



**SWP 20/89 BARRIERS TO EXCELLENCE AND THE
POLITICS OF INNOVATION**

**DR JOHN HENDRY
Cranfield School of Management
Cranfield University
Cranfield
Bedford MK43 0AL
United Kingdom**

Tel: +44 (0)1234 751122

Fax: +44 (0)1234 781806



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by

John Hendry

Cranfield School of Management
Bedford, MK43 0AL, UK
Tel: 0234-751122

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ABSTRACT

Research into the process and performance of technological innovation has led to two generations of recipes for innovation success, the first focusing on organization structures for the combination of marketing and R&D, the second on corporate culture and its manifestations. This paper draws on recent research on new product development as a political process to show the connections between the two sets of recipes, to demonstrate their practical limitations, and to indicate how these might be overcome.

Recipes for successful innovation

The problem of how to foster and manage technological innovation has long been of primary concern to both academics and executives. Since the late 1960s a large and still growing body of research evidence has pointed consistently to the conclusion that, for relatively small innovations at least, there is a broad correlation between the success of new product innovations and the extent to which their development is marketing or user led (Marquis, 1969; Mansfield and others, 1971; Utterback, 1971; Litvak and Maule, 1972; Rothwell, 1974; Cooper, 1975; Mansfield and Wagner, 1975; von Hippel, 1976, 1978, 1982; Freeman, 1982; Quinn, 1985; Georghiou and others, 1986; Cooper and Kleinschmidt, 1987). This is not to say that technology push has no part to play in successful innovation. On the contrary, it has been widely recognized that a purely market-led approach can be every bit as limiting as a purely technology-driven one (Dessauer, 1971; Tauber, 1975, 1979; Imae and others, 1984; Voss, 1984; Little and Sweeting, 1984). The art, as most commentators have agreed, is to combine the two; or, to use a phrase adopted in two of the key studies in the field, to ensure the "proper coupling of R&D with marketing" (Mansfield, 1971; Freeman, 1982; see also Cooper, 1975; Aram and Javian, 1973; Souder, 1977, 1987; Rubinstein and others, 1976).

A second and largely separate line of research has focused on the barriers to innovation experienced in organizations, and especially in large corporations, and on the characteristics of those projects in organizations in which the barriers are successfully overcome. Here the emphasis has been on two factors, the importance of which has been well demonstrated and is now generally accepted. One is the existence of product champions operating at a senior enough level in the firm to effectively sponsor the innovation and

overcome any natural organizational resistance to change (Schon, 1963; Roberts, 1968; Chakrabarti, 1974; Maidique, 1980; Burgelman, 1983). The second is a general commitment of top management to innovation, embodied in the practice of rewarding risk-takers and managing failure as the accepted organizational norm (Roberts, 1968; Quinn and Mueller, 1963; Backus, 1984).

On the basis of these consensus conclusions, a variety of recipes for the successful management of technological innovation have been put forward. Reflecting the research literature these are, broadly speaking, of two kinds. One kind, based primarily on the literature on R&D and marketing, focuses on the need for coordinating structures. In particular it advocates the use of matrix organizations for R&D or, carrying the same principle further, of a project-based organization for new product development in general, with all the main functional divisions of the organization represented in each project team. The other kind combines this prescription with a range of "cultural" imperatives drawn from the general observation of successful innovating firms and linked with the literature on champions and top management support.

Most recent recipes have been of the latter kind, and although the details have varied from guru to guru they have shared a common core of main features. The need for active collaboration between the marketing and R&D functions remains central, even if it is sometimes obscured by the surrounding cultural rhetoric. And a project-based organization is the order of the day. But beyond this there is a call for competing project teams with multiple approaches, skunk works and developmental shoot-outs. Failure is to be managed as the norm, but membership of a successful product development team is to be made into the key employee goal. Champions are to be nurtured and made into corporate heroes. Top management should be visibly committed to the innovation process, which

should be a key component of a strongly pronounced corporate image. And they should also have a strong market orientation, which should penetrate and act as the driving force for the whole organization (Peters and Waterman, 1982; Pascale and Athos, 1981; Quinn, 1985; Peters and Austin, 1985; Clifford and Cavanagh, 1985; Imae and others, 1984; Roberts, 1980). The aim, in the phrase coined by Quinn (1985), is "controlled chaos": an environment in which all the advantages of small entrepreneurial firms are retained at the project level and corporate control is provided by the management of culture and by a pervasive awareness of and deference to the market place.

