 5. This is reported in Chapter 12 and was used from a Strategic Choice Perspective to help the interpretation of results.

The hard analysis was the primary aspect of the Delphi process, i.e. it would be necessary for the researcher to consolidate and group participants' judgements before continuing with this part of the overall methodology.

5.1 Analysis Principles

Data analysis formed a complicating part of the Delphi process. After each iteration the data generated has to be analysed and presented to participants for the next round in a summary form, showing the response to the questions. Hence there is a need for a system of quick coding, input, and analysis before the next round. The procedure also needs to allow for amendment of views in the light of feedback given to participants. These needs are met by the ratings used in the different question styles. The questionnaire was designed so that the answers to the questions posed were effectively self coding and thus easily input for analysis purposes. Because of the degree of flexibility required by participants' comments and the provision of their own scenario elements the analysis routine cannot be rigid.

The basic analysis routine adopted is depicted in Figure 9.4.



As each returned questionnaire was received it was entered into a word processing package (Word) in its entirety to act as a full record; to act as a source of illustrations of viewpoints and to enable analysis of comments. The questionnaire answers were then entered into a spreadsheet package (Excel) to enable analysis of perceptions and consolidation of views for feedback to participants. The interpretation of their responses was described above, thus this stage of the analysis process was a relatively simple predetermined data entry and summarisation procedure. This double entry method provided a means of comparison of the input for accuracy.

Figure 9.4 shows the importance of accurate primary input of the participants' responses. The entire sequence of analysis stages depends on initial accuracy. For this reason a full audit of the input was jointly undertaken by the researcher and his wife, who has experience in working with international decision-makers at Board and Chief Executive level. There is a large number of linked spreadsheets involved - each of the seven participant groups (All Participants, UK Ports, SA Ports, Related Business, Academic, Key UK Ports, Key SA Ports) required 27 spreadsheets for the concept and proposition analyses alone, plus further consolidation spreadsheets.

For the Delphi feedback process this number was effectively reduced, since the detailed research concepts and propositions (identified in Sec. 2.2) would not be forwarded to participants, but held for the interpretation of the final Delphi research results. The consolidation of these concept and proposition spreadsheets was complicated - firstly because the questionnaire construction process of spreading the concepts and propositions across scenarios meant that only net opportunity or threat perceptions could be ascertained; and secondly because the different questions employed different methods of ascertaining strengths of perceptions.

For presentation reasons, i.e. to encourage further participation, it would have been necessary to convert some of these consolidation tables into graphics interspersed with illustrative comments for the Delphi feedback process. These selected comments have been used throughout this thesis to illustrate various issues and tensions in structural change. As a Delphi could not be organised because of longitudinal effects (discussed in Chapter 10), the process of creating a document with a 'professional' appearance was not explored. However, since the data was held on Excel and Word, which are designed to handle such documents, no major problems were foreseen.

The distinct benefit of the interim analysis routine in Delphi iterations is that it provides an audit trail and increases the chances for new implications to surface - but the disadvantage is that it also opens up the risk of 'locking' into a certain analytic frame of mind. The procedure of encouraging participants' comments was partially designed to restrict this risk. It also had the benefit of ensuring that the researcher became familiar with the raw data and enabled early recognition of patterns as they emerged, thereby easing final analysis. The number and nature of comments and/or scenario elements raised by participants determined the extent of qualitative interpretation for feedback into the next round.

However, the volume of data can be overwhelming. Had it been possible to organise a Delphi, it would have been necessary to select comments to illustrate viewpoints only, rather than submit a formal summary analysis to participants.

6/ SUMMARY

This chapter marks the end of the theoretical development of the overall methodology. An apparently workable Advanced Systems Technique was identified and translated into a data collection instrument, i.e. the Multiple Scenario Questionnaire. The generation of this questionnaire represented stages 5, 6 and 7 of the scenario process identified in Sec. 2.2 of Chapter 7.

In the process, construction and analysis principles were identified that depended on the methodological Research Assumption and certain presumptions. A methodological Research Expectation of the results of the analysis and interpretation of participants' judgements was derived.

This represents the achievement of the first methodological Goal:

to develop a data collection technique that ought to achieve the subject Goals.
(these are identified in Chapter 2).

The tests of the Research Assumption and Research Expectation are reported in Chapter 11, which represents the achievement of the second methodological Goal:

to test the data collection technique in practice.

The next chapter reports the results obtained from the Multiple Scenario Questionnaire regarding decision-makers' judgements of the potential impact of structural change on port governance. This represents the commencement of the final stages of the scenario process - Stages 8, 9 and 10. - which led to the construction of a 'Long-term Strategic Service Industry' model as shown in Chapter 15.

**CHAPTER 10 - RESEARCH PARTICIPANTS
AND SCENARIO JUDGEMENTS**

This chapter reports on the data obtained from the use of the Multiple Scenario Questionnaire for international research in order to answer the Research Assumptions. It takes the form of identifying participants, detailing the responses obtained, and explaining the prevention of a Policy Delphi (because of longitudinal events).

However, judgmental data was obtained from the Multiple Scenario Questionnaire. The base data is presented and its implications identified. The confirmation of the Research Assumptions, i.e. they demonstrated the existence of a Boundary-spanning area, enabled the further analysis that is reported in the following chapters.

1/ PARTICIPANTS

As discussed in Chapter 8, the research concentrated on seeking the perceptions of the key decision-makers at the level of chief executive of a single port organisation, or chief executive and senior port official of a multi-port organisation. These people are responsible for the successful implementation of structural change and were most likely to provide the knowledge of future effect uncertainty sought by the research.

It also sought the perceptions of statutory decision-makers, i.e. the senior officials responsible for the public right of access to, and control of, the harbour (the Harbour Master in the UK and Port Captain in SA) since their legal responsibilities mean that they have a very large influence on policy decisions.

These two categories formed the target judgmental research groups, i.e. Key UK ports decision-makers and Key SA ports decision-makers. When amalgamated, the judgements of these two groups on the multiple scenarios would reflect an international perspective of potential conflict in structural change. Their judgements would form the base data for constructing a 'Long-term Strategic Service Industry' model.

In order to add a further perspective to the Policy Delphi, it was decided to approach a third group of stakeholders who could challenge the judgements of decision-makers. These were a small non-random selection of senior ports policy implementers in both countries, SA business users, UK consultants and UK academics (as detailed in Chapter 8). These people thus formed a Stakeholder group.

The hierarchical ranks and groupings of the participants are shown in Table 10.1.

<i>RANK OF PARTICIPANTS</i>			<i>Table 10.1</i>
	<i>UK Ports</i>	<i>SA ports</i>	<i>Stakeholder Group</i>
<i>Key Ports</i>			
CEO or Board	5	2	
Head Office Manager	2	2	
Port Manager	1	4	
Harbour Master	2	4	
<i>Other Ports (Stakeholder Group)</i>			
Engineer	(2)	(1)	3
Senior Manager	(4)	(1)	5
<i>Related Business</i>			
CEO or Board			2
Head Office manager			2
Consultant			2
<i>Academic</i>			
Professor			1
Senior Lecturer/Lecturer			2
<i>(total number of participants was 39; of which Key UK Ports was 10; Key SA Ports was 12; Stakeholder Group was 17)</i>			

1.1 Sampling Principles

The immediate effect of concentrating on key decision-makers for the research is to restrict the numbers available for sampling. This limitation is onerous with the small number of ports in the industry affected to varying extents by structural change (twenty organisations in the UK, one in SA and one in Namibia, totalling thirty-six major ports) and in effect meant a '100% sample' was required to have any degree of confidence in the results. Thus all those organisations in UK and SA listed in the Introduction in Tables I.6. and I.7. were contacted, and Walvis Bay, in Namibia, i.e. the entire population of import / export general cargo / container ports affected by structural change.

These aspects are further exacerbated by the forbidding problems of access to this level of decision-maker in international research and obtaining sufficient interest to maintain a Policy Delphi. This revolved on personal contacts to overcome the natural hesitancy to participate imposed by commercial and political sensitivities. A

researcher will effectively need an industry patron of sufficient gravitas, but without a direct personal interest in the outcome, to reassure potential participants of the purpose of research. Without this, a PhD student is reliant on goodwill for the considerable time investment of participants. In a small industry such a person with the requisite international reputation who is prepared to act as a sponsor is rare. Such a person was identified, but unfortunately he died before a Policy Delphi could be organised; this materially affected the research process.

1.2 Piloting

The research progressed on the basis of utilising multiple scenarios in a postal questionnaire format. A problem with questionnaires is piloting. Normally it is possible to locate a test group to check both format and content for errors, omissions, confusion in layout, etc. With international scenario research at this level it is not the case. Firstly, content piloting becomes a problem - who has expert knowledge of decision-making in ports futures issues outside the industry? Secondly, format piloting is also a problem - who has used multiple scenarios in international futures research? Thirdly, cultural issues surface - who meets the above requirements and can also judge whether cultural differences will affect/influence reading of the scenarios (note: the SA civil service is predominantly Afrikaans in culture, but bilingual). Finally, the small numbers and access problems preclude the luxury of test groups since data is scarce and has to be used for the feedback aspects of the Policy Delphi.

Consequently, it was decided to check the questionnaire outside the target group with the Stakeholder group, whose purpose was to test the general usability of the questionnaire. Because of timing considerations this was done at the same time as the main research. The response of this group was assessed from a methodological perspective in Chapter 11. Generally, the same concerns surfaced over possible Bias, as they did in the ports groups. The only apparent difference between the groups seemed to be related to the subject matter - some members of the Stakeholder group were less comfortable with scenarios, as reported in Chapter 11.

1.3 Longitudinal Problems Encountered

The postal Multiple Scenario Questionnaire was the first data-gathering stage of a Policy Delphi, with iterative feedback to those participants expressing an interest in obtaining the results of all groups and re-evaluating their judgements. This presumed a degree of industry stability to avoid longitudinal effects from destroying the credibility of judgements which is an inherent part of the Delphi feedback process; if factors other than the views of participants influence the iterations then the reliability of results generated by the process is suspect. A realistic iteration period is in the order of three months, but in international research postal delays (of between 6 to 8 weeks for SA seamail) could be expected and would extend this period.

Two considerations affected the outcome of verification by iteration of judgements - firstly, the number and level of participants expressing an interest in feedback was distinctly too marginal to sustain the Policy Delphi rounds in the absence of a patron, and secondly, longitudinal events intervened, notably:

questionnaire despatched September 1994:

UK participants commented on insufficient track record from the privatisations of 1992 (only one complete trading year's results were available) - consequently the last responses were not received until 1995;

SA participants strongly suggested that a six month shake down period be allowed before recontact - final responses received during March 1995.

1st April 1995 - new SA organisational structures were introduced.

early June 1995 - compulsory privatisation process in the UK commenced.

early September 1995 - ports responded to compulsory privatisations in the UK with strong objections.

late 1995 - restructuring in SA was still incomplete.

1996 - port sales in the UK began, but there were still strong objections to privatisation.

SA resignations of key personnel occurred and restructuring was still incomplete.

Most notable of these longitudinal events involved SA which had just embarked on a period of change. This period had been traumatic because of political, economic and labour problems. These have led to severe congestion in the ports and customer objections. Although investment had been agreed it had still to take effect. Further, the chief executives and ports managers were still exploring international contacts and trading links, other countries' port structures and their solutions to common problems. This reduced the methodological reliability of an international feedback process for eliciting judgements until after this period had settled down.

Before the end of this settling period, which had been protracted well beyond the waiting period initially advised by respondents, the UK commenced another privatisation wave. Some of the participants in this research were of chief executive status and had entered the bidding process. One had temporarily withdrawn. One had purchased a privatised port. One was negotiating a management bid. One was embroiled in a commercial conflict between a trust port facing compulsory privatisation and a private port - he was trying to maintain an impartial stance.

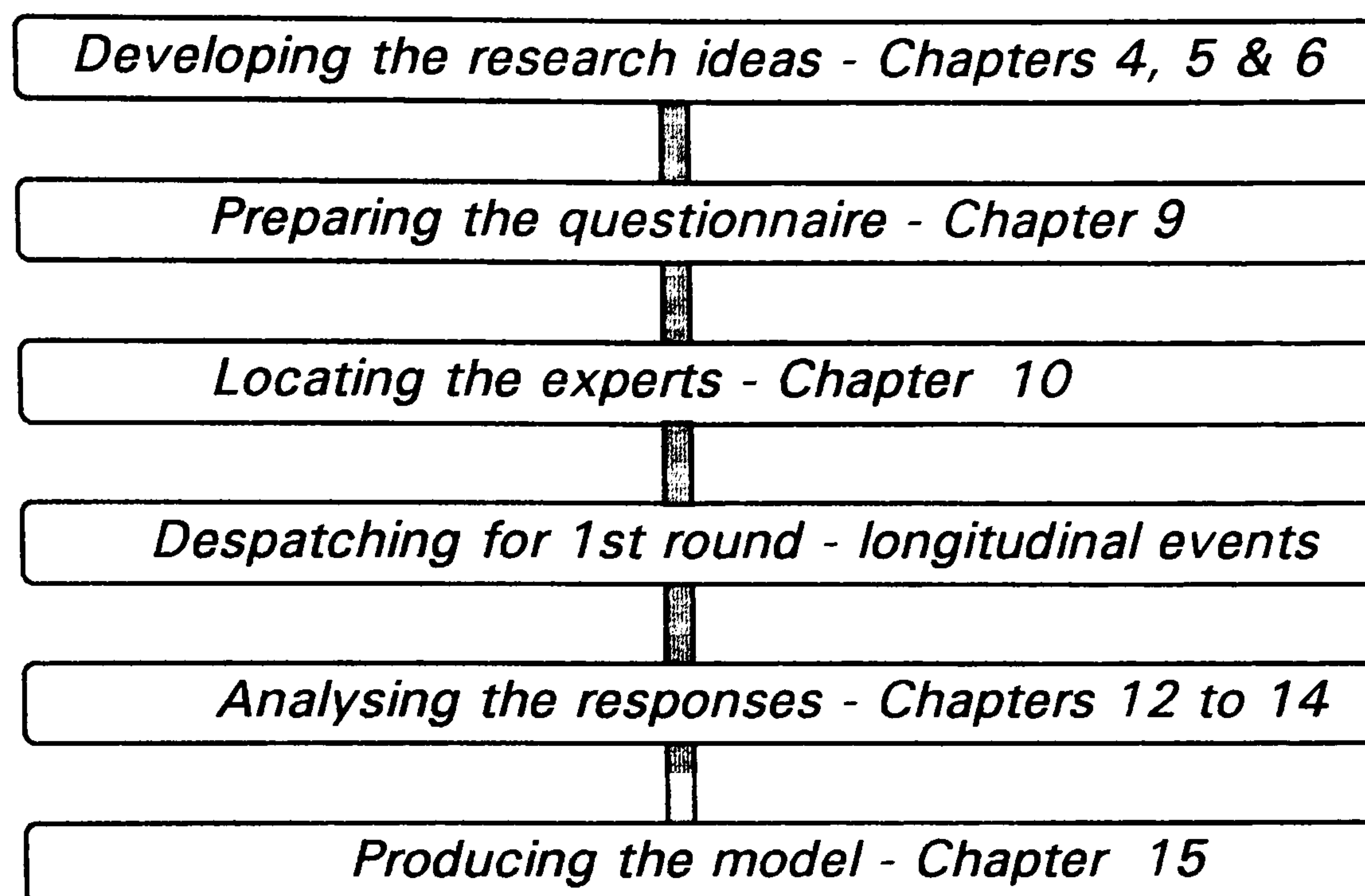
Consequently they did not have the time to participate further in the Delphi process, nor would they wish to do so for reasons of commercial confidentiality and political sensitivity. It was unlikely, but not impossible, that the research may have influenced their thinking in some way.

These longitudinal events severely restricted methodological options for ensuring validity. It would normally be practicable to solicit validating feedback on consolidated views of structural change by contacting participants in each country at separate times, but validation could only then be done on a national basis, rather than on an international basis. Utilising Delphi principles of feedback to verify the extent of international generalisability cannot be conducted in isolation, since this would have destroyed the principle of informed comment that is inherent in the process. Further, as was discussed, sampling problems of small numbers occurred, to the ultimate extent demonstrated by Namibian ports which were recently under SA control. There was only one chief executive for the country.

Feedback cannot be reliable without some minimum response numbers. These numbers are difficult to achieve where there are small populations. According to the literature the minimum number for a Policy Delphi is six (Turoff, 1975 mentions 10 - 50). From a researcher's perspective, these were particularly onerous conditions. There were insufficient expressions of interest in the two key SA and UK ports groups to run a comparative Delphi in each country. This meant that a solitary international Delphi would be the only feasible option. However, it raised problems of time, resources and sustained interest in the absence of an international champion. No chief executives could be encouraged to sponsor the research. Given these circumstances senior managers were wary of commitment without support from a higher level (as evidenced by the level of corporate responses discussed later). Hence the composition of the Policy Delphi would have to be at senior or lower manager level, supplemented by Stakeholder group participants to maintain minimum numbers.

Even adopting this formula, the subjective assessment was that only five would stay the course out of a possible two in key UK ports, three in Other UK ports, none in academic, two in UK related businesses, three in key SA ports, one in Other SA ports, a total of 11 altogether. The 'stayers' were likely to be four in UK, one in SA, of whom only one was of board level (Related Business) and would be taking early retirement. This participant level raised severe doubts over the validity and reliability of the *informed expert iteration*, which is the crux of the Delphi, *once* initial perceptions have been captured. Without a strong participant level the process would not add value to the research - the risks of over-ruling experienced decision-makers and achieving a biased and weakened result would be too great.

The circumstances were that the timing was not right to continue with an inherently long postal Policy Delphi iteration process until a degree of stability had returned to the industry. The indications were that this would not occur in both countries during the time available for a PhD. The decision taken was thus to halt the Policy Delphi after the first round. The research thus followed the course shown in Figure 10.1.

*DELPHI RESEARCH STAGES ACHIEVED**Figure 10.1*

(adapted from Jenkins and Theole, 1991)

The output of a Delphi is highly if not completely dependent on ownership by a well regarded champion, particularly in turbulent times. This has its drawbacks, unless the champion is carefully selected and *seen to be impartial* by all participants in situations of political and commercial sensitivity. In international research the champion must also be seen to have gravitas in each country if there is to be an expectation of successful iterations. Selection of subject matter was of crucial importance in attracting a champion and participants - it must be sufficiently abstract to avoid political and commercial sensitivities, but also sufficiently topical and informed to arouse interest. Further, to maintain interest, it must be challenging, but not overtaxing on participants' time.

1.4. Response

Initial responses to the questionnaire in the UK and SA were hesitant. There were possibly two prime reasons for this - the Multiple Scenario Questionnaire (Appendix A) was unsatisfactory in practice, or this was a manifestation of implicit power relationships in the ports industry. A Supplementary Questionnaire (Appendix B) was sent out in an attempt to discover the cause. This had a marginal effect as a 'reminder' but returns showed both reasons had a bearing on the response. The technique aspect is discussed in Chapter 11 and the power interpretation in the next section on participants.

The nature of the subject matter was commercially and politically sensitive. In the UK there was substantial evidence of Harbour Masters and senior port officials referring the Multiple Scenario Questionnaire to higher authority for completion.

The *overall response BEFORE adjusting for these referrals* is shown in Table 10.2:

<i>OVERALL RESPONSE BEFORE ADJUSTMENT Table 10.2</i>		
	<i>no. responding</i>	<i>response</i>
All participants	39	36.4%
UK ports (all port responses)	16	23.2%
SA ports (all port responses)	14	56.0%
UK & SA business & academic	9	69.2%
<i>(unadjusted total send-out was 107 questionnaires - 80 in UK and 27 in SA)</i>		

It had a marginal effect as a 'reminder', but did supply useful information. A total of 32 Supplementary Questionnaires were returned giving one or more reasons for refusal to participate. These reasons are listed in Table 10.3.

<i>REASONS FOR REFUSAL TO PARTICIPATE Table 10.3</i>		
<i>UK and SA PORTS</i>		
	<i>number</i>	<i>proportion</i>
No obvious relevance	6	12.0%
Response by someone else	18	36.0%
Politically sensitive	2	4.0%
Commercially sensitive	2	4.0%
Potential for misrepresentation of views	4	8.0%
Too early for view	4	8.0%
Complex and time consuming	11	22.0%
Biased questions	2	4.0%
Provocative questions	1	2.0%
<i>(total number of reasons given was 50)</i>		

The significant pattern in these reasons for refusal was the complex nature of the questionnaire (11 reasons) - this was expected. What was not expected was the even greater level of referrals to higher authority for answer *where the questionnaire was answered as a senior level* (18 reasons). There was only one case where the questionnaire was delegated to a mid-level manager for answer. By tracking the patterns of these corporate responses through the organisations where questionnaires had been returned, it appeared that there were a *further* 18 cases (17 in UK and 1 in SA). This applied where a head office manager, but not the port manager or Harbour Master of the particular port to whom the questionnaire had been sent, had answered.

The most likely explanation was that this reflected implicit power relationships in a sensitive area; the least likely answer was that of 'passing the buck' since an even more senior person had answered. Thus the level of referrals acted as a surrogate measure of the incidence of power relationships in the port industry. This incidence served to corroborate the researcher's view of implicit power being a factor in structural change which needed to be controlled in the research design.

The true response levels were disguised by the implicit power relationship and hence affected the assessment of a claim for contribution to knowledge. Correcting for the influence of referrals on the research was done by reducing the send-out numbers and thus increasing the response ratio. This was because those people referring the questionnaire to corporate officers would simply have been excluded from the research to avoid distorting the target decision-making population, had the researcher been aware of internal power relationships. This was only done for those cases where documentary evidence was held, even though there was a strong suspicion that the actual incidence was higher judging by the pattern of responses in the UK, particularly for the 22 ports of ABP. This amounted to a further 14 cases, giving a maximum UK ports (all industry responses) of 42.1%, which thus compares more realistically with the SA responses, and the Related Businesses and Academic responses.

The *overall response AFTER adjusting for KNOWN referrals* is shown in Table 10.4:

<i>OVERALL RESPONSE AFTER ADJUSTMENT</i>			<i>Table 10.4</i>
	<i>no. responding</i>	<i>response</i>	
All participants	39	43.8%	
UK ports (all industry responses)	16	30.8%	
SA ports (all industry responses)	14	58.3%	
UK & SA business & academic	9	69.2%	
<i>(adjusted total send-out was 89 questionnaires - 63 in UK and 26 in SA)</i>			

These percentages of the total target population are *very high* for what was an extremely complex and difficult questionnaire to complete. Comparisons with other studies are problematic, but response rates of up to 16% are considered normal for a simpler postal questionnaire. The overall methodology data obtained for 39 Multiple Scenario Questionnaires plus 32 Supplementary Questionnaires out of the original send-out of 107 questionnaires represented 66.4%. These provided evidence of conflicting views, both between the groups and within the groups. This implied that the results reflected a pluralist view of potential outcomes of structural change and supported the adoption of an Advanced Systems Technique to expose perceptions.

The Policy Delphi iterations would have enhanced the validity of a claim for a contribution to knowledge. In the absence of a full Delphi, the claim rested on the snapshot results obtained in the first round from the high status of the participants (shown in Table 10.1) and the high level of responses to the Multiple Scenario Questionnaire that were ultimately achieved (shown in Table 10.4). These response levels gave confidence in the representativeness of both the methodology results and the subject results. Thus the claim for both a subject and a methodology contribution to knowledge is substantially enhanced by the response level.

1.5 Statistical Data Analysis

Normally, it would be expected that quantitative results presented in the thesis would be subjected to non-parametric tests. However, the data collected by the questionnaire was based on a fundamentally unusual sampling frame. Firstly, the target populations are minuscule in comparison to usual PhD samples since the entire target population was contacted for the key decision-makers in UK and SA ports affected by structural change (including Namibia where the target population was two people).

Secondly, for Stakeholder participants, there was no attempt at random sampling - only those known to the researcher (for the purposes of technique checking), or who it was felt could add 'richness' to the study (engineering; trade links between the two countries; ports publications) were contacted.

Thirdly, the longitudinal effects prevented the Policy Delphi iteration process, resulting in capturing perceptions at a particular point in time. These will have changed by now because of environmental events.

The results obtained from this first category were unique. The response from the Key SA ports was 65% of the entire target population. For this level of response the relevance of tests is questionable. The response from the Key UK ports was greatly influenced by the high incidence of referrals to higher authority for answer - the operation of a policy for corporate responses only applied in at least 17 cases. On this basis 39% of the target Key UK port population replied, but corporate responses could be *reasonably* inferred in a further 14 cases. This raised the probable response rate of the entire Key UK port population.

McCall (1994) was adamant that the assumptions and conditions for appropriate non-parametric statistical tests (e.g. chi-square) are random and independent sampling. Sirkin (1995) supported this view. Obviously, these conditions are not satisfied, and whilst some relaxation is possible, the relaxation required would be extreme. In these circumstances non-parametric tests would add little to the presentation of results obtained and would effectively be attempting spurious accuracy. Hence the research results are presented only as numerical counts and percentages.

2/ PARTICIPANTS' JUDGEMENT OF THE MULTIPLE SCENARIOS

In Chapter 1 it was stated that decision-makers implementing the aims of structural change are effectively acting as agents for the 'public interest' in the ports industry. Should commercial pressures exist for diversification or alternative use of assets then there may be conflict.

Factors influencing selection of strategy in restructured ports included the ramifications of the environment within which the ports operated, the standards of performance required to maintain ports in the 'public interest' and the rewards required by investors.

This implied that there were 'structural constraints' within which decision-makers had to operate and functions that had to be carried out through the design of a suitable administrative system, i.e. organisational structure. These constraints could lead to conflicting views between the 'public interest' in the ports' continued operation and investors' desire for commercial returns.

This chapter presents the consolidated judgements of all the participants regarding the questions asked in the Multiple Scenario Questionnaire in Tables 10.5 to 10.9. The judgements reflect how the participants viewed the future nature of the environment and hence the implied role of agency in meeting stakeholder demands (in Sections 1 and 4 of the questionnaire). Sections 2 and 3 considered how agents could respond to structural change and hence the implied role of choice.

Participants' overall judgements would thus indicate whether or not the first subject Goals of ascertaining perceptions of the potential impact of structural change on 'public interest' activities, and strategic stance had been achieved. These judgements would also provide implied answers to the subject Research Expectations, which were dependant on the subject Research Assumptions being confirmed.

The Research Assumptions are tested to determine whether or not ports decision-makers were operating in a Boundary-spanning area. The outcome of testing the Research Assumptions, establishing the achievement of the subject Goals, and identifying implications for the Research Expectations would indicate the answers to the subject Key Questions. This presumed that Bias-free judgements had been surfaced and this is tested in Chapter 11.

The Research Expectations and Key Questions are revisited in Chapter 12, following determination of the extent to which final answers must be qualified.

Table 10.5

ALL PARTICIPANTS											Table 10.5
THE FUTURE - ASSESSMENT OF POTENTIAL CONFLICT											
SECTION 1 - BACKGROUND	interesting	obvious	irrelevant	absurd	no views	sub-total	comment				
UK PORTS	5	8	2	0	1	16	6				
SA PORTS	5	9	0	0	0	14	7				
UK & SA RELATED BUSINESSES	0	6	0	0	0	6	5				
UK ACADEMIC	2	1	0	0	0	3	1				
TOTALS	12	24	2	0	1	39	19				
	30.8%	61.5%	5.1%	0.0%		2.6%					
THE FUTURE - SCENARIO JUDGEMENTS											
SECTION 4 - PREFERENCE	opportunity	mixture	threat	no views	sub-total	comment					
UK PORTS	6	6	1	3	16	9	UK ports				
SA PORTS	7	6	0	1	14	6	SA ports				
UK & SA RELATED BUSINESSES	2	4	0	0	6	4					
UK ACADEMIC	1	1	1	0	3	3	rel bus				
TOTALS	16	17	2	4	39	22	acad				
	41.0%	43.6%	5.1%	10.3%							
											base data
											balance
											41.0%
											35.9%
											76.9%
											15.4%
											7.7%
											23.1%
Other factors thought to be relevant by participants (some factors were raised frequently)											
	conflict	opportunity	threat	scenario	sub totals		Analysis Groups				
	section 1	section 2	section 3	section 4			response				
UK PORTS	6	31	26	9	72		Key SA				
SA PORTS	7	27	19	6	59		Key UK				
UK & SA RELATED BUSINESSES	5	21	19	4	49		Stakeholder				
UK ACADEMIC	1	6	14	3	24						
TOTALS	19	85	78	22	204						
	9.3%	41.7%	38.2%	10.8%							

OPPORTUNITY SCENARIO - ASSUMPTIONS

Table 10.6

ALL PARTICIPANTS		OPPORTUNITY SCENARIO - ASSUMPTIONS						Table 10.6	
SECTION 2.1 - BUSINESS CONDITIONS		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		1	10	3	2	0	16	6	
SA PORTS		5	7	1	1	0	14	4	
UK & SA RELATED BUSINESSES		1	2	2	0	1	6	4	
UK ACADEMIC		2	0	0	1	0	3	2	
TOTALS	39	9	19	6	4	1	39	16	
		23.1%	48.7%	15.4%	10.3%	2.6%			
SECTION 2.2 - DIVERSIFICATION		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		1	9	2	4	0	16	7	
SA PORTS		5	3	3	2	1	14	7	
UK & SA RELATED BUSINESSES		2	3	0	0	1	6	5	
UK ACADEMIC		2	1	0	0	0	3	1	
TOTALS	39	10	16	5	6	2	39	20	
		25.6%	41.0%	12.8%	15.4%	5.1%			
SECTION 2.3 - DECISION-MAKING		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		3	12	1	0	0	16	4	
SA PORTS		1	8	3	1	1	14	7	
UK & SA RELATED BUSINESSES		0	4	0	0	2	6	4	
UK ACADEMIC		1	2	0	0	0	3	1	
TOTALS	39	5	26	4	1	3	39	16	
		12.8%	66.7%	10.3%	2.6%	7.7%			
SECTION 2.6 - ORGANISATIONAL STRUCTURE		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		3	9	1	1	2	16	5	
SA PORTS		3	11	0	0	0	14	2	
UK & SA RELATED BUSINESSES		1	4	0	0	1	6	1	
UK ACADEMIC		2	1	0	0	0	3	1	
TOTALS	39	9	25	1	1	3	39	9	
		23.1%	64.1%	2.6%	2.6%	7.7%			

OPPORTUNITY SCENARIO - IMPLICATIONS

Table 10. 7

SECTION 2.4 -		ALL PARTICIPANTS				OPPORTUNITY SCENARIO - IMPLICATIONS					Table 10.7	
STRATEGIC CHOICE		SHORT		MEDIUM		LONG		CONFIDENCE			comment	
(1) improbable (2) unlikely (3) feasible (4) likely (5) probable												
UK PORTS	mode	5	mode	4	mode	4	4	5	3	4		
	median	4.5	median	4	median	4						
SA PORTS	mode	4	mode	3	mode	3	2	2	1	5		
	median	3	median	3	median	4						
UK & SA	mode	2	mode	3	mode	3	0	2	1	4		
REL BUS	median	3	median	3	median	3						
UK	mode	4	mode	#N/A	mode	#N/A	0	0	1	0		
ACADEMIC	median	4	median	4.5	median	4.5						
TOTALS		mode	4	mode	4	mode	3	6	18	9	6	13
		median	4.0	median	4.0	median	4.0	total confidence				39

SECTION 2.5 -		DECISION-MAKING				CONFIDENCE					comment	
SHORT		MEDIUM		LONG								
(1) improbable (2) unlikely (3) feasible (4) likely (5) probable												
UK PORTS	mode	5	mode	5	mode	4	4	4	4	5		
	median	5	median	4	median	4						
SA PORTS	mode	2	mode	4	mode	5	2	1	1	2		
	median	3	median	3.5	median	4						
UK & SA	mode	3	mode	3	mode	3	0	2	2	3		
REL BUS	median	3	median	3	median	3						
UK	mode	3	mode	#N/A	mode	#N/A	1	1	0	1		
ACADEMIC	median	3	median	3	median	3						
TOTALS		mode	5	mode	3	mode	5	7	17	8	7	11
		median	3.5	median	3.0	median	4.0	total confidence				39

THREAT SCENARIO - ASSUMPTIONS

Table 10.8

ALL PARTICIPANTS		THREAT SCENARIO - ASSUMPTIONS						Table 10.8	
SECTION 3.1 - BUSINESS CONDITIONS		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		3	7	2	4	0	16	8	
SA PORTS		2	7	5	0	0	14	5	
UK & SA RELATED BUSINESSES		0	3	1	0	2	6	4	
UK ACADEMIC		0	0	0	2	1	3	3	
TOTALS	39	5	17	8	6	3	39	20	
		12.8%	43.6%	20.5%	15.4%	7.7%			
SECTION 3.2 - DIVERSIFICATION		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		2	10	3	1	0	16	5	
SA PORTS		7	3	2	1	1	14	3	
UK & SA RELATED BUSINESSES		0	4	0	0	2	6	3	
UK ACADEMIC		1	0	0	1	1	3	3	
TOTALS	39	10	17	5	3	4	39	14	
		25.6%	43.6%	12.8%	7.7%	10.3%			
SECTION 3.3 - DECISION-MAKING		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		2	8	2	3	1	16	4	
SA PORTS		4	9	0	0	1	14	3	
UK & SA RELATED BUSINESSES		1	3	1	0	1	6	6	
UK ACADEMIC		1	1	0	1	0	3	2	
TOTALS	39	8	21	3	4	3	39	15	
		20.5%	53.8%	7.7%	10.3%	7.7%			
SECTION 3.6 - ORGANISATIONAL STRUCTURE		interesting	obvious	irrelevant	absurd	no views	sub-total	comment	
UK PORTS		3	4	3	2	4	16	2	
SA PORTS		4	3	2	3	2	14	3	
UK & SA RELATED BUSINESSES		2	2	0	1	1	6	2	
UK ACADEMIC		1	0	1	1	0	3	3	
TOTALS	39	10	9	6	7	7	39	10	
		25.6%	23.1%	15.4%	17.9%	17.9%			

THREAT SCENARIO - IMPLICATIONS

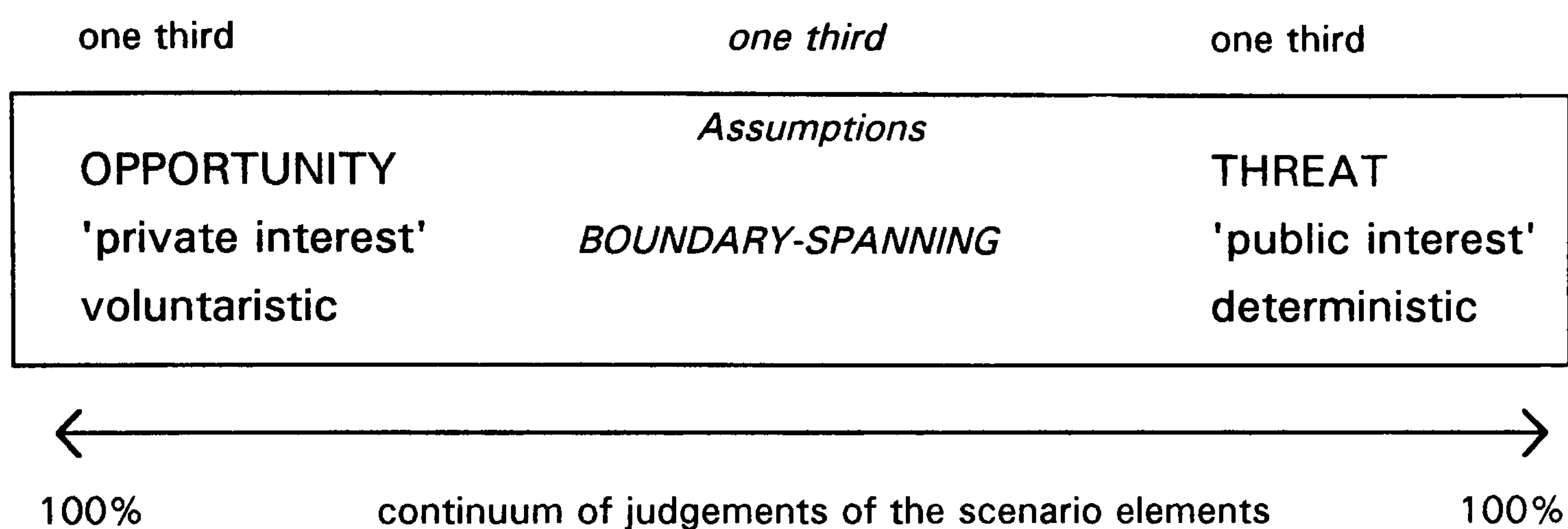
Table 10.9

SECTION 3.4 -			ALL PARTICIPANTS			THREAT SCENARIO - IMPLICATIONS					Table 10.9	
STRATEGIC CHOICE												
SHORT			MEDIUM			LONG						
(1) improbable (2) unlikely (3) feasible (4) likely (5) probable												
UK PORTS	mode	2	mode	3	mode	1	3	8	4	1	4	
	median	2.5	median	3	median	2						
SA PORTS	mode	3	mode	3	mode	1	2	7	4	1	2	
	median	2	median	2.5	median	2.5						
UK & SA	mode	1	mode	#N/A	mode	#N/A	1	2	1	2	2	
REL BUS	median	1.5	median	3	median	3						
UK	mode	#N/A	mode	#N/A	mode	#N/A	1	1	1	0	2	
ACADEMIC	median	2	median	2	median	2						
TOTALS	mode	1	mode	3	mode	1	7	18	10	4	10	
	median	2.0	median	2.5	median	2.0	total confidence					39
SECTION 3.5 -			DECISION-MAKING									
SHORT			MEDIUM			LONG						
(1) improbable (2) unlikely (3) feasible (4) likely (5) probable												
UK PORTS	mode	3	mode	3	mode	2	5	5	5	1	3	
	median	3	median	3	median	3						
SA PORTS	mode	5	mode	4	mode	5	0	8	5	1	3	
	median	4	median	4	median	4.5						
UK & SA	mode	#N/A	mode	4	mode	1	0	3	2	1	2	
REL BUS	median	3.5	median	3	median	2						
UK	mode	#N/A	mode	#N/A	mode	#N/A	0	1	1	1	1	
ACADEMIC	median	2.5	median	2.5	median	2.5						
TOTALS	mode	4	mode	4	mode	5	5	17	13	4	9	
	median	3.5	median	3.0	median	3.0	total confidence					39

3/ RESEARCH ASSUMPTIONS

The subject Research Assumptions were identified in Chapter 9 as being measured by Questions 1 and 4 of the Multiple Scenario Questionnaire. The judgements of all participants to these questions are shown in Table 10.5.

