

**Parallel Session 17: Scientists and science institutions as PCST agents:
responsibilities**

**NO ONE IS AN ISLAND: BIOTECHNOLOGY RESEARCHERS TALK
ABOUT COMMUNICATING**

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Abstract

This paper reports work-in-progress: a pilot study of biotechnologists communicating their work, with the aim of developing a research instrument to map communication attitudes and activities of researchers at the National Institute for Cellular Biotechnology in Ireland. The research has also enabled a limited exploration of communication models. A series of semi-structured interviews were conducted, producing data that was analyzed descriptively. Each question was re-assessed using the pilot responses and respondent-identified problems. The results show a willingness and responsible attitude manifested by biotechnologists in communicating their research and has led to a stronger emphasis on mixed methods in the re-development of the research instrument.

Key words: Biotechnology; research scientist; communication; semi-structured interviews

Text

Context

Increasingly, research scientists are encouraged to communicate their work to specialists and non-specialists, and nowhere more so than in the diverse and sometimes controversial fields of biotechnology. Yet, a mapping of biotechnology researchers' current communication activities and an understanding of their attitudes towards communication has been neglected. The aim of this research is to explore these issues with biotechnology researchers employed at the National Institute for Cellular Biotechnology (NICB) in Ireland.

The NICB has adopted a novel approach to biotechnology in Ireland: its research themes incorporate the entire value chain of activities from discovery to clinical treatment, including communication and educational considerations.

Objective

The long-range objectives of this research are to explore the following questions:

- What beliefs about and attitudes to communication of their own work do biotechnology researchers at the NICB hold?
- How do biotechnology researchers at the NICB communicate with each other, with other biotechnology researchers, other scientists and/or non-scientists?
- How do these compare with the beliefs/attitudes of scientists in general from a similar cultural milieu?
- What constraints on or encouragement for communication exists for biotechnology researchers?

Scientists are often accused of practicing the Shannon and Weaver ‘injection’ model of communication. This model emphasises a difference in status/expertise between sender and recipient, and assumes that the audience is passive. An unnecessary dichotomy has been created between the way scientists are accused of communicating and the emergent emphasis on a more egalitarian ‘dialogue’ model in science communication (i.e. interaction and debate between individuals and groups, treating science as simply another facet of life). If it is assumed that scientists use the injection model by default (and preference), a corollary is that the communication complexity afforded to other professional groups is not acknowledged for the science community.

In order to explore these seemingly simplistic assumptions and gain an empirical understanding of communication by scientists, the present pilot study gathered data about the communication attitudes and activities of a sample population of biotechnology research scientists. This information is being used as feedback in the development of a research instrument to gather census data about the communication attitudes and activities of the biotechnology research scientists at the NICB.

Methods

A series of face-to-face semi-structured interviews was carried out in April 2003. The interview instrument used the Wellcome Trust-commissioned MORI survey *The Role of Scientists in Public Debate* (MORI 2001) as a starting point, but evolved into an exploration of specific instances of communication by scientists in formal and informal contexts and with specialist and non-specialist audiences.

A database of the interview responses was constructed. Descriptive statistics were generated and the database was interrogated using the text tool WORDSMITH. Some interesting trends were identified using these methods, although these were limited in scope due to the small size of the pilot population. More importantly, each question in the pilot interview instrument was re-assessed for relevance and appropriateness using both the responses *and* respondent-identified problems associated with the questions.

Results

The descriptive statistics and WORDSMITH identified a positive association between 'years since receiving a PhD' and a range of activities and achievements (e.g. membership of professional organisations, applications for or ownership of patents), which is both obvious and expected, given the longer working life of respondents who have held PhDs for longer. These respondents also tended to spend less time in the laboratory than respondents either working towards a PhD or in post-doctoral research. In addition, they had more often practiced across the spectrum of least- to most-interactive communication activities. All respondents believe that there are real personal and professional benefits accrued in speaking with others and listening to feedback about their work.

In general, results have indicated a willingness and a sense of obligation in scientists doing biotechnology research to communicate their work, a belief in the social benefits of their work with a concurrent responsibility to demonstrate these benefits to others, and a positive attitude to face-to-face questioning/debate in informal situations, despite personal fears of being ill-equipped to deal with such situations.

Some methodological observations have been possible regarding the appropriateness of different approaches in large-scale multi-interviewer questionnaires compared to small-scale census (whole population) single-interviewer instruments. For example, large sample questionnaires are usually designed such that inferences may be made to a larger (untested) population. However, emphasis in the present research on a sub-group (biotechnologists at the NICB) calls for the use of more qualitative open questions. In addition, the population is 'captured' and may be re-tested at the will of the researcher. Set against this is the assumption that the respondents place a high value on quantitative methods because they are trained research scientists (as I was) – this has created a tension in the current re-development of the research instrument.

Conclusions

These results illustrate that biotechnology researchers do communicate about their work with others. At this stage it is safe to conclude that just as much complexity exists in communication by biotechnologists as it does in other professional groups. I would argue that there is a place for each model of communication (dissemination, engagement, consultation, dialogue etc.) depending on the communicative context.

The communication complexity practiced by these biotechnology researchers, coupled with tensions between divergent approaches to its exploration, is prompting a theoretical and methodological reappraisal, but is also leading to a more difficult and potentially more rewarding project.

Reference

MORI (2001) *The Role of Scientists in Public Debate: Full Report*. Retrieved December 2002 from <<http://www.wellcome.ac.uk>>

