Inversion of values?

A strange inversion of values is emerging in the world of proposals and scientific papers. The thought arose after a colleague had been complaining to me about what she felt was nit-picking by the evaluators of a recent proposal of hers. Upon reflexion, I realised how common that has become. Not only that, but applications to most grant-awarding bodies are increasingly required to conform to a format specified in minute detail by the body. Furthermore, they expect that the research that one is proposing be described in exhaustive detail. As has been pointed out before, I imagine, there would be no need to actually do the research were one able to foresee its progress in such detail. Where real research (and not research with the emphasis on the 're') needs to be carried out, the specification of such detail is highly inappropriate. When the proposal-and-grant system was first introduced into the UK, as long ago as the 1960s, distinguished voices were raised in protest, pointing out that this was not the way discoveries such as the electron, penicillin and the transistor had been made. All the protests were to no avail however—despite the fact that no counter argument has ever been offered! And the litany of errors does not end there. Increasingly, grant proposals are padded with what R.H. Thouless has called non-communicating discourse (NCD)—meaning text whose information content is essentially zero [1]. Although when he invented the term he could write "much NCD is to be found in writings which would be generally recognized to be not in the academic tradition", it has since become pervasive in both proposals and academic papers, albeit in different ways. In proposals it manifests itself mainly in paragraphs purporting to describe how the proposed research will increase employment in Outer Mongolia and that sort of thing—not that the proposer believes it will, but he has to write something along those lines because it is stipulated by the grant-awarding body. The European Union seems to be one of the chief offenders with its framework programme for research and technical development—typicallyas much as half of the text one is required to submit for a proposal consists of NCD.*

In summary then, precisely where the scientist's creativity should be given free rein, it is trammelled into a tight straitjacket, and in consequence the activity loses a great part of its value.

In striking contrast to that trend is the situation developing in the published scientific literature. Formerly, the scientific paper was seen as a repository of some definite advance in knowledge. Not definitive—that only came after further distillation in reviews and textbooks. But reviews nowadays are rarely critical enough to distil effectively, and most textbooks seem to be out of date even before they are published. The very rapidity of scientific advance, and the increasing pressures of time to which most scientists are subjected (not least because of the need to comply with the exigencies of proposal writing as described above), actually place a greater onus on the primary research paper, because these papers are on the whole no longer critically dissected and discussed in annual review series and suchlike. Yet the papers that are published, even in long-established journals, are characterized by a growing carelessness. They are no longer so carefully proofread, such that even mistakes obvious to a reader unfamiliar with the subject matter now intrude, laying open doubts about the reliability of the rest, and essential details of the work reported are frequently absent. This seems to have become a particular feature of reporting experimental work. During the past few months, several students of mine were attempting to repeat experiments that had been reported in the recent literature. Under close scrutiny, it turned out that the experimental "details" were often given extremely superficially; for example, the concentrations of some of the chemicals used were not given, or purity where purity was critical was not mentioned. One might wish to excuse the author by hinting at the extreme time pressure under which he or she is working. But then one finds that the paper is replete with NCD of another kind—meaningless statements in the Introduction about how active the field is, repetition of material in different sections, and so on. As Professor Wirth has pointed out in this Journal [2], "the goal of a manuscript should be to attain the conclusion...with a minimum of argumentative effort", but many authors appear not to be aware of that, despite their presumed time pressures.**

* This pales into insignificance when one considers that the guidelines, instructions etc. supplied to proposers by the EU for "help" in preparing their proposal may comprise as much as 90% NCD.

** One consequence of this creeping advance of prolixity and uncritical acceptance has been an explosion in journal sizes. Not so many years ago the American Chemical Society firmly affirmed that its policy was not to increase the size of its flagship journal, JACS. Now it is heading for 20 000 pages a year! Such profligacy represents a serious burden, in many ways, on the research community.

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This is indeed an inversion of values. Where speculation should be encouraged, and the mere outline of ideas should suffice, minute and careful detail—to which the scientist may then be contractually held—is required. Many scientists seem to proofread their proposals more carefully than their papers nowadays. On the other hand, where a solid and reliable account of what has been done is the least that one would expect, one finds a careless and badly written article that nevertheless passes essentially unchanged through the scrutiny of both reviewer and Editor.

I close with a fascinating proposal made more than 40 years ago by O.G. Selfridge [3]—he advocated calling for half baked ideas, from which a national commission would select some for funding, not so much on the basis of obvious merit, for those would be picked up anyway by private enterprise, but more on the basis of fancy. Such a policy would, he felt, be enormously profitable in the long run—and much more fun too.

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