These Research Assumptions (as identified in Chapter 2) were based on the idea of a Boundary-spanning area where ports bridged the continuum between public and private sectors. They also bridged the voluntaristic and deterministic philosophies of management. It was presumed that they could be measured by splitting the continua into thirds. If the Research Assumptions were to be endorsed then the overall participants' judgements and favoured scenario should occupy the middle third as illustrated below:



3.1 The First Research Assumption

"it was assumed that decision-makers in a 'Long-term Strategic Service Industry' operate within a complex managerial area that spanned the boundary between 'public' and 'private' interests, implying that the boundary between voluntaristic and deterministic approaches to strategy was also spanned."

(This was measured in Question 1 only, but implied in Question 4)

The obvious rating for potential conflict of 61.5% placed this assumption within the Boundary-spanning area, but towards the 'public interest' end of the continuum. If the interesting rating of 30.8% was considered, then it would be well out of the Boundary-spanning area. However, when read in conjunction with the favoured scenarios in Question 4, it appeared that this arose from perceptions of decision-makers acting as agents for the 'public' interest. This was implied by the mixed scenario being favoured by 43.6% of participants, compared to an opportunity scenario being favoured by 41%. Hence it seemed that the potential for conflict would be contained by selection of strategy within a Boundary-spanning managerial philosophy. This was demonstrated by the favoured scenarios being more optimistic than pessimistic.

The implication from both these questions was that a Boundary-spanning area existed for ports - they appeared to be situated towards the 'public interest' side of one continuum and the voluntaristic side of the second continuum.

Hence this first Research Assumption was confirmed by the data obtained. Within the Boundary-spanning area there appeared to be little difference between UK and SA ports regarding 'public interest' since the respective numbers of participants rating potential conflict as obvious were 8 and 9. A similar picture emerged for the favoured scenario with an equal split of opportunity and mixed scenario judgements.

These judgements depended on the second Research Assumption.

3.2 The Second Research Assumption

"it was assumed that the complex influences operating on decision-makers in a 'Long-term Strategic Service Industry' could be measured by the strength of their perceptions of the 'opportunity' or 'threat' posed by structural change.

(This was measured in Question 4 only, but implied in Question 1)

If this Research Assumption was to be confirmed by the data obtained, then a large proportion of the participants ought to be able to make a judgement that indicated their favoured scenario. As almost 90% were able to do so in Question 4 (i.e. only 10.3% recorded no views), this implied that the Assumption was valid. When read in conjunction with Question 1, where only 2.6% recorded no views, then there was little reason to doubt that the Multiple Scenario Questionnaire had essentially captured perceptions of future effect uncertainty of participants.

However, this statement has to be qualified by the relatively higher proportion of UK ports who recorded no views in Question 4. The technique may not have captured all their perceptions, i.e. there may be other factors of equal or greater importance to participants than those covered by the scenarios.

4/ SUBJECT GOALS

The first subject Goals for the research were:

- (a) to ascertain international decision-makers' perceptions of the potential impact of structural change on fulfilling statutory obligations;
- (b) to ascertain international decision-makers' perceptions on the potential impact of structural change on choice of a voluntaristic or deterministic strategic stance.

Tables 10.5 to 10.9 reflect the perceptions of both decision-makers and stakeholders. Thus the subject Goals were not only achieved, but also expanded by the inclusion of

international stakeholder participants whose perceptions added 'richness' to the research. (These perceptions are analysed from a Strategic Choice Perspective in Chapters 12 to 14, where decision-makers' and stakeholders' views are compared and contrasted.)

The subject aspects of these Goals regarding 'fulfilling statutory obligations' and 'voluntaristic or deterministic strategic stance', can be viewed as helping to explain the confirmation of the Research Assumptions. Because of their implications in helping to answer the Research Expectations, these aspects would act as a guide to answering the subject Key Questions.

4.1 Fulfilling Statutory Obligations?

As discussed in Chapter 9, the judgements of all participants to certain scenario questions could be used to imply confirmation or refutation of the first two Research Expectations. Considering:

(Research Expectation-1a)

structural change ought to be perceived as improving 'public interest' governance;

this could be inferred from the number of participants favouring a net opportunity scenario in Questions 2.1 and 3.1.

Comparing Tables 10.6 and 10.8 shows the overall opportunity favoured in Question 2.1 of interesting and obvious was 71.8%, implying that structural change was perceived as likely to improve governance. However, the overall threat favoured in Question 3.1 of interesting and obvious was 56.4%, implying that governance issues could raise conflict. The net opportunity was therefore low, i.e. supporting the finding of a Boundary-spanning area on the 'public interest' and 'private interest' continuum since the 'obvious' judgements almost cancelled out.

This Research Expectation (which was derived from the literature) could not be inferred to have been endorsed by participants.

(Research Expectation 1-b)

achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being necessary to meet 'public interest' considerations in a port.

This could be inferred from the number of participants favouring a net opportunity scenario in Questions 2.2, 2.3, 3.2, 3.3.

Comparing Tables 10.6 and 10.8 shows the overall opportunity favoured in Questions 2.2 and 2.3 of interesting and obvious was 66.6% and 79.5% respectively.

The opposing threat favoured in Questions 3.2 and 3.3 was 69.2% and 74.3% respectively. This implies a near-equal balance between opportunity and threat, from which it can be inferred that a balance between adaptive specialisation (opportunity) and adaptive generalisation (threat) is required.

Hence this Research Expectation is implicitly endorsed by participants. This tends to support the finding of a Boundary-spanning area where 'public' and 'private' interests are balanced.

It appeared that there was a difference in judgements between the UK and SA, possibly arising from the differences in ownership of the ports in these countries. This was shown by the higher SA number of interesting and irrelevant ratings in Questions 2.1 to 2.3, and 3.1 to 3.3, where structural change had yet to be fully implemented.

4.2 Voluntaristic or Deterministic Strategic Stance?

As discussed in Chapter 9, the judgements of all participants to most of the scenario questions could be used to imply confirmation or refutation of the second two Research Expectations. The results of calculating the net opportunity/threat judgements are reported in Chapter 12, but by considering the favoured organisational structure, the underlying strategic stance can be inferred. These Research Expectations were that:

(Research Expectation-2a)

a voluntaristic managerial philosophy and decentralised organisation structure ought to be perceived as being able to meet 'public' interest considerations in a port:

(Research Expectation-2b)

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

Both of these Research Expectations could be inferred from the number of participants favouring a net opportunity scenario in Questions 2.6 and 3.6. Comparing Tables 10.6 and 10.8 shows the overall opportunity favoured in Question 2.6 was 87.2%, whereas the overall threat favoured in Question 3.6 was 48.7%.

This indicates that both Research Expectations were endorsed by participants, but that the net difference of 38.5% again implies the existence of a Boundary-spanning area for both organisational structure and strategic stance. However, the ports seem to be towards the voluntaristic end of the continuum and thus the finding of the first Research Assumption is supported.

Differences between UK and SA judgements are identified in Chapter 12.

5/ RESEARCH QUESTIONS

As a result of achieving the first subject Goals and the confirmation of the Research Assumptions, it was possible to derive indicative answers to the subject Key Questions:

(Key Question - 1)

are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

and

(Key Question - 2)

so what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

By assessing Tables 10.5 to 10.9 the following indications could be made (subject to testing in Chapter 11):

Section 1 - Background - potential sources of conflict:

The notion of stakeholder-agency was substantiated by a very high overall judgement of structural change producing the potential for conflict in the roles of decision-makers when acting as agents for stakeholders, and when assuming economic trust.

The nature of the future environment was therefore implicitly deterministic. The decision-makers' role was likely to be that of stakeholder-agents, and one of implicit pro-active resolution of potential conflict. The environment could thus be seen to be imposing constraints on future selection of strategy. Nevertheless, the stakeholder-agent role implied that the environment was not likely to be fully externalised, since selection of strategic explicitly remained with decision-makers.

Section 2 - Business Circumstances - Opportunity Theme:

Section 2.1 Assumptions on core business conditions:

The overall opportunity judgement implied that all groups considered competition to be beneficial. The indication was that the environment was likely to be enabling.

Section 2.2 Assumptions on diversification flexibility:

All groups appeared to consider that scope existed for diversification. The overall opportunity judgement implied that increased resources might have to be channelled

towards meeting expansion demands. This indicated that the environment was likely to be enabling.

Section 2.3 Assumptions on freedom of decision-making:

The overall opportunity judgement implied a concentration of selection of strategy on matters to meet 'private' interest, thus implying that all groups felt that the role of decision-makers acting as agents for all stakeholders did not constrain decision-making activities. This indicated that the environment was likely to be enabling, but a split in opinion was shown by SA Ports, giving some indication of the cause of the mixed scenario choice.

These indications seemed to suggest that the future nature of the environment would be likely to enable decision-makers to act as agents for all stakeholders without any significant conflict between 'public' and 'private' interests. Their role seemed to be one of securing commercial advantage, which when achieved would secure benefits for the 'public' interest. Their relationship with the environment appeared to be one of 'laissez faire', with governance by 'market regulation'. Hence there was likely to be the appearance of a voluntaristic managerial philosophy in operation.

Section 2.4 Implications for strategic choice:

The overall judgement implied that structural change was likely to remove constraints on decision-making. There was some international disagreement over likelihood and timing, with the SA participants apparently rating freedom of choice as no more than a 'feasible' outcome of structural change. This indicated that the environment was unlikely to be externalised.

Section 2.5 Implications for decision-making:

The overall judgement implied that there was likely to be a potential for some pragmatic compromises in order to balance the needs of all stakeholders. However, the UK ports seemed to see few restrictions. This was interpreted as probably arising from their perceptions of the benefits of competition creating a greater focus on priority commercial stakeholders. This indicated that the environment was unlikely to be wholly externalised, but there were likely to be some constraints.

Section 2.6 Assumptions for organisational structure:

The overall opportunity judgement implied that all groups considered that decentralisation of structure offered advantages. This indicated that the environment was unlikely to be externalised.

These indications seemed to confirm that decision-makers would be likely to act as agents for all stakeholders without any significant conflict between 'public' and 'private' interests. Since the environment was unlikely to be externalised this would support a voluntaristic managerial philosophy and decentralised organisational structure. However, these appearances did not match the final overall marginally favoured mixed opportunity and threat scenario.

Section 3 - Business Circumstances - Threat Theme

Section 3.1 Assumptions on core business conditions:

The overall threat judgement was relatively low and indicated that the environment was unlikely to be significantly constraining irrespective of location.

Section 3.2 Assumptions on diversification flexibility:

The overall threat judgement was relatively high and implied that a challenge to perceptions had raised factors previously unconsidered by participants, notably in SA. This might have been as a result of the differing stage of restructuring, with SA having little direct experience. All groups seemed to consider that scope for diversification was restricted. This indicated that the environment was potentially constraining irrespective of location.

Section 3.3 Assumptions on freedom of decision-making:

The overall threat judgement was high and implied that considerations of 'public interest' could restrict decision-makers' selection of strategy. Both the UK Ports and Academic groups showed a roughly two-thirds to one-third split of opinion, whereas the SA Ports were in agreement. Again this implied the different perceptions were because of the differing stage of restructuring. However, most participants seemed to indicate that there were limits to decision-making discretion in the role of agents for all stakeholders. This indicated that the environment was likely to be constraining according to location.

These indications seemed to suggest that the future nature of the environment constrained decision-makers' freedom of action in order to avoid significant conflict between 'public' and 'private' interests. Although decision-making appeared likely to be tempered both by governance through 'market regulation' and stakeholder power, the role of stakeholder-agency seemed to imply that conflict was containable within the strategic choice process. However a potential cause of the favoured mixed scenario was the split of opinions in the UK, and an apparently greater strength of 'public interest' perceptions in SA.

Section 3.4 Implications for strategic choice:

The overall judgement implied that all groups saw some potential constraints. This did not appear to be considered a significant problem since the overall judgement was that it would be unlikely in the short-term and only be feasible in the medium-term. This seemed to apply irrespective of location. Hence the environment seemed to be likely to become externalised to a degree and constraints could materialise. The implication was that 'public interest' concerns could become a major issue in the future.

Section 3.5 Implications for decision-making:

The overall judgement implied that most groups considered a potential conflict with 'public interest' needs was likely, particularly in SA Ports. Overall this seemed not to depend on a time-span, implying that pragmatic compromises were likely to be made to meet some expression of stakeholder power. This indicated that the environment was likely to be externalised, but more strongly in SA than UK.

Section 3.6 Assumptions for organisational structure:

The overall threat judgement was low implying a preferred decentralised structure. However, there were indications that the UK and SA Ports considered that centralisation of structure offered some advantages. This indicated that the environment was unlikely to be wholly externalised.

These indications suggested that the final overall marginally favoured mixed opportunity and threat scenario could have been caused by an element of concern over the likely impact of the 'public interest' indicating that the environment was externalised to some degree.

Section 4 - Scenario Construction - Preference

There was overall disagreement on the future externalisation of the environment with 41% of all participants favouring an opportunity scenario (i.e. freedom in selection of strategy) and 43.6% favouring the mixed opportunity and threat scenario (i.e. constraints on selection of strategy). The pattern for the UK and SA ports was the same - an equal split of views. Both the related business group and the academic group showed a one-third/two-thirds split in favouring a mixed scenario. This indicated that the future nature of the environment was likely to lie somewhere between enabling decision-makers to act as agents for all stakeholders and constraining some aspects of their selection strategy because of potential conflict between 'public' and 'private' interests.

These indications provided the apparent answers to the Research Questions:

The marginally stronger favouring of a mixed scenario implied that there would be some manifestation of tensions between 'public' and 'private' interests. This implied that the future nature of the environment could create structural constraints on selection of strategy because of 'public interest' concerns. However, the opportunity element of the mixed scenario implied that these tensions could be contained and balanced by a proactive managerial stance (since there was a low favouring of the threat scenario). The indication was that the likely managerial philosophy would favour a voluntaristic stance to selection of strategy and decentralised organisational structure within these structural constraints.

Thus the future environment was likely to be neither wholly constraining, nor wholly enabling, but a balance lying somewhere in between. It was also likely to be neither wholly externalised, nor wholly internalised, but a balance lying somewhere in between. This was in accordance with the first Research Assumption of a Boundary-spanning area.

These apparent answers depended on the extent of Bias-free judgements on the Multiple Scenario Questionnaire. This is tested in Chapter 11, and the Research Questions are revisited in Chapter 12 to provide a final answer.

6/ SUMMARY

From the data obtained through participants' judgements of the Multiple Scenario Questionnaire it was possible to address the key aspects of the subject research. Although confirmation of the base data from a Delphi process was not available, the levels of response from the target population was sufficient to enable indications to be derived with confidence for the Research Assumptions, Research Expectations and Key Questions.

The Research Assumption that a Boundary-spanning area was likely to exist for the future operation of ports was confirmed. Indicative answers to the Research Expectations and Key Questions supported the Boundary-spanning area. These answers represented the achievement of subject research Goals 1(a) and (b).

However, in the absence of a Delphi, the data was dependant on the presumption that Bias-free judgements had been made. If this was the case then the data could be re-analysed from a Strategic Choice Perspective to enable the construction of a 'Long-term Strategic Service Industry' model. This would represent the achievement of the remaining subject Goals.

Accordingly, the next chapter tests the extent to which Bias-free judgements were made.

CHAPTER 11 - QUALIFICATION OF THE BASE DATA

The nature of futures research by scenarios is that it is inherently imprecise. Thus results must be expressed cautiously since they relate to the likelihood of occurrences, rather than being wholly normative predictions. Conversely, in the absence of any better data, their message should not be suppressed by overly reticent language, since the purpose of scenarios is to challenge thinking (Schwartz, 1991).

The base research results obtained must be qualified in some way to reflect this conundrum, particularly for the second level analysis of the concepts and propositions since these were indirectly tested (as described in Chapter 9). The best way of expressing caution appeared to be by summarisation of the quantitative measures of Chapter 10 and expressing these as qualitative endorsements of the subject aspects of the research.

There is also the potential for various factors to counter holistic judgements by participants, such as researcher intervention, personal bias and other influences. If these are markedly present, they represent a degree of failure in the basic questionnaire design which could nullify the value of the results obtained. Hence the performance of the questionnaire in practice needs to be assessed before determining the need for, and a method of showing the extent of, any qualification that may be necessary for reporting results of subject Research Expectations and inferences from a Strategic Choice Perspective.

1/ TESTING THE MULTIPLE SCENARIO QUESTIONNAIRE

The purpose of scenarios is to challenge perceptions and assumptions. By raising previously unconsidered factors, participants were required to consider their position and form an opinion. The final favoured scenario should reflect a holistic judgmental opinion of the component elements of the scenario, and interpretations can be made with appropriate caution if the extent of other influences is ascertained. The favoured scenario would be affected by the extent to which the research had intervened in participants' thought processes and changed their attitudes to the problem situation. It would also be affected by factors other than those presented in the scenarios. Both of these effects could materially alter the accuracy of the results.

1.1 The Questionnaire in Use

The potential problems participants could have with researcher intervention related to the completion and assessment of the questionnaire. These were in understanding the Multiple Scenario Technique and ease of use of the Multiple Scenario Questionnaire.

These problems could be considered as comprising:

a/ Completion:

Layout confusion shown - questions not answered, but comments made indicating a position has been taken - recorded as no views, but indicates question spread was insufficient, e.g.:

"This can be done without contracting out. Otherwise agree with points made." (UP - AL)

Definition confusion shown - a preference for researcher specification of the future for assessment, rather than using own interpretation, e.g.:

"What do you mean by 'contracting out'? (UB - A); 'Definition needed [for Opportunity Theme]. Are you thinking in 'SWOT' terms?' (UB - F)

b/ Provocation:

Content objection - participants disagreeing with aspects of the scenarios presented for evaluation, not realising that it is their perceptions that were sought and the scenario technique was a tool to encourage thinking. This may lead to frustration and presentation bias.

Content endorsement - an element of a scenario was particularly in tune with their thinking, which may have led them to consider the rest of the scenario more favourably than otherwise. This may lead to presentation bias.

c/ Understanding:

Scenario confusion shown - comments which showed a preference for certainty and a dislike of uncertainty (the prediction bias), e.g.:

"... in the exceptional changing conditions prevailing [in SA] at the present time, and the general policy of the new government with regard to state owned institutions being unclear, a qualified answer in some instances is pure [conjecture]." (SP - L)

Judgmental confusion shown - this was most clearly shown in the plausibility questions with numerical codes for short-term, medium-term and long-term assessments, where participants did not follow through their answers, e.g.:

responses were (SP - C: 3/4/-); (SP - N: -/-/5); (SP - U:-/3/-); or sought to apply historical trends, e.g. "But, is there any evidence to endorsement the conclusion/suggestion [referring to trends in environmental planning imposing restrictions] in the last sentence?" (UB - B)

Participants' responses and comments on the questionnaire, and in correspondence, were reviewed for these difficulties as shown in Table 11.1.

<i>Table 11.1</i>	
<i>MULTIPLE SCENARIO QUESTIONNAIRE DIFFICULTIES</i>	
<i>a/ Completion:</i>	
Layout confusion shown	20
Definition confusion shown	10
<i>b/ Provocation:</i>	
Content objection	23
Content endorsement	4
<i>c/ Understanding:</i>	
Scenario confusion shown	12
Judgmental confusion shown	17
<i>(n = 39 participants x 16 questions = 624 possible areas of confusion)</i>	

In overall terms then these difficulties are low. All participants seemed to be aware of the response options in structural change. Nevertheless, the questionnaire was viewed as complex by some participants.

What could not be measured, and was not referred to by participants, was how much the choice expressed was truly felt or how much this was a case of giving the expected answer. There were indications that this was the honest feeling:

"I had difficulty in answering the questions in the simplistic manner you requested due to the assumptions you made regarding what I felt to be unrelated arguments or statements. Nevertheless, I have answered the questions but should be pleased if you would note my comments when analysing my answers. In some instances you will note I have annotated the questions." (UP - BZ)

Early responses revealed these concerns and a separate simple Supplementary Questionnaire was sent out to UK and SA ports only in an attempt to discover the extent of the concern over complexity (this Supplementary Questionnaire is attached at Appendix B). 32 were returned. Incorporating the information from this supplementary questionnaire with the methodology information from the Multiple Scenario Questionnaire gave an overall measure of the understanding of, and ease of use of, the Multiple Scenario Technique as shown in Table 11.2.

Table 11.2

SCENARIO TECHNIQUE DIFFICULTIES

a/ Completion:

Layout confusion shown	31
Definition confusion shown	10

b/ Provocation:

Content objection	38
Content endorsement	4

c/ Understanding:

Scenario confusion shown	18
Judgmental confusion shown	17

(n = 39 + 32 participants x 16 questions
= maximum of 2704 possible areas of confusion,
but in reality this is far lower as refusals may have
only assessed the questionnaire superficially)

In overall terms, these difficulties were again relatively low and do not show a failure of questionnaire design. However, they did serve to demonstrate that the Multiple Scenario Technique was not to be approached lightly - without care in construction and subject choice the difficulties could increase alarmingly, implying that irrational judgements could occur.

Effort was made in the iterative questionnaire generation process to avoid researcher bias. As there were only six reasons for refusal to participate because of perceived researcher bias (Table 10.3) this was successful, but given the nature of the topic it is difficult to assess the extent to which the results were influenced by participants' own biases or distaste for the subject matter. The presence of strong opinions indicates that participant bias was exposed by the provocative stance, rather than being hidden, which might have produced a result which did not reflect deeply held convictions.

1.2 Other Factors Raised

Several participants viewed the questionnaire as firstly being specific to their individual port or country, rather than at an industry level or global transport level, and then secondly considering whether aspects of a particular scenario element were relevant to overall structural change. Approaching the questionnaire in this manner led to comments along the lines of "You can't generalise like this!" (UP - N).

But a strong SA choice for a landlord structure and strong UK choice for a decentralised structure does imply that most participants considered firstly the broad

applicability of the scenario and secondly how the content should be tailored to meet the specific circumstances of their country or port. This concern over the generalisability and accuracy of the scenarios reflects the form of a participant's mental model and how he utilised it. This raises concerns which may be represented as:

a/ Accuracy:

Overstated point - this occurred where participants felt that a particular scenario element was too sweeping and not entirely accurate, thus needing to be qualified in some way, e.g. "Private sector managers are often less likely to be rule-bound and more free to take decisions on commercial bases." (UA - B)

Supplementary point - this occurred where participants made points to clarify, or define, terms used in a scenario element, e.g. "Environments within which the commercial decisions are made (SB - J):

<i>Legal</i>	/	<i>Environmental</i>	/	<i>Political</i>	/	<i>Social</i>
Rigidity		Level of		influence		unions and
		environmental				interest groups"
		commitment				

b/ Conclusions:

Misleading result - where participants thought unqualified application of the scenarios or their elements could lead to errors in decision-making, e.g. "Much depends on whether you are considering e.g. a national ports organisation, or a very large port with scope for internal decentralisation; or a smaller (or more specialised) port." (UB - F)

Participants' responses and comments on the questionnaire, and correspondence, were reviewed for these concerns as shown in Table 11.3.

<i>Table 11.3</i>	
<i>QUESTIONNAIRE CONCERNS</i>	
<i>a/ Accuracy:</i>	
Overstated point	22
Supplementary point	6
<i>b/ Conclusions:</i>	
Misleading result	11
<i>(n = 39 participants x 16 questions = 624 possible areas of concern)</i>	

In overall terms, these concerns are again low. Whilst they caution against over-generalisation, they do show that participants were apparently taking a holistic stance in their judgements.

1.3 Conclusions on the Questionnaire in Practice

As discussed in Chapter 9, the Multiple Scenario Questionnaire posed differing question styles that could be answered in several ways.

The plausibility questions were unpopular, being erratically answered, but this was spread evenly across both the opportunity and threat scenarios. This seemed to be more the result of the common preference for certainty over uncertainty when considering the future, rather than the content of these particular scenario elements:

"I found the methodology of 'assessing plausibility of implications' novel and difficult to get my mind around, but it provoked me into serious thought about the 'implications'." (UP - I)

Some participants seemed uncomfortable with being forced to indicate plausibility on the numerical Likert type scales. Although a qualitative reference for each scale was included (and there were several examples of this being used in preference to the numerical scale) this did not ease concerns. There were several examples of only partial assessment for the short-term/medium-term/long-term scales, i.e. only one or two scales being marked, rather than the three suggested. There was no significant evidence of illusory expertise shown by the participants in the questions asking them to self-assess their confidence. Subjectively, when judging answers according to their position, it seemed that they were under-rating their experience, but on the grounds that they were unhappy with the plausibility questions it was decided to discount any 'low' answers when assessing strength of opinion.

It is conceivable that answers may have been forced into a 'higher' or more aggressive classification than the participant desired:

"... [I] concluded that, in some of the questions, you were attempting to be provocative." (UA - B)

Given the frequent use of 'obvious' and 'absurd' there was little indication that this was in fact a problem, nor that participants were trying to mind-read the questionnaire, nor that they were being kind to the researcher. Nevertheless, it would appear that a weak 'mid-range' rating in addition to those specified by Weick (1989) was required.

Conceivably, the common preference for simplicity has altered some views expressed, but this was unmeasurable. There were very few participants who were unable to cope with the qualitative 'interesting', 'obvious', 'irrelevant', or 'absurd' ratings, but

a number of questions were answered with comments along the lines of "does not really reflect my view" indicating some conceptual difficulty and the desire for wider ranges. These categories were proposed by Weick (1989) as being the equivalent of mild and strong significance tests, and serving as substitutes for validity. The questionnaire offered 'no views' as a mid point and this was used for questions to which participants gave qualified responses for analysis purposes.

Several participants in the Related Business and Academic group appeared uncomfortable with the questionnaire being based on an approach of 'open wording' on occasion, seeming to prefer narrow, well-defined terms in order to challenge the researcher's perceptions of potential effects, rather than evaluating and providing their own perceptions. In contrast, the ports participants were more comfortable with 'open wording' particularly in SA where there was no apparent problem in understanding the broad meaning of the terms used. This implied a more holistic assessment, possibly as a result of greater familiarity with potential conflict situations. It also implied that cultural and language difficulties in international research had been controlled.

The thinking forced by 'rolling together' sequential scenario elements into a limited number of questions and creating opposing scenarios seemed to minimise any tendency to superficiality or 'mind-reading' in the responses.

"... I found the compiling of different assumptions / implications made judgements difficult. Perhaps that was the point of it." (UP - H)

Arranging the scenarios from the abstract longer-term considerations of effects to the shorter-term considerations of actions may have helped to persuade participants to 'stay the course' in completing the lengthy and complex questionnaire. There were only two failures to complete the questionnaire - one on the grounds of time but the main points were covered by correspondence which gave valuable information. The second was supplemented by an interview which showed that the cause arose from a specific set of problems when ownership and jurisdiction boundaries clashed, thus emphasising the problems of generalisation and the uneasy relationship between short-term demands and long-term investment.

However, there was one strong criticism of the research being dominated by a strategic response philosophy of 'contracting out', but the particular participant made numerous comments which gave differing perspectives of response options, and made seemingly well-considered assessments. This incident, or other themes, may have marginally affected participants' perceptions of researcher bias. There was one refusal to participate on the grounds of the themes chosen (Table 10.3).

These aspects to understanding were generally foreseen, in that the questionnaire was constructed in such a way that all interpretations could be logically derived from the literature, and participants' supplementary comments on the questions asked (i.e. their own experiential views) could be grouped into similar analysis/interpretation

categories. By creating opposing opportunity/threat scenarios a method for 'denial' of scenario factors was provided, thus minimising researcher intervention.

The space given in the form for writing observations was well utilised, and there was little evidence of 'essay' writing. The participants seemed to be certain on their answers (except as indicated above) and any hesitancy was recorded in this space, or by correspondence. All the participants appeared to be aware of the nature of changes taking place, but there was considerable diversity over the effects of technical aspects of port operations - notably in the Academic group and to a lesser extent in the Related Businesses. There seemed to be little indication of the layout generating preference for opportunity in short-term and preference for threat in long-term, i.e. discounting the future.

1.4 The Methodological Research Assumption

It appeared from the way in which the questionnaire was completed by participants that qualitative scales are very useful in multi-cultural, multi-language international research. They give the same codification as numerical scales but seem to avoid the problem of participants feeling that they are giving spuriously accurate views. There was no evidence of simplistic judgements with these scales and ample indication of thought generated in the comments made in these sections. By expansion to a seven point ordinal scale incorporating opposing weak strength answers, e.g. reasonable / incomplete, the questionnaire could have been improved. Likewise, the numerical scales should have been dropped and the descriptive scales substituted - although this may have created its own presentational problems for the content of these questions.

Other than this improvement to questions styles, there was little to suggest lack of support for the methodological Research Assumption:

it ought to be possible to obtain holistic judgements of holistic scenarios - if research participants were unable to form a judgement then this would imply that the proposed characteristics of the model did not reflect their perceptions of future effect uncertainty.

The majority of answers to scenario elements did show a holistic judgement was made and the small numbers of problems experienced by participants were measureable. In all cases where participants were unable to form a judgement, reasons were given that showed the scenario elements did not fully capture their holistic perceptions.

Consequently, the base results of Chapter 10 appeared inherently robust. The methodological Research Expectation could therefore be addressed with confidence.

Nevertheless, these should be viewed as indicative of a Boundary-spanning area only in the absence of other longitudinal data, or after confirmation by a Policy Delphi.

However, there was cause to consider qualification of these results for interpretation from a Strategic Choice Perspective for model building because of the scenario and questionnaire difficulties that were displayed. This perspective attempted a greater depth of penetration into the subject matter. It was therefore more likely to be affected by inconsistencies in the data than the broad Research Assumptions of Chapter 10. The effect of aggregating and consolidation of the data was to suppress any impact this could have on interpretation of the results.

Consequently, although the methodological Research Assumption could be supported by the base data, caution in interpreting the subject Research Expectations, and hence answers to the subject Research Questions, would be advisable for reporting in Chapter 12. It appeared that it ought to be possible to draw *strong inferences* regarding:

whether or not the future environment was perceived as being likely to be constraining or enabling, i.e. the extent to which decision-makers felt that structural change would be likely to pose an opportunity or threat to their governance activities;

how externalised the future environment was perceived as being likely to be, i.e. the extent to which decision-makers felt that they were likely to possess a freedom of selection of strategy that was independent of stakeholder influences.

(This outcome of the Strategic Choice Perspective is assessed in Chapter 15 after the further analyses of Chapters 12, 13 and 14.)

This consideration led to the need to derive some form of measure to test the methodological Research Expectation.

2/ HOLISTIC JUDGEMENTS

The questionnaire did not test individuals' personal characteristics as there were no purely 'psychological' questions. There was no comprehensive way of determining the extent of bias and the effectiveness of the questionnaire design in controlling for this. Participants seemed to have carefully assessed the multiple scenarios presented and their comments reflected little bias. Schoemaker (1993) stated that one of the benefits of the scenario technique was that it used one set of biases to counter another set, thus it was possible that the effects of intervention and other factors would also tend to cancel each other out. The overall accuracy of the result would be enhanced if this occurred, worsened if it did not. The problem was to obtain a surrogate measure to indicate the extent to which results obtained should be treated with caution.

In designing the questionnaire the presumption was that participants would assess the structural change problem area, work through questions assessing possible opportunity scenarios, repeat the procedure for threat scenarios, and then make a final judgement

based on their views of the information presented. The opportunity scenarios and threat scenarios were presumed to be mutually exclusive. This meant that participants ought to favour one scenario and refute the second if there were no other influences. Thus comparing the pattern of opportunity answers to the pattern of threat answers would indicate whether or not the final scenario favoured had been influenced in some way. Any discrepancy between the patterns and final favoured scenario would imply the existence of complicating influences.

It was presumed that if a participant's preconceived ideas (i.e. his mental model) was sufficiently affected by the information presented during the course of the questionnaire, he would choose not to give an opinion, and select the 'no views' rating on the questionnaire for the overall favoured scenario. The presumption was that a rational participant would prefer not to favour a scenario, rather than stay with his original perceptions if the scenario narrative had raised doubts on the accuracy of his mental model. Any discrepancy in final favoured scenario choice would therefore represent the net effect of personal bias, intervention (e.g. questionnaire design) and other factors.

For ease of reference, this composite discrepancy could be termed as 'Bias' since the participant would probably be unaware of the exact cause of his making such a judgement. If the progress of arriving at the final favoured scenario could be tracked through a measure, then it would be possible to see if Bias existed.

