

1994 NZAS Survey of Scientist's Perceptions of New Zealand Science: Free Comments

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The greatest number of free comments made by respondents are about the administration of funding, largely negative. Linked to that is the concern about the quality of science. It was also frequently commented on. There is a feeling of social insecurity about, caused not only by the restructuring of the institutions, by redundancies, relocation and disestablishment, but also by the uncertainties of funding and the perception that there is funding for short-term projects only. A great deal of concern is felt for the lack of a clear career structure for scientists. Conflicting views are expressed when it comes to the management of science and scientists.

University scientists have concerns about the decline of available funds to update major items of equipment. This fact, combined with increased teaching and administrative loads has already had a serious effect on both the quantity and quality of their research. Those in the universities fear that this will lead to a decline in the quality of the teaching and training of research scientists.

Free comments were made, covering many areas of concern (Table 1).

Thirty-three of these were not usable, leaving 320, (38.2%) to be considered. The unusable ones were trivial, unclear, unprintable or stated, with justification, that the envelopes were too small to accommodate the questionnaire comfortably. The over-all nature of these comments made by the NZAS membership and respondents from the Royal Society's Random List are shown in Table 2. The comments made by respondents from the Royal Society's Primary Production Group were differently classified by Anis Rahman and Mike O'Connor. They are listed in Table 3.

Comments

A selection of edited comments are quoted here.

A scientist comments: "The aims of the MoRST and FRST schemes are laudable, and have brought many beneficial changes to New Zealand science, but the cost in bureaucracy is immense, and the practical problems of running the programme in a country with a small scientific community are large. The best way to encourage science is to inform the public, the politicians, and the science administrators about the contribution science can make"

A policy analyst: "I am concerned that the results of this survey may be used to complain about change *per se*. I hope they will instead be used constructively. I believe that scientists do need to be seen to be socially responsible, and not to

be hiding in their specialities ... I do not agree that competition will improve science outputs, but in the absence of any other suggestions, government can have such ideas. Science New Zealand needs a good PR effort, plus a lot of thought about relevance and communication. And customer consciousness!"

A director of a government department about the survey: "Congratulations on taking this initiative! It should provide useful information which will, I believe be of limited value, since the contextual issues of the upheavals in science are not covered. That is not surprising, but it does mean the survey could look like scientists doing some special pleading without regard to the changed status of so many other government professionals over the last five to ten years."

An important comment from a scientist: "Not included in the questionnaire was a topic on the effect of the 'fear of funding repercussions' on the selection of areas of research promotion for funding by CRIs. One of my concerns has been the fear my CRI appears to have of promoting a particular area of research which may adversely affect the willingness of industry to fund the CRI." (A hypothetical example of such an area might well be unwelcome research into residues in water, soil or food products.)

"Museum taxonomic science is disappearing and museums are becoming fun-fairs. Public enquiries indicate that the demand for services from natural scientists remains high. The changes to do away with natural history scientists originate from within the museum system. It should be countered"

"The level of scientific understanding in policy circles is abysmal ... politically directed science is wasteful and generally useless to get good returns on investment. Directors of science must know what has been done and what is doable."

Another scientist: "The current bidding system to get funds from FRST is very bad for New Zealand science, because:

- (1) "It is very expensive, eg 30% of programme leaders' time, time for refereeing, time of other managers and science planners.
- (2) "It encourages safe, sure and predictable science at the expense of (a) high risk projects and (b) "spare time" science, when scientists follow their own inclinations. The result is mediocrity.
- (3) "It causes bad science as people take shortcuts to meet annual objectives. On the up-side, people are pressured to finish work off!

"Bulk funding of CRIs would give better results, I have enough confidence in the managers of my CRI to use funds wisely (especially as there would be about a 30% increase in funds and time available.)"

A lecturer in science: "Student numbers here have doubled. Student ability has halved. I am ordered to pass a percentage of students, with lip service only given to any standard. My appraisal as a teacher is based on student popularity, not peer-review ..."

Another university teacher: "University funding: The absence of funds for the replacement of aged and obsolete major equipment is beginning to erode the quality of research and the effectiveness of student training ... Tertiary training: Increased participation in tertiary training loses by giving access to those who would traditionally not come, in general the less well qualified. For science this is lowering standards as traditional pass-rates (or higher) are expected."