These recipes appear to work well for the exemplary firms on whose practices they are largely based. They are clearly related to the research traditions mentioned above, and they also tie in well with the recent research results of Souder (1987, 1988) correlating innovation success with the use of organizational commitment in place of formal controls, and with high levels of interaction and communication across traditional task boundaries. However, they leave unanswered two very basic problems. One is how to implement them. Knowing where to go is one thing, but getting there is quite another, and many firms clearly find the recipes almost impossible to enact. The other problem, underlying this practical one, is how the two sets of component prescriptions fit together: how the structural prescriptions for the coupling of R&D and marketing relate to the more general prescriptions on corporate culture.

Barriers to implementation

The overriding problem is in implementing the required coordination between the marketing and R&D functions. Many firms would nowadays claim to be doing this effectively, and many now employ some kind of structural coordinating mechanism. But recent research results suggest

strongly that such mechanisms are not working. There is still a chronic lack of understanding in industry as to how the marketing-R&D interface ought to operate. Even where there is a marketing input to initial project assessments, this is rarely carried through into the crucial engineering design phase. And where the marketing function is given a role in the development process it typically seeks to control that process, withholding its own information from engineers and designers, and rejecting any contributions they might seek to make outside its own imposed specifications or terms of reference (Gupta and others, 1985, 1988; Dumas, 1988; Bonnet, 1986). Either way, effective collaboration between marketing and R&D remains elusive.

Underlying this lack of collaboration is a lack of understanding. Researchers have long recognized that the marketing and R&D functions are typically characterized by strongly contrasting organizational subcultures, with different values, motivations and goals, differing status structures and reward systems, and different concepts of procedure and control (Lawrence and Lorsch, 1967; LaPorte, 1967). Given this context, it is scarcely surprising that members of the two functions find it very difficult to understand each other's worlds. Recent research by Souder (1988) has shown that this is indeed the case, that, in particular, they find it difficult to understand and adapt to each other's operational requirements, and that from this lack of understanding there arises a wide range of grievances and suspicions.

It should not be surprising either, given what we know about the sources of conflict between departments and functional groups, that far from resolving these differences, organizational structures which bring the two subcultures into immediate contact tend also to bring them into open conflict (Lawrence and Lorsch, 1967; Seiler, 1963; Walton and Dutton, 1969; Souder, 1977, 1987). Classic sources

of interdepartmental conflict, such as task-related asymmetries and mutual dependencies, become more visible. And while any conflict may be overcome in some cases through the creation of a strong project identity and commitment, anything short of a very strong, and very elusive, degree of cohesion in this respect is likely to fatally compromise the organizational initiative.

Besides this fundamental problem, other interfunctional relationships, such as those between marketing or R&D and operations can also cause problems well recognized in the research literature (Quinn and Mueller, 1963; Burgelman, 1983) but scarcely addressed by the recipes for success. And the use of any project based organization in which the project teams have a high degree of autonomy faces other serious difficulties too. To advocate the management of failure is all very well, but innovative projects and internal new ventures do have very high failure rates (Roberts, 1980; Little and Sweeting, 1984). And research into executive attitudes to project teams and venture groups has shown that while executives recognize many advantages for such organizational structures their attitudes are dominated by persistent perceived disadvantages. They are worried about the difficulty of imposing financial control, and about excessive autonomy leading to developments that might fit into the company's overall strategy. They anticipate difficulties in finding the right people to head up the teams. In short, they are quite reasonably worried about the danger of losing control, and strongly prefer to stick to a more traditional and tightly controlled organizational structure wherever possible (Hopkins, 1975).

In summary it would appear that, while there is a large measure of consensus on the requirements to be met if a strategy of technological innovation is to be pursued successfully, there are formidable barriers to the implementation of these requirements. And there is relatively little

guidance, within the recipes for success, as to how to overcome these. You cannot imitate 3M or Sony by imitating their organizational machinery. Matrix or project based structures are not universal panaceas. The objective recognition of the need for project autonomy, loose financial controls, and operating flexibility sufficient to allow for skunk works, spontaneously arising high-performance teams and multiple competing approaches, is far from equivalent to a subjective preparedness to accept the loss of immediate control entailed. And above all the call for an integration of marketing with research and development, or for a combination of a strongly marketing-led approach with technological freedom, is far removed from most firms' realities of practice. Underlying all this is a pervasive uncertainty and vagueness about what roles the different parts of the recipes play relative to each other, and what specific functions each part serves.