2.1 Bias-free Holistic Judgements

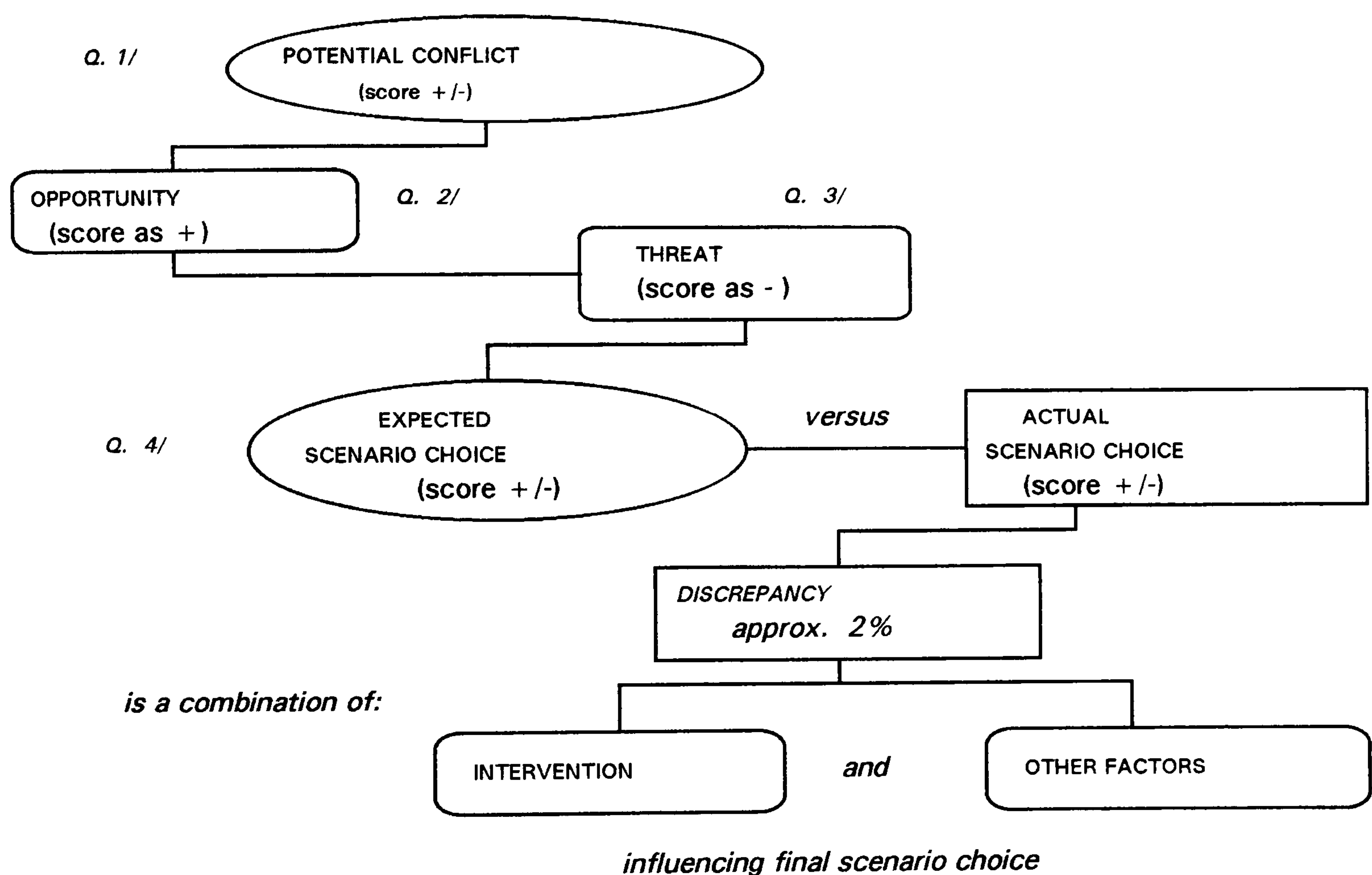
The base data was rearranged to comply with the decision-maker and other participant groups as identified in Chapters 8 & 10 (i.e. Key UK ports decision-makers; Key SA ports decision-makers; Stakeholders; and the combined Key UK & SA ports decision-makers) to reflect the overall international perceptions for modelling a 'Long-term Strategic Service Industry'. The answers to all question types that challenged assumptions were then scored. The answers were allocated signs (interesting = +1, obvious = +2; irrelevant = -1, absurd = -2) in order to obtain an expected scenario choice. A similar approach was adopted for the feasibility of occurrence questions. On consolidation, this gave the percentage of participants in each group whose pattern of ratings implied that they should have favoured a particular scenario. When this overall expected scenario choice was compared to the actual favoured scenario, then the extent of the discrepancy was revealed, as depicted in Figure 11.1.

The results of this procedure are shown in Table 11.4. The consolidated result for all participants showed that only 1.9% of participants overall had exhibited an unexpected final favoured scenario choice, thus implying that the existence of these complicating influences had little effect on their judgement.

However, when the individual groups were considered, then 22.5% of choices in the Key UK Ports group were unexpected. This high figure appeared to have arisen

principally from the consolidation of an unusual pattern of ratings by a Key UK Finance Director who showed a very strong opportunity preference and gave commercially oriented reasons (from personal knowledge of his views, he seems likely to have felt that a differing research thrust should have been adopted towards seeking shorter-term benefits of privatisation); a Chief Executive who recorded numerous 'no views' ratings and declined to make a final choice, but in interview showed a strong perception of structural constraints; and a Head Office Commercial Manager who also recorded numerous 'no views' and declined to favour a scenario, but whose comments showed strong opportunity preferences. The pattern of responses by these participants significantly affected the group result on consolidation and highlighted the problems of having small numbers of people in a group.

BIAS-FREE JUDGEMENTS BY PARTICIPANTS? Figure 11.1



This was dramatically demonstrated by the results for the Stakeholder group which were much lower at -10.3%, implying that intervention and other factors had acted to force a final favoured scenario. This was directly opposite to the anticipated effect of acting to prevent an opinion being formed. But consolidation of participants' responses in this group disguised some unusual patterns; firstly in the Academic section a marine economist showed strong opportunity preferences and seemed to have discounted the possibility of legal constraints and threat response as a decision-making option; and in the Related Business section a legal consultant and a port consultant both made numerous comments but answered many questions by using the 'no views' ratings. However, all favoured a final scenario that reflected their comments.

BIAS-FREE HOLISTIC JUDGEMENTS Table 11.4

Table 11.4 EFFECT ON JUDGEMENT FROM INTERVENTION and OTHER FACTORS				KEY UK PORTS	KEY SA PORTS	KEY UK & SA PORTS
(questionnaire constructed on principle that interesting/obvious = + ; irrelevant/absurd = - ; thus net score predicts final favoured scenario)						
total # of participants				10	12	22
1/ EXPECTED SCENARIO CHOICE				(CALCULATED BY NETTING OPPORTUNITY/THREAT PERCEPTIONS IN Q1 to 3.6)		
calculated choice - opportunity				53.8%	50.0%	51.7%
calculated choice - mixed & threat				-38.8%	-43.8%	-41.5%
majority				15.0%	6.3%	10.2%
calculated no views				7.5%	6.3%	6.8%
2/ ACTUAL FAVOURED SCENARIO						
final choice - opportunity				20.0%	50.0%	36.4%
final choice - mixed & threat				-50.0%	-41.7%	-45.5%
majority				-30.0%	8.3%	-9.1%
actual no views				30.0%	8.3%	18.2%
3/ NET DISCREPANCY IN CHOICE						
difference - opportunity				33.8%	0.0%	15.3%
difference - mixed & threat				11.3%	-2.1%	4.0%
net discrepancy				22.5%	2.1%	11.4%
4/ NO VIEWS						
expected no views				7.5%	6.3%	6.8%
actual rise in no views Q1 to Q4				20.0%	8.3%	13.6%
5/ PRESUMED EFFECT OF INTERVENTION AND OTHER FACTORS INFLUENCING FAVOURED SCENARIO						
surrogate intervention measure				-20.0%	-8.3%	-4.5%
other factors influencing choice				42.5%	10.4%	15.9%
net surrogate measure of all influences				22.5%	2.1%	11.4%

The Key SA Ports group showed 2% with no markedly unusual patterns of responses. An impression was gained that overall intervention effects were low, but that other factors had a bearing on participants' perceptions, leading to a greater than expected use of 'no views' and final mixed opportunity/threat scenario choice. Variations between small groups tended to cancel each other out on consolidation, but Key SA Ports appeared to be the best single measure.

Hence the following surrogate measures can be used on the basis that the questionnaire forced an appraisal of the scenarios, which was influenced by intervention and other factors.

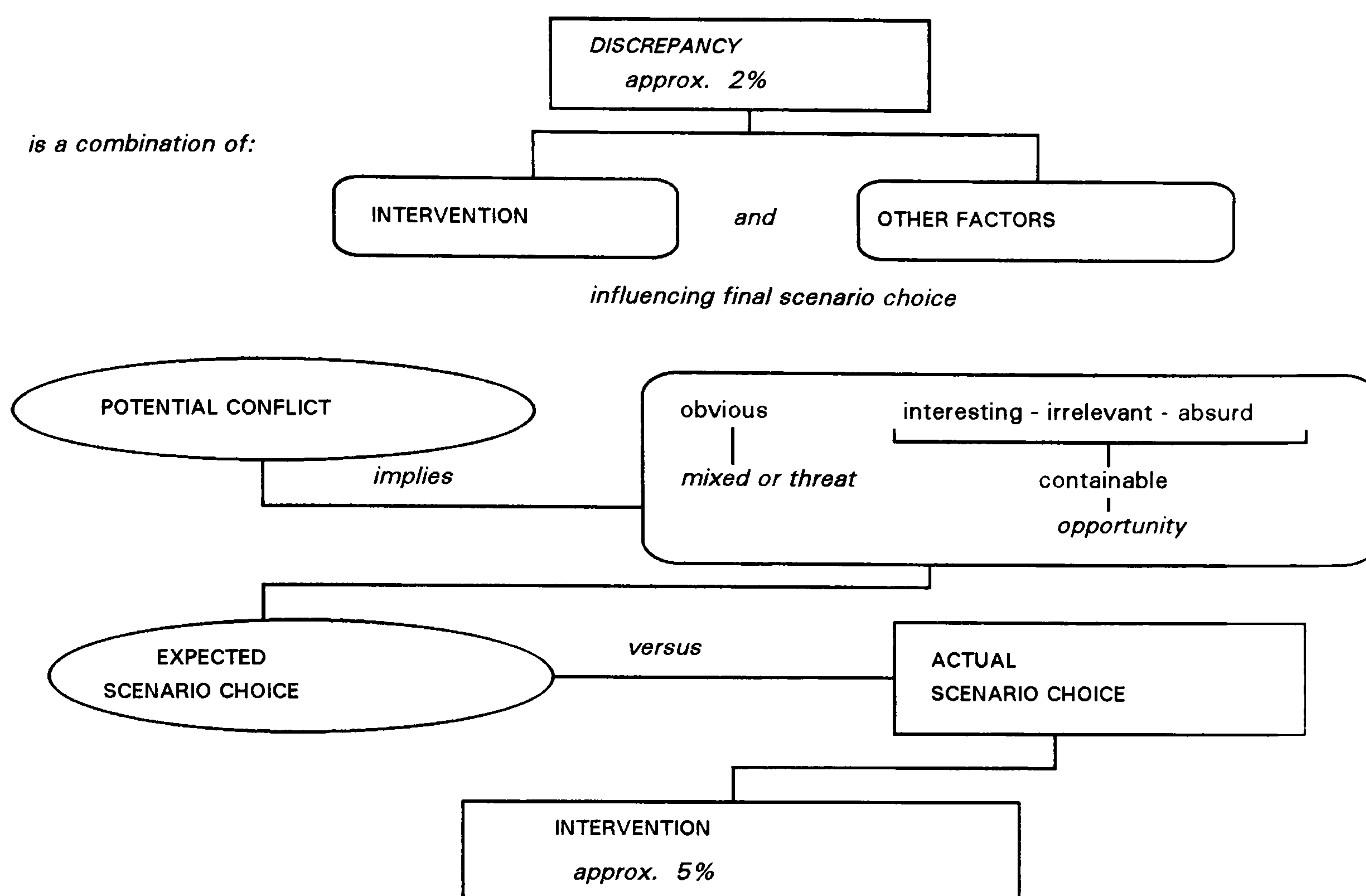
2.2 Intervention

A change in the extent of 'no views' recorded between Question 1 and final favoured scenario would indicate that the challenge to assumptions had either increased or decreased participants' uncertainty on outcomes of structural change. Thus by simply comparing the initial answers in Question 1 to the final favoured scenario, a rise or fall in 'no views' could form a surrogate measure of intervention. However this approach disguised the effect of other influences by assuming that a change in 'no views' was solely due to intervention, and as indicated above, there were doubts over the veracity of this method of calculation. This is shown by a large difference between expected 'no views' and actual 'no views' listed in Table 11.4.

In order to strip out the intervention effect it was assumed that the favoured scenario choice would be for opportunity (Research Expectation 1) and participants had made a reasoned judgement. Question 1 concerned potential conflict and participants who saw no potential for this could be expected to choose an opportunity scenario, participants who thought this was 'obvious' could be expected to choose a mixed or threat scenario. But participants who thought that potential conflict was 'interesting' could also be expected to choose an opportunity scenario, since it was presumed that a participant would expect that conflict was relatively easily containable by managerial action, otherwise they would have chosen an 'obvious' rating.

Hence the key presumption was that there would be a preference for an opportunity scenario since conflict could be contained by expected managerial action, thus researcher intervention would raise uncertainty by outlining some potential pitfalls in this expectation. A discrepancy between the actual initial conflict rating and the actual final favoured scenario would thus show the extent to which the remainder of the questionnaire had presumably influenced a final scenario choice.

This procedure is depicted in Figure 11.2, whilst Table 11.5 illustrates a worked example of the process of comparison from the judgements of all participants (as shown in Table 10.5).

*INTERVENTION**Figure 11.2*

The assumption was that any discrepancy in favour of an opportunity choice had been generated by the researcher's intervention in participants' thought processes over the questionnaire. Provided that the figure obtained was less than the change in 'no views' then it could be used as a surrogate measure reflecting the effect of intervention, since the change in 'no views' incorporated other factors. The results of this procedure are shown for the various groups of participants in Table 11.5. The overall consolidated result for all participants showed that only 5.1% of participants could be presumed to have been influenced in their final scenario choices because of intervention in their thought processes, thus implying that the existence of other factors had a greater effect on their judgement. The Key SA Ports group was 8.3%.

The UK Ports group was high at 20%, but this was due to unusual responses. For the Stakeholder Group, the surrogate measure of intervention of 17.6% was greater than the change in 'no views'. From the pattern of responses outlined in Section 2.1 it was assumed that the questionnaire had not adequately allowed for differing shades of opinion, leading to an unrepresentative use of 'no views' to answer questions.

Thus it seemed that there had been some intervention by the researcher in participants' thought processes. However, at an overall figure of approximately 5%, but a more likely 8% because of consolidation effects, this did not materially affect results.

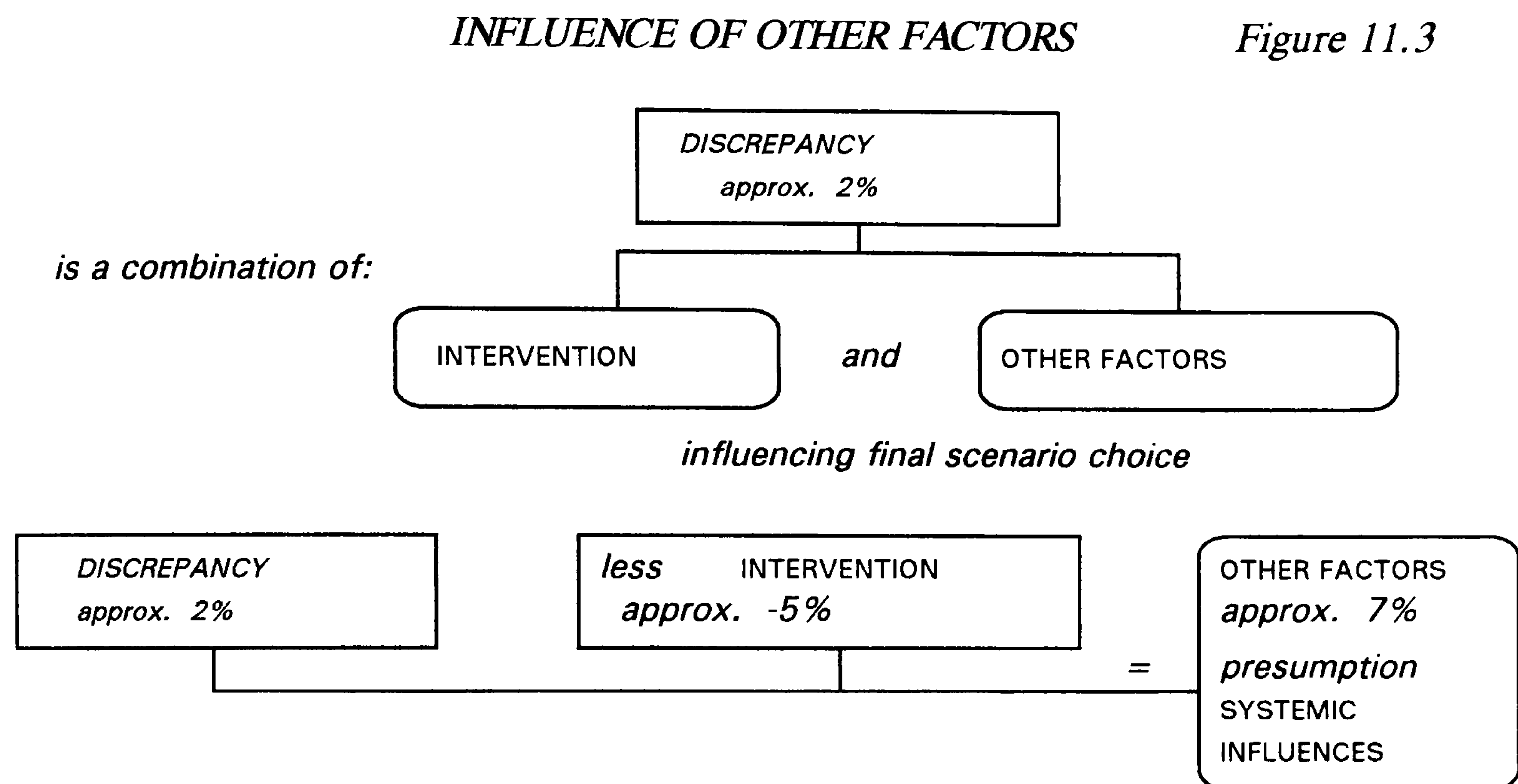
Nevertheless, some qualification of the results was advisable.

INTERVENTION Table 11.5

EXAMPLE OF SURROGATE INTERVENTION MEASURE		ALL PARTICIPANTS						Table 11.5
SECTION 1 - ROLE OF PORTS		interesting	obvious	irrelevant	absurd	no views	total	
UK PORTS		5	8	2	0	1	16	
SA PORTS		5	9	0	0	0	14	
UK & SA RELATED BUSINESSES		0	6	0	0	0	6	
UK ACADEMIC		2	1	0	0	0	3	
majority		12	24	2	0	1	39	
		92.3%	61.5%	5.1%	0.0%	2.6%		
		(i)	(ii)	(iii)	(iv)	(v)		
SECTION 4 - SCENARIO PREFERENCE		opportunity	mixture	threat	no views	sub-total		
UK PORTS		6	6	1	3	16		
SA PORTS		7	6	0	1	14		
UK & SA RELATED BUSINESSES		2	4	0	0	6		
UK ACADEMIC		1	1	1	0	3		
		16	17	2	4	39		
		41.0%	43.6%	5.1%	10.3%			
		(vi)	(vii)	(viii)	(ix)			
92.3%	of participants thought there was potential for conflict {(i) + (ii)} (i.e. believed this was a fair summary) Research expectation 1 was for opportunity preference, thus interesting/obvious ratings implied rejection (i.e. threat preference) and irrelevant/absurd ratings implied confirmation (i.e. opportunity preference)							
41.0%	however, believed that conflict could be overcome - opportunity assessment (vi)							
43.6%	however, believed that conflict could be contained - mixed assessment (vii)							
5.1%	however, believed that conflict may not be containable - threat assessment (viii)							
10.3%	expressed no overall verdict (ix), but gave views on aspects of the scenarios							
SURROGATE INTERVENTION MEASURE								
ASSUMPTION - challenge has apparently reduced participants' certainty by 7.7% {(ix) - (v)} (i.e. rise in no views) but, if obvious ratings = mixture choice, and interesting ratings = opportunity choice; then did intervention provoke a further change in opportunity scenario by INFLUENCING final mixture choice?								
						(vi) - {(iii) + (iv) + (i)} = 5.1%		

2.3 Influence of Other Factors

It was assumed that the measure of discrepancy would be the combined effect of intervention and other factors. Therefore having established a measure of intervention, then the extent of other factors influencing final scenario choice would simply represent the difference between the figures obtained, since these factors would act to reduce the uncertainty caused by the researcher's intervention. This assumption is depicted in Figure 11.3.



On this basis, the 'other factors' figure was calculated as shown in Table 11.4. The overall consolidated result for all participants showed that as a surrogate measure only 7% of participants' choices could be presumed to have been influenced by other factors, thus implying that the scenarios provided were a comprehensive picture of likely future states. The Key SA Ports group was 10.4%.

The UK Ports group was high at 42.5%, but again this was due to unusual responses. However, numerous comments were received from this group and supplemented by correspondence and interview. Regarding the Stakeholder Group, the surrogate measure of 7.3% was a reflection of the questionnaire format generating an unusual pattern of 'no views' answers to questions.

Thus it seemed that there had been some degree of influence on participants' choice by other factors which was revealed by analysis of their comments. This surrogate measure was not entirely satisfactory since it bore no relation to the number of comments made by a particular participant, or the content of the comment, i.e. whether it amplified a scenario point arising from intervention, or whether it was raising a new scenario point, i.e. arising from the participant's mental model. Further, the calculation method did not allow for other factors that were raised by participants who did not exhibit unusual scenario choices.

Nevertheless, subjectively this figure seemed to be of about the right level when analysing participants' comments. At an overall figure of 7%, but a more likely 10% because of consolidation effects, the presence of other factors did not materially affect results, since they tended to compensate for researcher intervention.

2.4 Methodological Research Expectation

Having considered the various aspects of Bias, it was possible to address:

(Research Expectation - 3)

decision-makers' judgements of opportunity/threat scenarios that address future effect uncertainty ought to be the outcome of their Bias-free holistic perceptions.

Broadly, this Research Expectation was supported in that Section 1 confirmed holistic judgements had been made and there was no evidence of major levels of Bias. Nevertheless, it seemed that there was cause to qualify interpretations derived from the base data. However no satisfactory measure could be obtained. The best that could be achieved was a surrogate measure that indicated compensatory effects on participants' judgements were present.

Overall these amounted to small numbers in the order of 2%, but individually these compensatory effects had some potential to distort the interpretations of the base data. Hence any interpretation from a Strategic Choice Perspective could not claim to have been supported by the data. Nevertheless, it was probable that the concepts and propositions had received some endorsement by participants' judgements.

Tracking the effects of intervention and other factors revealed a basic incomparability between the participant groups if numerical analysis solely was used. The effects of erratic 'no views' choices, small numbers and compensatory consolidation all meant that it would be misleading to identify the strength of endorsement for concepts and propositions purely by numbers. A common measure was required in order to compare results of groups and countries. Accordingly the following method was devised to qualify interpretations as being 'strong inferences' that could be endorsed by the data obtained by the Multiple Scenario Questionnaire.

3/ ASSESSMENT PARAMETERS

The solution adopted to the problem of qualifying interpretations was to create assessment parameters for the base data. These effectively led to specifying bands of strength of endorsement within each group, based on the general principle that the overall strength of opinions could be classified as being high, medium or low. These bands had numerical values that were specific to each participant group. Consequently, strength of endorsement for interpretations was translated from quantitative measures to qualitative measures, avoiding spurious accuracy and

unjustifiable conclusions since various factors may have influenced participants' perceptions. By creating broad assessment parameters a greater degree of confidence in inferences from the results was achieved.

Besides ensuring comparability between groups which had participants of differing expertise in different countries, this method had the effect of suppressing the influence of erratic 'no views' choices within each group. It also had the effect of minimising influences of intervention and other factors. The only effect these influences could exert was if they forced a group result from one band into another on consolidation. Firstly, it would take a significant effect to achieve this, and secondly, a comparison between groups would show up any inexplicable results, as would comparison to the overall consolidated results for all participants.

Translating the notion of assessment parameters into specific bands was not a simple matter. An arbitrary selection of bands could not be made, given the differing composition of the groups and hence the differing levels of endorsement they would exhibit. There had to be some logic in a choice of bands that applied to all the groups but also recognised their individual characteristics. An assumption of rationality in participants' choices was made, i.e. that their initial rating of a potential for conflict (Section 1 of the questionnaire) would be reflected in their favoured opportunity/threat scenario. This assumption was in accordance with the conclusion in Section 2.1 that participants had made a reasoned judgement, since the overall discrepancy in actual versus expected choices was only approximately 2%.

By comparison of various aspects of participants' initial choices to their final favoured scenario, it was possible to arrive at generally applicable assessment parameters that reflected the unique results of each group, but still ensured comparability between groups. An example of the process adopted for calculating these 'strength bands', and the prime assumptions made in order to set the parameters, is given in Table 11.6. This example is based on the data for all participants contained in Table 11.5. In effect, this was a 'best fit' solution since certain of the assumptions implied that, irrespective of scenario content, a participant would not change his views over the course of the questionnaire.

The expected absolute maximum and minimum levels of endorsement could be calculated. However, given the differing judgements shown within, and across, the groups, it would not be valid to compare the strength of endorsement solely by this measure. Instead, a probable maximum measure was calculated which would act as a benchmark for strength of endorsement, i.e. above this measure would imply exceptionally strong endorsement, whereas below this would imply a lesser strength of endorsement. This was then refined to create a more indicative measure of three bands of strength. This would enable a better comparison of endorsements between the groups for analysis from a Strategic Choice Perspective.

Table 11.6

EXAMPLE OF METHOD FOR CALCULATING COMPARATIVE ASSESSMENT PARAMETERS				ALL PARTICIPANTS		Table 11.6	
ASSUMPTIONS		(see Table 11.5 for source data) ENDORSEMENT					
the majority threat perceptions will exceed {(vii) + (viii) + (ix)} - {(ii) + (v)}		-5.1 %		(sets upper limit for negative parameter)			
the majority opportunity preferences will exceed (vi) - {(iii) + (iv) + (i)}		5.1 %		(sets lower limit for positive parameter)			
the majority opinions will not exceed {(vi) + (vii)}		84.6 %		(sets maximum limit = both opportunity elements)			
the majority opinions will exceed {(iii)}		61.5 %		(sets minimum limits = mixture only)			
a more probable majority opinion is {(i) + (ii) - diff (ii)-(vii)}		74.4 %		(reflects perceptions & shifts provoked by questions)			
the majority expressed confidence will exceed {(ii) + (iv)}		61.5 %		(minimum = strong views of obvious/absurd)			
assumed		{ expected maximum endorsement					
strength of		{ probable endorsement					
endorsement		{ expected minimum endorsement					
		{ parameter = two thirds probable strength					
		{ parameter = mid point probable strength					
		{ parameter = one third probable strength					
assumed		{ favoured threat scenario vs. initial reaction					
potential		{ favoured opp. scenario vs. initial reaction					
source		{ parameter = mid point split					
of conflict							
FOLLOWING REORGANISATION OF BASE DATA TO REFLECT ANALYSIS GROUPS, THIS PROCESS WAS REPEATED, LEADING TO:							
ASSESSMENT PARAMETERS		ALL STAKEHOLDER		KEY		KEY	
(for group comparisons)		PARTICIPANTS (other ports		UK		UK & SA	
		rel. bus. & acad.)		PORTS		PORTS	
strength of support:							
primary		70 - 85 %	67 - 94 %	63 - 70%	75 - 92%	70 - 77 %	
secondary		66 - 70 %	63 - 67 %	56 - 63 %	67 - 75%	62 - 70 %	
tertiary		61 - 66 %	59 - 63 %	50 - 56%	58 - 66%	54 - 62 %	
potential source of conflict:							
strong		> +/- 5.1%	> +/- 17.6%	> +/-20.0%	> +/- 8.3%	> +/- 4.5%	
moderate		between these values					
weak		< +/- 2.6 %	< +/- 8.8 %	< +/-10.0%	< +/- 4.2%	< +/- 2.3 %	

The same process was applied to the other participant analysis groups and worked well in practice, enabling sufficient confidence to describe interpretations and conclusions drawn as '*strong inferences*'.

This allowed for summarisation of those concepts and propositions that were endorsed by an analysis of the base data. This summation could then be used for modelling purposes, i.e. to identify the characteristics of a 'Long-term Strategic Service Industry' from a sound analysis of the research data base. In other words only those concepts and propositions that had been endorsed by decision-makers would be modelled - if not then they could be discarded or held back for further research.

4/ METHODOLOGICAL GOAL AND RESEARCH QUESTION

The subject goals for the research implicitly presumed that a suitable methodology was available in order to assess what was the likely effect of structural reform as perceived by decision-makers. Considering the practicalities of achieving these goals led to the methodology Research Objective, which was achieved in Chapters 8 and 9. It also led to the identification of the first methodology Goal (which was achieved in Chapter 9) and the second Goal:

to test the data collection technique in practice.

This required identifying and testing a methodological Research Assumption and Expectation. Since these were confirmed, with a proviso, this goal was achieved. This enabled the methodological question to be addressed:

(Key Question - 3)

How can decision-makers' perceptions of the potential future outcomes of structural change be gathered and analysed to demonstrate the characteristics of a 'Long-term Strategic Service Industry' model?

This chapter provides an answer in that Multiple Scenarios assessed by means of a postal international Multiple Scenario Questionnaire will generate the relevant data. However, analysis in the absence of a Policy Delphi to confirm the base data is problematic because of the effect of Bias.

A method of comparison between participant groups was identified which ought to enable analysis from a Strategic Choice Perspective and summarisation to demonstrate these characteristics of a 'Long-term Strategic Service Industry' model.

The next Chapter addresses the subject Research Expectations in order to answer the subject Key Questions. If these could be answered satisfactorily, then the data could be analysed in order to achieve the subject goals (and hence completion of the scenario stages 8 to 10). The consideration in doing this was to examine the implications for the future role of agency and choice.

**CHAPTER 12 - RESEARCH EXPECTATIONS AND
THE FUTURE ROLE OF AGENCY AND CHOICE**

This chapter revisits the indications of the base data in Chapter 10 to determine what the implications were for answering the subject Research Expectations and subject Research Questions, following determination of the extent of qualification required as a result of Bias identified in Chapter 11.

The need for qualification was due to Bias which was in the order of 2%. However, there were indications that this figure arose from the compensatory effects of researcher intervention and the presence of other factors. Hence the conclusions drawn from the base data could only be described as 'strong inferences'.

As a result, a method of summarisation of the data was identified to enable comparison and contrast between the participant groups from a Strategic Choice Perspective. This analysis would help to explain the outcome of the subject Research Expectations and Questions. This explanation would be assisted by an analysis of participants' comments to help identify the systemic pressures on decision-makers which could lead to conflict.

Following the development of 'strong inferences' from the base data, the method of analysis of participants' comments is described. The base data is then summarised and combined with indications from these comments to explain decision-makers' role of agency and choice in structural change. The outcome demonstrates the overall characteristics of a 'Long-term Strategic Service Industry'.

1/ THE SUBJECT RESEARCH EXPECTATIONS

Table 12.1 presents the consolidated net favoured opportunity/threat scenario elements of the participant groups, and the overall calculated level of 'strong inferences' for the Research Expectations.

(The base data has been rearranged to enable perceptions of key decision-makers to be extracted as identified in Chapters 8 and 10. This provides both a national and international perspective. In the absence of a confirming Policy Delphi, there was little point in reporting a breakdown of perceptions between the ports members of the Stakeholders group and their employing key decision-makers. This facility had been included in the research design. Had a Delphi been concluded, this could have provided rich material in surfacing and understanding any dissenting perceptions between the 'followers' in the Stakeholder group and the 'leaders' in the Key Ports groups - this could have pointed to potential failure of the aims of structural change, if they viewed the relative importance of 'public' and 'private' interests differently from decision-makers when implementing the selection of strategy in a decentralised organisation.)

RESEARCH EXPECTATIONS

Table 12.1

RESEARCH EXPECTATIONS							Table 12.1
NET FAVOURED SCENARIO ELEMENT		ALL PARTICIPANTS	STAKEHOLDER (other ports rel. bus. & acad.)	KEY UK PORTS	KEY SA PORTS	KEY UK & SA PORTS	
(indicates Boundary-spanning area - Chapter 2)							
BACKGROUND - Q1							
potential conflict foreseen		92.3%	94.1%	80.0%	100.0%	90.9%	
no conflict foreseen		-5.1%	-5.9%	-10.0%	0.0%	-4.5%	
	majority	87.2%	88.2%	70.0%	100.0%	86.4%	
no views		2.6%	0.0%	10.0%	0.0%	4.5%	
BUSINESS CONDITIONS - Q2.1; 3.1							
opportunity		53.8%	52.9%	50.0%	58.3%	54.5%	
threat		-41.0%	-35.3%	-50.0%	-41.7%	-45.5%	
	majority	12.8%	17.6%	0.0%	16.7%	9.1%	
no views		5.1%	11.8%	0.0%	0.0%	0.0%	
DIVERSIFICATION - Q2.2; 3.2							
for diversification		43.6%	41.2%	50.0%	41.7%	45.5%	
against diversification		-48.7%	-47.1%	-50.0%	-50.0%	-50.0%	
	majority	-5.1%	-5.9%	0.0%	-8.3%	-4.5%	
no views		7.7%	11.8%	0.0%	8.3%	4.5%	
DECISION-MAKING - Q2.3; 3.3							
unrestricted		48.7%	52.9%	60.0%	33.3%	45.5%	
restricted		-43.6%	-38.2%	-35.0%	-58.3%	-47.7%	
	majority	5.1%	14.7%	25.0%	-25.0%	-2.3%	
no views		7.7%	8.8%	5.0%	8.3%	6.8%	

RESEARCH EXPECTATIONS

Table 12.1 (cont.)

<i>Table 12.1 (cont)</i>	ALL PARTICIPANTS <i>(other ports rel. bus. & acad.)</i>	KEY UK PORTS	KEY SA PORTS	KEY UK & SA PORTS
SELECTION OF STRATEGY - Q2.4; 3.4				
perception of future freedom	opportunity	opportunity	opportunity	opportunity
med/high confidence rating	70.5%	65.6%	75.0%	70.5%
no views	12.8%	12.5%	8.3%	13.6%
DECISION-MAKING - Q2.5; 3.5				
unconstrained		opportunity		
constrained	mixed		mixed	mixed
med/high confidence rating	70.5%	56.3%	83.3%	72.7%
no views	14.1%	15.6%	8.3%	13.6%
STRUCTURE - Q2.6; 3.6				
for decentralisation	60.3%	53.1%	66.7%	61.4%
against decentralisation	-26.9%	-28.1%	-25.0%	-22.7%
majority	33.3%	25.0%	41.7%	38.6%
no views	12.8%	18.8%	8.3%	15.9%
FINAL FAVOURED SCENARIO				
overall choice - opportunity	41.0%	20.0%	50.0%	36.4%
overall choice - mixed & threat	-48.7%	-50.0%	-41.7%	-45.5%
majority	-7.7%	-30.0%	8.3%	-9.1%
no views	10.3%	30.0%	8.3%	18.2%
OVERALL CALCULATED LEVEL OF STRONG INFERENCES FOR RESEARCH EXPECTATIONS				
1(a) - improving governance	12.8%	0.0%	16.7%	9.1%
1(b) - adaptive specialisation/generalisation	0.0%	25.0%	-33.3%	-6.8%
2 (a) - voluntaristic managerial philosophy	-0.3%	2.0%	-4.2%	-1.4%
2 (b) - decentralised organisational structure	37.4%	32.0%	47.1%	40.7%

(see Chapter 9, Section 4, for analysis criteria)

From the analysis specification of Chapter 9, the strong inferences for the Research Expectations have been calculated and expressed as percentages. These percentages should be viewed with caution as they are subject to Bias in the order of plus or minus 2% overall, but as identified in Chapter 11, researcher intervention was in the order of 5% and other factors in the order of 7%. Nevertheless, they serve to support the broad Research Assumption of a Boundary-spanning area.