A scientist, previously in government, comments: "I have recently moved into the private sector for a substantial increase in salary, without any change in either responsibility or stress etc. I am quite happy in my new job, so personally there is no problem. However, there should not be such a discrepancy. Government science is currently poorly rewarded, yet the work is important and worthwhile."

A former university researcher, with a PhD, left to work in a private company. He says: "My skills are in demand commercially. If I returned to my interest in basic research, I would now be unemployed. The questions you asked never got this information, probably because I switched successfully before restructuring killed basic research dead."

"As a young New Zealand scientist, about to head off ... to an overseas research place ... to pursue an open-ended research programme, ie where I do not have to specify the outcomes before I have reached them. I felt so disappointed when I read the list of projects funded by FRST. Most of them seem so applied, it hardly seems like the cutting edge of science at all, rather it seems like the fulfilment of short-sighted, money-based governmental policy. I hope that this will change in the two or three years I am away."

A scientist: "Much of agricultural science now seems *too* short term and economically orientated. In my opinion there is a greater than ever need for *basic* research to enable New Zealand to keep to the forefront of agricultural development and excellence. Research must consider its input in terms of environmentally sustainable land use."

"Some of the best science done by DSIR has been interdisciplinary. Funding barriers and management structures have killed this. To break out of these impediments to collaborative science, I have had to form my own company and form international collaborations."

A consultant adviser: "Movement of science into the field has been blocked... . The linkages between scientists and

advisers have been smashed. Agriculture New Zealand is a joke, I am tired of patching up their mistakes. Information transfer is blocked by commercial goals, 'I won't publish my work as it is against my business interests ...' ."

Scientist: "I had hoped to see some alternative ways of funding scientific research to FRST presented for respondents to comment on ... It seems to me that the restructuring of science in New Zealand recently, and particularly the establishment of FRST, is based on the false premise that science is a *competitive* activity and not a *cooperative* one. Research builds on other information and ideas, and the present structure actively inhibits sharing in many ways. New Zealand needs to establish priorities in research with a strong bias towards applied research, but we need a far less bureaucratic and costly funding system. In my area of research we were between 25% and 50% more productive under bulk funding ... we had considerably more time to plan good research, more time to do it, and much better staff morale."

A retired scientist: "This questionnaire seems to have been launched primarily to confirm the prejudices of its promoters, who are opposed to recent changes to science in New Zealand. The results are guaranteed to confirm these prejudices, therefore I found it impossible to answer most of the questions."

"Funding and the organisation of scientific activity is dependent on a subtle combination of recognition of the cultural and economic value of science by the whole community. The recent decline in this recognition, (and consequent funding) is partly a failure of science itself and partly of the business community to appreciate the economic and community benefit science can bring ... place less emphasis on criticising the changes that have occurred, most of which were inevitable, and in many senses *deserved*."

University Head of Department: "Restructuring is only a response to other elements in the environment, particularly demand for science products/services, and political fashion (eg addiction to free market mechanisms). The changes that have occurred are basically more usefully seen as responses to the elements of the environment, rather than of restructuring, which is merely a process of change ..."

A scientist: "There is a serious clash between the scientific aim that FRST claims to foster and the immediate demand in science organisations to make a profit. The CRI for which I work has yet to show the same enthusiasm for the quality of science that it has for getting income from whatever source. I do not see that the CRIs have a clear perception of their scientific, as opposed to their financial aims."

Overall the changes in management style have been regressive. There are signs that, where initially there was openness, management is becoming more secretive, more inclined to suppress criticism. There is an increasing restriction on free interchange of scientific ideas ..."

A research fellow: "I offer a general comment regarding career development within CRIs. I enjoyed working with my colleagues at a CRI, but felt there were few opportunities to develop my career long-term. I enjoy no more job security in my present circumstances, but considerably more responsibility, and opportunities to grow on the international scene. It would be the fear of limited responsibility, (opportunity to initiate, plan and execute) that would discourage me from returning to New Zealand."

Research scientist: "I am (reluctantly) looking for a job overseas, because I have zero job-security and funding for biomedical research is becoming increasingly tight. Unless the issue of job security is resolved, biomedical researchers are likely to be lost to New Zealand in the next few years."

A university lecturer: "Things have deteriorated, even in the universities, which have been less touched than the DSIR etc.

"(1) Everyone is stressed; this leads to inefficiency in the long run.

"(2) After a few unpleasant experiences with the new commercial CRIs, I am now much less free with my results and other cooperation with them. Everybody loses, and the job is less pleasant, work and facilities are unnecessarily duplicated.