The politics of innovation

The key to this dilemma is to recognize that the innovation process is, like most organizational processes, a political one. Many writers in recent years have drawn attention to the political nature of organizations, and of the managerial processes within them (Farrell and Petersen, 1982; Gray and Ariss, 1985; Mintzberg, 1985, 1987; Mintzberg and McHugh, 1985; Kotter, 1986; Pfeffer, 1981; Narayanan and Fahey, 1982; Nielsen and Rao, 1987; Hambrick, 1981; Jemison, 1981, 1984). In particular the political nature of decision making processes, both in general and in the context of technological innovation, has now been thoroughly attested to and explored through a substantial body of empirical research (Fahey, 1981; Hickson and others, 1986; Pfeffer and Salancik, 1974; Pettigrew, 1973; Wilson, 1982; Welsh and Slusher, 1986; Johnson, 1987; Hendry, 1988; Graham, 1986). The importance of political activity in the promotion or hindrance of change processes has also been thoroughly

demonstrated (Mumford and Pettigrew, 1975; Pettigrew, 1985; Greiner, 1986; Guth and Macmillan, 1986). And a political perspective is implicit too in the literature on innovation champions and in that on interdepartmental conflict. The political nature of the processes concerned is not however recognized in the recipes for success, and it is here that the difficulties discussed above arise.

From a political perspective, the problem of managing technological innovation is one of how to manage the collaboration between rival interest groups within the organization. Usually this will include interest groups with generally similar cultural backgrounds (and operating within the same functional divisions), but with different personal or social values or goals, different professional backgrounds, or competing political interests. Almost always it will include groups with contrasting cultural backgrounds, radically differing experiences, and different status and reward environments. If a set of prescriptions for solving the problem is to be successfully implemented, it must address this political reality, by taking full account of the political relationships between the parties involved.

In those recipes which focus purely on the organizational structure, the aim, in political terms, is to provide a mechanism for the establishment of working relationships and consensus decision making across some of the principal political divisions of the organization. This prescription relies, however, on a sense of belonging and commitment to a project being sufficient to override the conflict automatically engendered by bringing the rival interest groups into close contact. And it also fails to address the political situation outside the project or venture group, and the barriers to change that are encountered there.

One way of addressing these problems is to focus attention on methods for binding organizations together: for providing

project teams with the cohesion to overcome their internal conflicts, and organizations as a whole the cohesion both to limit conflict on a larger scale and to provide an environment of trust in which project groups can be given sufficient autonomy to escape the effect of this wider conflict. And it would appear to be this approach that underlies the relative success of the more recent culturally based recipes for managing innovation. A strong corporate image binds people together. So does a perceived commitment on behalf of top management to the innovation process. A preparedness to allow project teams to form spontaneously and the encouragement of competition between teams both serve to strengthen team bonding. Indeed the encouragement of conflict between groups (i.e. between project teams) is probably the fastest and most effective way of reducing conflict within them (i.e. between functions). And while it imposes its own problems, especially in terms of the management of failure, these are at least manageable. So long as the structure of political conflict separates vital elements of expertise, such as those held by the research and marketing specialists, nothing is manageable for there is nothing to manage.

These binding effects are important. But they are also limited. A strongly proclaimed set of corporate cultural norms informs people what is expected of them, and provides a foundation for bonding in terms of shared perceptions. But it can only act as an effective unifier if it is specific enough to direct people's behaviour, and that brings us back to our original problems. Unless there are some other means of coordinating research and marketing, for example, proclaimed cultural norms must almost inevitably favour one or the other, or be irrelevant to the innovation process. Within the framework of the existing prescriptions a corporate commitment to innovation per se can only work in conjunction with the use of autonomous and competing project teams, and these raise the issues of control we

discussed earlier. Any organization needs some form of control over its activities, and if this is not to be operated through a tight corporate structure there must be some overriding discipline, be it financially or more broadly marketing based, which will again upset the balance of the innovation process. Or else an organization must be prepared to take genuine risks. Of the exemplary companies used as the basis for existing prescriptions, many are actually market-led, and while this approach is reaping short-term harvests, its long-term viability remains open to question (Quinn and McGrath, 1985). Others are actually risk-takers, but while it may be necessary to take risks in order to optimize the chances of survival this is an approach that is unlikely to be widely imitated, at least so long as there appear to be more comfortable options.

