DISPUTE RESOLUTION IN SCIENTIFIC SETTINGS: A SYSTEMS APPROACH

Mary P. Rowe, Ph.D.
MIT

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Disputes in scientific settings have been recently much in the public eye. Dozens of thoughtful articles have appeared on various problems of scientific and engineering ethics. Articles of this sort have discussed improper bidding practices by corporations and institutions seeking government contracts, fiscal mismanagement, research fraud of many varieties, health and safety violations, improper treatment of animal and human subjects, threats to the environment, and whistle-blowing on all these subjects. A few authors have also explored ordinary scientific disputes among scientists and engineers: the processes by which colleagues decide (more or less peacefully) on research priorities, plans and procedures, under circumstances of legitimate disagreement.

Recent articles have focussed primarily on ways of preventing unethical behavior. Most authorities agree on the importance of self-regulation of science by scientists. Professional societies are being called upon to be far more active and many are doing exactly that--provoking discussion and launching Codes of Ethics. Scientific establishments have been widely urged to publish policies with regard to academic fraud; several excellent sets of guidelines are available for designing such

policies. More emphasis is being placed on the role of group leaders and principal investigators to run safe and ethical laboratories. Many useful, ad hoc educational efforts have been launched and ad hoc structures set up within corporations and institutions to prevent and deal with scientific disputes and ethical problems.

This article addresses the construction of effective dispute resolution systems within scientific establishments. I take as my premise that many institutions will already have adopted appropriate policies and policy dissemination procedures consonant with the kind of guidelines mentioned above, since effective dispute resolution depends on the existence of such policies and procedures. Most institutions will also have in place a number of dispute resolution structures. My purpose is to give an overview of all the functions that need to be performed within a given establishment, for an effective dispute resolution system to work. These functions are discussed with some mention of appropriate structures. The paper concludes with presentation of two sets of problems yet to be solved.

An effective dispute resolution system needs to perform a number of functions, all of them necessary, but not sufficient by themselves. These functions can be described in various ways. My typology includes: one-to-one communications; counselling; investigation, conciliation and mediation; adjudication; feedback to the scientific establishment about the nature of disputes and concerns brought forward.

1. One-to-One Communications. Every institution needs to offer individuals a chance to talk, one-on-one, with appropriate and experienced managers about ethical and safety concerns. No matter how good the policies and training programs are, most employees most of the time don't really know what the rules are. Scientists and engineers are often too busy to learn what they need to know about ethics and safety until a problem arises. Moreover most engineers and scientists are shocked by confrontation with scientific dishonesty. For these reasons all scientific establishments need to establish safe, accessible, responsible channels for individuals concerned about ethics and similar issues to get the information they need.

Usually a scientist can go to a supervisor or safety officer to find out about policy or express a concern. ("Whose names go on this article?" "Shouldn't we cite the work of so-and-so?" "Is there radioactive contamination in that area of the building?")

But sometimes a scientist may wish to be able to ask confidential questions, especially if an immediate supervisor seems to be the problem. And sometimes facts, or information about policy, will resolve a concern. ("Is it right to switch money from the X project to the Y? Oh, it is? Ten percent of a line item may properly be reallocated? Maybe there's no problem then.") It is important, therefore, to provide access to responsible managers, in addition to those in line supervision, who can answer reasonable questions of policy and fact. Many research establishments lack managers who can serve in this

fashion as options for those who need information.

2. Counselling. In addition to facts and policy, scientists need managers who can give responsible advice about ethical concerns, safety problems and scientific disputes. Here again the most likely support will come from supervisors, group leaders and department heads.

However in many corporations and research institutions supervisors get promoted for technical rather than managerial skills. And sometimes the supervisor appears to be the problem. So scientific establishments should provide responsible managers who can help a concerned employee to frame his problem,....or help a scientist learn how to go back on her own, to deal with a concern on her own.

Counsel of this kind may help a scientist learn how to argue constructively with a colleague. Or how to write up a statement of concern about the treatment of laboratory animals. Or how to report an apparent incident of scientific fraud. Advice and counselling of this sort should be available on a confidential basis, to prevent fear of retaliation and to protect people's privacy wherever possible. In my opinion much more should be done in scientific establishments to provide appropriate counsel and advice for those with concerns.

3. Investigation, conciliation and mediation. Scientific institutions need procedures to investigate safety and ethical complaints. This is an area of some progress, since many institutions now have responsible policies and procedures.

Contemporary investigative processes provide for fact finding by "neutral" managers or offices, in addition or subsequent to line management.

Many scientific establishments now also seek to mediate concerns and complaints, in a less formal and less polarized manner than would be the case if all employees were unionized. Here again supervisors and lab directors are the best source of mediation if they are able to perform that function. But it makes sense in this area also, to provide intra-institutional managers, outside the line of supervision, who can conciliate in appropriate cases.