(Research Expectation - 1a)

Structural change ought to be seen as improving 'public interest' governance.

Overall, there was a degree of endorsement for this expectation, but it was less than would be necessary to be confident that structural change could move 'public interest' outside the Boundary-spanning area. Between the groups, Key SA Ports could be inferred as seeing some improvements, as could the Stakeholder group.

This Research Expectation was not confirmed.

(Research Expectation - 1b)

achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being necessary to meet 'public interest' considerations in a port.

Overall, this expectation could be inferred as being endorsed since the calculated percentages placed it firmly in a Boundary-spanning area (for all participants and the Stakeholder group.) However there was a clear divergence between Key UK Ports and Key SA Ports. The Key UK Ports' positive figure placed this expectation at the opportunity end of the Boundary-spanning area, i.e. favouring adaptive specialisation, whereas the Key SA Ports' negative figure placed this expectation at the threat end of the Boundary-spanning area, i.e. favouring adaptive generalisation.

The implication was that this reflected the differing demands of stakeholders in the differing public trustee circumstances of these countries, i.e. the UK has many competing ports, while SA has few ports but with both national and international economic criteria (they act as a gateway to large hinterlands and land-locked countries).

This Research Expectation was confirmed.

(Research Expectation - 2a)

a voluntaristic managerial philosophy and decentralised organisation structure ought to be perceived as being able to meet 'public interest' considerations in a port.

Overall this Research Expectation was not confirmed, contrary to the indications from the base data (discussed in Chapter 10). The calculated percentages placed managerial philosophy firmly in the middle of the Boundary-spanning area, rather than at the

voluntaristic end as indicated and expected. There were few differences between the groups. The inference was that a blend of voluntaristic and deterministic approaches are likely to be required.

This was an important disconfirmation since it demonstrated the complexity of management in a Boundary-spanning area. Whittington (1988) drew attention to a prevailing dichotomy between voluntarist and determinist approaches to strategic management, arguing that it was too simple and this simplicity had dangerous consequences for understanding the Strategic Choice Perspective. The inference was that misapplication of either approach could jeopardise 'public interest' in the future in both countries, and hence internationally. Consequently, a key feature of a 'Long-term Strategic Service Industry' was likely to be its unique managerial philosophy.

(Research Expectation -2b)

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

Overall, and between the groups, this Research Expectation was confirmed. However, there was a difference between the Key UK Ports and Key SA Ports groups with the latter being more inclined to favour decentralisation. The inference is that the likely structure was well on the decentralised edge of a Boundary-spanning area. It was the researcher's perception that the stronger SA choice of decentralisation was a reaction to the heavily centralised structure of that country, and the UK judgement was more indicative of likely future structure, i.e. not wholly decentralised but following these principles where consistent with meeting the 'public interest' concerns of stakeholders.

2/ THE SUBJECT RESEARCH QUESTIONS

Having established strong inferences for the Research Expectations, it was possible to identify strong inferences for the subject Key Questions:

(Key Question - 1)

are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

So far as the future UK and SA ports industry was concerned, the strong inference was "yes", as evidenced by Research Expectation 1(b) inferring that constraints on strategy were likely because of a perceived need to balance adaptive specialisation and generalisation; as evidenced by Research Expectation 1(a) inferring that 'public interest' was likely to feature in governance considerations. Hence the future environment was likely to be constraining.

(Key Question - 2)

so what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

So far as the future UK and SA ports industry was concerned, the strong inference was that it would be likely to be a blend between voluntaristic and deterministic approaches to strategy selection, as evidenced by the strong inference of Research Expectation 2(a); and an organisational structure based on decentralisation principles, but not wholly decentralised, would be likely, as evidenced by the strong inference of Research Expectation 2(b). Hence the future environment was likely to be partially externalised.

The second Research Question implicitly raised the issue of what would be the likely role of international ports' decision-makers acting as agents and their selection of strategy. Examining this from a Strategic Choice Perspective would help in understanding the strong inferences from the Research Expectations regarding the environment.

It would also enable the achievement of the second subject Goals (2a and b) which were to assess the potential impact on a strategic corporate plan and organisational structure.

The first stage in this was examining the comments made by participants to determine the influence of stakeholder power that could constrain selection of strategy.

3/ ANALYSIS OF PARTICIPANTS' COMMENTS

In Chapter 1 it was identified that the core managerial issue arising from structural change was the effect on the creation or selection of matters for a strategic corporate plan. Effectively, the design of a corporate plan was a process of selection of strategy. The Strategic Choice Perspective considered three key issues, which needed to be analysed from the participants' comments:

the future role of agency and choice in organisational analysis;

the future nature of the organisational environment;

the future relationship between organisational agents and the environment.

A total of 204 comments were made by participants, which were arranged into three comprehensive groups for analysis purposes:

- 1/ amplifying the multiple scenario factors presented;
- 2/ raising further related factors which could be included in the scenarios;
- 3/ factors relating specifically to the Multiple Scenario Technique.

All of the participants made some comments covering one or more factors which could have an effect on port operations in the future. Examples of these comments, which were at varying levels of abstraction, have been given throughout the thesis. The frequency of comments varied according to the personal characteristics of the participant - some made general observations, some made numerous detailed comments. These comments ranged from short phrases, one line sentences, and paragraphs written on the questionnaire, through to factors raised by correspondence.

Nevertheless, all comments were relevant to the research and could be used to inform the Strategic Choice Perspective. An analysis of these comments would show if there was any evidence of participants 'hedging their bets', being totally truthful or merely saying what they felt would be acceptable in their assessments. It would also serve to illustrate the full potential of the Multiple Scenario Technique which had uncovered unexpectedly high 'public interest' constraints from a numerical analysis.

The comments were grouped into:

- 1/ a majority of comments which related to general issues which affected the future of the ports industry as a whole, i.e. relevant to both countries for the discernible future - overall this was 89.2% of comments;
- 2/ a minority of comments which related to individual ports' current concerns within one country. These might reflect a 'discounting the future' bias, but were more likely to be 'advance warning signals' and were accordingly analysed on this presumption - overall this was 10.8% of comments;
- 3/ following repeated review of both of these groups of comments a small element of methodological concerns was extracted (these are analysed in Chapter 11).

This prime classification was the best that could reasonably be achieved for the factors raised which related to the multiple scenarios or the technique. Comments regarding current concerns were disregarded for further analysis since they did not relate to the 'futures' emphasis of the research. These comments were used instead to illustrate points in the thesis.

Comments relating to general issues were interpreted according to their tone and the ratings selected in the questionnaire by participants (e.g. interesting, obvious,

irrelevant, absurd - see Chapter 9 for the interpretation criteria for these classifications), and classified into:-

- opportunity;
- mixed opportunity and threat;
- threat.

The challenge to assumptions produced a strong response and the analysis of these reasons was not simple. The number of interpretations that gave some insights into participants' thinking was high. It was found that the cryptic nature of many comments meant that previous experience within the industry was relied on to interpret the comments, i.e. to understand what it was the participants were trying to say.

Consequently, an inductive and iterative process of understanding the influences of stakeholder power represented by each phrase of a particular comment was required. This exposed the inherent complexity and uncertainty of international structural change caused by the extent of stakeholder power.

Each of these comments was assessed according to the frequency with which the following broad systemic influences (identified in Chapter 5) were raised in order to pinpoint the source of the concerns. These systemic influences reflected the extent of stakeholder power to influence decision-making. The rationale for this approach to the analysis was that decisions would be required to take advantage of an influence, or to circumvent its future effect on port operations, in response to events instigated by stakeholders.

Consequently, the frequency with which a particular systemic influence was raised would be a surrogate measure of the extent of future stakeholder power. This power could be preventative, e.g. local resident pressure groups acting to have port activities curtailed at night because of noise, or cautionary, e.g. decision-makers acting to change proposed revisions to a port dues schedule to avoid a stakeholder appeal to the Secretary of State.

The greater the extent of stakeholder power, the greater the reduction in freedom of selection of strategy for decision-makers. Hence the greater the reduction in freedom, the greater the perceived level of threat from:

National systemic influences:

- Political system;
- Legal system;
- Economic system;
- Location system.

Local systemic influences:

Commercial system;
Social system.

Functional systemic influence:

Operational systems.

Administrative systemic influence:

Managerial systems.

Each individual comment was analysed to determine which systemic influence could best describe the broad nature of the particular factor being raised. Comments could be read in numerous ways and an experiential approach was necessary to determine allocation to one or more of the systemic influences. This meant that allocation of factors could not be independently checked, unless the checker had substantial industry experience at a senior level and an awareness of differing international cultures and concerns.

The comments had been entered in a word processing package for data base purposes according to the overall participant grouping for the Delphi feedback (UK and SA Ports, Related Business and Academic). The relevant systemic influences were entered after each phrase of the comment. This process followed the general guidelines on coding of Miles and Huberman (1994) and continued until the researcher was confident that all comments had been comprehensively examined for meaning. During this process some methodological concerns emerged which were coded according to their content and are discussed in Chapter 11. The allocations were then individually entered into a spreadsheet package for counting and consolidation.

This process effectively tested for the existence of the systemic influences identified in Chapter 5 and could be used to measure the influence on all participants' judgements of the state, effect and response elements contained in the Multiple Scenario Questionnaire.

3.1 Using Participants' Comments for Understanding

The comments could also be used to inform the Strategic Choice Perspective. Having established a classification of participants' comments by systemic influences, it was then possible to use this to help understand the extent of stakeholder power for each concept or proposition in a corporate plan. The concepts and propositions were reviewed to determine which one or more of the systemic influences would be appropriate to a particular concept or proposition. These are shown in Section 2.1 of Chapter 9. This meant that they were classified by systemic influence.

Participants' comments on general issues had also been classified by systemic influences to help understand their judgements of the scenarios. It was conceivable that these comments could also be illustrating the concepts and propositions identified from the literature search, which would help to explain the appropriateness of the Strategic Choice Perspective for model building.

The outcome of a further analysis of the comments to see if they could in fact be reinterpreted would imply that the comments and propositions could be illustrated by examples provided by participants. It would also provide indications as to whether structural change was perceived to pose an opportunity, a threat, or a mixture of the two, their organisational environment and decision-making. This qualitative explanation would help to interpret the quantitative results obtained from an analysis of participants' judgements. The procedure adopted to analyse the participants' comments was relatively simple, but laborious, and is depicted in Figure 12.1.

The data base on the word processor package which had the participants' comments analysed by systemic influences and opportunity/mixed/threat classifications was repeatedly copied for each individual concept and proposition. Comments which were irrelevant were deleted, and the remaining comments were subjectively examined to see if they were illustrating that particular concept or proposition. By an iterative process of reduction a kernel of comments was left which reflected the essence of the particular concept or proposition. As before, these were entered on a spreadsheet for counting and consolidation purposes, with a test audit.

A significant aspect of the consolidation procedure for concepts and propositions was to interpret these results solely according to the overall count and not to analyse them by participant grouping of country etc. The rationale was that these were third level analyses, i.e. they were interpretations of interpretations and thus subject to researcher bias. Further, the procedure led to an erratic coverage of factors since not all participants had made a relevant comment on a particular concept or proposition.

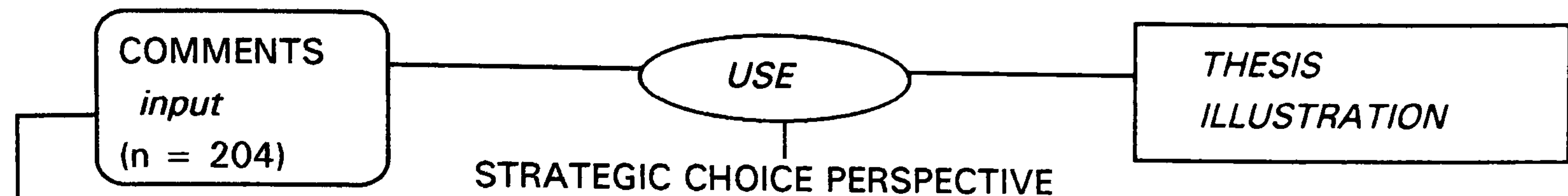
This meant that the balance between ports decision-makers' and other participants' perceptions of power exerted by stakeholders and freedom in selection of strategy had been compromised. Nevertheless, the available information was relevant and useful. These two concerns meant that whatever could be gleaned from the comments was grouped together to obtain an insight into future effects of structural change and to help understanding of the value of the concepts and propositions for model building.

By this process of sequential classification, the usefulness of the original comments was greatly increased with a commensurate increase in difficulty in the overall workload. The process was laborious and open to minor allocation and recording errors, thus auditing was required. However, the volume of material meant that a full audit was infeasible and only test audits could be undertaken to ensure accuracy of the input.

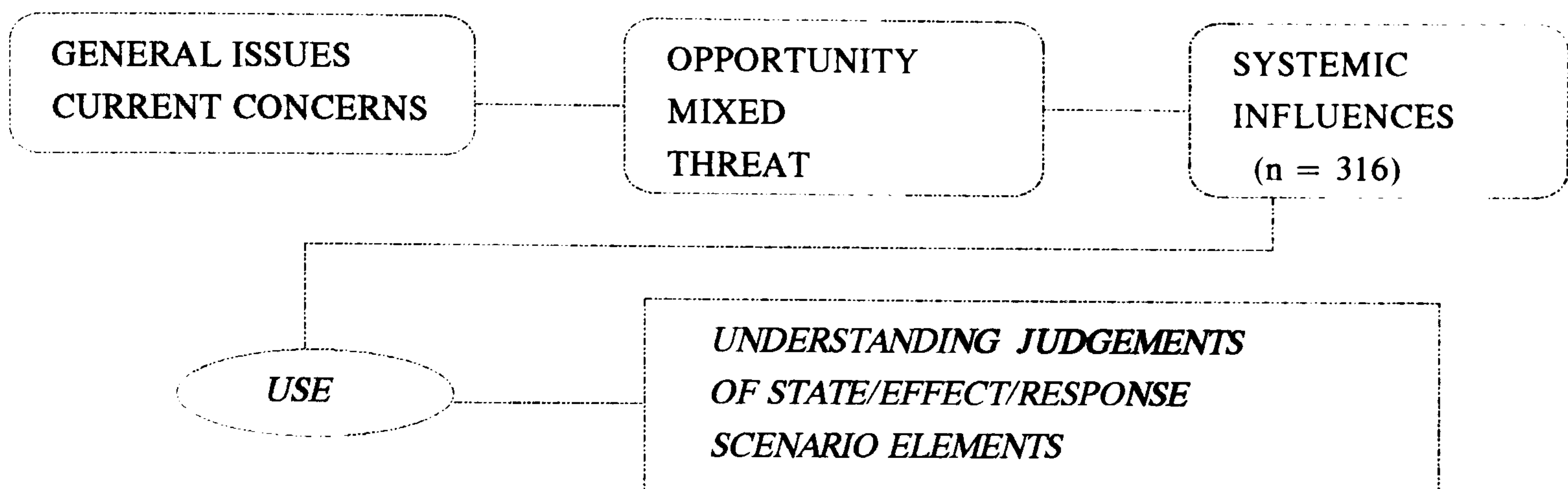
For example, when the original 204 comments were first divided into current or general concerns a total of 316 general factors were identified within these comments for further analysis from a Strategic Choice Perspective.

QUALITATIVE ANALYSIS OF PARTICIPANTS' COMMENTS *Figure 12.1*

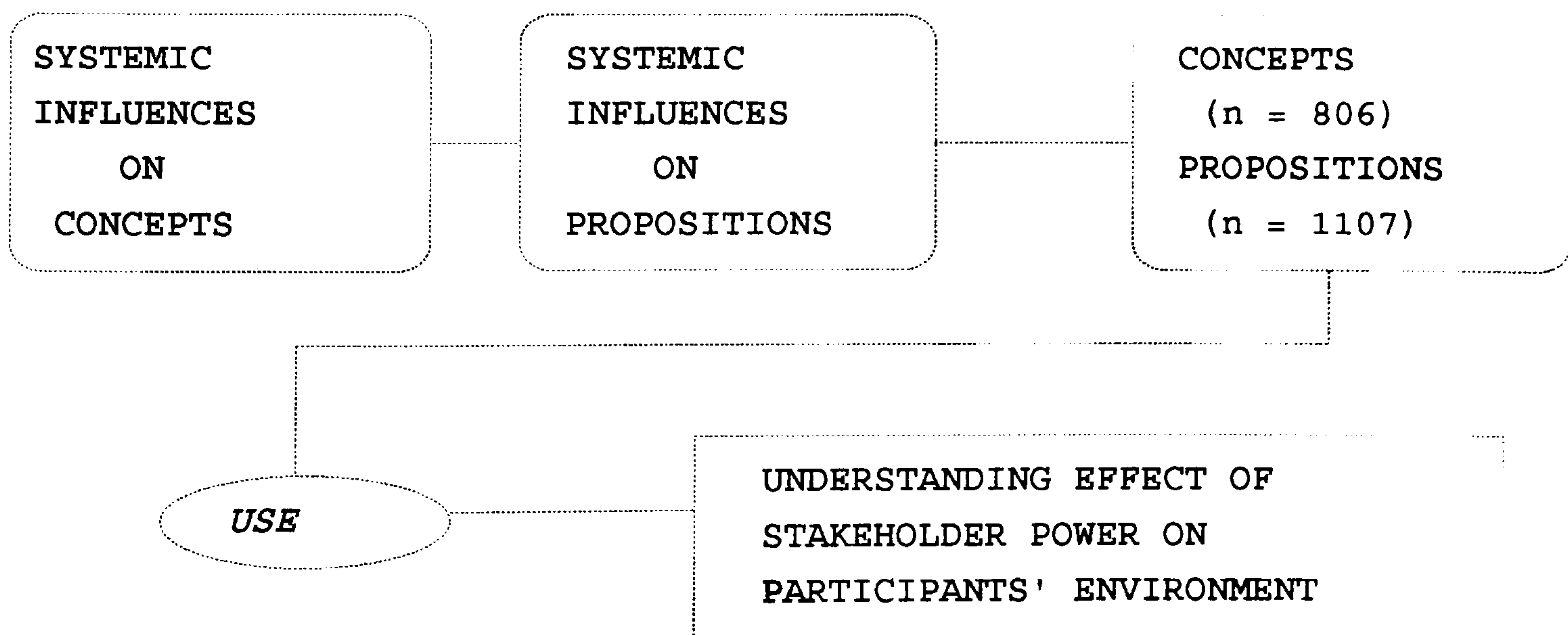
1st Level Analysis



2nd Level Analysis - future role of agency and choice



3rd Level Analysis - future environment - nature and relationship



4th Level Analysis



These 316 factors were then further subdivided into opportunity, mixed or threat perceptions relating to the future role of agency and choice. They were then repeatedly reviewed for differing interpretations that could be applicable.

In all, the comments were assessed a further 33 times. This gave a total of:

806 interpretations for concepts on the future nature of the organisational environment;

plus 1107 interpretations for the propositions on future the relationship between organisational agents and the environment;

plus further methodology interpretations and consolidation interpretations reported in Chapter 11.

The results of this classification procedure demonstrated how grounded theory coding processes (Strauss and Corbin, 1990) can be helpful in explaining the unexpected, particularly when blended with the 'a priori' concepts and propositions. It also served to demonstrate the extent to which meanings could be read into the relatively short comments generated by the Multiple Scenario Technique.

4/ THE FUTURE ROLE OF AGENCY AND CHOICE

The first influence of stakeholders in a future strategic corporate plan is on the role of agency and strategic choice. This determines the appropriate future managerial philosophies and priorities for action, i.e. the identification of the principal components and underlying assumptions in the plan that are likely to be affected by structural change.

To understand how this influence could affect the corporate plan it was necessary to summarise the base data into a form that illustrated the judgement of participants on core assumptions of the plan.

The need for summarisation was identified in Chapter 11 as enabling comparison between groups that avoided spurious accuracy and unjustified conclusions that could arise if the quantitative measures solely were used. The process of summarisation involved translating the quantitative measures into qualitative measures through applying the assessment parameters (identified in Chapter 11) that gave a strength of endorsement for each interpretation that could be drawn from the net favoured opportunity/threat scenario elements, i.e. the separate questions in the Multiple Scenario Questionnaire. From this strength of endorsement it was possible to determine whether a group was favouring a particular scenario, i.e. opportunity, mixed or threat.

A summary of the results of this analysis enabled each group to be compared, as well as enabling inferences to be drawn as to how the groups judged each scenario element. This enabled a greater understanding of how the final favoured scenario was arrived at, since the quantitative measures on their own were not providing the full picture. This was evidenced by Research Expectation 2(a); the indications in Chapter 10 showed it should have been endorsed, but further analysis in this chapter showed that it was not.

Table 12.2 illustrates the outcome of the summarisation process.

The base data was restated to reflect the participant groups, and was summarised as shown in the following worked example. The net favoured scenario elements are contained in Table 12.1 and the assessment parameters are shown in Table 11.6. These parameters were applied to the consolidated data in Table 12.1 in order to indicate constraints arising from 'public interest':

	<i>All Participants net scenario data Table 12.1</i>	<i>parameter Table 11.6</i>	<i>potential source of conflict</i>	<i>favoured scenario</i>
Conflict	87.2%	n/a	n/a	mixed
Business	12.8%	> 5.1%	strong	opportunity
Diversification	-5.1%	< -5.1%	moderate	mixed
Freedom	5.1%	> 5.1%	strong	opportunity
Strategy	opportunity	n/a	n/a	opportunity
Implications	mixed	n/a	n/a	mixed
Structure	33.3%	> 5.1%	strong	opportunity
Scenario	-7.7%	< -5.1%	n/a	mixed

(As this example shows, some discretion in application of the parameters is required when the base data values are on the borderline of categories in order to obtain an understandable overall picture (e.g. diversification could be viewed as strong which would take it into a threat rating, but this does not match the overall mixed scenario choice). High potential conflict ratings implied a favoured mixed scenario. The plausibility questions (selection of Strategy and decision-making Implications) did not lend themselves to parameter setting so the researcher's judgement of the overall effect was required - this was based on mode/medians and pattern of choices in the base data - Tables 10.7 and 10.9).

4.1 All Participants Group - Endorsements

This gives the following table (Table 12.2) which shows at a glance how the final favoured scenario developed from interim judgements. From this the influence of the 'public interest' can be inferred, i.e. the reasons why Research Expectation 2(a) - voluntaristic philosophy/decentralised structure ought to meet 'public interest' needs - was not confirmed.

<i>ALL PARTICIPANTS</i>		<i>Table 12.2</i>
SUMMARY - PLANNING ASSUMPTIONS	<i>Endorsement</i>	
	<i>Opportunity</i>	<i>Mixed</i>
Potential Conflict?		<i>yes</i>
Core business conditions - changing?	<i>yes</i>	
Diversification flexibility - likely?		<i>yes</i>
Freedom of decision-making - unrestricted?	<i>yes</i>	
Implications for selection of strategy - freedom?	<i>yes</i>	
Implications for decision-making - unconstrained?		<i>yes</i>
Decentralised organisational structure?	<i>yes</i>	
SCENARIO - Final choice:		<i>mixed</i>

Considering the All Participants group in Table 12.2, the inference was that agreement had been reached on the principal components of the plan (core business conditions and structure since these were in a strong parameter), and assumptions for the plan (freedom of decision-making for the same reason). However, the areas of potential conflict were identified as being the practical implications of decision-making and diversification (mixed assessment). These influences on the future environment were assessed as presenting a mixed opportunity/threat. The inference was that as a consequence, managerial actions could involve the application of power in some form to resolve conflict arising from the 'public interest' concerns of stakeholders.

The inference from the overall mixed scenario was that a structurally constrained opportunity faced the UK and SA transport industry, which was surprising in view of the popularity of restructuring. The questionnaire exposed differing perceptions between groups, but participants' comments from the UK and SA reflected this mixed scenario. An implication from the two national industries was that potential conflict applied internationally. These particular comments were analysed to identify the tone of the points raised, and the source of the structural constraints and stakeholder influences, in order to understand the implications for the future role of agency and choice.

4.2 Participants' Comments

The majority of comments concerning the operation of structural constraints (i.e. 'public interest') were made by the Key Ports groups, but the Stakeholder group also made a noticeable contribution. It should be emphasised that not all participants made the same number of comments; some made many, others made few.

<i>Participants</i>	<i>Key Ports</i>	<i>Other Ports</i>	<i>Business</i>	<i>Academic</i>	<i>Totals</i>
UK	79	31	66	26	202
SA	69	20	25	0	114
totals	148	51	91	26	316
	<i>46.9%</i>	<i>16.1%</i>	<i>28.8%</i>	<i>8.2%</i>	

When these comments were assessed according to their tone, the extent of structural constraints was possibly even greater than the mixed scenario choice had indicated:

Current And General Comments:

<i>Issues</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>	
current	8	17	9	34	10.8%
general	101	107	74	282	89.2%
totals	109	124	83	316	
	<i>34.5%</i>	<i>39.2%</i>	<i>26.3%</i>		

The higher element of threat in the comments added further credence to the inference that managerial philosophies could involve the application of power in some form to resolve conflict in a Boundary-spanning area. A large proportion of these comments related to systemic expressions of stakeholder power (identified in Chapter 5.):

Systemic influences

Government

political	12	20	32	10.1%
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Stakeholder power

legal	23	5	28	8.9%
economic	16	8	24	7.6%
location	4	10	14	4.4%
commercial	23	20	43	13.6%
social	5	4	9	2.8%

Agency

operational	22	8	30	9.5%
managerial	97	39	136	43.1%

totals	202	114	316
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Surprisingly, given that structural change arose from governmental action, political influences did not seem to be of major concern in stakeholder-agent relationships. The inference was therefore that national economic considerations could have little impact on decision-makers' selection of strategy.

However, the stakeholder power classification reflected the wider concern of stakeholder-agent relationships in the balancing of priorities in a future strategic corporate plan. Excluding geographical factors of location, a third of the influences on the future strategic corporate plan appeared to be concerned with stakeholders' considerations that were related to the agency role. This implied that a large element of the mixed scenario favoured could be tracked to manifestations of stakeholder power. The social considerations for recreational use of the port environs was low, but the tone of the comments made suggested that this could become a more pressing issue for future strategic planning.

The high proportion of managerial influences reflected the importance of selection of strategy in meeting the effects of structural change. The inference that managerial attitudes would involve the application of power in some form to resolve conflict in a Boundary-spanning area was further supported.

4.3 Stakeholder Group - Endorsements

The summarisation of perceptions for the Stakeholder group in Table 12.3 followed the same procedure adopted for All Participants (as did the Key Port groups).

<i>STAKEHOLDER Group</i>		<i>Table 12.3</i>
SUMMARY - PLANNING ASSUMPTIONS	<i>Endorsement</i>	
	<i>Opportunity</i>	<i>Mixed</i>
Potential Conflict?		<i>yes</i>
Core business conditions - changing?	<i>yes</i>	
Diversification flexibility - likely?		<i>yes</i>
Freedom of decision-making - unrestricted?	<i>yes</i>	
Implications for selection of strategy - freedom?	<i>yes</i>	
Implications for decision-making - unconstrained?		<i>yes</i>
Decentralised organisational structure?	<i>yes</i>	
SCENARIO - Final choice:		<i>mixed</i>

The results for this group were identical to the All Participants group. This raises the inference that managerial philosophies in a Boundary-spanning area are likely to be blended between voluntaristic and deterministic approaches since the areas of concern were diversification and operational decision-making.

4.4 Key UK Ports Group - Endorsements

For the Key UK Ports (Table 12.4) the perceived areas of concern over future effects of structural change differed from those of the Stakeholder group.

<i>KEY UK PORTS</i>		<i>Table 12.4</i>
SUMMARY - PLANNING ASSUMPTIONS	<i>Endorsement</i>	
	<i>Opportunity</i>	<i>Mixed</i>
Potential Conflict?		<i>yes</i>
Core business conditions - changing?		<i>yes</i>
Diversification flexibility - likely?		<i>yes</i>
Freedom of decision-making - unrestricted?	<i>yes</i>	
Implications for selection of strategy - freedom?	<i>yes</i>	
Implications for decision-making - unconstrained?	<i>yes</i>	
Decentralised organisational structure?	<i>yes</i>	
SCENARIO - Final choice:		<i>mixed</i>

The core business conditions were perceived as being unlikely to change, thus the inference was that the emphasis of the corporate plan would be on adaptive specialisation since structural change had not introduced further competition into an already competitive industry. The perception of unchanged diversification flexibility implied that adaptive generalisation would not be a major issue since there was likely to be little significant change to established structural constraints.

The role of the decision-makers as agents was not perceived to be constrained in the future. Nevertheless there appeared to some a degree of adaptive generalisation to meet stakeholders' future requirements, since potential conflict was foreseen.

An inference was that since future freedom in selection of strategy was likely to be high, existing competitive manoeuvring activities were likely to continue (and if the tone of comments were considered, this could well intensify).

4.5 Key SA Ports Group - Endorsements

A somewhat different picture was shown for Key SA Ports (Table 12.5) which were in the process of initiating structural change in an environment of low competition.

KEY SA PORTS		Table 12.5
SUMMARY - PLANNING ASSUMPTIONS	Endorsement	
	Opportunity	Mixed
Potential Conflict?		yes
Core business conditions - changing?	yes	
Diversification flexibility - likely?		yes
Freedom of decision-making - unrestricted?		yes
Implications for selection of strategy - freedom?	yes	
Implications for decision-making - unconstrained?		yes
Decentralised organisational structure?	yes	
SCENARIO - Final choice:	opportunity	

Diversification flexibility and freedom of decision-making appeared less likely to be affected by structural change. The small number of ports and the vast hinterland served implied that the stakeholder-agent role assumed greater importance in SA than it did in the UK. The inference was that an emphasis on adaptive generalisation was likely to be required in corporate planning because of the particular structural constraints which applied. Nevertheless, structural change seemed likely to raise the expectations of the commercial stakeholders, and potential conflict could constrain the role of decision-makers as agents. The inference was that constraints on selection of strategy were likely to be higher than in the UK, and a lesser focus on adaptive specialisation was implied.

4.6 Inferences for a Boundary-spanning Model

The consistent mixed scenario elements implied that in a Boundary-spanning area the role of agency and choice was likely to be influenced by stakeholder power in an environment where:

the future environment was likely to present a mixed opportunity/threat, hence a structurally constrained opportunity faced the UK and SA transport industry;

national economic considerations were likely to have little impact on decision-makers' selection of strategy, which was more likely to be concerned with stakeholder-agent relationships involving port users;

in the UK future freedom in selection of strategy was likely to be high and existing competitive manoeuvring activities were likely to continue. An emphasis on adaptive specialisation was likely in corporate planning;

in SA the freedom in selection of strategy was likely to be lower, and an emphasis on adaptive generalisation was likely in corporate planning;

managerial actions were likely to involve the application of power in some form to resolve conflict. The literature on voluntaristic strategic management could be identifying an appropriate philosophy, provided it could be modified to reflect the likely extent of stakeholder power.

5/ SUMMARY

Following the qualification necessary because of the presence of Bias, the base data was re-examined to confirm or deny the Research Expectations. Significantly, it was determined that a voluntaristic management philosophy was judged not to be likely to meet 'public interest' considerations in a Boundary-spanning area.

The Research Questions were answered as a result of addressing the Research Expectations. The 'public interest' was judged as likely to constrain future selection of strategy. A blend of voluntaristic and deterministic approaches to strategy and an organisational structure based on decentralisation principles, but not wholly decentralised, was judged likely to emerge.

To explain these findings, the data was re-analysed from a Strategic Choice Perspective of the future role of agency and choice. This revealed that the implicit power of stakeholders was likely to constrain future selection of strategy.

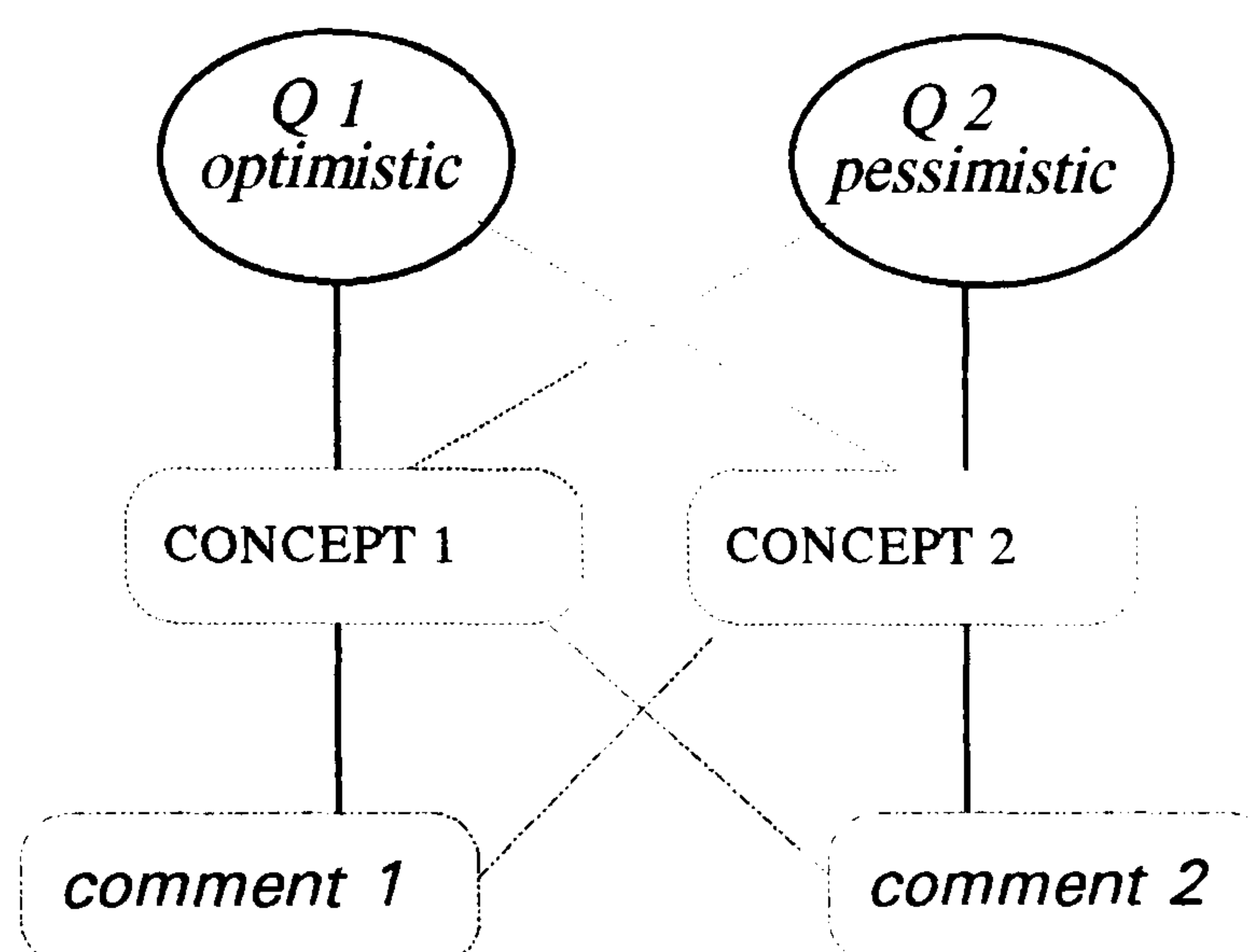
The next chapter approaches the Strategic Choice Perspective analysis results from the aspect of the future nature of the organisational environment. This identifies potential issues and tensions that ought to be considered in the corporate plan.