Overcoming the barriers

So far as they relate to the politics of the situation at all the existing recipes for innovation success rely almost entirely on the provision of forms of corporate glue. But this is like taking a set of magnets and, instead of aligning them, trying to glue them together by their repelling poles. If the glue is strong enough they may hold together for a time, but the forces of repulsion will be undiminished. The arrangement will be unstable and instead of being put to useful work the magnetic energy will be wasted. Similarly with organizations, one can glue together rival interest groups so as to neutralise their conflicts, but it may be only at the expense of neutralising their powers too. The glue can play a very important part, but the first priority should be to remove, so far as possible, the sources of conflict.

Surprisingly, despite the considerable research into the sources of conflict, relatively little has been written about their removal. In the course of some recent research on the management of new product innovations, Souder (1988) has however made some suggestions as to how

this might be achieved within an organizational development setting, giving some evidence in support of a procedure which involves alternating periods of nominal (side by side) and interacting (face to face) group activities. And once we ask the right question, our knowledge of the practices of successful innovating firms produces some ready answers. In particular, many of the practices of Japanese technology-based firms appear to relate directly to our problem, without being in any way specific to a Japanese context (Ohmae, 1985; Imae and others, 1984; Pascale and Athos, 1981; Rubinger, 1985). Drawing on these practices, all of which are mentioned, though not generally emphasized, in the existing literature, as well as on our own research into the management of technology and design and the work of Souder and others on inter-departmental conflict, we may put together a list of eight ways in which conflict might be reduced, and the barriers to innovation lessened.

1. Group development programmes such as that proposed by Souder, in which the timing and extent of integration and retreat can be managed by development experts, have an obvious part to play.
2. Common socialization processes, and in particular common training programmes for marketing and R&D recruits, should serve both to strengthen the glue of an overriding corporate culture and to reduce conflict through the provision of shared experience.
3. The recruitment of science and engineering graduates to the marketing function, either directly or through a period in the R&D function, should help to overcome one of the major communication barriers between the two functions, and with it a large element of mistrust and suspicion.



4. Job rotation programmes or similar schemes, if sufficiently widespread, should further strengthen interdepartmental understanding, both through shared experiences and through the building of personal linkages.
5. Strong social and recreational programmes have a part to play not only in enhancing corporate belonging but also in encouraging personal cross-functional links.
6. Common status and reward systems should also remove a major source of conflict. For an organization starting with a mixture of systems (by research ability, management ability, seniority, market shortage, etc), this will inevitably entail costs as some groups are paid over the previous "going rate", and may also entail some staff losses. But the costs should be mitigated by improvements in quality and should be substantially outweighed by the benefits. Moreover, since reward systems provide one of the most visible demonstrations of the values of the organization the careful management of relative rewards should anyway be a top organizational priority.
7. Of crucial importance, but rarely discussed, is the role played by the design function. In some firms the presence of a design department serves merely to complicate the political situation, while in others it is virtually an irrelevance, ignored so far as possible by both marketing and R&D (Hendry and Dumas, 1988). But given the appropriate authority it can play an important coordinating role, and indeed must do so if the product design process is to be successful. An autonomous design department, independent of the marketing function and with sufficient internal authority not to

be ignored by that function can serve both to improve end product design and to speed up and facilitate the collaborative new product development process. This is also an area in which external consultants can be used to good effect, their freedom from the organizational structure allowing them to create communication channels and bonds between the different functions.

8. More ambitiously, but not necessarily impracticably so, a range of specific training and organizational development programmes might be used to change the very nature of the functions themselves, and particularly of the marketing function.

There is nothing radically new in these suggestions. All are already implemented to some extent in some firms, in the West as well as in Japan. The Japanese education system does simplify the recruitment of scientifically trained marketing and operations staff and the use of the R&D function as a staff resource pool on which other functions can draw. But there is nothing in principle to prevent Western corporations from adopting similar policies.

