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EDITORIAL

The integrity of structures

Science journals operate on an implicit principle of trust, assuming that authors of all papers, that are submitted, report results as they have been obtained. While interpretations may sometimes be incorrect, the facts are generally assumed to be incontrovertible. Mistakes and errors, of course, abound in the scientific literature, an inevitable part of scientific research; when uncovered, often by the original authors themselves, these are recorded without undue fuss in the journals of science. This issue of *Current Science* documents an instance where experimental results, reported in a paper submitted for publication, were alleged to be fraudulent; after preliminary enquiry the paper was withdrawn, but the issue of whether the original data was genuine or not led to subsequent enquiries and also resulted in the extensive correspondence that appears in this issue. The setting for this unfortunate episode is one of the best institutions of the chain of laboratories of the Council of Scientific and Industrial Research (CSIR), the National Aerospace Laboratories (NAL). The manuscript in question was authored by B. K. Parida and coworkers and was submitted for publication as a Special Test Publication (STP) of the American Society for Testing Materials (ASTM). In 1998, *Current Science* received a letter for publication authored by R. Sunder, alleging that the Parida paper was based on fraudulent data and further highlighted the apparent reluctance of the organization to investigate the charge. While this letter remained unpublished, its circulation together with the vigorous intervention of a former Director of NAL, S. R. Valluri, led to the initiation of an enquiry ordered by the Director-General of CSIR. Two enquiry committees and two and a half years later, the conclusion was reached that the principal author of the original manuscript, B. K. Parida 'committed serious technical mistakes'. The 'whistle blower', Sunder clarified that plagiarism had never been a charge. This left the origin of the data, a fractograph in the original manuscript submitted to ASTM, a puzzle. Indeed, the enquiry committee found 'that the ownership of the fractograph in ASTM-CP will probably remain a mystery unless one carries out a different kind of investigation, perhaps even forensic in nature'. The entire episode was further clouded by the fact that Sunder had left the Structural Integrity Division at NAL a few years ago and had indeed been closely associated with the activities of the laboratory from which the disputed manuscript originated.

In considering the publication of the correspondence in this issue several questions arose: First, should *Current Science* consider controversial issues pertaining to an unpublished manuscript? Secondly, should this journal consider discussion of specific cases where ethical issues in science are involved, or should it confine itself solely to discussions of the abstract problem of misconduct in science? Thirdly, would not public airing of contentious issues sully the reputations of individuals and institutions? Fourthly, would not publication of such correspondence diminish the image of the journal, bringing a touch of the popular press, to a journal devoted to the dissemination of science? It was precisely these considerations that led to non-publication of Sunder's original letter; but the matter surfaced again with the resubmission of a technical manuscript, which cleverly highlights the complex issues involved. Based on opinions of expert referees this manuscript was revised and accepted and sent to authors of the original disputed manuscript and the head of NAL for their responses. The entire material was then scheduled for publication in our August 10 issue, but the impending report of the second committee of enquiry led to its withdrawal from the press. While this report found evidence for 'serious technical error' its content and conclusions continue to be debated. Both sides of the issue have used the popular press, a medium in which technical matters can be easily obfuscated and personal weaknesses highlighted. As this journal vacillated between final publication and rejection, pressures have mounted. The proponents of public airing of the issue charged this journal with bowing to pressure and accused the editors of paying 'only lip service' to the cause of ethics in our science. The opponents of publication charge that by printing Sunder's note this journal maligns an institution; some go so far as to impute motives to this journal for even entertaining Sunder's original submission.

The decision to publish is, finally, solely that of the editors. The cause of science is not helped by avoiding

discussion of the difficult issues of acceptable conduct in the practice and reporting of research. Institutional images do not depend on individuals, but are the result of peer perception, accumulated over many years. It is important that individual reputations do not suffer unfairly; but enlightened readers can also be discerning judges. Inevitably, such editorial decisions are tinged with regret, but there is the hope that public contemplation of contentious issues, will allow us to evolve robust mechanisms for swiftly addressing allegations of scientific misconduct. As in the present case, the slow pace of enquiries and the tendency to centralize the decision-making processes of administration, lead to wounds that fester and eventually become untreatable. The rapidity with which investigative actions can follow the charge of a misdemeanour is illustrated by the action of the Johns Hopkins University, in examining the case of the clinical trials conducted collaboratively with the Regional Cancer Centre, Thiruvananthapuram (*Nature*, 2001, **414**, 386).

A major difficulty is to distinguish between flimsy allegations that appear to be motivated by personal jealousies and animosities from those that appear to be based on moderately reliable evidence. A swift, preliminary, internal enquiry is indeed necessary to establish whether a *prima facie* case exists or not. If there is a case, a purposeful and quick institutional investigation is necessary to clear the air. Most importantly, if mistakes have been made it may be easier to acknowledge them at the earliest, rather than to convert the issue into a major battle, with the protagonists ranged on opposite sides. The tendency to paint all 'whistle-blowers' as disgruntled elements, out to rock the boat of scientific progress must be avoided. When misdemeanours or errors of judgement are uncovered, the punishments must fit the situation; harshness is generally unwarranted. Regrettably, there has always been a tendency to award harsh punishments to those who may least deserve it; students and postdoctoral fellows can easily be removed from their positions when there is a whiff of trouble. Senior scientists, on the other hand, are protected by institutional armour, powerful colleagues and the general reluctance to wage a prolonged battle to establish facts.

While a significant proportion of the scientists who matter, subscribe to the dictum 'hear no evil, see no evil, speak no evil', at least in part, the cause of upholding scientific ethics is not helped by the intemperate posturing of those who don the role of guardians of scientific values. Curiously, many leading science administrators develop a passion for just causes after retirement from powerful positions. Having been out of touch with the practical aspects of scientific research, these guardians of integrity see skeletons in every closet; sometimes their charges border on the ridiculous. One interesting example is the oft-repeated statement that the results of Ph D research must appear in papers that always bear only the supplicants' name; the appearance of the names of mentors or collaborators is construed as an example of misconduct. It is this kind of attitude, that betrays a complete lack of understanding of any of the processes of modern science, that has led to the community generally discrediting the views of our champions of integrity. 'Crying wolf', once too often, is not a fruitful way of promoting the cause of ethical behaviour in science. Suggestions that issues of scientific misconduct be examined by the Central Vigilance Commissioner (CVC) reveal a touching naivete, which fails to acknowledge the complexity of the issues involved and the inability of the CVC to even check widespread bureaucratic and political corruption. But, individual conscience keepers have played a vital role which must not go unacknowledged.

The Sunder–Parida episode has also strained the credibility of our editorial process, as judgements on submitted manuscripts have wavered over time. But, pressures on editors are not uncommon, as exemplified by the recent report that the journal *Human Immunology* has deleted an accepted paper on genetic variability in Palestinians. The stated reason was that the paper contained 'inappropriate political comments about the Israeli–Palestinian conflict' (Klarreich, E., *Nature*, 2001, **414**, 382). It is indeed with some regret that we publish the correspondence in this issue on the 'Reproducibility of metal fatigue'. But, publication and transparent enquiry may be essential for the maintenance of the integrity of our structures — institutions and journals amongst them.

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