CHAPTER 13 - THE FUTURE NATURE OF THE ORGANISATIONAL ENVIRONMENT

The future nature of the organisational environment for the international ports industry was discussed in Chapter 4 (macro level structural constraints and freedom in selection of strategy in a Boundary-spanning environment) and Chapter 5, where the underlying operational level concepts were identified. The Multiple Scenarios Questionnaire was constructed so that these concepts could be interpreted from judgements of the scenario elements questions. The questions in the multiple scenarios were thus designed to assess the level of endorsement for the concepts in order to enable inferences to be drawn, as depicted in Figure 13.1 (which is based on Figure 9.3).

DRAWING INFERENCES FOR CONCEPTS

Figure 13.1



The drawing of inferences was dependant on the key presumptions underlying the construction of the questionnaire discussed in Chapter 9 and the analysis specification detailed in Section 2.2 of that chapter.

The second influence of stakeholders in a future strategic corporate plan was on the organisational environment. This determined the priorities for managerial attention in decision-makers' governance of a port in the 'public' and 'private' interests. To understand how this influence could affect the corporate plan, it was necessary to summarise the base data into a form that illustrated the relative importance of aspects of the environment (the concepts). This was measured by interpreting the judgements of participants as to whether or not structural change had increased or decreased the potential conflict that could be caused by a clash between 'public' and 'private' interests in these areas of the plan. The need for summarisation by translating quantitative measures into qualitative measures through applying assessment parameters to show strength of endorsement was identified in Chapter 11.

Tables 13.1 to 13.4 illustrate the outcome of the summarisation process utilising assessment parameters.

ASSESSMENT PARAMETERS - CONCEPTS

Table 13.1

Table 13.1		ALL PARTICIPANTS	STAKEHOLDER	KEY		KEY	KEY
		PARTICIPANTS (other ports rel. bus. & acad.)		UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
				UK	UK	SA	UK & SA
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				UK	UK	SA	UK & SA
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BOUNDARY-SPANNING ENVIRONMENT

Table 13.2

Table 13.2		ALL STAKEHOLDER PARTICIPANTS (other ports rel. bus. & acad.)		KEY UK PORTS	KEY SA PORTS	KEY UK & SA
ASSESSMENT OF CONCEPTS		Boundary-spanning environment				
Structural Constraints	concept endorsed?		high	high	high	high
	judgement	majority	70.5%	67.5%	77.1%	72.7%
		band	primary	primary	primary	primary
	opportunity/threat	strength	4.5%	7.5%	-4.2%	3.4%
		band	moderate	weak	weak	moderate
		opportunity	likely	likely	feasible	likely
	expressed confidence	threat	unlikely	unlikely	unlikely	unlikely
Selection of strategy	concept endorsed?		70.5%	65.0%	75.0%	70.5%
	judgement	majority	> min	> min	> min	> min
		band				
	opportunity/threat	strength				
		band				
		opportunity				
	expressed confidence	threat				
	concept endorsed?		moderate	high	moderate	moderate
	judgement	majority	67.9%	70.0%	62.5%	65.9%
		band	secondary	primary	secondary	secondary
	opportunity/threat	strength	-3.8%	-5.0%	-8.3%	-2.3%
		band	moderate	weak	moderate	weak
		opportunity	likely	likely	feasible	likely
	expressed confidence	threat	unlikely	unlikely	unlikely	unlikely
		majority	70.5%	65.0%	75.0%	70.5%
		strength	> min	> min	> min	> min

UNAFFECTED BY CHANGES IN STRUCTURAL CONSTRAINTS Table 13.3

Table 13.3		ALL		STAKEHOLDER		KEY		KEY		KEY	
ASSESSMENT OF		PARTICIPANTS		(other ports		UK		SA		UK & SA	
CONCEPTS				rel. bus. & acad.)		PORTS		PORTS			
Unaffected by Changes in Structural Constraints											
Public/Private Trustee	concept endorsed?		high	high	high	high	high	high	high	high	high
	judgement	majority	70.5%	67.6%	67.5%	77.1%	72.7%	72.7%	72.7%	72.7%	72.7%
		band	primary	primary	primary	primary	primary	primary	primary	primary	primary
	opportunity/threat	strength	4.5%	5.9%	7.5%	-4.2%	3.4%	3.4%	3.4%	3.4%	3.4%
		band	moderate	weak	weak	weak	moderate	moderate	moderate	moderate	moderate
		opportunity	likely	feasible	likely	likely	likely	likely	likely	likely	likely
	expressed confidence	threat	feasible	feasible	unlikely	likely	likely	likely	likely	likely	likely
		majority	70.5%	67.6%	60.0%	83.3%	72.7%	72.7%	72.7%	72.7%	72.7%
		strength	> min	> min	> min	> min	> min	> min	> min	> min	> min
Node	concept endorsed?		high	high	high	high	high	high	high	high	high
	judgement	majority	92.3%	94.1%	80.0%	100.0%	90.9%	90.9%	90.9%	90.9%	90.9%
		opportunity	likely	feasible	likely	likely	likely	likely	likely	likely	likely
		threat	feasible	feasible	unlikely	likely	likely	likely	likely	likely	likely
	expressed confidence	majority	70.5%	67.6%	60.0%	83.3%	72.7%	72.7%	72.7%	72.7%	72.7%
		strength	> min	> min	> min	> min	> min	> min	> min	> min	> min

UNAFFECTED BY CHANGES IN STRUCTURAL CONSTRAINTS Table 13.3 (cont.)

Table 13.3 (cont)									
ASSESSMENT OF CONCEPTS		ALL PARTICIPANTS		STAKEHOLDER		KEY		KEY	
		PARTICIPANTS		(other ports rel. bus. & acad.)		UK		SA	
						PORTS		PORTS	
Core Businesses	concept endorsed?								
	judgement	majority	moderate	moderate	low	high	moderate	moderate	
		band	66.0%	66.2%	55.0%	75.0%	65.9%	65.9%	
	opportunity/threat	strength	secondary	secondary	tertiary	primary	secondary	secondary	
		band	11.5%	7.4%	15.0%	14.6%	14.8%	14.8%	
	threat	band	strong	weak	strong	strong	strong	strong	
		threat	unlikely	feasible	unlikely	unlikely	unlikely	unlikely	
expressed confidence	majority	majority	70.5%	70.6%	65.0%	75.0%	70.5%	70.5%	
	strength	strength	> min	> min	> min	> min	> min	> min	
Peripheral Businesses	concept endorsed?								
	judgement	majority	moderate	moderate	low	high	moderate	moderate	
		band	66.0%	66.2%	55.0%	75.0%	65.9%	65.9%	
	opportunity/threat	strength	secondary	secondary	tertiary	primary	secondary	secondary	
		band	11.5%	7.4%	15.0%	14.6%	14.8%	14.8%	
	threat	band	strong	weak	strong	strong	strong	strong	
		threat	feasible	likely	unlikely	likely	feasible	feasible	
expressed confidence	majority	majority	70.5%	67.6%	60.0%	83.3%	72.7%	72.7%	
	strength	strength	> min	> min	> min	> min	> min	> min	
Tangential Businesses	concept endorsed?								
	judgement	majority	moderate	high	moderate	moderate	moderate	moderate	
		band	67.9%	72.1%	60.0%	68.8%	64.8%	64.8%	
	opportunity/threat	strength	secondary	primary	secondary	secondary	secondary	secondary	
		band	9.6%	5.9%	7.5%	16.7%	12.5%	12.5%	
	threat	band	strong	weak	weak	strong	strong	strong	
		threat	feasible	likely	unlikely	likely	feasible	feasible	
expressed confidence	majority	majority	70.5%	67.6%	60.0%	83.3%	72.7%	72.7%	
	strength	strength	> min	> min	> min	> min	> min	> min	

AFFECTED BY CHANGES IN STRUCTURAL CONSTRAINTS Table 13.4

Table 13.4							
ASSESSMENT OF CONCEPTS	ALL STAKEHOLDER PARTICIPANTS (other ports rel. bus. & acad.)			KEY UK PORTS	KEY SA PORTS	KEY UK & SA	
Affected by Changes in Structural Constraints							
Financial Pressure	concept endorsed?	majority	opportunity	opportunity	opportunity	opportunity	opportunity
		band	76.9%	76.5%	75.0%	79.2%	77.3%
	opportunity/threat	band	primary	primary	primary	primary	primary
		strength	6.4%	11.8%	10.0%	-12.5%	4.5%
		band	strong	moderate	weak	strong	moderate
		opportunity	likely	likely	likely	feasible	likely
expressed confidence	threat	unlikely	unlikely	unlikely	unlikely	unlikely	
	majority	70.5%	70.6%	65.0%	75.0%	70.5%	
	strength	> min	> min	> min	> min	> min	
Portfolio Pressure	concept endorsed?	opportunity	mixed	opportunity	mixed	mixed	mixed
		threat	feasible	feasible	likely	feasible	feasible
	expressed confidence	majority	unlikely	feasible	unlikely	unlikely	unlikely
		strength	70.5%	69.1%	62.5%	79.20%	71.6%
			> min	> min	> min	> min	> min
Environmental Management	concept endorsed?	majority	opportunity	opportunity	mixed	opportunity	opportunity
		band	72.4%	73.5%	72.5%	70.8%	71.6%
	opportunity/threat	band	primary	primary	primary	secondary	primary
		strength	2.6%	4.4%	7.5%	-10.4%	-2.3%
		band	weak	weak	weak	strong	weak

The base data of Chapter 10 was re-organised into participant groups, and consolidated and analysed to extract values for the concepts (as specified in Chapter 9). This was then summarised to compare and contrast the participant groups. The summarisation process was complicated by the two differing styles of questions - judgement-seeking and plausibility. Hence two differing assessment parameter classifications were required, as shown in Table 13.1, covering:

Judgement-seeking questions - potential source of conflict and strength of endorsement;

plausibility questions - likelihood of constraints and Bias check (because answers to these questions where participants had expressed a low confidence in their replies were discarded, it was felt necessary to confirm that the cross-interpretation of concepts between these questions was exceeding the minimum acceptable endorsement levels of the judgement-seeking questions.)

(The assumptions underlying these parameters were discussed in Chapter 11 - not all these concepts required both classifications of parameters since some were not tested in the scenario elements addressed by the plausibility questions.)

This meant that the researcher had to form an opinion on the message being imparted by these assessment parameters as to whether or not the concept was being endorsed, and if so, what the overall strength of endorsement was. Because the summarisation involved the researcher's opinion it was decided to show this clearly as a differentiation from the data, by creating separate endorsement categories of high / moderate / low. These were analogous to the strength bands identified in Chapter 11 of primary / secondary / tertiary. An opinion was also required as to whether the message implied an opportunity, mixed or threat influence on the future corporate plan, i.e. how decision-makers were likely to see the nature of structural change and their response options in altering the plan to take advantage of, or circumvent, the potential effects of this change.

A worked example of these opinions for All Participants follows.

1/ ALL PARTICIPANTS GROUP - ENDORSEMENTS

Using structural constraints as an illustration from summary Table 13.5, the question to be answered is whether or not it has been endorsed by the data as a concept. Referring to the section on structural constraints in Table 13.2, the first line says 'high'. This reflects the researcher's opinion. In order to understand how this opinion was arrived at, the data needs to be considered. The second line gives the majority endorsement as 70.5%. Referring to the assessment parameters in Table 13.1 for judgement-seeking questions shows that the strength of endorsement was 'primary', i.e. strongly endorsed. This was the first consideration.

ALL PARTICIPANTS

Table 13.5

CONCEPTS SUMMARY

	<i>Endorsement</i>		
	<i>High</i>	<i>Moderate</i>	<i>Low</i>
<i>Boundary-spanning environment:</i>			
Structural constraints	yes		
Selection of strategy		yes	
<i>Unaffected by changes in structural constraints:</i>			
Public/Private Trustee	yes		
Node	yes		
Core		yes	
Peripheral		yes	
Tangential		yes	
	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>
<i>Affected by changes in structural constraints:</i>			
Financial pressure	yes		
Portfolio pressure		yes	
Environmental Management	yes		

The second consideration was whether or not it was likely to be a source of potential conflict that ought to have priority attention in the corporate plan. The variation between opportunity and threat in the judgement-seeking questions over the course of the scenario was 4.5%. Applying the parameter indicated that a moderate opportunity preference was expressed. This implied further endorsement, but at diminished strength.

The third consideration was whether structural constraints were likely to influence selection of strategy and decision-making for existing operational activities. The plausibility questions indicated that an opportunity scenario was likely and a threat scenario was unlikely. The overall medium and high ratings of confidence in answers was 70.5%. Applying the parameter showed that this was higher than the acceptable minimum. This implied further endorsement, but at an increased strength.

Given this information, the researcher's opinion was that structural constraints as a concept had been established. It was being acted upon in the corporate plan and hence had high endorsement. The inference was that it would continue to influence strongly the overall tone of the plan.

Using portfolio pressure (Table 13.4) as an illustration of the differing assessment caused by the plausibility questions, then the question to be answered was whether this concept was endorsed. This was only tested by plausibility questions since it

related to the make-up of the port, i.e. as business units (e.g. cargo terminals and operation). These questions showed overall that an opportunity scenario was feasible (i.e. the mid point on the questionnaire scale) and a threat scenario unlikely. The overall medium and high ratings of confidence in answers was 70.5%. Applying the parameter showed that this was higher than the acceptable minimum. By implication therefore this concept was endorsed. However, given that opportunity was only rated as feasible the researcher's opinion was that structural change was likely to be viewed as having a mixed opportunity/threat influence on the corporate plan.

The inference was that stakeholder power was likely to be exerted in some form in these operational areas. This could influence the detailed aspects of implementation of the corporate plan, which could then be modified to take advantage of, or pre-empt, stakeholders' concerns, depending on how these matched investors' concerns.

These two illustrations show the method by which the concepts were established as being relevant to corporate planning, as well as the derivation of the summarisation from which inferences could be drawn. Although these inferences were based on hard analysis, the method ultimately relied on the researcher. The mixture of question types created analysis difficulties. These would have been considerably eased if all questions were of the judgement-seeking type.

The prime inference from the summary of all participants' endorsements was that the key aspects of the future nature of the environment had been identified (in the high endorsement for structural constraints, public/private trustee, node and financial pressure). These were likely to be addressed in the corporate plan through a process of environmental management.

2/ PARTICIPANTS' COMMENTS

Comments from the UK and SA reflected the tone of these endorsements and were analysed in order to understand the implications of the concepts.

<i>Participants</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>	
UK	204	167	155	526	65.3%
SA	99	119	62	280	34.7%
totals	303	286	217	806	
	37.6%	35.5%	26.9%		

This listing of the comments that related to the concepts shows a higher threat concern that revealed by the endorsement analysis. It implied that a balance in corporate planning was required between the two extremes of determinism and voluntarism in environmental management, as surfaced by Research Expectation 2(a). This balance was apparently biased towards opportunity, i.e. relatively free selection of strategy but with constraints implied by 'public interest'. The inference was that selection of managerial philosophy should reflect, or be tailored to reflect, structural constraints.

The extent of stakeholder influence is shown by the following list of systemic influences (see Chapter 5 for definitions). The high proportion of managerial influences reflected the extent of environmental management undertaken in ports:

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>	
<i>Government</i>					
political	6	15	1	22	2.7%
<i>Stakeholder power</i>					
legal	17	22	34	73	9.1%
economic	6	10	6	22	2.7%
location	4	15	14	33	4.1%
commercial	47	52	34	133	16.5%
social	5	2	10	17	2.1%
<i>Agency</i>					
operational	58	37	48	143	17.7%
managerial	160	133	70	363	45.1%
totals					
	303	286	217	806	
	37.6%	35.5%	26.9%		

Significantly, the extent of threat management was higher than anticipated, as were legal influences exerted by stakeholders. Commercial influences reflected the opportunities for ports to pursue traffic, but also the implicit stakeholder power in securing preferential treatment. This implied that the final mixed scenario choice was a reflection of the underlying concepts of the future nature of the ports environment.

Structural constraints

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Government</i>				
political	3	6	1	10
<i>Stakeholder power</i>				
legal	1	4	11	16
economic	2	2	1	5
location	0	5	3	8
commercial	11	9	5	25
social	1	0	3	4
<i>Agency</i>				
operational	12	8	2	22
totals				
	30	34	26	90

The low number of comments implied that the scenario narratives were effective in covering the general nature of the constraints in the ports industry that were not altered by structural change. The implications for planning lay in the frequency with which legal and commercial expressions of stakeholder power were raised.

Selection of strategy

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
operational	5	4	3	12
managerial	31	29	15	75
<i>totals</i>				
	36	33	18	87

The overall mixed tone of the comments reflected the moderate endorsement.

Public/Private trustee

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Government</i>				
political	3	9	0	12
<i>Stakeholder power</i>				
legal	8	5	11	24
economic	3	7	3	13
location	2	3	3	8
commercial	2	9	6	17
social	1	1	3	5
<i>Agency</i>				
operational	0	1	0	1
<i>totals</i>				
	19	35	26	80

Although there were relatively few comments, the noticeable threat element added credence to the researcher's perception of unchanged structural constraints.

Node

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
economic	1	1	2	4
location	1	5	5	11
commercial	1	6	5	12
<i>Agency</i>				
operational	0	4	4	8
<i>totals</i>				
	3	16	16	35

Few participants saw any change to nodal operations. Those that did were concerned that structural change could have an adverse impact.

Core businesses

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
legal	8	13	12	33
location	1	2	3	6
commercial	3	8	3	14
social	0	1	2	3
<i>Agency</i>				
operational	5	6	3	14
managerial	7	12	4	23
totals				
	24	42	27	93

Again the significant comments related to legal concerns over structural change affecting the core business of navigational access and right to port facilities. This helped to understand the moderate endorsement.

Peripheral businesses

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
commercial	9	7	6	22
<i>Agency</i>				
operational	15	5	6	26
managerial	13	6	6	25
totals				
	37	18	18	73

These comments were generally optimistic, but some concern over the potential effects of structural change may have led to the moderate endorsement.

Tangential businesses

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
commercial	11	3	1	15
social	2	0	1	3
<i>Agency</i>				
managerial	22	15	3	40
totals				
	35	18	5	58

The generally optimistic comments gave no clue to the moderate endorsement.

Financial pressure

Systemic influences **Opportunity** **Mixed** **Threat** **Totals**
Stakeholder power

commercial	4	6	6	16
<i>Agency</i>				
operational	4	3	3	10
managerial	23	16	14	53
totals				
	31	25	23	79

The relatively high threat element of the comments implied that a significant proportion of managerial effort would be concerned with level of returns generated.

Portfolio pressure

Systemic influences **Opportunity** **Mixed** **Threat** **Totals**
Stakeholder power

commercial	6	4	2	12
social	1	0	1	2
<i>Agency</i>				
operational	17	6	27	50
managerial	15	20	3	38
totals				
	39	30	33	102

The relatively high number of comments and the threat element of them implied that the scope for diversification was limited. The inference was that stakeholders and managers perceived diversification flexibility differently, creating the potential for conflict in future operations. This helped to explain the moderate endorsement.

Environmental management

Systemic influences **Opportunity** **Mixed** **Threat** **Totals**

managerial	49	35	25	109
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The relatively high number of comments and their opportunity element lent credence to the high endorsement.

3/ STAKEHOLDER GROUP - ENDORSEMENTS

The summarisation of concepts for the Stakeholder group in Table 13.6 followed the same procedure adopted for All Participants (as did the Key Ports groups). The results from this group were similar to those from All Participants, except for selection of strategy and tangential businesses where endorsement was high. The inference from

these results was that the nature of constraints influencing the corporate plan was determined by public/private trustee obligations and the purpose of ports in acting as a node. Hence selection of strategy which could affect these areas implied careful prior evaluation was required in order to avoid potential conflict.

<i>STAKEHOLDER Group</i>		<i>Table 13.6</i>		
CONCEPTS SUMMARY		<i>Endorsement</i>		
		<i>High</i>	<i>Moderate</i>	<i>Low</i>
<i>Boundary-spanning environment:</i>				
Structural constraints		yes		
Selection of strategy		yes		
<i>Unaffected by changes in structural constraints:</i>				
Public/Private Trustee		yes		
Node		yes		
Core			yes	
Peripheral			yes	
Tangential		yes		
		<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>
<i>Affected by changes in structural constraints:</i>				
Financial pressure		yes		
Portfolio pressure			yes	
Environmental Management		yes		

For those areas of the strategic corporate plan unaffected by structural change, operational activities of core operations (marine undertakings) and peripheral operations (cargo handling) seem likely to be subject to some constraints in the future. However, structural change appeared to have relaxed previous constraints to some extent. Endorsement for tangential activities was high, which implied that structural change had emphasised these activities. This could also be interpreted as that these activities were unconstrained before structural change, thus little or no alteration in approach to planning for these areas was required. The inference was that the net effect of structural change was to increase the attention devoted to planning for adaptive specialisation in the core and peripheral undertakings.

For the areas of the strategic corporate plan affected by structural change, financial pressure had been endorsed as creating an opportunity. This was interpreted as being that the anticipated level of returns to investors was likely to be sufficient to prevent dissatisfaction and that the organisations were likely to be in a secure future environment. Given the 'profits' on the resale of Medway and Tilbury it seemed that this was likely to be the investors' opinion as well (as discussed in the Introduction).

Portfolio pressure referred to the severity of the imbalances between the organisations' undertakings. This was endorsed as being mixed, which implied that whilst tangential activities were likely to be unconstrained, the future structural constraints on core and peripheral activities were likely to affect the freedom of selection of strategy for the corporate plan as a whole. The inference was that viewing the port as a single entity with a common measure of success, e.g. returns on capital employed, could be a source of conflict between stakeholders and investors. This implied that planning each of these three basic activities was likely to be treated as having separate evaluation criteria, with different balances between adaptive specialisation and adaptive generalisation. Structural constraints for each of these three areas appeared to be different, implying differing individual selections of strategy within the overall corporate plan.

Decision-makers had apparent freedom to undertake environmental management activities, since these were endorsed as a future opportunity. This was also shown by the high endorsement for selection of strategy. The inference was therefore that the environment could be influenced by internal manipulation (i.e. decision-makers could circumvent structural constraints through their selection of strategy). However, the endorsement to other concepts and participants' comments implied that there were limits to these possible activities. This was also shown by the high endorsement for structural constraints that could arise from stakeholder power. The inference was therefore that the corporate plan was likely to have implicit environmental checks and balances which were likely to be reflected by the selection of a particular strategy. This suggested that the future environment was likely to be neither externalised (i.e. fully deterministic) nor internalised (i.e. fully voluntaristic), but a balance lying somewhere between the two extremes in a Boundary-spanning industry. This balance appeared to be heavily influenced by stakeholder power, and partially explained the Research Expectation (2a) finding that ports were characterised by relatively equal levels of voluntarism and determinism.

4/ KEY UK PORTS - ENDORSEMENTS

For the Key UK Ports (Table 13.7) a similar picture emerged. This was tempered by:

firstly, the influence of strong competition in the UK industry;

secondly, by an investment climate that was heavily focused on the shorter-term (hence more favourable to adaptive specialisation); and

thirdly by anticipation of returns available from the redeployment of land which was scarce in most urban areas.

These factors were shown by the lower endorsement for areas unaffected by structural change. The inference is that structural change could affect these areas at some stage in the future.

KEY UK PORTS

Table 13.7

CONCEPTS SUMMARY

	<i>Endorsement</i>		
	<i>High</i>	<i>Moderate</i>	<i>Low</i>
<i>Boundary-spanning environment:</i>			
Structural constraints	yes		
Selection of strategy	yes		
<i>Unaffected by changes in structural constraints:</i>			
Public/Private Trustee	yes		
Node	yes		
Core			yes
Peripheral			yes
Tangential		yes	
<i>Affected by changes in structural constraints:</i>			
Financial pressure	yes		
Portfolio pressure	yes		
Environmental Management	yes		

This implied that the perceived scope for adaptive specialisation was greater as a result of structural change, hence it was likely to encourage environmental management. It would also imply that financial and portfolio pressures were likely to be enabling environmental management activities. This was shown by the rating of these concepts as presenting future opportunities, implying that whilst structural constraints were likely to occur, the perceived scope for manipulation of the environment through a strategic choice process was also likely to be high.

The inference was that implicit checks and balances arising from stakeholder power were containable within the corporate planning process. Thus the future environment was likely to be neither externalised nor internalised, but was likely to lie somewhere between the two extremes in a Boundary-spanning industry - however it was likely to be closer to the internalised (voluntaristic) end than the Stakeholder group endorsements would suggest.

The inference was that the future environment was likely to be biased towards being internalised, thereby encouraging voluntaristic managerial philosophies and adaptive specialisation. These inferences were subject to some caution since the results for this group were influenced by an unusual pattern of 'no views' responses in the questionnaire.

5/ KEY SA PORTS - ENDORSEMENTS

For Key SA ports (Table 13.8) a different picture emerged. This was tempered by:

firstly, the influence of lower competition than in the UK industry;

secondly, by a centralised public sector climate that was more heavily focused on the longer-term (hence more favourable to adaptive generalisation):

thirdly by less experience of the outcomes of structural change; and

fourthly, by less pressure for returns from the redeployment of land - this is reflected in policy statements which showed intentions to hold land for future expansion.

<i>KEY SA PORTS</i>		<i>Table 13.8</i>		
CONCEPTS SUMMARY		<i>Endorsement</i>		
		<i>High</i>	<i>Moderate</i>	<i>Low</i>
<i>Boundary-spanning environment:</i>				
Structural constraints		yes		
Selection of strategy			yes	
<i>Unaffected by changes in structural constraints:</i>				
Public/Private Trustee		yes		
Node		yes		
Core		yes		
Peripheral		yes		
Tangential			yes	
		<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>
<i>Affected by changes in structural constraints:</i>				
Financial pressure		yes		
Portfolio pressure			yes	
Environmental Management			yes	

These influences were reflected in the moderate endorsement for selection of strategy and the generally high endorsement for concepts of areas unaffected by structural change in the future. Tangential activities had moderate endorsement implying that these were likely to be affected at some stage in the future by structural change.

Financial pressure was endorsed as being likely to create an opportunity, implying that structural change had increased the level of stakeholder pressure for 'value for money', and also financial returns to Transnet, in a secure future environment.

Portfolio pressure was endorsed as being mixed, which implied that whilst tangential activities were likely to be relatively unconstrained, the likely future structural constraints on core and peripheral activities could influence discretion in selection of strategy for the corporate plan as a whole. This is shown by the high endorsement for these organisational concepts, the high endorsement for structural constraints, and the moderate endorsement for selection of strategy.

The inference was that viewing Portnet as a single entity with a common measure of success, e.g. returns on capital employed, could be a source of conflict between stakeholders. Each of the individual ports and the basic activities in each of these ports was likely to have needs for different balances between adaptive specialisation and adaptive generalisation, e.g. a concentration on swift container movements at Durban and development of major oil storage and handling facilities at Saldanha. This implies that the planning process is likely to be split into two elements, firstly at a national level and secondly at the local port level. In this way the three basic activities of core, peripheral and tangential operations, with their different balances between adaptive specialisation and adaptive generalisation, could be accommodated according to the future nature of the environment at a local level. Selection of strategy for each of these three areas was likely to be different. However, the overall corporate plan might become difficult to control at a national level, thus it may lead to decentralisation pressures by both local stakeholders and local managers.

This was shown by the mixed endorsement for environmental management, which implied that the environment was not wholly internalised, but subject to some degree of external pressure, i.e. decision-makers were likely to prioritise some national and local structural constraints through their selection of strategy. However, the judgement of scenario elements in the questionnaire showed that there were likely to be limits to the extent of priority setting, which were likely to arise from the power that could be wielded by all the stakeholders. This implied that some accommodation was likely to occur between their conflicting objectives. Hence the future environment was likely to be neither externalised nor internalised, but was likely to lie somewhere between the two extremes in a Boundary-spanning industry - however it was likely to be closer to the externalised (deterministic) end than the Stakeholder group endorsements would suggest.

6/ INFERENCES FOR A BOUNDARY-SPANNING MODEL

The endorsement for all the concepts in a Boundary-spanning industry by all participants led to strong inferences on the future nature of the organisational environment which were that:

Future structural constraints on core and peripheral activities were likely to affect the freedom of selection of strategy for the corporate plan as a whole;

Viewing the port as a single entity with a common measure of success could be a source of conflict between stakeholders;

The net effect of structural change was likely to increase the attention devoted to planning for adaptive specialisation in the core and peripheral undertakings;

Structural constraints for core, peripheral and tangential operations appeared likely to be different, implying differing selections of operational strategy within the corporate plan, with different balances between adaptive specialisation and adaptive generalisation, and separate evaluation criteria;

The future environment could possibly be influenced by internal priority setting, but there were likely to be limits to these activities since the corporate plan was likely to reflect implicit environmental checks and balances of strategy;

The future environment was likely to be neither externalised (i.e. fully deterministic) nor internalised (i.e. fully voluntaristic), but a balance lying somewhere between the two extremes;

In the UK, the perceived scope for adaptive specialisation was likely to be greater as a result of structural change, hence it was likely to encourage environmental management. The future environment was likely to enable voluntaristic managerial philosophies to be favoured, but unlikely to allow these to be adopted without some accommodation for the 'public interest';

In SA the planning process was likely to be split into two elements, firstly at a national level and secondly at the local port level. Each of the ports was likely to have different balances between adaptive specialisation and adaptive generalisation needs. A lesser extent of environmental management than in the UK was likely. The future environment was likely to restrict voluntaristic managerial philosophies being adopted to a greater extent than in the UK.

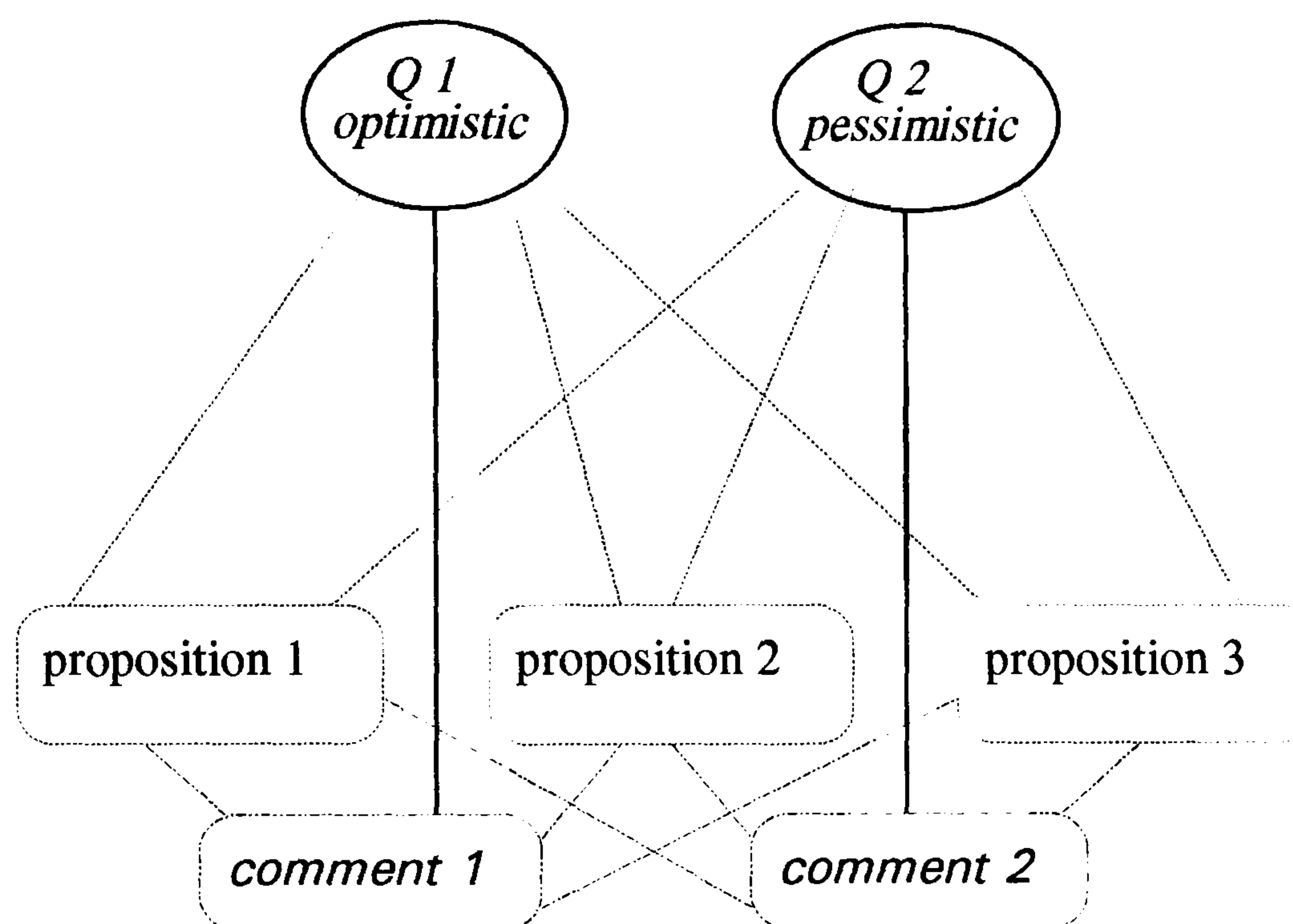
There were likely to be detail differences between organisations and countries arising from differing degrees of structural constraints and consequent selection of strategy by decision-makers. Neither 'public sector' nor 'private sector' managerial philosophies appeared to be wholly appropriate for ports governance.

A blend between the two was indicated and this is discussed in the next chapter, which considers the future relationship between organisational agents and the environment.

**CHAPTER 14 - THE FUTURE RELATIONSHIP BETWEEN
ORGANISATIONAL AGENTS AND THE ENVIRONMENT**

The future relationship between organisational agents and the environment for the international ports industry was discussed in Chapter 6 where the underlying strategic management level propositions for environmental management were identified. The Multiple Scenario Questionnaire was constructed so that these propositions could be interpreted from judgements of the scenario elements. The questions in the multiple scenarios were thus designed to assess the level of endorsement for the propositions in order to enable inferences to be drawn, as depicted in Figure 14.1 (which is based on Figure 9.3).

DRAWING INFERENCES FOR PROPOSITIONS Figure 14.1



The drawing of inferences was dependant on the key presumptions underlying the construction of the questionnaire discussed in Chapter 9 and the analysis specification detailed in Section 2.2 of that chapter.

The third influence of stakeholders in a future strategic corporate plan is on the relationship between organisational agents and the environment. This determined the priorities for managerial action in order to meet the practical considerations in undertaking future governance of a port in the 'public' and 'private' interests. To understand how this influence could affect the implementation of the corporate plan, it was necessary to summarise the base data into a form that illustrated the importance of the relationship of decision-makers to their external environment (stakeholders). This was measured by interpreting the judgements of participants as to whether or not structural change had increased or decreased the scope for managerial action.