What all this points to is a form of organization that is marketing centred, but is nevertheless technologically literate, and more specifically design-literate, through and through. Picking up on point (8) above, this suggests a new role for the marketing function. In a recent paper, Miles and Snow (1986) claim to identify the emergence of a new form of organizational structure designed to cope with the increasingly competitive and rapidly changing markets and technologies characteristic of the present era. These "dynamic networks" are characterised by vertical disaggregation, with market mechanisms and full information disclosure

systems taking the place of the close linkages and trust characteristic of more traditional organizational forms: a move from hierarchies to internal markets. The key figures in these structures are "brokers", dealing as in a market place with the four separate constituencies of suppliers, producers, designers and distributors.

How representative, and indeed how desirable, this model is is open to question, but it does provide a provocative extreme representation of an organization in which interfunctional linkages and trust cannot be relied upon, as is often the case in the technology-based firm. And it prompts the question: who are the brokers? They can only be the marketing function, and if that function is to play the central role in a disaggregated organization, it should perhaps do so also in the more closely knit firm to which we are aspiring here. Several writers have recently argued strongly for an internal as well as an external role for the marketing function (Leonard-Barton and Kraus, 1985; Simmonds, 1986), and such a role would provide a natural organizational setting for that most crucial of ingredients for innovation success, the product champion. It would seem in many respects to be precisely what is needed for the management of innovation.

As we have already noted, there are many advocates of a marketing-led approach to innovation, but these generally assume a traditional externally-oriented marketing function using its knowledge of the external market to specify development targets. An internal marketing role implies a knowledge of the interior of the organization, including the R&D and operating functions, equal to that of the external environment. It implies, in particular, a detailed knowledge of the technological capabilities, preferences and trajectories existing in the organization, as well as of their cultural settings and political structuring. This in turn would require radically new forms of training and

avenues of recruitment for marketing personnel. If the function is to exercise properly the powers it is being afforded in contemporary organizations, however, such changes may well be necessary.

BIBLIOGRAPHY

- ARAM, J.D., and JAVIAN, S., "Correlates of success for customer-initiated R&D projects", IEEE Transactions in Engineering Management EM20(4) (1973), 108-113.
- BACKUS, J., "In research, failure is the partner of success", Research Management 27(4) (1984), 26-29.
- BONNET, D.C.L., "Nature of the R&D/marketing co-operation: the design of technologically advanced new industrial products", R&D Management 16 (1986), 117-126.
- BURGELMAN, R.A., "A process model of internal corporate venturing in the diversified major firm", Administrative Science Quarterly, 28 (1983), 223-244.
- CHAKRABARTI, A.K., "The role of champions", California Management Review 17(2) (1974), 58-62.
- CLIFFORD, D.K., JR, and CAVANAGH, R.E., The Winning Performance. How America's High-Growth Midsize Companies Succeed (Sidgwick and Jackson, 1985).
- COOPER, R.G., "Why new industrial products fail", Industrial Marketing Management 4 (1975), 315-326.
- COOPER, R.G., and KLEINSCHMIDT, E.J., "What makes a new product a winner: success factors at the project level", R&D Management 17 (1987),
- DESSAUER, J.H., My Years with Xerox. The Billions Nobody Wanted (1971).
- DUMAS, A., "Attitudes to design in British and American companies", working paper, Design Management Unit, London Business School, 1988.
- FAHEY, L., "On strategic management decision processes", Strategic Management Journal, 2 (1981), 43-60.
- FARRELL, D., and PETERSEN, J.C., "Patterns of political behavior in organizations", Academy of Management Review 7 (1982), 403-412.
- FREEMAN, C., The Economics of Industrial Innovation 2nd edn. (1984).
- FROST, P.J., and others, eds, Organizational Culture (Sage, 1985).
- GEORGHIOU, L., GIBBONS, M., and METCALFE, J.S., "Staying the distance: technological development and competition", International Journal of Technology Management 1 (1986), 425-438.
- GRAHAM, M., RCA and the Videodisc (Cambridge University Press, 1986).
- GRAY, B., and ARISS, S.S., "Politics and strategic change across organizational life cycles" Academy of Management Review, 10 (1985), 707-723.
- GREINER, L.E., "Top management politics and organizational change", in SRIVASTVA (1986), 115-177.
- GUPTA, A.K., and others, "The R&D-marketing interface in high technology firms", Journal of Product Innovation Management 2(1) (1985), 12-24.
- GUPTA, A.K., and WILEMON, D., "The credibility-competence connection at the R&D-marketing interface", Journal of Product Innovation Management 5 (1988), 20-31.
- GUTH, W.D., and MacMILLAN, I.C., "Strategy implementation versus middle management self-interest" Strategic Management Journal 7 (1986), 313-328.
- HAMBRICK, D.C., "Environment, strategy and power within top management teams", Administrative Science Quarterly 26 (1981), 253-276,
- HENDRY, J., and DUMAS, A., "What do