"(3) The universities have had an atmosphere of goodwill, a sense of duty and enthusiasm. This pool or reserve of goodwill is being drawn down and will eventually run dry, being drained by excessive administrative demands and larger student/staff ratios."

A scientist: "My job satisfaction in terms of research focus has improved. However, this is significantly offset by greatly increased pressure to perform and to meet deadlines, at the cost of not having adequate time to read and to think."

A scientist: "Science funding is moving closer to being industry-funded. This will direct research to be of a more applied nature. This is good. Some research will not be able to be funded by industry (eg conservation, some very basic research). But I believe industry has to play a stronger role in funding. After all, who gets the early gains and benefits?"

A research leader: "My own research has resulted in significant improvements affecting New Zealand's export earnings. The environment now is such that this earlier development would not have been able to take place. In other words, funding contracts presuppose a result, and risk is not seen as worthwhile. My present work will also result in significant benefits ... it has been funded out of overheads. Funding sources agree it is good, but no money is available ...

The mechanism is not in place to be proactive and follow new directions. Yet, this is what the new structures were meant to produce."

On management style: "The organisation *claims* to be consultative, team-focussed, progressive, flexible etc, but management can interfere and make the place act as if it were hierarchical, authoritarian, conservative and secretive. I feel what the organisation claims is not exactly how it operates in practice!"

"The only scientific growth industry in New Zealand is Funding Administration!"

Concerns and Future Action

Many other concerns were raised by respondents in their free comments. Most of them seem to flow from concerns about the high cost of administration both in time and in the consequent reduction in time spent on research, in the reduction in the time available for thinking, keeping up-to-date. Scientists, in their comments, are showing more concern for the quality of science, for the appropriateness of the measures taken to better the scientific research effort, than their own welfare. Some comments point out that there is a conflict between the commercial function and the FRST funded research projects within CRIs, to the detriment of the quality of the research. While some comments make reference to good, trustworthy management practices, there are some that point to bad staff relations or raise questions about accountability when funds, are being diverted from research to finance management's desire to project a corporate image. Many signs indicate that the morale of the active scientists has suffered.

University science may have to play a more important role as commercial interests impose conditions of confidentiality and secrecy on CRIs. Free and open cooperation between CRIs, and CRIs in a competitive climate, has been restricted. Science flourishes in an open environment, allowing for a free exchange of ideas and criticism.

The reforms have been holistic, large scale and therefore it is not possible to attribute a certain result to a certain measure or decision. The quantitative and qualitative results of this survey provide information about the state of affairs and a stimulus to criticism. Let us hope that in future we shall adopt the piecemeal method, the scientific method of administering New Zealand science that is by actively seeking out *mistakes*, not to ignore them, not to hide them, not to blame others for them, but to *learn from them*, so that we may do things better in future. A positive sign seems to be the creation of the Marsden Fund, which may allay some fears of our respondents. Its effect will need monitoring.

Table 1

	Number of Respondents	Number of Comments	%
NZAS Membership	144	63	44
Royal Society, Random List	296	128	43
Royal Society, Primary Production Group	397	162	41
TOTAL	837	353	42

Table 2

Topic:	NZAS %	Royal Soc. %	Random All %
Funding Reforms	41	30	34
Effect on Science	26	18	21
Career Structures	21	17	18
Effect of Restructuring	23	14	17
Science Education	11	12	12
Management	9	11	11
Image of Science	15	4	8

Table 3*Negative Comments:*

Cost of FRST, bureaucracy of FRST.	16
CRI: Increasing administration costs, increased work-load, declining staff morale, poorer staff relation (managers-scientists).	16
Inhibition of research ideas, need for "safe" research, short term research, less flexibility, preconceived outcomes, slow degradation of science.	13
Poor image, poor future, poor career paths in science.	11
Reduced quantity of research.	7
Lack of recruitment and poorer quality of graduates, increasing age gap	7
Disillusionment with science, leaving science.	7
Industry comments: Tax deductibility needed, CRIs dominate funding.	6
Poorer cooperation between CRIs and CRIs and CRIs and universities.	5
Inability to adapt to commercialisation.	3
Declining real salaries.	3

Positive Comments:

New structure better, particularly for young scientists.	3
Increased emphasis on outcomes, research more relevant.	2
CRIs better organised than predecessors.	2

Total Number = 152