ASSESSMENT PARAMETERS - PROPOSITIONS

Table 14.1

Table 14.1		ALL PARTICIPANTS (other ports rel. bus. & acad.)		KEY UK	KEY SA	KEY UK & SA
ASSESSMENT PARAMETERS		STAKEHOLDER		UK	SA	UK & SA
PROPOSITIONS		rel. bus. & acad.)		UK	SA	UK & SA
FOLLOWING REORGANISATION OF BASE DATA TO REFLECT ANALYSIS GROUPS				UK	SA	UK & SA
(see Table 11.5 and Table 11.6 for assumptions & example of method of calculation of assessment parameters)				UK	SA	UK & SA
(see Chapter 12 - Research Expectations, Table 12.1 for example of net opportunity/threat calculations)				UK	SA	UK & SA
Strength of endorsement:						
primary		70 - 85 %	67 - 94 %	63 - 70 %	75 - 92 %	70 - 77 %
secondary		66 - 70 %	63 - 67 %	56 - 63 %	67 - 75 %	62 - 70 %
tertiary		61 - 66 %	59 - 63 %	50 - 56 %	58 - 66 %	54 - 62 %
Operational activities - propositions for attention in corporate plan - NET opportunity/threat judgements:						
strong		> +/- 5.1 %	> +/- 17.6 %	> +/- 20.0 %	> +/- 8.3 %	> +/- 4.5 %
moderate	between these values					
weak		< +/- 2.6 %	< +/- 8.8 %	< +/- 10.0 %	< +/- 4.2 %	< +/- 2.3 %
Operational activities - propositions - overall likelihood of efforts to circumvent constraints on selection of strategy & decision-making:						
improbable	opportunity	no managerial action	managerial freedom	strong effort	some managerial action	weak effort
unlikely		weak effort	strong effort	no managerial action	no managerial action	no managerial action
feasible		some managerial action	strong effort	managerial freedom	strong effort	managerial freedom
likely		strong effort	managerial freedom	strong effort	strong effort	strong effort
probable		managerial freedom	strong effort	strong effort	strong effort	strong effort
Check for expertise bias - low self ratings of expertise or confidence discounted, hence endorsement must exceed tertiary strength:						
medium/high self rating		> 61.5 %	> 58.8 %	> 50.0 %	> 58.3 %	> 54.5 %

Table 14.2		ALL STAKEHOLDER PARTICIPANTS (other ports rel. bus. & acad.)		KEY UK PORTS	KEY SA PORTS	KEY UK & SA
ASSESSMENT OF PROPOSITIONS		Uncertainty in Managing Environmental Events				
proposition P1 - LOW level of environmental management - centralised - Threat - Model 1						
endorsed?		no	no	no	no	no
judgement	majority	41.0%	39.2%	43.3%	41.7%	42.4%
	band	below	below	below	below	below
opportunity/threat	strength	-7.7%	-11.8%	-10.00%	-16.7%	-4.5%
	band	strong	moderate	weak	strong	moderate
proposition P2 - MODERATE level of env. man. - centralised/decentralised - Mixed opportunity/threat - Model 3						
endorsed?		yes	yes	no	yes	no
judgement	majority	59.8%	64.7%	46.7%	63.9%	51.60%
	band	borderline	secondary	below	tertiary	below
opportunity/threat	strength	20.5%	14.7%	20.0%	29.2%	25.0%
	band	strong	moderate	moderate	strong	strong
	opportunity	likely	likely	likely	likely	likely
expressed confidence	majority	66.7%	70.6%	50.0%	75.0%	63.6%
	strength	> min	> min	at min	> min	> min

Table 14.2 (cont)		ALL STAKEHOLDER PARTICIPANTS (other ports rel. bus. & acad.)		KEY UK PORTS	KEY SA PORTS	KEY UK & SA
ASSESSMENT OF PROPOSITIONS		Uncertainty in Managing Environmental Events				
proposition P3 - LOW level of environmental management - centralised - Threat - Model 1						
endorsed?		no	no	no	no	no
judgement	majority	26.9%	32.4%	20.0%	25.0%	22.7%
	band	below	below	below	below	below
	threat	unlikely	unlikely	unlikely	likely	unlikely
expressed confidence	majority	74.4%	67.6%	75.0%	83.3%	79.5%
	strength	> min	> min	> min	> min	> min
proposition P4 - HIGH level of environmental management - decentralised - Opportunity - Model 2						
endorsed?		yes	yes	yes	yes	yes
judgement	majority	66.0%	69.1%	57.5%	68.8%	63.6%
	band	secondary	primary	secondary	secondary	secondary
opportunity/threat	strength	20.5%	19.6%	13.3%	27.8%	21.2%
	band	strong	strong	moderate	strong	strong
	opportunity	likely	likely	likely	feasible	likely
expressed confidence	majority	69.2%	76.5%	50.0%	75.0%	63.6%
	strength	> min	> min	at min	> min	> min

Table 14.3

Table 14.3								
ASSESSMENT OF PROPOSITIONS	ALL PARTICIPANTS			STAKEHOLDER		KEY		KEY
	PARTICIPANTS (other ports			UK		UK		UK & SA
	rel. bus. & acad.)			PORTS		PORTS		PORTS
Adaptive specialisation								
proposition P5 - environmental complexity - high = Model 2; moderate = Model 3; low = Model 1								
endorsed?		high	high	high	high	low		moderate
judgement	majority	70.5%	72.1%	75.0%	75.0%	64.6%	69.3%	secondary
	band	primary	primary	primary	primary	tertiary	18.2%	strong
opportunity/threat	strength	21.4%	25.5%	26.7%	26.7%	11.1%	11.1%	strong
	band	strong	strong	strong	strong	strong	strong	strong
proposition P6 - environmental dynamism - high = Model 2; moderate = Model 3; low = Model 1								
endorsed?		moderate	high	low	low	high		moderate
judgement	majority	66.7%	70.6%	50.0%	50.0%	75.0%	63.6%	secondary
	band	secondary	primary	tertiary	tertiary	primary	secondary	secondary
proposition P7 - resource scarcity - high = Model 2; moderate = Model 3; low = Model 1								
endorsed?		high	high	high	high	moderate		moderate
judgement	majority	70.5%	73.5%	65.0%	65.0%	70.8%	68.2%	secondary
	band	primary	primary	primary	primary	secondary	secondary	secondary
proposition P8 - resource concentration - high = Model 2; moderate = Model 3; low = Model 1								
endorsed?		moderate	high	moderate	moderate	moderate		moderate
judgement	majority	67.9%	70.6%	60.0%	60.0%	70.8%	65.9%	secondary
	band	secondary	primary	secondary	secondary	secondary	secondary	secondary

Table 14.4

Table 14.4		ALL STAKEHOLDER PARTICIPANTS (other ports rel. bus. & acad.)		KEY UK PORTS	KEY SA PORTS	KEY UK & SA
ASSESSMENT OF PROPOSITIONS		Adaptive generalisation				
proposition P9 - organisational size - high = Model 1; moderate = Model 3; low = Model 2						
endorsed?		moderate	high	low	high	moderate
judgement	majority	66.7%	70.6%	50.0%	75.0%	63.6%
	band	secondary	primary	tertiary	primary	secondary
proposition P10 - organisational slack - high = Model 1; moderate = Model 3; low = Model 2						
endorsed?		low	high	no	moderate	low
judgement	majority	62.8%	70.6%	40.0%	70.8%	56.8%
	band	tertiary	primary	below	secondary	tertiary
	opportunity	likely	likely	likely	feasible	likely
expressed confidence	majority	70.5%	70.6%	65.0%	75.0%	70.5%
	strength	> min	> min	> min	> min	> min
proposition P11 - centralisation of decision-making - high = Model 1; moderate = Model 3; low = Model 2						
endorsed?		high	high	high	high	high
judgement	majority	79.5%	82.4%	70.0%	83.3%	77.3%
	band	primary	primary	primary	primary	primary
opportunity/threat	strength	12.8%	23.5%	20.0%	-25.0%	-9.1%
	band	strong	strong	strong	strong	strong
Blending adaptive specialisation and generalisation						
proposition P12 - dominance of boundary spanning functions - high = Model 2; moderate = Model 3; low = Model 1						
endorsed?		moderate	high	high	low	moderate
judgement	majority	66.7%	68.2%	66.0%	65.0%	65.5%
	band	secondary	primary	primary	tertiary	secondary
opportunity/threat	strength	2.6%	4.4%	0.0%	2.1%	1.1%
	band	weak	weak	weak	weak	weak

ASSESSMENT - DECISION-MAKER ATTRIBUTES

Table 14.5

Table 14.5							
ASSESSMENT OF PROPOSITIONS	ALL PARTICIPANTS		STAKEHOLDER		KEY	KEY	KEY
	PARTICIPANTS (other ports rel. bus. & acad.)				UK	SA	UK & SA
					PORTS	PORTS	
Decision-maker attributes							
proposition P13 - decision-maker flexibility - dynamic environments - high = Model 2; moderate = Model 3; low = Model 1							
endorsed?		high	high	high	high	high	high
judgement	majority	79.5%	84.3%	66.7%	83.30%	75.8%	75.8%
	band	primary	primary	primary	primary	primary	primary
proposition P14 - decision-maker flexibility - stable environments - high = Model 1; moderate = Model 3; low = Model 2							
endorsed?		no	low	low	no	no	no
judgement	majority	55.6%	60.8%	50.0%	52.80%	51.5%	51.5%
	band	below	tertiary	border	below	below	below
proposition P15 - related to need to achieve - stable environments - high = Model 1; moderate = Model 3; low = Model 2							
endorsed?		no	low	no	no	no	no
judgement	majority	53.8%	58.4%	45.0%	54.2%	50.0%	50.0%
	band	below	border	below	below	below	below
	managerial action?	likely	likely	likely	likely	likely	likely
expressed confidence	majority	64.1%	64.7%	50.0%	75.0%	63.6%	63.6%
	strength	> min	> min	> min	> min	> min	> min
proposition P16 - related to need to achieve dynamic environments - high = Model 2; moderate = Model 3; low = Model 1							
endorsed?		no	low	moderate	low	low	low
judgement	majority	59.0%	61.8%	60.0%	58.8%	56.8%	56.8%
	band	below	tertiary	secondary	tertiary	tertiary	tertiary
	managerial action?	feasible	feasible	feasible	likely	feasible	feasible
expressed confidence	majority	76.9%	70.6%	70.0%	91.7%	81.8%	81.8%
	strength	> min	> min	> min	> min	> min	> min
proposition P17 - related to locus of control of decision-maker - high = Model 2; moderate = Model 3; low = Model 1							
endorsed?		no	no	no	no	no	no
judgement	majority	45.3%	45.1%	36.7%	52.8%	45.5%	45.5%
	band	below	below	below	below	below	below
source of conflict?	strength	20.5%	14.7%	20.0%	29.2%	25.0%	25.0%
	band	strong	moderate	strong	strong	strong	strong

Tables 14.1 to 14.5 present the consolidated data and the assessment parameters for the propositions. The only refinement to the summarisation procedure and principles described in Chapter 13 was to allocate those propositions that were endorsed according to the Chakravarthy and Lorange (1984) models of strategic adaptation:

- Model 1 = centralised strategic planning;
- Model 2 = decentralised strategic planning;
- Model 3 = decentralised decision-making guided by corporate portfolio planning.

This allocation was made according to specification in Chapter 6 (and shown in these Tables). A worked example of this summarisation process follows in Table 14.6.

Using proposition P4 as an illustration, the question to be answered is whether or not it has been endorsed by the data. Referring to the section on Uncertainty in Managing Environmental Events in Table 14.2, the first line says 'yes'. This reflects the researcher's opinion. In order to understand how this opinion was arrived at, the data needs to be considered. The second line gives the majority endorsement as 66.0%. Referring to the assessment parameters in Table 14.1 for judgement-seeking questions shows that the strength of endorsement was 'secondary', i.e. endorsed but not very strongly, implying that whilst the attributes of this organisational form were recognised, some failings were seen which did not make it ideal for international ports, lowering endorsement.

The second consideration was whether or not it was likely to be a feature of corporate planning. The variation between opportunity and threat perceptions in the judgement-seeking questions over the course of the scenario was 20.5%. Applying the parameter indicated a strong opportunity judgement. This implied that the organisational form was well suited to future environmental management actions.

The third consideration was the probable influences of structural change on selection of strategy and decision-making. The plausibility questions indicated that an opportunity scenario was likely, implying participant certainty over effect and response. The overall medium and high ratings of confidence in answers was 69.2%. Applying the parameter showed that this was marginally higher than the acceptable minimum. Again, this implied that the organisational form was not ideal.

Given this information, the researcher's opinion was that P4 (implying high levels of environmental management and a decentralised organisational structure) had been established. However this was not as strongly endorsed as anticipated and should be read in conjunction with the marginal endorsement for P2 which implied a lesser extent of environmental management and a mixed centralised/decentralised structure.

Using P5 (Table 14.3) as an illustration of a differing assessment, then the question to be answered was whether or not this was endorsed. This was only tested in judgement-seeking questions since it related to the environment of the port,

i.e. complexity of the business units (e.g. cargo terminals and their method of operation). These questions showed overall that the majority endorsement was 70.5%. The variation between opportunity and threat perceptions in the judgement-seeking questions over the course of the scenario was 20.5%. Applying the parameter indicated a strong opportunity judgement. This implied that there were likely to be high levels of interacting elements in the future environment increasing pressure to respond. In the researcher's opinion, this proposition was endorsed, and could be summarised according to the pre-determined allocation to a Model 2 form. The implication was that structural change could encourage innovation in port operations.

These two illustrations showed the method by which the propositions were established as being relevant to organisational models for implementation of selection of strategy, as well as the derivation of the summarisation from which inferences could be drawn. As for Chapter 13, these inferences ultimately relied on the researcher to resolve analysis difficulties, which would have been considerably eased if all questions were of the judgement-seeking type.

1/ PARTICIPANT GROUPS - PROPOSITION SUMMARIES

ALL PARTICIPANTS		Table 14.6		
PROPOSITIONS SUMMARY		Endorsement		
		Model 1	Model 2	Model 3
<i>Uncertainty in managing environmental events:</i>				
P2	MODERATE			yes
P4	HIGH		yes	
<i>Adaptive specialisation:</i>				
P5	environmental complexity		yes	
P6	environmental dynamism			yes
P7	resource scarcity		yes	
P8	resource concentration			yes
<i>Adaptive generalisation:</i>				
P9	organisational size			yes
P10	organisational slack		yes	
P11	centralisation of decision-making	yes		
<i>Blending adaptive specialisation & generalisation:</i>				
P12	dominance of Boundary-spanning functions			yes
<i>Expected decision-maker attributes:</i>				
P13	flexibility for dynamic environments		yes	

The prime conclusion from the consolidation of All Participants' endorsement Summary Table 14.6 indicated a broadly equal split between Model 2 and Model 3 organisational styles, and reflected the likely future relationship between decision-makers acting as agents and the organisational environment. The implication was that this relationship would determine the likely managerial philosophy to be adopted, which was likely to be a blend of voluntaristic and deterministic approaches (as discussed in Chapter 1).

Generally the participant groups of Stakeholders (Table 14.7), Key UK Ports (Table 14.8) and Key SA Ports (Table 14.9) tended to reflect this inference. The Key UK Ports showed a stronger endorsement for a Model 2 style, implying a more voluntaristic managerial philosophy. These tables follow on pages 348 - 350.

2/ PARTICIPANTS' COMMENTS

As discussed in Chapters 12 and 13, the comments were analysed in detail for their tone in an attempt to identify the source of stakeholder influences. This would illustrate the inference of blending managerial philosophies. The following summaries reflect the nature of the comments for the individual propositions. These serve to illustrate that a balanced approach to environmental management in ports was likely to emerge in the future.

Comments from the UK and SA reflected a markedly higher mixed and threat perception than the questionnaire had disclosed:

<i>Participants</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>	
UK	290	273	201	764	69.0%
SA	93	177	73	343	31.0%
totals	383	450	274	1107	
	34.6%	40.7%	24.8%		

The extent of managerial factors leading to this higher mixed/threat perception is shown by the following list of systemic influences (see Chapter 5 for definitions). The list is illustrative only, since not all participants in both countries made the same level of comments. Further, each country had differing priorities in structural change. Nevertheless they served to help explain the future relationship between organisational agents and the environment.

The following list shows that the predominant perception was one of opportunity, but it was strongly tempered by expressions of threat. Stakeholder influences were lower than for the concepts of Chapter 13 since environmental management was an internal activity, but have some bearing as the list shows. Whilst environmental management scope was high at 70.8%, the constraining effects of stakeholder power was significant at 17.8%. Operational factors also acted to limit scope.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>	
<i>Government</i>					
political	6	23	7	36	3.3%
<i>Stakeholder power</i>					
legal	7	6	12	25	2.3%
economic	8	6	10	24	2.2%
location	1	6	5	12	1.1%
commercial	18	35	30	83	7.5%
social	3	1	12	16	1.4%
<i>Agency</i>					
operational	48	54	25	127	11.5%
managerial	292	319	173	784	70.8%
totals	383	450	274	1107	
	34.6%	40.7%	24.8%		

The high proportion of mixed comments implied a strong endorsement of a Model 3 organisation and managerial philosophy.

3/ ENDORSEMENT OF PROPOSITIONS

The propositions and their endorsement for the strategic adaptation models were:

Decision-maker uncertainty in managing environmental events:

P1 LOW level of environmental management effort - when response and effect uncertainty were both high - adaptation was determined externally. Proposition P1 could be seen as a surrogate measure for Model 1.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
commercial			12	12
<i>Agency</i>				
social			1	1
managerial			4	4
totals			27	27

There was no endorsement for this proposition from any participant group. This was reflected by the low level of comments which simply indicate that structural change posed potential conflicts, implying environmental management would take place to resolve these.

STAKEHOLDER Group		Table 14.7		
PROPOSITIONS SUMMARY				
		Endorsement		
		Model 1	Model 2	Model 3
<i>Uncertainty in managing environmental events:</i>				
P2	MODERATE			yes
P4	HIGH		yes	
<i>Adaptive specialisation:</i>				
P5	environmental complexity		yes	
P6	environmental dynamism		yes	
P7	resource scarcity		yes	
P8	resource concentration		yes	
<i>Adaptive generalisation:</i>				
P9	organisational size	yes		
P10	organisational slack	yes		
P11	centralisation of decision-making	yes		
<i>Blending adaptive specialisation & generalisation:</i>				
P12	dominance of Boundary-spanning functions			yes
<i>Expected decision-maker attributes:</i>				
P13	flexibility for dynamic environments		yes	
P14	flexibility for stable environments		yes	
P15	need to achieve for stable environment		yes	
P16	need to achieve for dynamic environment	yes		

P2 MODERATE level of environmental management effort - when response uncertainty was low and effect uncertainty was high - decision-makers showed a paradoxical selection of strategy. Proposition P2 could be seen as a surrogate measure for Model 3.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
commercial		14		14
<i>Agency</i>				
operational		10		10
managerial		56		56
<i>totals</i>				
		80		80

KEY UK PORTS		Table 14.8		
PROPOSITIONS SUMMARY				
			Endorsement	
		Model 1	Model 2	Model 3
<i>Uncertainty in managing environmental events:</i>				
P4	HIGH		yes	
<i>Adaptive specialisation:</i>				
P5	environmental complexity		yes	
P6	environmental dynamism	yes		
P7	resource scarcity		yes	
P8	resource concentration			yes
<i>Adaptive generalisation:</i>				
P9	organisational size		yes	
P11	centralisation of decision-making	yes		
<i>Blending adaptive specialisation & generalisation:</i>				
P12	dominance of Boundary-spanning functions			yes
<i>Expected decision-maker attributes:</i>				
P13	flexibility for dynamic environments		yes	
P14	flexibility for stable environments		yes	
P16	need to achieve for dynamic environment			yes

This was endorsed by the Stakeholder group and the Key SA group. On consolidation all participants endorsed this proposition. The proportion of 'mixed' managerial comments implied a balanced approach to environmental management.

P3 LOW level of environmental management effort - when response uncertainty was high and effect uncertainty was low - adaptation was by chance. Proposition P3 could be seen as a surrogate measure for Model 1 - UK and SA before structural change.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
social			4	4
<i>Agency</i>				
operational			6	6
managerial			23	23
totals				
			33	33

KEY SA PORTS		Table 14.9		
PROPOSITIONS SUMMARY		Endorsement		
		Model 1	Model 2	Model 3
<i>Uncertainty in managing environmental events:</i>				
P2	MODERATE			yes
P4	HIGH		yes	
<i>Adaptive specialisation:</i>				
P5	environmental complexity	yes		
P6	environmental dynamism		yes	
P7	resource scarcity			yes
P8	resource concentration			yes
<i>Adaptive generalisation:</i>				
P9	organisational size	yes		
P10	organisational slack			yes
P11	centralisation of decision-making	yes		
<i>Blending adaptive specialisation & generalisation:</i>				
P12	dominance of Boundary-spanning functions		yes	
<i>Expected decision-maker attributes:</i>				
P13	flexibility for dynamic environments		yes	
P16	need to achieve for dynamic environment	yes		

There was no endorsement for this proposition as a future organisational state. Again, this was reflected by the low level of comments which simply indicated that structural change posed potential conflicts, implying environmental management would take place to resolve these.

P4 HIGH level of environmental management effort - when response and effect uncertainty were both low - adaptation was by design. Proposition P4 could be seen as a surrogate measure for Model 2.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
commercial	6			6
social	2			2
<i>Agency</i>				
operational	9			9
managerial	59			59
totals				
	76			76

This was endorsed by all groups. The proportion of opportunity managerial comments implied an active environmental approach to conflict resolution.

Decision-maker reactions implying an adaptive specialisation choice of strategy:

P5 environmental complexity - the more there were interacting elements increasing pressure to respond in some form, the greater the likely incidence of environmental management (i.e. manipulation of structural constraints).

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Government</i>				
political	3	12	3	18
<i>Stakeholder power</i>				
legal	5	5	9	19
economic	5	5	4	14
location	1	6	4	11
commercial	7	12	8	27
social	1	1	5	7
<i>Agency</i>				
operational	8	10	4	22
managerial	16	15	12	43
<i>totals</i>				
	46	66	49	161

This was endorsed by all groups, but the level of endorsement from the Key SA group indicated a Model 1 organisation, whereas the other groups indicated a Model 2 organisation. This was interpreted as likely to arise from the differing national considerations and stakeholder influences, creating a perceived need for a unitary 'landlord' organisation to safeguard the 'public interest' in SA. The relatively high level of mixed and threat comments support this interpretation.

However, mixed comments also include an opportunity element implying high levels of interacting elements in the future environment. Hence a pressure to respond was likely to be created. A Model 2 organisation implied an emergent managerial response, whereas a Model 1 organisation implied a planned managerial response to the future environmental demands.

The overall mixed nature of the comments implied that the likely outcome of conflicting pressures to respond could well be an organisational form reminiscent of Model 3, i.e. a balance between centralisation and decentralisation.

P6 environmental dynamism - the higher the rate of change in interacting elements the greater the incidence of future environmental management (i.e. circumvention or manipulation of structural constraints).

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Government</i>				
political	2	10	4	16
<i>Stakeholder power</i>				
legal	2	1	3	6
economic	3	1	3	7
location	0	0	1	1
commercial	5	8	9	22
social	0	0	2	2
<i>Agency</i>				
operational	2	2	4	8
managerial	11	18	13	42
<i>Totals</i>				
totals	25	40	39	104

This was endorsed by all groups. The level of endorsement from the Key UK Ports group indicated a Model 1 organisation (but was influenced by an unusual pattern of responses), whereas the other groups indicated a Model 2 organisation. This was interpreted as arising from considerations of retention of managerial control over decision-making. The participants' comments indicated that stakeholder power could lead to a centralising tendency because of the potential for conflict implied by the threat element. This could lead to planned managerial action reminiscent of a Model 1 organisation. However, the opportunity comments (and the opportunity element of the mixed comments), implied a decentralisation tendency in future organisational structure. Again, the mixed nature of the comments implied that the likely outcome of conflicting pressures could be an organisational form reminiscent of Model 3.

P7 resource scarcity - when important resources were scarce, vigorous competition should help to ensure organisational survival.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
operational	8	6	4	18
<i>Agency</i>				
managerial	11	17	10	38
<i>Totals</i>				
totals	19	23	14	56

This was endorsed by all groups, but the endorsement from the Key SA group indicated a Model 3 organisation, whereas the other groups endorsed a Model 2 organisation. This was interpreted as arising from differing national circumstances and stakeholder influences. The overall mixed nature of the comments tended to support this variation of organisational choice between the countries.

P8 resource concentration - referred to clustering of resources and ease of securing resources, e.g. skills (managers) and assets (land).

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
operational	3	5	1	9
<i>Agency</i>				
managerial	16	24	15	55
totals				
	19	29	16	64

This was endorsed by all groups. The endorsement from the Stakeholder group was for a Model 2 organisation, whereas the other groups endorsed a Model 3 organisation. This was interpreted as arising from the differing views on managerial control over conflict resolution. The overall mixed nature of the comments tended to support this variation in perceptions between stakeholders and decision-makers. However, the decision-makers' views were preferred as being the more likely organisational structure, given their practical experience of resource acquisition.

Decision-maker reactions implying an adaptive generalisation choice of strategy:

P9 organisational size - the power to dictate events by sheer dominance reduced threat behaviour.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
operational	6	6	1	13
<i>Agency</i>				
managerial	17	13	5	35
totals				
	23	19	6	48

This was endorsed by all groups. The Stakeholder and Key SA groups endorsement of a Model 1 organisation implied this style would be required for governance, whereas the Key UK group endorsed a Model 2 organisation. This split choice was apparent in the comments, but not wholly explained since the opportunity element of these comments was relatively high. The strength of endorsement was such that on consolidation a Model 3 organisation surfaced as the likely future structure, which was reflected by the tone of the comments. This was the more likely future organisational style, as evidenced by Associated British Ports.

P10 organisational slack - the existence of surplus reduced threat behaviour as survival was of less concern than investing for future success.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
operational	9	9	4	22
<i>Agency</i>				
managerial	18	13	9	40
totals	27	22	13	62

This was not endorsed by the Key UK group, which was likely to be a reflection of the unusual pattern of 'no views' selections. The endorsement from the Stakeholder group was for a Model 1 organisation, whereas the Key SA group was for a Model 3 organisation. This was interpreted as arising from the differing views on managerial control. The strength of endorsement was such that on consolidation a Model 2 organisation surfaced as the likely future structure. The comments were biased towards opportunity, thus tending to support the consolidated perception.

P11 centralisation of decision making - the location of command and control influenced resource allocation and the speed of response.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
managerial	19	29	6	54

This was endorsed by all groups as Model 1. The mixed comments could only be inferred to support this endorsement if they were viewed as implying a threat element.

Decision-making implying a blend of adaptive specialisation / generalisation:

P12 dominance of Boundary-spanning functions - decision-making power resided in functional areas best suited to the dominant future environment.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Stakeholder power</i>				
operational	3	6	1	10
<i>Agency</i>				
managerial	28	29	11	68
totals	31	35	12	78

This was endorsed by all groups. The Stakeholder and Key UK Ports groups endorsed a Model 2 organisational style and the Key SA Ports group a Model 1 organisation. This reflected national practice and on consolidation a Model 3 organisational style emerged, which tended to be supported by the comments.

Expected decision-maker attributes:

(These propositions were not comprehensively addressed by the Multiple Scenario Questionnaire and were effectively testing the limits of the technique. The results indicate their applicability for further research, rather than for model building).

P13 related to decision-maker flexibility for dynamic environments - this represented a risk-taking attitude.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
managerial	35	14	0	49

This was endorsed by all groups for a Model 2 organisation. The comments tended to support this endorsement.

P14 related to decision-maker flexibility for stable environments - this represented a risk-averse attitude.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
managerial	0	28	18	46

This was endorsed by the Stakeholder and Key UK Ports groups. The strength of endorsement indicated that, surprisingly given the number of threat comments, this attitude could be accommodated in a Model 2 organisation. The result was interpreted as that future dynamic events were not continuous and stability could return to the industry leading this attitude to be valued. It was not endorsed on consolidation.

P15 related to need to achieve among decision-makers for stable environmental events (the desire for control over events was probably more realisable in predictable environments).

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
managerial	24	0	0	24

This was endorsed by the Stakeholder group only and the implication was that this attitude could be accommodated in a Model 2 organisation. This result was consistent with the previous proposition. It was not endorsed on consolidation.

P16 related to need to achieve among decision-makers for dynamic environmental events (the desire to see success was probably less realisable in unstable unpredictable environments).

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
managerial	0	27	17	44

This was endorsed by the Stakeholder and Key SA Ports groups for Model 1 organisations, which reflected the number of comments. The Key UK Ports group endorsed it for a Model 3 organisation. It was not endorsed on consolidation.

P17 related to the locus of control of the decision-maker - the individual's perception of control he could exercise over his life and the world, i.e. a proactive, risk-taking decision-maker, or perception as being at the mercy of events, i.e. a reactive, risk-averse decision-maker.

<i>Systemic influences</i>	<i>Opportunity</i>	<i>Mixed</i>	<i>Threat</i>	<i>Totals</i>
<i>Agency</i>				
managerial	37	36	20	93

There was no endorsement for this proposition. This was surprising given the number of comments related to this proposition - this may represent the point at which the Multiple Scenario Technique and interpretations broke down.

4/ INFERENCES FOR A BOUNDARY-SPANNING MODEL

The variations between the groups showed that the scope for future environmental management was relatively wide and there were differing perceptions on the form it could take. For the ports industry a balanced environmental management approach was likely.

The pattern demonstrated for the Stakeholder group (Table 14.7) reflected the popularity of the Model 2 organisational form. However, the challenge to participants' assumptions in the Multiple Scenario Questionnaire had resulted in a Model 1 (centralised strategic planning) endorsement for adaptive generalisation. This implied that future environmental management would not be purely based on decentralisation principles, but would have an element of centralisation.

The pattern of predominantly Model 2 (decentralised strategic planning) endorsement for the Key UK Ports group (Table 14.8) implied an overall entrepreneurial stance, but that some tight central control could be a feature even in dynamic environments. This implied a selection of managerial philosophy that was likely to be biased towards adaptive specialisation, i.e. short-term, for the core, peripheral and tangential activities. However, the central control implied that adaptive generalisation to meet stakeholder expectations was likely to be an ongoing concern. Hence a balanced approach to environmental management was likely to be exhibited.

The widespread pattern of all three Model endorsements for the Key SA Ports group (Table 14.9) could be explained as arising from the needs to meet conflicting stakeholder pressures. These were likely to result in tensions between centralisation and decentralisation. This reflected the early stages of the move from a fully centralised structure and uncertainty over the future organisational environment. The likely outcome was a Model 3 (decentralised decision-making guided by corporate planning) structure which reflected the aspirations of splitting of commercial and statutory activities. This implied an equal balance between adaptive specialisation and adaptive generalisation.

These patterns of endorsements led to the inferences that the future relationship between organisational agents and the environment were:

Within the ports industry a future environmental management approach balanced between adaptive specialisation and adaptive generalisation was likely to develop. This balance was likely to vary between ports and between countries, resulting in differing degrees of environmental management;

In the UK a modified Model 2 organisational structure was likely to be the preferred form for enabling environmental management. This implied an entrepreneurial stance, but also that even in dynamic environments some tight central control was likely to be a feature.

In SA the likely organisational structure was Model 3, which implied an equal balance between adaptive specialisation and adaptive generalisation.

5/ SUMMARY

This chapter completed the analysis of the data from a Strategic Choice Perspective that was commenced in Chapter 12 and continued in Chapter 13. These three chapters represent the achievement of the subject Goals 2 (a) and 2(b) which were to assess international decision-makers' perceptions of the potential impact of structural change on key aspects of a corporate plan and organisational structure.

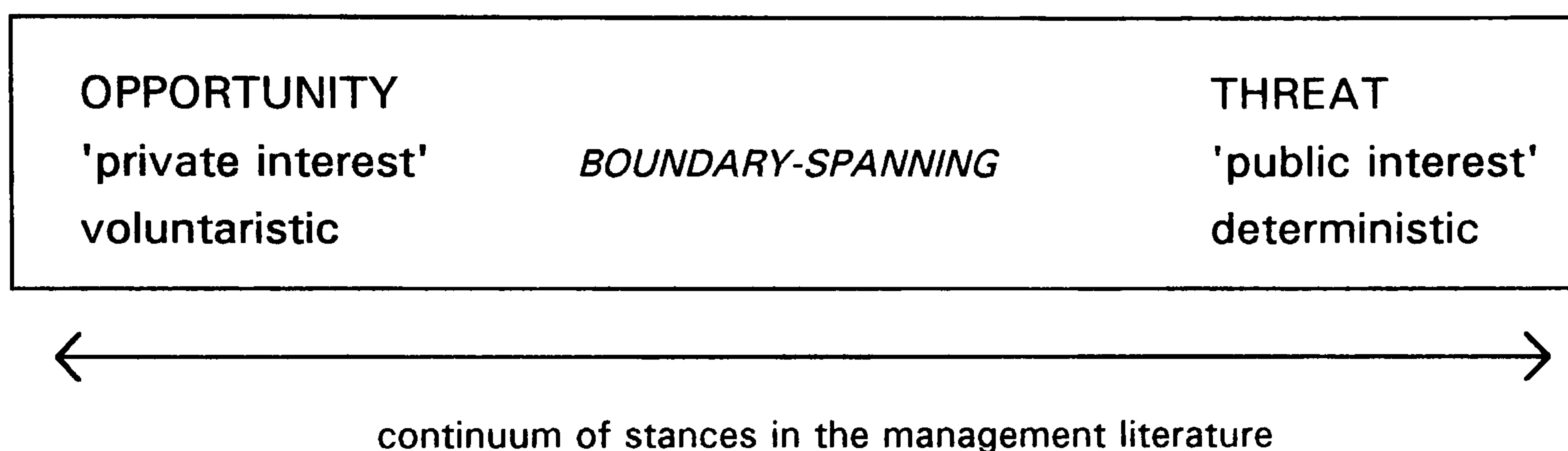
The next chapter presents the Boundary-spanning 'Long-term Strategic Service Industry' model. In effect, it consolidates the inferences from this chapter (and Chapters 12 and 13) that were derived from further analysis of the data and participants' comments.

CHAPTER 15 - 'LONG-TERM STRATEGIC SERVICE INDUSTRY' MODEL

The purpose of the research was to propose a 'Long-term Strategic Service Industry' model based on the specific example of international ports, which incorporated a Boundary-spanning perspective and Strategic Choice Perspective of selection of the strategy and of the organisational structure which ought to be adopted in the future.

1/ BOUNDARY-SPANNING AREA

It was assumed that ports operated in a Boundary-spanning area which bridged the extreme stances in management identified in the literature. This first Research Assumption was confirmed (as discussed in Chapter 10) and can be illustrated as:



The implication from testing the Research Assumption was that a Boundary-spanning area existed for ports - they appeared to be situated towards the 'public interest' side of one continuum and the voluntaristic side of the second continuum. Within this Boundary-spanning area the potential for future conflict could be contained by selection of strategy. This depended on identifying the appropriate Boundary-spanning managerial philosophy. This was approached from a Strategic Choice Perspective and involved assessing:

- the *future* role of agency and choice;
- the *future* nature of the organisational environment;
- the *future* relationship between organisational agents and the environment.