you do with an industrial designer", working paper, Cranfield School of Management, 1988.

HENDRY, J., "Technological decision making in its organizational context: nuclear power reactor development in Britain", working paper, Cranfield School of Management, 1988.

HENDRY, J., "The political anatomy of decision making", working paper, Cranfield School of Management, 1988.

HICKSON, D.J., and others, Top decisions: strategic decision making in organizations (Basil Blackwell, 1986).

HOPKINS, D.S., "The roles of project teams and venture groups in new product development", Research Management 18 (January 1975), 7-12.

IMAE, K., NONAKA, I., and TAKEUCHI, H., "Managing the new product development process: how Japanese companies learn and unlearn", Hitotsubashi University Discussion paper no.118 (1984).

JEMISON, D.B., "Organizational versus environmental sources of influence in strategic decision-making", Strategic Management Journal 2 (1981), 77-89.

JEMISON, D.B., "The importance of boundary spanning roles in strategic decision making", Journal of Management Studies 21 (1984), 131-152.

JOHNSON, G., Strategic Change and the Management Process (Basil Blackwell, 1987).

KOTTER, J.P., "Why power and influence are at the very core of executive work", in SRIVASTVA (1986).

LaPORTE, T.A., "Conditions of strain and accommodation in industrial research organizations", Administrative Science Quarterly 12(2) (1967), 21-38.

LAWRENCE, P.R., and LORSCH, J.W., "Differentiation and integration in complex organizations", Administrative Science Quarterly 12 (1) (1967), 1-47.

LAWRENCE, P.R., and LORSCH, J.W., Organization and Environment: Managing Differentiation and Integration (Harvard Business School, 1967).

LEONARD-BARTON, D., and KRAUS, W.A., "Implementing new technology", Harvard Business Review 63 (November -December 1985), 102-110.

LITTLE, D.A., and SWEETING, R.C., "Business innovation in the UK", R&D Management 14 (1984), 1-10.

LITTLE, B., "New technology and the role of marketing", in BAKER (1979), 258-265.

LITVAK, I.A., and MAULE, C.J., "Managing the entrepreneurial enterprise", Business Quarterly 37 (1972), 47.

MAIDIQUE, M.A., "Entrepreneurs, champions and technological innovation", Sloan Management Review 21(2) (1980), 59-76.

MANSFIELD, E., and WAGNER, S., "Organizational and strategic factors associated with probabilities of success in industrial R&D", Journal of Business 48 (1975), 179-198.

MANSFIELD, E., and others, Research and Innovation in the Modern Corporation (Norton, 1971).

MARQUIS, D., "The anatomy of successful innovations", Innovation (1969).

MILES, R.E., and SNOW, C.C., "Network organizations: new concepts for new forms", California Management Review, 28(3) (1986), 62-73.

MINTZBERG, H., "The organization as a political arena", Journal of Management Studies 22 (1985), 133-154.

MINTZBERG, H., "Crafting strategy", Harvard Business Review 65 (July-August 1987), 66-77.

MINTZBERG, H., and McHUGH, A., "Strategy formation in an adhocracy", Administrative Science Quarterly 30 (1985), 160-197.

MUMFORD, E., and PETTIGREW, A., Implementing strategic decisions (Longman, 1975).

NARAYONAN, V.K., and FAHEY, L., "The micro-politics of strategy formulation", Academy of Management Review 7 (1982), 25-34.

NIELSEN, E.H., and RAO, M.V.H., "The strategy-legitimacy nexus: a thick description", Academy of Management Review 12 (1987), 523-533.

OHMAE, K., "Managing innovation and new products in key Japanese industries", Research Management 28(4) (1985), 11-18.