4. Adjudication. All fair dispute resolution systems need clearly defined procedures for the adjudication, where necessary, of disputes, allegations of fraud, safety problems and other ethical dilemmas. These procedures always begin with the line supervisors but often involve off-line managers, committees, advisory groups and consultants.

Here again many scientific establishments now have relatively good adjudicatory structures: clearly spelled out, providing fair appeal options, protective of the rights of all sides, timely, well-understood. Some are very general structures which accept almost any kind of ethical or safety concern; (and also any other kind of dispute;) these usually are widely known in a given institution. Others are narrowly focussed to problems of fraud or safety, and may need to be publicized more frequently.

5. Upward Feedback. It is important that scientific

establishments be able to learn and change in response to a changing environment. Ideally this will happen on a low-key, steady-state basis as data come into the system from those with concerns and complaints.

Chief executive officers in scientific establishments--as in any other organization--need to presume that dissent problems will arise all the time and that they want to know of the type and frequency of such concerns. (In order to protect the privacy and confidentiality of individuals such data may be reported routinely on an aggregated and/or anonymous basis.) Many chief scientists now presume that data on safety violations, ethical dilemmas, fiscal mismanagement, etc., are just management data like any other: one collects aggregate data, analyzes dispassionately, responds in an orderly fashion. Other research heads assert flatly that science is honest; "our scientists behave safely;" "the main goal is profits." Progress in the area of upward feedback to management is exceedingly uneven in US research institutions, in large part because some research managers do not wish to hear of problems, especially ethical problems.

The reader will have noted an emphasis on providing multiple, internal options for those with ethical concerns and safety complaints. Effective dispute resolution systems must have redundant structures, in the engineering sense of redundancy (fail-safe, back-up, checks and balances). Redundancy is critical for functions 1, 2, 3 and 5; fair appeals channels should suffice for function 4.

An effective system will also put equal emphasis on each of the functions of a dispute resolution system. (By contrast, many US research institutions concentrate only on adjudication.) If any function is not well-performed, problems will quickly arise, both in that respect and elsewhere in the dispute resolution system. This is because if any one function is not performed well, it is much more difficult for the others to succeed. Moreover a structure designed only for one function may be pushed into trying to fulfill other roles as well. Thus a product liability committee may be pushed into counselling whistle-blowers under the table, or an ombudsman designated as a neutral may feel under great pressure to adjudicate.

In every scientific establishment line managers should be expected to perform all of these functions and should be supported to do this well. Otherwise these five roles can and should be performed by different structures in different scientific establishments. A little, high-tech company may assign certain of its scientific and other employees to act as designated mediators in addition to their other work. A large research lab may have an ombudsman as an internal, designated neutral. In most corporations, confidential communications and counselling may be through the Human Resource managers. In a research university there may also be ad hoc or standing committees for investigation, mediation or adjudication of some disputes. Health and safety, bio-hazards, and product liability committees may perform one or more functions, depending on the charges to such committees.

Obviously the specific dispute resolution structures

of any given establishment should fit the idiosyncratic history and philosophy and goals of that particular institution. What is important is that major research managers should review their own institutions, to be sure of the following points:

1) that there are clearly defined complaint policies and procedures, especially for safety, health and ethical issues (but not of course limited to these issues);

2) that these policies and procedures be well-publicized, with appropriate training and monitoring programs;

3) that dispute resolution is seen in the context of a system of dispute resolution functions, all of which need to be performed well;

4) that redundant internal options be available to scientists and engineers with ethical and safety concerns.

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PROBLEMS FOR THE COMING YEAR

Work in the areas of scientific dispute resolution and whistle-blowing has been moving rapidly in the past several years. Some problems are not yet well-reviewed or resolved. To take a systematic approach to research in these areas, here are some questions of particular interest to me, in case you or anyone you know, is working on them.

1) How can we do better in protecting the rights of everyone involved in an allegation of unethical or unsafe behavior?

For example, at what point should a person under investigation be informed of an investigation? How if at all should the answer "depend on the circumstances of the case?" Should managers and confidential counsellors and mediators keep individual records of concerns brought to them? If any records are kept, where and how should they be kept and for how long? Is there anything an employer can do to make restitution to a person wrongly accused? By the same token, what measures can be taken to prevent reprisals against those who legitimately raise concerns and complaints? What success do we have in monitoring for reprisal attempts?

2) Who really is the client of an internal complaint handler and how should the answer(s) to this question be determined? For example what weight should be given to the "public interest" in addition to the interests of disputants? When does a complaint handler have a "duty to warn?" Should there be state shield laws to protect the confidentiality of some or all internal complaint handlers? With regard to institutional responsibility in case of fraud and health and safety, what obligation (if at all) should an employer have to inform employees, scientific colleagues, sponsors, the public about cases that have been mediated or adjudicated internally? What are the cons as well as the pros?

I look forward to correspondence with all who may be on the forefront of these questions.