The outcome of this assessment was the model which reflected *how externalised the future environment was perceived as being likely to be*, i.e. the extent to which decision-makers felt that they were likely to possess a freedom of selection of strategy that was independent of stakeholder influences. It also reflected *whether or not the future environment was perceived as being likely to be constraining or enabling*, i.e. the extent to which decision-makers felt that structural change would be likely to pose an opportunity or threat to their governance activities.

This assessment process raised the two subject Key Questions that needed to be answered in order to identify the characteristics of the model:

(Key Question - 1)

are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

For the future UK and SA ports industry, the strong inference was that constraints on strategy were likely because of a need to balance adaptive specialisation and generalisation. Hence the future environment was likely to be constraining.

(Key Question - 2)

so what do decision-makers perceive in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

For the future UK and SA ports industry, the strong inference was that it would be likely to be a blend between voluntaristic and deterministic approaches to strategy selection. An organisational structure based on decentralisation principles, but not wholly decentralised, would be likely. Hence the future environment was likely to be partially externalised.

The model is concerned with the long-term survival of the organisation. This presumed a balanced approach - an over-commitment to adaptive specialisation in a pursuit of profit (the commercial role) could compromise the future of the organisation, whereas an over-commitment to adaptive generalisation to secure the future of the port to serve 'public interest' needs and legislation (the statutory role) could result in short-term cash crises.

Strong inferences regarding the nature of the Boundary-spanning ports industry were drawn in Chapters 12, 13 and 14 - these are repeated as 'global' characteristics, which are expanded to reflect the inferences that can be drawn from consolidating the two port groups to provide an international perspective of a 'Long-term Strategic Service Industry'. The model draws together these discussions and summarises the judgements of the Key UK Ports group and the Key SA Ports group that are shown in Table 12.1, Tables 13.2 to 13.4, and Tables 14.2 to 14.5.

The model itself is represented by the following summary Tables 15.1, 15.2 and 15.3. which reflect the combined response of the Key UK and SA Ports groups (representing a ratio of 46:54 in favour of SA). At an overall inferred response rate (after adjustments) for these groups, of 39% for Key UK Ports and 65% for Key SA Ports, it was representative of the entire target international population.

Hence it can be seen as reflecting potential future outcomes of structural change, and begins to address the understanding of environmental structure to aid understanding of the future actions of decision-makers as stakeholder-agents for the 'public interest' in the movement of trade. Further research on this proposed model is required and this is discussed in Chapter 16.

1.1 Inferences on the Future Role of Agency and Choice

The consistent mixed scenario elements implied that managerial action was likely to be influenced by stakeholder power where:

the future environment was likely to present a mixed opportunity/threat, hence a structurally constrained opportunity faced the UK and SA transport industry;

national economic considerations were likely to have little impact on decision-makers' selection of strategy, which was more likely to be concerned with stakeholder-agent relationships involving port users;

in the UK future freedom of selection of strategy was likely to be high and existing competitive manoeuvring activities were likely to continue. An emphasis on adaptive specialisation was likely in corporate planning;

in SA the freedom in selection of strategy was likely to be lower, and an emphasis on adaptive generalisation was likely in corporate planning;

managerial actions were likely to involve the application of power in some form to resolve conflict. The literature on voluntaristic strategic management could be identifying an appropriate philosophy, provided it could be modified to reflect the likely extent of stakeholder power.

KEY UK & SA PORTS		Table 15.1
SUMMARY - PLANNING ASSUMPTIONS	Endorsement	
	Opportunity	Mixed
Potential Conflict?		yes
Core business conditions - changing?	yes	
Diversification flexibility - likely?		yes
Freedom of decision-making - unrestricted?		yes
Implications for selection of strategy - freedom?	yes	
Implications for decision-making - unconstrained?		yes
Decentralised organisational structure?	yes	
SCENARIO - Final choice:		mixed

The assumptions underpinning a corporate strategic plan in Table 15.1 were endorsed. The endorsement on the potential for conflict implied this would have to be resolved by decision-makers in their capacity of stakeholder-agents. Freedom in selection of strategy was endorsed as mixed, which implied that strategic management and performance and control techniques based on private sector philosophies were not necessarily wholly appropriate. These were likely to be tailored to reflect stakeholder power.

This could result in complex options for selection of strategy. Perceived freedom of decision-making was likely to be tempered in routine operational activities. This implied that manipulation of the environment was likely and a flexible managerial approach towards priority stakeholders could emerge, since priorities might change according to shifting power bases. The strong mixed endorsements implied that a balance between adaptive specialisation and adaptive generalisation might not be static, and could be particularly changeable in operational activities. This tended to support the endorsement of decentralisation. However, because of the need to resolve or forestall potential conflict implied by the mixed endorsements, this might not exist in a pure form. It was likely to be tailored to meet structural constraints.

1.2 Inferences on the Future Nature of the Organisational Environment

There were likely to be detail differences between organisations and countries arising from differing degrees of structural constraints and consequent selection of strategy by decision-makers. Neither 'public sector' nor 'private sector' managerial philosophies appeared to be wholly appropriate for ports governance. A blend between the two was indicated, since:

future structural constraints on core and peripheral activities were likely to affect the freedom of strategic choice for the corporate plan as a whole;

viewing the port as a single entity with a common measure of success could be a source of conflict between stakeholders;

the net effect of structural change was likely to increase the attention devoted to planning for adaptive specialisation in the core and peripheral undertakings;

structural constraints for core, peripheral and tangential operations appeared likely to be different, implying differing selections of operational strategy within the corporate plan, with different balances between adaptive specialisation and adaptive generalisation, and separate evaluation criteria;

the future environment could possibly be influenced by internal priority setting, but there were likely to be limits to these activities since the corporate plan was likely to reflect implicit environmental checks and balances of strategy;

the future environment was likely to be neither externalised (i.e. fully deterministic) nor internalised (i.e. fully voluntaristic), but a balance lying somewhere between the two extremes;

in the UK, the perceived scope for adaptive specialisation was likely to be greater as a result of structural change, hence it was likely to encourage environmental management. The future environment was likely to enable voluntaristic managerial philosophies to be favoured, but unlikely to allow these to be adopted without some accommodation for the 'public interest';

In SA the planning process was likely to be split into two elements, firstly at a national level and secondly at the local port level. Each of the ports was likely to have different balances between adaptive specialisation and adaptive generalisation needs. A lesser extent of environmental management than in the UK was likely. The future environment was likely to restrict voluntaristic managerial philosophies being adopted to a greater extent than in the UK.

KEY UK & SA PORTS		Table 15.2		
CONCEPTS SUMMARY			Endorsement	
	High	Moderate	Low	
<i>Nature of organisational environment:</i>				
Structural constraints	yes			
Selection of strategy		yes		
<i>Unaffected by changes in structural constraints:</i>				
Public/Private Trustee	yes			
Node	yes			
Core		yes		
Peripheral		yes		
Tangential		yes		
	Opportunity	Mixed	Threat	
<i>Affected by changes in structural constraints:</i>				
Financial pressure	yes			
Portfolio pressure		yes		
Environmental Management	yes			

The purposes of a port were unaltered by structural change, hence the high endorsements implied that diversification activities might need to avoid conflict with future trustee or node responsibilities. However, the moderate endorsement of selection of strategy implied that structural change could create some scope to manipulate detailed operational activities within these constraints. This could arise from the incentive effect of financial pressure, but selection of strategy for the portfolio areas could be subject to restrictions imposed by stakeholder power.

1.3 Inferences on the Future Relationship of Agents and the Environment

The scope for future environmental management was relatively wide:

Within the ports industry a future environmental management approach balanced between adaptive specialisation and adaptive generalisation was likely to develop. This balance was likely to vary between ports and between countries, resulting in differing degrees of environmental management;

In the UK a modified Model 2 organisational structure was likely to be the preferred form for enabling environmental management. This implied an entrepreneurial stance, but also that even in dynamic environments some tight central control was likely to be a feature.

In SA the likely organisational structure was Model 3, which implied an equal balance between adaptive specialisation and adaptive generalisation.

KEY UK & SA PORTS		Table 15.3		
PROPOSITIONS SUMMARY		Endorsement		
		Model 1	Model 2	Model 3
<i>Uncertainty in managing environmental events:</i>				
P4	HIGH		yes	
<i>Adaptive specialisation:</i>				
P5	environmental complexity			yes
P6	environmental dynamism			yes
P7	resource scarcity			yes
P8	resource concentration			yes
<i>Adaptive generalisation:</i>				
P9	organisational size			yes
P10	organisational slack		yes	
P11	centralisation of decision-making	yes		
<i>Blending adaptive specialisation & generalisation:</i>				
P12	dominance of Boundary-spanning functions			yes

The widespread pattern of Model 3 on consolidation of the two port groups implied that there was complete endorsement for the ability of decision-makers to undertake environmental management activities in their role as stakeholder-agents.

The endorsement for organisational structure (P4) represented a Model 2 (decentralised strategic planning) structure. This reflected the judgements of scenario elements and the general aims of restructuring to make ports more responsive to customer needs. However it did not fully reflect the final favoured mixed scenario, nor the high threat element in the participants' comments.

The Model 3 (decentralised decision-making guided by corporate portfolio planning) endorsement for adaptive specialisation reflected the organisational structure inferred in Chapter 14. (This was the form adopted by ABP for its 22 ports and was the form shown by Port of London before privatisation of Port of Tilbury. It was also similar in governance to the form shown by 'landlord' ports worldwide.)

The endorsement for adaptive generalisation covered all three Models. This implied that organisational size could matter, but not to the extent that total industry dominance was necessary for survival. From participants' comments it would seem that the effect of natural hinterlands of ports was to reduce, but not eliminate, tendencies for dominance. The Model 3 endorsement for P9 was thus in keeping with the final favoured mixed scenario and the tone of participants' comments. The existence of surpluses was seen as an inefficient use of resources according to many of the participants' comments and thus the endorsement for a Model 2 form was unsurprising for P10. The extent of stakeholder power and conflict resolution implied a relatively strong command and control structure. This was not a feature of Model 2 organisations, but was characteristic of Model 1 organisations; hence this endorsement for P11 was understandable. The net effect of these varied endorsements implied that the compromise Model 3 approach could be the most workable for long-term survival.

The endorsement for a Model 3 form for blending adaptive specialisation and adaptive generalisation was thus consistent with the favoured mixed scenario and for balancing conflicting stakeholder-agent relationships. The inference was that a Model 3 organisational form was the most likely future Boundary-spanning organisational form.

However, this raises the issue of selection of strategy. Privatisation and restructuring was expected to introduce creative private sector 'market' philosophies (discussed in the Introduction). To what extent will a Model 3 organisation encourage their development?

2/ IMPLICATIONS FOR SELECTION OF STRATEGY

The structural constraints and influences of stakeholder power in the organisational environment created differing expectations of the activities of decision-makers as stakeholder-agents. The overall effect was to produce a situation of potential conflict. This role affected the freedom of a port's decision-makers in selection of strategy.

If a 'Long-term Strategic Service Industry', of which ports were assumed to be an example, adopted a Model 3 organisation, then distinctive managerial systems could evolve to manage these stakeholder-agency expectations. The principal systems were likely to be:

- a command and control system which could reconcile stakeholder influences in the managerial and political environments;
- a nodal activities system which could carry out aspects of trade in the commercial, economic and operational environments;
- a statutory system which could look after the legal, social, physical and location environments.

Each of these systems was likely to be interlinked and strategic issues could cross boundaries according to the needs and perceptions at a particular time. The systems were therefore likely to be relatively fluid and boundaries ever-changing. The decentralised organisational decision-making areas in ports could be envisaged as being determined by the:

areas unaffected by changes in Structural Constraints - these were likely to be outside the direct control of management but could possibly be influenced by managerial action:

the 'public safeguards' as enshrined by the legal process;

e.g. specific legislation including access to port and safe navigation leading to subordinate legislation (bylaws, Statutory Instruments) and general legislation applicable to all organisations.

effects of international competition on trade and the economy as a whole;

e.g. national imports/exports and transshipment traffic; local dedicated traffic; local occasional traffic and leisure.

location and environmental issues and policies;

e.g. marine geography; land utilisation; pollution.

Consequently, managerial philosophies for decentralised organisational decision-making structures within a Model 3 organisation could be determined by the:

considerations affected by changes Structural Constraints - those aspects of selection of strategy in port operations that were likely to be within the direct control of management, but could be influenced by external events:

local marine operations;

e.g. core - continuous vessel traffic management;

e.g. peripheral - routine access and engineering maintenance; legal functions and endorsement services;

e.g. tangential - occasional major civil engineering works to maintain or improve access.

local shore operations and local land utilisation;

e.g. core - continuous cargo interchange activities of bulk, container;

e.g. peripheral - specialist terminals and related operations;

e.g. tangential - unrelated diversification and leisure developments.

The problem for decision-makers in an agency-stakeholder relationship in a Model 3 organisation was likely to be selection of strategy which best accommodated the potentially conflicting objectives of these systems. Management in a Boundary-spanning organisation could create its own unique strategy demands. There might be no one best way for the port as a whole, since the needs of the individual decision-making structures could vary according to their purpose and shifting influences of stakeholder power.

3/ *BOUNDARY-SPANNING STRATEGY*

The standard method of presentation of selection of strategy in the literature was by means of a two by two matrix categorising strategy options according to their underlying philosophy. The outcome was four distinctive self-contained categories of strategy which were presented as being mutually exclusive. Selection of strategy was thus seen to be choosing one category according to prevailing environmental demands and decision-maker preference.

These categories were also presumed to apply equally to the various elements of the organisation as a whole, and were presumed to be able to accommodate the organisational survival criteria of:

Adaptive Specialisation: this process sought to fine-tune the strategies of the organisation for a better fit with its environment;

Adaptive Generalisation: - this process sought to prepare the organisation for strategic responses to future environments.

If these options did not do so, or did not balance them adequately, there was a potential for rapid alternation between competing strategies as the need for one or the other adaptive process became paramount. Structural constraints could lead to conflicting views between the 'public interest' in the ports' continued operation and investors' desire for commercial returns.

This might not be problematic if there were few priority stakeholders, e.g. shareholders, but if there were many groups of priority stakeholders the chances of conflict between objectives increased. For Boundary-spanning organisations there were likely to be influences which decision-makers either balanced, or were dominated by, according to prevailing circumstances.

Selection of strategy could be limited by considerations of 'public interest', and enhanced by 'public interest'. In other words, structural change led not only to perceptions of greater freedom, but also to demands for maintenance of existing standards (from a legal viewpoint) as well as social expectations of improvement from employees, customers, port users, local residents and economic trade considerations. Stakeholder needs, as perceived by decision-makers, may lead to selection of strategy as a means of resolution of potential conflict rather than for financial gain.

Conflict resolution could take two forms - reactive selection of strategy, i.e. in response to stakeholder demands, or pro-active selection of strategy, i.e. to circumvent constraints or potential stakeholder demands without creating a future crisis. This had to be encompassed by a general theory of strategic choice which related port decision-makers' freedom of selection of strategy in relation to constraints of stakeholder power, their own managerial power, and their control over activities of subordinates.

In times of linear change conventional strategic management philosophies could be the most appropriate since well developed techniques exist for planning (objective and goal setting), positioning and scanning the environment. These theories were seen by Mintzberg (1994) to have a limited application, seeming to be best at the end of a period of changing circumstances and the start of one of operating stability. They appear to value adaptive generalisation above adaptive specialisation.

However, when rapid environmental changes created a non-linear progression of events, emergent tactical management philosophies could take over the roles of objective and goal setting, positioning and scanning the environment. These theories were seen by Mintzberg (1994) as best suited for strategy formulation in complex circumstances of considerable uncertainty and unpredictably, where power over strategy-making had to be granted to a variety of decision-makers in a decentralised organisation. They appeared to value adaptive specialisation above adaptive generalisation.

Continuous changes between these approaches to strategy could lead to the appearance of a 'flip-flop' selection of strategy that did not necessarily reflect the respective needs of adaptive generalisation, adaptive specialisation or stakeholders. It might be that short-term complexity was best dealt with by measures such as parallel and temporary organisations to detect and respond to environmental changes, whilst a slow, but permanent, reconfiguration in strategy and structure was achieved to encompass both stability and complex instability in the future environment (Boschken, 1990). An inappropriate switch from one theory base to another could be avoided by the flexibility in a Model 3 organisation.

The fundamentals of a Boundary-spanning philosophy for selection of strategy for a Model 3 organisation were identified in Chapter 3. The results of the testing of the Research Expectations (Chapter 12) indicated that a fifth category of selection of strategy was required for a Model 3 organisation. This spanned the boundaries between existing managerial philosophies such that *elements of all the categories of selection of strategy were present*.

In other words, the outcome of the Research Expectations were strong inferences that confirmed that no single managerial philosophy in the literature was necessarily appropriate for the whole organisation in a 'Long-term Strategic Service Industry'. A composite blending of several strands of thought in the strategic management literature was more likely to be appropriate.

This was necessary to reflect the international nature of structural constraints shown by:

(Research Expectation - 1b)

achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being necessary to meet 'public interest' considerations in a port.

This Expectation was endorsed since the calculated percentages of decision-makers' judgements placed it firmly in a Boundary-spanning area. However there was a clear divergence between Key UK Ports and Key SA Ports. The Key UK Ports' positive figure placed this Expectation at the opportunity end of the Boundary-spanning area, i.e. favouring adaptive specialisation, whereas the Key SA Ports' negative figure placed this Expectation at the threat end of the Boundary-spanning area. The implication was that this reflected the differing demands of stakeholders in the differing public trustee circumstances of these countries.

(Research Expectation - 2a)

a voluntaristic managerial philosophy and decentralised organisation structure ought to be perceived as being able to meet 'public interest' considerations in a port.

This Research Expectation was not confirmed, since the calculated percentages placed managerial philosophy firmly in the middle of the Boundary-spanning area, rather than at the voluntaristic end. The inference is that a blend of voluntaristic and deterministic approaches are likely to be required. This was an important disconfirmation since it demonstrated the complexity of management in a Boundary-spanning area. The inference was that misapplication of either voluntaristic or deterministic approaches could jeopardise 'public interest' in the future in both countries, and hence internationally. Consequently, a key feature of a 'Long-term Strategic Service Industry' was likely to be its unique managerial philosophy.

(Research Expectation -2b)

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

This Research Expectation was confirmed. However, there was a difference between the Key UK Ports and Key SA Ports groups with the latter being more inclined to favour decentralisation. The inference was that the likely structure was well on the decentralised edge of a Boundary-spanning area, i.e. not wholly decentralised but following these principles where consistent with meeting the 'public interest' concerns of stakeholders.

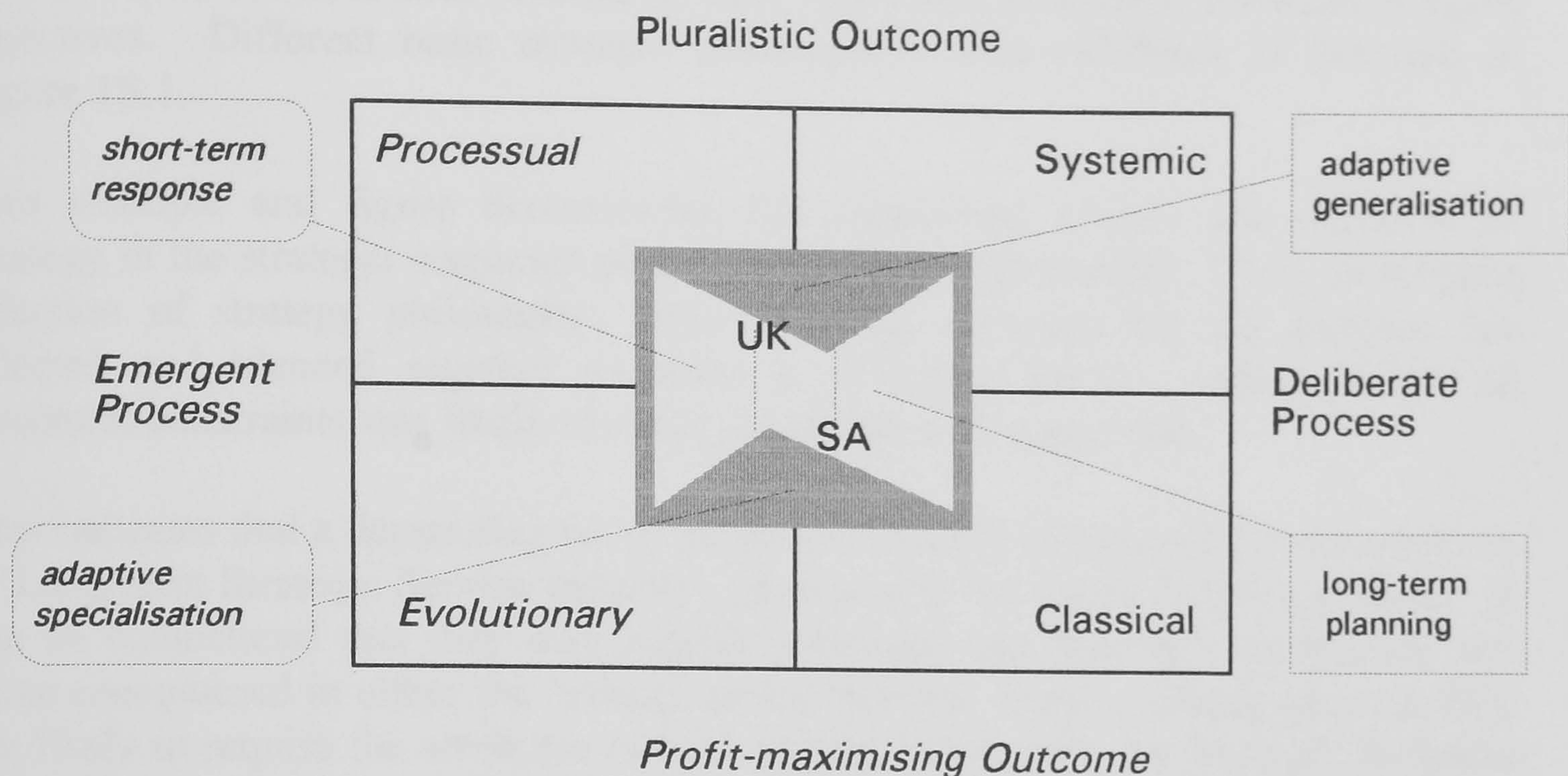
The outcome of testing these Research Expectations is illustrated in Figure 15.1, which draws on Whittington's (1993) assessment of the processes and outcomes of strategy options, as modified from the theoretical establishment of a Boundary-spanning area in Chapter 3. This illustrates decision-makers' stakeholder-agent roles. The roles include the choice of a particular strategy for the Model 3 organisation as a whole, and individual strategies for the elements of the organisation as part of the strategic corporate planning process.

This results in a blended approach to the activities of a port and a balancing of stakeholder needs. This could demonstrate a selection of strategy that blended the findings on commitment theory of strategy (Ghemawat, 1991), and co-operative

strategy (Nielsen, 1988), as well as the rationale for growth from hostile competition (Potter, 1991) and the phases of growth (Greiner, 1972).

BOUNDARY-SPANNING SELECTION OF STRATEGY

Figure 15.1



(developed from Whittington, 1993)

[This presentation is modified from his original because of the theoretical Boundary-spanning justification discussed in Chapter 3 (see Figures 3.3 & 3.6).]

Within the Boundary-spanning area there was likely to be differing emphases between ports and countries. These are indicated for UK as being biased towards the emergent process side of the matrix, and SA as being towards the deliberate process side. Since the Research Expectations were measured, and percentages were derived, it should be possible to plot the differences between the two countries. However, in the absence of the confirming Delphi and Bias (Chapter 11) this would not necessarily portray an accurate representation of the Boundary-spanning characteristics. Hence an illustration only is shown - further research is required before attempting such a course.

A recent example of the benefits and balances in this Boundary-spanning approach was the dredging undertaken by Harwich to enable new generation container ships to call at Felixstowe at all states of the tide. The reason for dredging was to meet financial pressure on Felixstowe by its Hong Kong owners and the commercial systemic influences of its customers. The economic and location systemic influences were benefited by the work. At a 20 year payback, it was adaptive generalisation for Harwich. Spoil from the works was used to strengthen sea defences resulting in social systemic influence benefits. The operational systems benefited from a more regular traffic flow which was a process of adaptive specialisation for both Harwich and Felixstowe. The managerial system was employed in such a way that there was minimal resentment of the works by all

stakeholders. This was in direct contrast to the construction of a new terminal at Felixstowe which aroused considerable stakeholder objections. (interview UP - N).

The works were thus an example of short-term responses, i.e. reaction to events, long-term responses, i.e. proaction to meet future needs, and manipulation of the environment, i.e. structural constraints were reconciled to achieve stakeholder-agent objectives. Different basic strategic philosophies were exhibited as depicted in Figure 15.1.

This example and figure demonstrates the anticipated criteria for selection of strategy in the strategic corporate plan of a Model 3 organisation. There is no pure selection of strategy philosophy, rather the best elements for the purpose are selected and blended together to make a workable whole. Manipulation of structural constraints was likely to occur, as shown by the example.

This indicates that a demanding set of personal attributes is required for managers in a 'Long-term Strategic Service Industry', particularly for senior decision-makers. It can be conjectured that they may require a breadth and flexibility of thought not often encountered in either the 'public' or the 'private' sector - simply because they are likely to require the attributes of both sectors. However, the Multiple Scenario Questionnaire did not specifically address this aspect, although some clues are given by Table 14.5.

4/ SUMMARY

This chapter marks the achievement of subject Goal (a):

to propose the extent to which Boundary-spanning processes and outcomes ought to dominate international decision-makers' selection of strategy and organisational structure in a 'Long-term Strategic Service Industry';

It represents the last stage of the thesis as the purpose of the research was achieved.

The next chapter draws conclusions as to whether achieving both the subject and methodology objectives contributed to knowledge. It identifies further avenues for research into the idea of a Boundary-spanning 'Long-term Strategic Service Industry' and the Multiple Scenario Technique.

CHAPTER 16 - CONCLUSIONS AND FURTHER RESEARCH

The complexity of strategic issues in international structural change was demonstrated by the UK and SA ports. Beliefs in both countries were that 'private sector' management philosophies delivered benefits to the global transport system; however, structural change had created organisations whose objectives and contexts were more complex than profit maximisation.

The purpose of the research was to propose a 'Long-term Strategic Service Industry' model based on the specific example of international ports, which incorporated a Boundary-spanning perspective of selection of the strategy and a Strategic Choice Perspective of the organisational structure which ought to be adopted by decision-makers. This ought to have wider implications for further research into industries other than ports, that appeared to have similar characteristics.

The international transport system was reviewed and factors identified which emphasised that the future of ports depended on the role of decision-makers. Ongoing manifestations of stakeholder power were not explained in the literature, nor were the implications of operational sub-systems requiring differing selections of strategy. The contextual political, economic, social and legal constraints on selection of strategy imposed by obligations to provide essential services had been overlooked. These structural constraints and options for selection of strategy meant decision-making on behalf of a wide variety of stakeholders.

A Boundary-spanning strategy perspective was developed from emerging Advanced Systems Theory, since the use of any single research paradigm produced too narrow a view to reflect the multifaceted nature of selection of strategy and organisational structure. A conceptual model of potential outcomes of structural change was developed via the economic, legal, ports, organisational and strategy literature. It considered ports as holons comprising economic, technological, behavioural and mechanistic models that were influenced by power relationships. Underlying concepts and systemic influences on strategy were identified and related to environmental management propositions. The outcome of this conceptual model was opposing scenarios of potential effects arising from structural change.

A review of systems methodologies disclosed their deficiencies in embracing power relationships. A need for a new futures methodology was identified. This was developed and a congruent research technique was constructed. Circumstances of potential outcomes of structural change were explored by multiple scenarios. These challenged perceptions of the future from the stance that structural change would be effective only because of the efforts of decision-makers, and not necessarily because structural change in the absence of economic regulation was theoretically sound. The boundaries of soft science forecasting were moved towards a harder method through the rigorous construction and analysis specification process adopted for the Multiple Scenario Questionnaire.

The multiple scenarios were put to decision-makers and stakeholders by means of a postal Policy Delphi. The small numbers of ports meant that it was possible to contact the total population of specific decision-makers in the ports. A very high response was achieved. These responses were subjected to numerical analysis of judgements and qualitative analysis of systemic influences in comments made. Longitudinal events created a problem for the Policy Delphi iterations.

Whilst the overall Multiple Scenarios Questionnaire assessed by a Policy Delphi was not perfect in practice, given the longitudinal iteration problems encountered, the Multiple Scenario Technique did produce valid subject results that were representative of international views. Some improvements to the questionnaire design were identified from experience in its use. The Delphi concept was modified by a multiple scenario based approach for strategic research.

The subject results endorsed concepts, propositions and systemic influences underlying the conceptual model. Differing views of structural constraints and strategic choice were expressed in the UK and SA. They required careful analysis to elicit both convergent and divergent beliefs from a Strategic Choice Perspective. The results of this analysis enabled a 'Long-term Strategic Service Industry' model and Boundary-spanning strategy idea to be proposed.

There was a dual contribution to knowledge of how to proceed with understanding structural change. The subject contribution rests on the development of the Advanced Systems Philosophy, conceptual model of potential outcomes of structural change, and the strategic issue analysis of how changes in the UK and SA ports were being perceived by senior managers and informed observers. The methodology contribution rests on the theoretical development of an Advanced Systems Methodology, Multiple Scenario Technique, rigorous construction process of the Multiple Scenario Questionnaire, and testing this in practice.

In relative holism research it is not sufficient to say that a dual contribution to knowledge arises merely from showing these two contributions. The next step must be addressed - this is "so what?". Dual means additional to singular. The proposed 'Long-term Strategic Service Industry' model and Boundary-spanning strategy idea represent the dual contribution to knowledge.

This was an ambitious research project, particularly as it was difficult to conduct international research into perceptions of the future from a common base that allowed for cultural differences. In considering the breadth and depth of research entailed, it became apparent that the methodology adopted for the research would be problematic. It raised the question regarding the methodology aspect of the thesis:

How can decision-makers' perceptions of the potential future outcomes of structural change be gathered and analysed to demonstrate the characteristics of a 'Long-term Strategic Service Industry' model?

1/ METHODOLOGY OBJECTIVE

This led to the research objective of:

to identify or develop a congruent systemic methodology that accommodates power relationships to assess perceptions of the future effect uncertainty in selection of strategy.

Achieving this depended on confirming the Research Assumption which was that:

it ought to be possible to obtain holistic judgements of holistic multiple scenarios - if research participants were unable to form a judgement then this would imply that the proposed characteristics of the model did not reflect their perceptions of future effect uncertainty.

Other than an improvement to the style of some questions, there was little to suggest lack of support for the methodological Research Assumption. The majority of answers to scenario elements did show a holistic judgement was made and the small numbers of problems experienced by participants were measurable. In all cases where participants were unable to form a judgement, reasons were given that showed the scenario elements did not fully capture their holistic perceptions.

1.1 Methodology Goals

Considering the practical application of the research led to the methodology Goals:

to develop a data collection technique that ought to achieve the subject goals; and to test the data collection technique in practice;

These goals were achieved, with a proviso, by means of multiple scenarios assessed by means of an international postal Multiple Scenario Questionnaire which generated the relevant data. However, analysis in the absence of a Policy Delphi to confirm the base data was problematic because of the effect of Bias. Hence a method of comparison between participant groups was identified, that enabled analysis of the data from a Strategic Choice Perspective and summarisation.

1.2 Methodology Research Expectation

To satisfactorily answer the methodology Research Question, and demonstrate the extent of the applicability of the model, depended on obtaining a discerning holistic appraisal of the multiple scenarios presented for judgement. The Research Expectation was that the target level of the participants would ensure this, i.e.:

decision-makers' judgements of opportunity/threat scenarios that address future effect uncertainty ought to be the outcome of their Bias-free holistic perceptions.

Broadly, this Research Expectation was confirmed. Holistic judgements had been made and there was no evidence of major levels of Bias. Nevertheless, there was cause to qualify interpretations derived from the base data. However no satisfactory measure could be obtained. The best that could be achieved was a surrogate measure that indicated compensatory effects of Bias on participants' judgements were present.

1.3 The Multiple Scenario Technique in Practice

In general, the Multiple Scenario Technique worked well and achieved its aim of catching the conflicting views of structural constraints and selection of strategy held by participants in different occupations and countries. The results of the research generally appeared to represent the views held by the participants. It was notable that the South African ports contingent was more favourably disposed to the research - this arose from cultural and political isolation factors. It also arose from a relative lack of 'repetition' of research requests and being a unitary organisation. In contrast, the UK ports contingent found the questionnaire time-consuming and was less forthcoming, displaying an expected caution over political and commercial sensitivities. The non-ports actors approached were surprisingly interested in the topic and the technique.

However, as to be expected, there were some areas in which the technique showed limitations. There was some dissatisfaction with the format of the questionnaire and the content of the multiple scenarios. The presence of Bias, although relatively well controlled by the questionnaire design, led to developing a means of qualifying the results for judgements of concepts and propositions as strong inferences. The surrogate measures derived for Bias suggested that a degree of caution was necessary in interpretation. The expertise of all participants and the positions they held minimised concerns over objectivity. The conflicting judgements shown, and the level of response and comments, indicated the validity of the subject results obtained.

There was a strong spirit of providing judgements to the scenario questions, which implied that the research had resulted in an intervention in participants' views. This aspect is important as the scenarios raised awareness - the knowledge elicitation method adopted in scenarios may have influenced or changed future responses, since the participants could not 'unread' the document they had completed. There were indications of both fixed opinions not being altered by the opposing scenarios and change in views taking place over the course of the questionnaire. This appeared to be because the scenarios had effectively raised unconsidered possibilities. There were a few indications of difficulty in coping with the purpose and complex format of scenarios, the thought train required, the ideas involved and the time requirements. Conversely, there were indications that most participants had little difficulty.

There was some evidence of external factors influencing the final favoured scenario. The accuracy in obtaining deep-seated perceptions was difficult to measure. The participant levels were chosen for an expected truthful reply. At these levels there will be strong opposing views, some forcibly expressed. Some comments were

strongly critical of the scenarios, but all seemed to be honest reflections of the mental models generated by challenging their assumptions of the future. The uniqueness and strength of the scenario concept appeared to be dependent on, and conditioned by, participants' perceptions of the business circumstances presented in the questionnaire. Multiple scenarios are inherently not comprehensive in scope, but selective so far as a participant is concerned. Consequently, they must be allowed their own input to reflect their mental model to maintain interest.

The data generated by the technique was also influenced by participants' goodwill in imparting knowledge and by their perceptions of the value the research will have in adding to their bank of knowledge. It appeared from the way in which the questionnaire was completed that qualitative scales are very useful in multi-cultural, multi-language international research. They give the same codification as numerical scales but seem to avoid the problem of participants feeling that they are giving spuriously accurate views. There was no evidence of simplistic judgements with these scales and ample indication of thought generated in the comments made in these sections. By expansion to a seven point ordinal scale incorporating opposing weak strength answers, e.g. reasonable / incomplete, the questionnaire could have been improved. Likewise, the numerical scales should have been dropped and the descriptive scales substituted - although this may have created its own presentational problems for the content of these questions.

1.4 Credibility of the Methodology

The believability and trustworthiness of the Multiple Scenario Technique determined if it made a significant contribution to methodological knowledge in how to proceed with understanding structural change. These concerns for accuracy in research can be expressed as questions to assess the credibility of the methodology (Robson, 1993; Gill and Johnson, 1991). The extent to which the concerns are met were:

Reliability - i.e. what consistency of results were obtained? The research is repeatable, but not replicable. Because of the nature of the research the scenarios were controlled through a rigorous questionnaire development process. A comprehensive audit trail and analysis specification were created. The procedure adopted is therefore replicable, but participant selection cannot be repeated because of longitudinal events, hence identical results will not be obtained on a future occasion. Small, but significant, levels of Bias were apparent, which the Delphi iterations were likely to have controlled.