PASCALE, R., and ATHOS, A., The art of Japanese Management (Simon and Schuster, 1981).

PETERS, T., and WATERMAN, R., In Search of Excellence: Lessons from America's Best-Run Companies (Harper and Row, 1982).

PETERS, T., and AUSTIN, N., A Passion for Excellence (Collins, 1985).

PETTIGREW, A.M., The Awakening Giant: Continuity and Change in ICI (Basil Blackwell, 1985).

PETTIGREW, A.M., The Politics of Organizational Decision Making (Tavistock, 1973).

PFEFFER, J., Power in Organizations (Pitman, 1981).

PFEFFER, J., and SALANCIK, G.R., "Organizational decision making as a political process: the case of a university budget", Administrative Science Quarterly 19 (1974), 135-151.

QUINN, J.B., and MUELLER, J.A., "Transferring research results to operations", Harvard Business Review 41 (January-February 1963), 49-66.

QUINN, R.E., and McGRATH, M.R., "The transformation of organizational cultures. A competing values perspective", in FROST and others (1985).

QUINN, J.B., "Managing innovation: controlled chaos", Harvard Business Review 63 (May-June 1985), 73-84.

QUINN, J.B., "Technological innovation, entrepreneurship and strategy", Sloan Management Review 20(3) (1979), 19-30.

ROBERTS, E.B., "New ventures for corporate growth", Harvard Business Review 58 (July-August 1980), 134-142.

ROBERTS, E.B., "A basic study of innovators: how to keep and capitalize on their talents", Research Management, July 1968, 249-266.

ROTHWELL, R., and others, "SAPPHO updated", Research Policy 3 (1974), 259-291.

RUBINGER, B., "Technology policy in Japanese firms: decision making, suppliers links and technical goals", Technology in Society 7 (1985), 281-296.

RUBINSTEIN, A.H., and others, "Factors influencing innovation success at the project level", Research Management 19(3) (1976), 33-37.

SCHON, D.A., "Champions for radical new inventions", Harvard Business Review 41 (March-April 1963), 77-86.

SEILER, J.A., "Diagnosing inter-

departmental conflict", Harvard Business Review 41 (September-October 1963), 121-132.

SIMMONDS, K., "Marketing as innovation. The eighth paradigm", Journal of Management Studies 23 (1986), 479-500.

SOUDER, W.E., Managing New Product Innovations (Lexington, 1987).

SOUDER, W.E., "Managing relations between R&D and marketing in new product development projects", Journal of Product Innovation Management 5 (1988), 6-19.

SOUDER, W.E., "Effectiveness of nominal and interacting group decision processes for integrating R&D and marketing", Management Science 23 (1977), 595-605.

SRIVASTVA, S., and others, eds, Executive Power: How Executives Influence People and Organizations (Jossey Bass, 1986).

TAUBER, E.M., "Why concept and product tests fail to produce new product results", Journal of Marketing 39(4) (1975), 69-74.

TAUBER, E.M., "How market research discourages major innovations", Business Horizons 17 (1974), 22-26.

UTTERBACK, J., "The process of technological innovation within the firm" Academy of Management Journal (March 1971), 75-88.

UTTERBACK, J., "Innovation in industry and the diffusion of technology", Science (1974), 620-626.

von HIPPEL, E., "Successful industrial products from customer ideas", Journal of Marketing (January 1978), 39-49.

von HIPPEL, E., "Get new products from customers", Harvard Business Review 60 (March-April 1982), 117-122.

von HIPPEL, E., "The dominant role of the

user in semi-conductor and electronic sub-assembly process innovation", Research Policy 5 (1976), 212-239.

VOSS, C.A., "Technology-push and need-pull: a new perspective", R&D Management 14 (1984), 157-151.

WALTON, R.E., and DUTTON, J.M., "Organizational context and interdepartmental conflict", Administrative Science Quarterly 14 (1969), 522-542.

WALTON, R.E., and DUTTON, J.M., "The management of inter-departmental conflict: a model and review", Administrative Science Quarterly 14 (1969), 73-84.

WELSH, M.A., and SLUSHER, E.A., "Organization design as a context for political activity", Administrative Science Quarterly 31 (1986), 389-402.

WILSON, D.C., "Electricity and resistance: a case study of innovation and politics", Organization Studies 3 (1982), 119-140.