Objectivity - i.e. was there agreement of multiple observers on what constituted a phenomenon? - yes, as evidenced by the 92.3% agreement on potential conflict (in Chapter 10).

Validity - i.e. does the technique measure what it is supposed to? - yes, for the future stage of the structural change process addressed. A multi-source controlled research base was developed from the literature for scenarios, the questionnaire had specified interpretation and analysis categories; judgements would have been controlled by panel iterations, but two areas were uncontrolled - the effects of intervention depended on the researcher for assessment, as did interpretation of comments.

Generalisability or transferability - i.e. do the results apply to other groups? - yes and no. This was high for the countries concerned because of contacting the total population, but moderate because of a restricted worldwide sample. It was industry specific and thus relevant to similar public/private Boundary-spanning industries, but low for commercially-driven organisations in other industries.

Credibility - i.e. what is the overall believability of the research? - High because of triangulation, i.e. quantitative multiple scenario format and participants' qualitative comments; inbuilt checks and analysis specification; total population coverage and unusually high response levels to the questionnaire of 39% for the Key UK Ports (but this was more likely to be higher because of referrals) and 65% for Key SA Ports, as well as 69% for other stakeholders and academics.

The multiple scenario procedure could influence participants' outlook in some way, but the choice of language and method of enquiry were controlled to prevent unduly influencing the outcome. The combination of quantitative and qualitative data collection methods enhanced the overall results, and the Policy Delphi in particular would have added to validity had it been possible to overcome longitudinal events. With hindsight, a Delphi is too reliant on environmental stability, and on ownership by a well-regarded champion. This has its drawbacks, unless he/she is seen to be impartial, since their influence could easily lead to a conditioned response. Allowing 'maverick' views to surface was achieved in the research.

1.5 Methodology Contribution Assessment

The Multiple Scenario Technique worked and its deficiencies were identified in practice. Valid data that was representative of international views was obtained. The Multiple Scenario Technique of the best elements of hard and soft systems research practices in order to seek a more complete picture was applied, and a new way of assessing thinking behind organisational and structural change in a transport system was developed. This methodological development was unique in its cross-fertilisation of qualitative and quantitative approaches. Whilst the Multiple Scenario Questionnaire assessed by a Policy Delphi was not perfect in practice, given the longitudinal iteration problems encountered, the Delphi concept was modified by a new form of scenario-based strategic research.

There was therefore an advancement in methodological knowledge.

1.6 Further Methodology Research

The final methodology Goal was:

to identify further avenues for research into the validity of the data collection technique as a judgmental methodology.

The Multiple Scenario Technique is a viable futures research method if the following modifications, identified from experience of its use in practice, are made:

expansion to a seven point scale for ease of participant choice of the nearest answer to their views;

substitution of qualitative scales for numerical scales for participant ease;

restriction of holistic scope where possible to ease questionnaire construction and analysis.

However, the technique should not be used for futures research without extensive researcher knowledge of background events, in situations of rapid change, or in the absence of expert participants, whose selection and co-operation may rely on the extent of the researcher's contacts.

Although the Multiple Scenario Technique was restricted to ports, the Stakeholder group provided some evidence of its usability elsewhere. This needs to be tested with other problem situations in other environments, given its success at moving the boundaries of soft science forecasting towards a harder method. It can be improved as a research tool or simplified as a decision-making support tool. Given the extensive literature on the Delphi method, this iterative aspect of the research ought to enhance valid results in a different stable international setting.

Multiple independent methods testing different facets of the area have a greater validity or reliability than a single methodological approach to a problem if they reach the same conclusions. Holistic research seeks broadly in order to find the right questions, reductionistic research seeks deeply to answer identified questions. This research has identified what are the right questions to ask, hence the next stage would appear to be to confirm the relative holism result by re-running the Multiple Scenario Technique in full, i.e. with complete Policy Delphi iterations, followed by in-depth reductionistic research on each of the factors of the model. However, a re-test is unlikely to give identical results because of changes in participants and industry circumstances. Nevertheless the inferences drawn are researchable.

Certain unsubstantiated statements came to light during analysis of the comments made by participants. These indicated that they might be basing their views on accepted conventions within their sphere of expertise rather than on deeply held convictions of future outcomes. These comments all pointed to a need for further in-depth research to ascertain whether or not they arose from some form of bias or were simply the case that fuller explanations of a point of view had not been given for

reasons of time, space on the questionnaire or an expectation that the researcher's background enabled the point being made to be understood. There were not a significantly large number, but could shed further light on the complex strategy options in a Boundary-spanning area.

2/ SUBJECT OBJECTIVES

The purpose of the research was to show that ports were conceptual examples of a 'Long-term Strategic Service Industry'. The subject objectives were:

*to assess systemic structural change in the international ports industry from a Strategic Choice Perspective; and
to model the considerations decision-makers ought to make in selection of a Boundary-spanning strategy.*

These objectives depended on the Research Assumptions:

it was assumed that decision-makers in a 'Long-term Strategic Service Industry' operate within a complex managerial area that spanned the boundary between 'public' and 'private' interests, implying that the boundary between voluntaristic and deterministic approaches to strategy was also spanned.

This first Research Assumption was confirmed by the data obtained. The inference was that within a Boundary-spanning area, ports appeared to be situated towards the 'public interest' side of the 'public' versus 'private' interest continuum and the voluntaristic side of a voluntaristic versus deterministic managerial philosophy continuum.

it was assumed that the complex influences operating on decision-makers in a 'Long-term Strategic Service Industry' could be measured by the strength of their perceptions of the 'opportunity' or 'threat' posed by structural change.

There was little reason to doubt that the Multiple Scenario Questionnaire had essentially captured perceptions of future effect uncertainty of participants. There may have been other factors of equal or greater importance to participants than those covered by the scenarios.

In order to model the characteristics of a 'Long-term Strategic Service Industry' there was a need to answer what is likely to be changed by structural reform and what are decision-makers likely to do in response to change?

Are 'public interest' obligations perceived by decision-makers in a Boundary-spanning industry as imposing constraints on future selection of strategy?

The strong inference was "yes", for the future UK and SA ports industry. Hence the future environment was likely to be constraining.

So what do decision-makers in a Boundary-spanning industry perceive as being the likely managerial philosophy and organisational structure to safeguard the 'public interest'?

The strong inference for the future UK and SA ports industry was that it would be likely to be a blend between voluntaristic and deterministic approaches to strategy selection. Hence the future environment was likely to be partially externalised.

2.1 Subject Goals

These subject goals were:

*to ascertain international decision-makers' perceptions of the potential impact of structural change on fulfilling statutory obligations; and
to ascertain international decision-makers' perceptions of the potential impact of structural change on choice of a voluntaristic or deterministic strategic stance.*

They were not only achieved (Chapter 9), but also expanded by the inclusion of international stakeholder participants whose perceptions added 'richness'.

*to assess international decision-makers' perceptions of the potential impact of structural change on key aspects of a strategic corporate plan; and
to assess international decision-makers' perceptions of the potential impact of structural change on organisational structure.*

These assessments were made from a Strategic Choice Perspective of the future role of agency and choice (Chapter 12); the future nature of the environment (Chapter 13); and the future relationship between organisational agents and the environment (Chapter 14).

to propose the extent to which Boundary-spanning processes and outcomes ought to dominate international decision-makers' selection of strategy and organisational structure in a 'Long-term Strategic Service Industry';

This was proposed in Chapter 15.

2.2 Subject Research Expectations

The strong inferences for the following Research Expectations supported the presence of ports in a Boundary-spanning area:

Structural change ought to be seen as improving 'public interest' governance.

This was not confirmed. Overall, there was a degree of endorsement for this expectation, but it was less than would be necessary to be confident that structural change had moved 'public interest' outside the Boundary-spanning area.

achieving a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being necessary to meet 'public interest' considerations in a port.

This Research Expectation was confirmed. The Key UK Ports' placed it at the opportunity end of the Boundary-spanning area, i.e. favouring adaptive specialisation, whereas the Key SA Ports' placed it at the threat end of the Boundary-spanning area.

a voluntaristic managerial philosophy and decentralised organisation structure ought to be perceived as being able to meet 'public interest' considerations in a port.

This Research Expectation was not confirmed. Managerial philosophy was firmly in the middle of the Boundary-spanning area, rather than at the voluntaristic end as expected. There were few differences between the groups. The inference was that a blend of voluntaristic and deterministic approaches are likely to be required. Consequently, a key feature of a 'Long-term Strategic Service Industry' is likely to be its unique managerial philosophy.

a balance between adaptive specialisation and adaptive generalisation ought to be perceived as being able to be met in a decentralised organisational structure.

This Research Expectation was confirmed. However, there was a difference between the Key UK Ports and Key SA Ports groups with the latter being more inclined to favour decentralisation. The inference was that the likely structure was on the edge of a Boundary-spanning area, i.e. not wholly decentralised but following these principles where consistent with meeting the 'public interest' concerns of stakeholders.

2.3 Subject Contribution Assessment

The subject must have addressed an intellectual problem in order to claim a contribution to knowledge. However, contribution assessment is difficult in holistic research - where does the value lie in the subject? This arose from the strategic issue analysis of the underlying factors in structural change that were identified in the Introduction; the development of an Advanced Systems Philosophy; the identification of potential conflict, concepts and propositions that underpinned the scenarios.

The strong inferences clarified issues from a Strategic Choice Perspective regarding the future role of agency and choice, the future nature of the organisational

environment, and the future relationship of agents and the environment. These reflected an international perspective on the likely future outcomes of structural change in the ports industry. No such perspective existed before the research. There was therefore an advancement in subject knowledge.

2.4 Further Subject Research

The final subject Goal was:

to identify further avenues for research into the concept of a 'Long-term Strategic Service Industry'.

The extent of change needs to be tracked by longitudinal methods to understand whether or not the concept of a deep structure represented by the 'public interest' is in operation. Two aspects of the 'public interest' were interesting - the different judgements between the stakeholder and the ports groups, and the overall consolidated judgements of all participants. The questionnaire provoked some surprising individual responses and comments in all groups. Was this a general phenomenon or was it because of the small 'inbred' ports population and non-random selection of like-minded experts? To what extent did consolidation suppress maverick views? Likewise, there was some evidence of a difference in perceptions between the upper managerial level key executives in a port and the next managerial level of engineers and operations managers in the same port. To what extent was this a general phenomenon in all industries? Or was it because of the small ports population and non-random selection of experts by the researcher unconsciously biasing the result?

One query that arose was how accurate were the scenarios that were developed? There was some indication in post-research events that the scenarios were foreshadowing the broad consequences of managerial decisions and stakeholder power. A theme of one scenario element was potential problems in contracting out and losing command and control. A port was heavily fined after full contracting out of an engineering investment project. Six people died and seven were injured. Obviously, the scenario did not envisage this scale of disaster, but the underlying principle of responsibility remaining with the port and need to review projects was envisaged, along with the managerial implications for staffing. A major theme was investor dissatisfaction with 'public interest' expenditure. Shareholders in a major port group have expressed dissatisfaction that their shares were underperforming the FTSE 100. Were these cases of a fluke anticipation? Can other instances be uncovered by longitudinal research? This could point to the value of scenarios as a decision support tool for assessing the implication of the balanced approach to adaptive generalisation and adaptive specialisation in selection of strategy.

Structural constraints and selection of strategy are far more complex than the model suggests. Hence further research should be geared towards comparative studies in differing national, international industries to establish the extent of its usefulness.

3/ DUAL CONTRIBUTION TO KNOWLEDGE

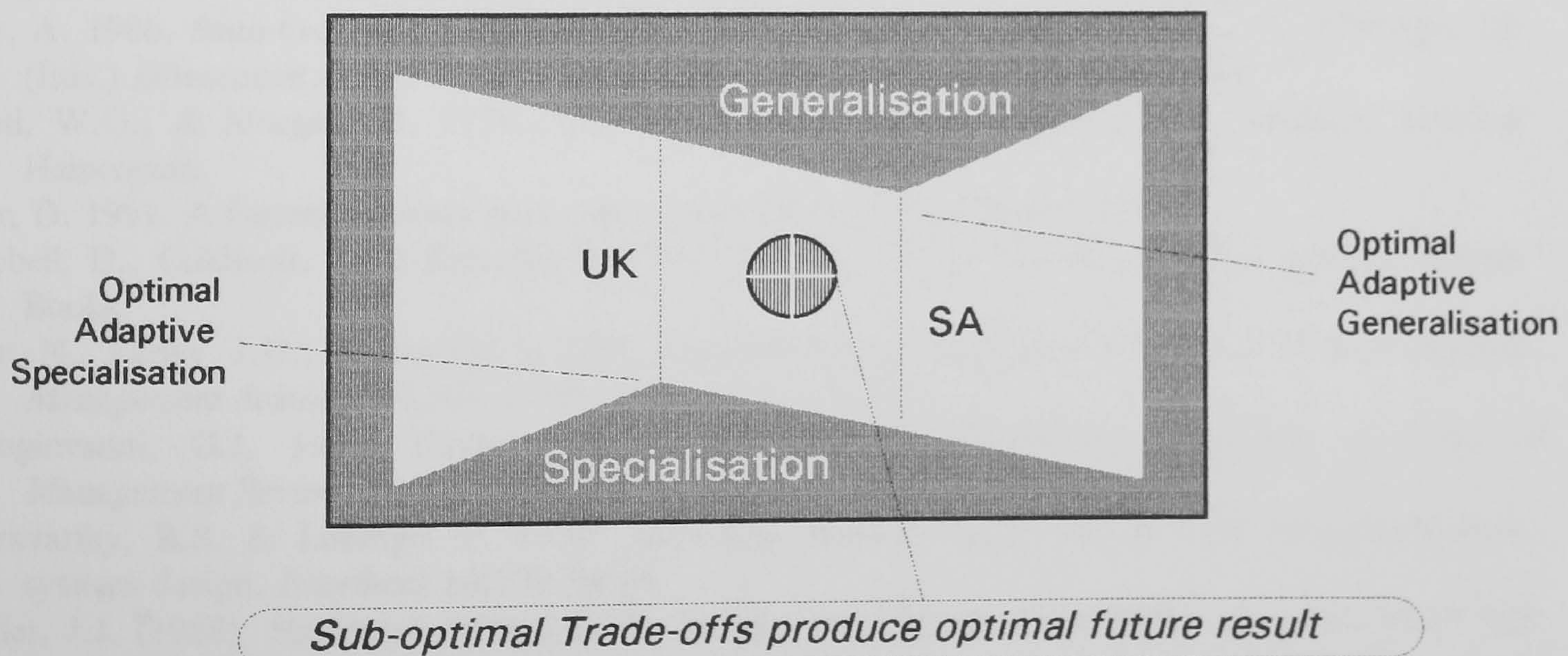
The aim of undertaking the research was for a dual subject and methodological contribution to knowledge by showing that international ports are an example of a conceptual 'Long-term Strategic Service Industry' that required the application of a blend of hard and soft management science methodology to accommodate decision-maker and stakeholder power relationships.

This research has thus advanced the knowledge and understanding of the movement of people and goods and organisations involved with transport; developed a new way to evaluate their future environment; challenged accepted wisdom and further developed an understanding of the field of management; and attempted to relate academic developments worldwide to management practice for the benefit of managers and organisations. A Boundary-spanning strategy idea was developed and results were obtained from a developed methodology that were sufficient to propose a 'Long-term Strategic Industry' model. Hence a claim for a dual contribution is made.

One methodological and subject conjecture arose from the implications for selection of strategy shown in Figure 15.1:

what was the message of the balanced approach to adaptive generalisation and adaptive specialisation in selection of strategy?

Does the ideal Boundary-spanning strategy for a Boundary-spanning organisation imply an equal balance between adaptive specialisation and generalisation? Will stakeholders allow this?



The optimal strategy may be the simple tactic of doing one's best on a purely local basis (Schutzenberger, 1954). This research has gone some way towards defining 'best': the value of the research is therefore that an argument has been made which has the capacity to open up a debate on the management of Boundary-spanning organisations and which justifies further research into a little understood facet of strategic management.

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id code:- ports related business academic

PRIVATISATION AND COMMERCIALLY ORIENTED RESTRUCTURING IN THE PORTS INDUSTRY

Privatisation and commercially oriented restructuring in the ports are relatively new developments. Whilst initial results are sufficiently encouraging to create a world-wide spread, there may be multiple tensions and diverse forces operating in the business climate which have yet to surface. These tensions and forces may arise from a conflict between the public interest in the ports' continued operation as a cargo transfer point in a land/sea transport network and investors' desire for commercial returns.

There are differing views on this potential conflict and the managerial uncertainty in decision-making it implies. The purpose of this research is to identify perceptions of the future of these developments, so as to establish a model for the management of uncertainty. This model should assist managers and investors in reconciling differing viewpoints on the long-term outcomes of current decisions.

METHOD OF RESEARCH

The best way to identify concerns over the control of future uncertainty seems to be through creating opposing opportunity/threat scenarios. From these scenarios it is possible to model the principles required for developing strategies.

Scenarios offer an advantage over other forecasting methods when uncertainty is high and historical relationships are shaky. They are suited to those situations where the future is likely to be affected by factors that have no direct historical precedent, as they can include anticipated events. This questionnaire aims to develop themes from current business conditions where many of the events that will undoubtedly affect business in the coming years are not discernible solely from manipulation of historical data.

Constructing themes depends on reducing a large number of potential influences into a few plausible statements that capture the essence of future business circumstances. The questionnaire is based on the principle that events are more likely to occur from a combination of factors, rather than a single isolated factor. It tests groups of key factors which may act as either an opportunity for, or a threat to, management for omissions. These factors have been gleaned from various published sources, including recent journal articles and newspaper reports.

The danger is that some unexpected combination of key factors will be overlooked, or an important factor omitted, and your assistance in identifying these for the research is appreciated.

THE LAYOUT OF THE QUESTIONNAIRE AND QUESTION STYLES:

The time taken to complete the questionnaire will depend on the thought train this encourages and thus will vary from person to person. For ease of completion, it is divided into four sections asking a total of 15 questions. These pose conditions that may generate separate opportunity/threat decision-making choices in managing uncertain outcomes. It follows the format:

SECTION 1 - BACKGROUND - Potential Sources Of Conflict

SECTION 2 - BUSINESS CIRCUMSTANCES - Opportunity Theme
(assumptions/implications for decision-making)

SECTION 3 - BUSINESS CIRCUMSTANCES - Threat Theme
(assumptions/implications for decision-making)

SECTION 4 - SCENARIO CONSTRUCTION - Preference

The following question styles appear in *italic print*.

Please circle the appropriate answer

After each question there is space for any comments you may have. Please outline any important implication, factor or combination of factors that you feel has been overlooked.

There is no need to scan the questionnaire first to avoid duplicating the factors included at a later stage, since initial reactions on the implications of different combinations of factors from those posed in the questionnaire are very helpful to the research.

Opinions and assumptions:

The background section asks for an opinion on a summary of potential sources of conflict and the usefulness of final scenarios will depend on the assumptions underlying the selection of factors to act in combination.

In each case it will be helpful to know whether the research is proceeding along the 'right lines' in identifying key aspects of planning for the management of uncertainty.

<i>interesting</i>	= unexpected discussion raising valid points; on course
<i>obvious</i>	= discussion as expected; on course
<i>irrelevant</i>	= unexpected discussion; going off at a tangent
<i>absurd</i>	= unexpected discussion; completely off course

Assessing plausibility of implications:

The themes are effectively developed from the implications of a combination of factors that may occur at some point in the future from the time privatisation/restructuring takes place;

scales	1 2 3 4 5	for	short-term (under 2 years)
"	1 2 3 4 5	"	medium-term (2 to 5 years)
"	1 2 3 4 5	"	long-term (over 5 years)

where:

- 1 = improbable; very low prospect; < 20% sure this will happen
- 2 = unlikely; low prospect; about 20% - 40% sure this will happen
- 3 = feasible; reasonable prospect; about 40% - 60% sure this will happen
- 4 = likely; high prospect; about 60% - 80% sure this will happen
- 5 = probable; very high prospect; > 80% sure this will happen

Note - there may be cases of plausibility being the same or changing over two or more time scales, e.g. you may feel that the factors are unlikely in short-term, but probable in medium-term - if so please mark scale numbers accordingly.

No strong views on a discussion:

The answers to all questions reflect uncertainty in that they seek personal views of an unknown future and as such cannot be exact - please circle "*no views*" if you do not feel confident to form an opinion on any question.

Basis of perceptions:

The questionnaire is designed to obtain views from a cross-section of experts with different backgrounds, who will have relevant operational management or decision-making experience, or experience as advisors.

Analysing and consolidating replies will depend on an expert's experience in a relevant area, and it will be helpful if you indicate any reservations you may have when assessing plausibility.

<i>low</i>	an expectation of business practice based on expertise in areas generally related to the particular factors discussed.
<i>middle</i>	a considered view based on expertise in areas closely related to the particular factors discussed.
<i>high</i>	direct expertise in the particular factors discussed.

SECTION 1 - BACKGROUND - Potential Sources Of Conflict

Privatisation and commercially oriented restructuring in ports has its adherents who point to some common perceptions of the benefits to be gained by a change from public sector to private sector management styles. These perceptions revolve around the pressures that market forces bring on managers when they utilise the capital provided by the private sector. Meeting investors' expectations is seen to require not only safeguarding a continuity of income, but also increasing its level. Speed and responsiveness to events are paramount. This necessitates dynamic tactics to be competitive, as well as ensuring that early warning sensors are found to minimise the risk of picking the wrong strategy in offering products and services. Thus time periods in decision-making are viewed as important to success.

There are those who deny all benefits from a purely ideological stance. Others acknowledge that the private sector style gives freedom for creative thought, but question whether port restructuring will in all cases result in more successful innovative solutions than the public sector produces. They are concerned about the 'public interest' aspects of navigation safety and environmental pollution, as well as managerial authority and financial control. They see the primary status of a port as being a transfer point in an international transport network that is open to all users which may be best suited to public sector control because of the potential for commercially justifiable decisions to act as restraints on trade (as happened in 1993 in the UK, according to a European Commission ruling) and their potential impact on the environment. Hence decision-making requires extensive consultation with interested parties. In their view the success of the port depends on being seen to satisfy all users, not only investors.

Queries they raise are along the lines of: what is the value added function of privatisation/restructuring? What does it achieve that could not be achieved by contracting out, especially for duties that are still seen to be a 'public interest' responsibility (such as the conservancy activities of a harbour authority in providing environmentally safe access to a port)? Is the range of decision-making options for private/public supply the same or different? Are the responsibility and results of decisions changed? Is speed of decision-making achieved at the expense of quality? Is the decision making-framework more or less open?

An intermediate group is less concerned with this debate and more concerned with the implementation process. These are the post-privatisation/restructuring managers who must meet the expectations of their new investors, as well as maintaining or improving the service to the customer. Their concerns arise from the practical problems of providing a low cost service for users and generating cash for the investor. When reacting to demand, this leads to fluctuating priorities between raising income from port/cargo dues and attracting investment from shippers.

External factors may have variable influences on their decisions. Ports cannot create a demand for their services as they are dependant on economic conditions. Although there may be geographical constraints on particular port operations, they must have the facilities to meet ever increasing vessel sizes and specialised trades. Further, the rate of change in cargo operations is characterised by rapid growth/decline and increasing environmental and safety legislation. There may in fact be little difference in basic handling operations between competing ports and thus priority is given to plans seeking to influence flexibility and efficiency. Competition for market share of specific trades may force commercial collapses, resulting in mergers, acquisitions and shifting traffic patterns. This may threaten the existence of small ports or ports that are expensive to maintain (e.g. those needing extensive dredging for deep water channels).

Therefore decision-making could be greatly influenced by considerations of financial risk, as opposed to the risk of not meeting 'public interest' expectations for service levels and facilities. However, if there is no form of regulatory body concerned with safeguarding the 'public interest' (such as the 'watchdog' offices of OFGAS, OFWAT etc. provided in the utility privatisations in the UK) investors' interests may be seen by users to be over-represented. These users may be less willing to accept pragmatic commercial considerations taken under private sector management styles.

Thus, the nature of uncertainty for managers may take many forms. What were the strategic objectives of the port - profit maximisation, including diversification, or market share? Service on demand for all or service tailored to specific traffics? How to approach the treatment of capital investments? Long-term investment with uncertain payback periods (such as dredging or perhaps the rescue of ailing terminals that are important to the local economy) determined by 'public interest' considerations, whilst short-term charging policies assessed by detailed cost/return criteria? Contract out or not?

Reconciling these differing viewpoints on market innovation vs. conforming to non-commercial standards of 'public policy and interests' is the key to the future success of privatisation and commercially oriented restructuring in ports.

as an illustration of some potential sources of conflict in privatisation/restructuring do you think this commentary is:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other potential conflicts you consider more appropriate? - please outline:

SECTION 2 - BUSINESS CIRCUMSTANCES - Opportunity Theme

2.1 Assumptions on core business conditions:

Competition will lead to higher stable cargo volumes for successful ports thus raising the vessel traffic levels. This implies increases in navigational requirements, together with a rise in demand for systems and ongoing maintenance. In turn, this may create pressure for increased specialist marine and operations staffing levels and corresponding additional expenditure. Consequently, a substantial part of managerial decision-making concerns maintenance or contracting out of existing systems of regulation (e.g. directions for navigation and bylaws; electronic data systems; port security) as well as ensuring safe passage (e.g. dredging channels to maintain or increase depth; vessel traffic management; pilotage).

for an opportunity theme, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

2.2 Assumptions on diversification flexibility:

Restructuring provides an opportunity for acquisition of, and mergers with, other ports; diversification into new businesses (which may not be port related) e.g. joint venture terminals for specific trades, land transport and leisure developments. Equally important is the profitable exploitation of surplus assets such as land inherited from past strategic decisions. These assets are redundant, and the managerial task is to facilitate their disposal or re-use. It is unnecessary to retain control over present use to allow future flexibility for expansion of facilities since trends in local planning and environmental legislation will effectively restrict major new berths.

for an opportunity theme, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

2.3 Assumptions on freedom of decision-making:

Private sector style port operators have high discretion in the managerial task of developing and controlling operational assets and systems. Thus decisions on setting objectives and goals can be taken solely on commercial grounds, such as profit maximisation, market share, or growth sought through diversification or expansion. Decisions on retaining, contracting out or disposal of marine or cargo functions are made primarily according to the investors' interest.

for an opportunity theme, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

2.4 Implications for strategic choice:

Objectives may include contracting out maintenance or support services to enhance efficiency, thereby reducing uncertainty over predicting effects of change on the resources of the organisation. Returns may be enhanced by ensuring that capital investment costs have short payback periods and port/cargo dues are charged according to marketing considerations in attracting and retaining traffic. These measures will give scope for cost reductions/improved facilities, thereby both satisfying customers and meeting 'public interest' demands for minimum overall transport costs.

<i>plausibility of implications?</i> (improbable - unlikely - feasible - likely - probable)														
<i>short-term</i> (under 2 years)					<i>medium-term</i> (2 to 5 years)					<i>long-term</i> (over 5 years)				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

<i>confidence in your assessment based on experience in these areas ?</i>	<i>low</i>	<i>medium</i>	<i>high</i>
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<i>no views?</i>

other implications you consider more appropriate? - please outline:

2.5 Implications for decision-making:

Decision-making may be concerned with setting targets and identifying methods of achieving an overall improved performance in the provision of efficient and responsive service to variable demands from both shippers and shipowners. Contracting out provides scope for reorganisation and staff reduction (since the expertise required for technical aspects, such as civil engineering, land management projects and electronic regulation systems, can be cheaper than maintaining in-house specialists). This leads to shorter decision times and hence more responsive actions in changing trading conditions. Selected traffic is attracted through high profile promotional activities and incentives, e.g. leases, discounted port dues and provision of specialist terminals.

<i>plausibility of implications?</i> (improbable - unlikely - feasible - likely - probable)														
<i>short-term (under 2 years)</i>					<i>medium-term (2 to 5 years)</i>					<i>long-term (over 5 years)</i>				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

<i>confidence in your assessment based on experience in these areas ?</i>	<i>low</i>	<i>medium</i>	<i>high</i>
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<i>no views?</i>

other implications you consider more appropriate? - please outline:

2.6 Assumptions for organisational structure:

Measures aimed at improving performance are implemented through centralised managerial methods for those traditional functions whose nature has not changed greatly because of privatisation/restructuring policies, such as marine regulatory activities. However, where policies have changed operational routines dramatically, as in container terminals, improved performance is sought through decentralised, innovative managerial methods, that instigate a cultural change towards a commercial outlook. A responsive managerial and employee attitude is enhanced by incentive methods such as profit sharing or share ownership.

for managing opportunity, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

SECTION 3 - BUSINESS CIRCUMSTANCES - Threat Theme

3.1 Assumptions on core business conditions:

The existence of individual ports in the transport network may be threatened by competition. Lower cargo volumes and shipping patterns with unpredictable arrival and departure times could occur as customers chase the 'best deals', thus provoking the financial collapses of multi-user terminals. Hence there could be an overall loss of facilities for certain trades in individual ports. However, there will still be a need to provide navigational facilities and regulatory control systems for the remaining niche market and leisure facilities, albeit at a reduced level. This indicates that a minimum level of service and maintenance will be required to meet erratic demands. Therefore the principal managerial commitment will be to maintain and modernise existing systems in the interests of safety and the environment, possibly seeking subsidies to do so.

for a threat theme, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

3.2 Assumptions on diversification flexibility:

This commitment to maintaining a minimum level of service means that a secondary managerial concern is the profitable exploitation of surplus assets inherited from past strategic decisions. In order to allow future flexibility in meeting demands for additional or replacement facilities generated by changing trading patterns or new technology, it is vital to retain control over present usage of fixed assets, e.g. short-term development and leasing of surplus land, rather than its disposal for housing developments. It implies that diversification, acquisition or merger initiatives should be arranged so that the port authority is exposed to low financial risks, with third parties such as shippers, shipowners or property developers bearing the greater share of both risks and rewards.

for a threat theme, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

3.3 Assumptions on freedom of decision-making:

Since private sector style managers have some limits on their discretion in the managerial task of developing and controlling operational assets and systems, they are less free to take commercially attuned decisions than may be expected from privatisation/restructuring, e.g. they must comply with EC environmental decisions on reducing port dues to encourage double-hulled tankers. Decisions on goals and objectives cannot solely be concentrated on matters such as profit maximisation, market share, or contraction sought through divestment or merger, but need to consider factors such as the impact on local businesses or the environment. Consideration also needs to be given to the 'public interest' and the implications for the ultimate survival of the port in deciding whether control over a particular activity, for instance port security or multi-user terminal management, should be retained, or contracted out, or disposed of.

for a threat theme, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

3.4 Implications for strategic choice:

These assumptions imply that the scope to reduce staffing levels and expenditure to ensure survival is limited. Consequently, port dues and cargo dues may be unrelated to cost of provision of a particular service, e.g. pilotage either subsidising or being subsidised by marketing decisions to attract trades. Payback periods for capital investment costs of dredging may increase because of declining deep draught vessels, but investors still demand market returns leading to further cross subsidy pressures. Thus investment in navigational facilities may take a secondary role in capital rationing, unless the returns can match returns from the commercial operations.

<i>plausibility of implications?</i> (improbable - unlikely - feasible - likely - probable)														
<i>short-term (under 2 years)</i>					<i>medium-term (2 to 5 years)</i>					<i>long-term (over 5 years)</i>				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

<i>confidence in your assessment based on experience in these areas ?</i>	<i>low</i>	<i>medium</i>	<i>high</i>
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<i>no views?</i>

other implications you consider more appropriate? - please outline:

3.5 Implications for decision-making:

Although targets may be set for increased efficiency and reduced expenditure, overall there may be little significant change in costs, because of the need to maintain existing services. Managerial activities are concentrated on defensive measures, including cutting capital investment, such as replacement of harbour craft and handling equipment, and in marketing efforts. Staff reduction may be achieved through contracting out functions. However, port user complaints could surface because of inadequate provision of on-demand services, or lack of discussion on investment decisions. These protests are worsened by legislation requirements, e.g. the length of decision times caused by the consultation process for works which have an environmental impact, and in meeting EC decisions on utilities contracts with the attendant problems of defining specifications and delays. Since contracting out may lead to concerns over loss of command and control, e.g. disputes with external maintenance organisations over relative priorities may delay ship movements and cargo handling, it implies that some in-house specialist expertise to define complicated documentation for user/contractor standards is still required.

<i>plausibility of implications?</i> (improbable - unlikely - feasible - likely - probable)														
<i>short-term (under 2 years)</i>					<i>medium-term (2 to 5 years)</i>					<i>long-term (over 5 years)</i>				
1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

<i>confidence in your assessment based on experience in these areas ?</i>	<i>low</i>	<i>medium</i>	<i>high</i>
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<i>no views?</i>

other implications you consider more appropriate? - please outline:

3.6 Assumptions for organisational structure:

Measures aimed at improving performance are implemented through traditional methods of centralised decision-making and planning, since this may be the most appropriate form for imposing contentious choices. This managerial style could be particularly noticeable in marine and cargo handling areas in times of financial stringency, when the risk of a decentralised decision-making and innovation leading to losses is seen to threaten survival. There may be minimal cultural change as the motivation to share financially in the risks of privatisation/restructuring is low.

for managing threat, do you think these assumptions are:

<i>interesting? - obvious? - irrelevant? - absurd? - no views?</i>
--

other assumptions you consider more appropriate? - please outline:

SECTION 4 - SCENARIO CONSTRUCTION - Preference

4.1

Overall assessment:

which do you feel is the most likely theme to incorporate in the management of uncertainty for a maritime port, e.g.

opportunity? - threat? - mixture of both? - no views?

4.2

if you have chosen "mixture of both" please indicate any additional factors (beyond those opportunity/threat questions that you have already assessed) which should be incorporated:

4.3

if you have chosen "mixture of both" please outline the management structure (possibly by diagrams) and managerial attitudes you feel are best suited for the most likely theme (e.g. centralised with cautious bureaucratic control attitudes for 'public interest'; decentralised with innovative entrepreneurial attitudes for commercial activities):

THANK YOU FOR YOUR ASSISTANCE IN THIS RESEARCH

Ref:

***PRIVATISATION AND COMMERCIALY ORIENTED
RESTRUCTURING IN THE UK AND SOUTH AFRICAN PORTS INDUSTRIES***

*Reasons for not completing the research questionnaire:
Please tick the appropriate answer (s)*

1. GENERAL VIEWS ON RESEARCH

1. I object to the method of approach by post and to subsidising the research []
2. It is time consuming with no obvious relevance to my work []
3. There was no promise of feedback/results from researcher []
4. It is not our policy to complete questionnaires on a local basis []
5. A response is unnecessary, as another person in the firm has replied []

2. THE RESEARCH TOPIC

1. Is unsuitable as it is politically sensitive []
2. Is unsuitable as it is commercially sensitive []
3. It is too early to form a view on the outcome of current changes []
4. I see a potential for misinterpretation of my views, because:
 - (a) generally, I am unhappy with outcomes of other ports research []
 - (b) specifically, I am unhappy with researcher's industry background which may lead to biased judgements []

3. THE QUESTIONNAIRE

1. Is overly complicated and time consuming []
2. The questions seem unnecessarily provocative []
3. It is not clear what information is being sought []
4. The questionnaire style seems designed to fulfil the researcher's beliefs rather than throw light on the topic []
5. I may have considered answering a simpler, clearer questionnaire []

4. OTHER REASONS - please outline

THANK YOU FOR COMPLETING THIS FORM