The Public Perception, Political Persuasiveness and Professional Profile of Statistics – Can Statistical Societies Make a Difference ?

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Introduction

I was very pleased to be invited by Jean-Louis Bodin to reflect on the roles of international and national statistical societies, drawing upon my experience both as a former Director of the ISI and more recently as president of the Royal Statistical Society. Changes in society, the rapid growth of our discipline and the growing awareness of its importance require that we examine the effectiveness of statistical societies in developing the contributions which statisticians can make. Rather than putting forward simplistic answers to some of the very profound problems and dilemmas we face, I assert that we must be prepared now to engage in serious debate so that whatever conclusions we reach are well-argued and take account of all the relevant factors. My presentation therefore highlights some of the issues which I regard as important as a stimulus for further widespread discussion. I focus on areas where either our contributions have so far been limited or where I believe that new approaches may be needed.

Such considerations inevitably lead to the need to examine the internal structure and organization of our societies. For example, what should be the balance between the need for continuity and the introduction of new blood, ideas and activities? Given that a society's staff are key to the maintenance of continuity, difficult questions arise about their contributions vis-à-vis those of the elected officers.

Globalisation

Globalisation is inevitably resulting in greater mobility among professionals in our field. We therefore have a responsibility not only to facilitate the effectiveness of such movements but also to maintain the integrity of the profession. We must consider what constitutes adequate training, how members of the profession can keep up to date with the rapid advances in statistics and whether societies have a responsibility for providing Continuing Professional Development. We should also address the difficulties of cross-national recognition (e.g. through "chartered" status). While advances in these areas are being made in some countries, there is as yet only limited sharing of experience. We seem to be wary of international "standardisation" either through a natural defensiveness of our own systems or a reluctance to question the systems of others. However, we cannot simply hope that the issue will go away as we run the risk of having standardisation imposed on us by supranational bodies (such as the EU).

Developments in Communications and Information Technologies

These technologies are transforming all types of communications within the profession (perhaps even calling into question the cost-effectiveness of large biennial international conferences!). Instant electronic publication in so- called "e-archives" has already become the norm in many fields such as Physics resulting in much reduced overheads compared with traditional paper-based journals. The submission of articles is unfettered and un-refereed with material being indexed and put on the web automatically and instantaneously. Were we to follow this route, all statisticians would, in theory, have access irrespective of their location or affiliation. Similarly, all statisticians would be free to publish. It can be argued that this would level the playing field in statistics so that those in less developed countries where the distribution of paper journals can suffer severe delays and those in less prestigious institutions or at an early stage of their careers would not be disadvantaged.

However, a number of caveats must be mentioned:

Statistics unlike Physics does not have a culture of pre-prints and it would require a significant leap for this to be accepted. Universal access assumes an adequate telecommunications infrastructure which is by no means the case in many of the developing countries. The academic community is the principal driving force for publication but statisticians outside higher education or retired from active practice may not have IT facilities at their disposal for accessing articles in e-archives. Whilst costs may appear to be lower than printed journals, e-archives are not free but entail inter alia the establishment, operation, maintenance and enhancement of host sites as well as documentation, publicity and educational material for subscribers.

In common with all subject areas, e-archives require the establishment of sophisticated mechanisms to ensure the authenticity of an article's authorship and to protect it from unauthorized tampering. The e-archive mechanism also lacks the quality assurance of the peer review process for conventionally published journals.

Many statistical societies rely on their published journals as a significant source of income which they fear could be severely impaired by e-archives. However, this has not necessarily been borne out in other fields where conventional and e-archive approaches operate successfully in parallel.

The Developing World

As a previous Director of the ISI, I have to confess to some responsibility for our failure to be more active in promoting statistics as a tool for evidence-based policies in the developing world and to provide adequate support to the small networks of statisticians in these countries.

International agencies such as UNESCO tend to work with senior staff of countries' official statistics organisations. Relatively little support is provided for more junior staff or for

statisticians working in other parts of government or in non-governmental organisations.

In developing countries, communications and relationships between academic and official statisticians are often weak with the consequence that statistical training in universities tends to neglect the practical application of statistics to countries' problems. This also contributes to a highly undesirable brain drain of very capable theoretical statisticians from developing to industrialized countries.

Concerned statisticians working through the societies face the dilemma of wanting to assist the colleagues in developing countries whilst respecting their national sovereignty. This tension is explored in more detail in my recent presidential address to the Royal Statistical Society (Lievesley, 2001). The societies' objectives should be to assist countries in achieving long-term statistical self-sufficiency including the capability to generate, exploit and value their own data. This is particularly important as aid is increasingly contingent upon viable plans which must be based on sound statistical data.

Both national and international statistical societies need to pool their expertise to determine what works and what does is less effective in technical cooperation in statistics. Perhaps societies are too cautious in their approach to supporting the developing world and they might be surprised at the degree of support which more adventurous attitudes might engender among their members. Again a balance must be struck between the desirability of wide and diverse representation on committees and working parties and a tokenism which inadvertently becomes patronising of the statisticians in developing countries.

Political Influence

Statistical societies rightly pride themselves on their independence from government or narrow employers' interests. This enables them to address politically difficult issues (e.g. the ASA committee on Human Rights) and to defend statisticians in their professional capacity. The societies need to maintain their privileged position and independence. For example, when they have concerns about the actions of government, they must be prepared to offer constructive criticism whilst taking account of the views of their members employed in official statistics agencies.

Integrating the Profession

Some societies represent statisticians working in many different areas. One of the difficulties is that statisticians are becoming ever more narrowly specialized and this, combined with pressures on their time, prevents them from appreciating the value of learning from colleagues in other fields of statistics. The societies are often the only forum where those from widely different backgrounds (e.g. academic and official, public sector and private industry, theoretical and applied, producers and users of statistics etc.) can come together to exchange ideas. Such cross-fertilisation is

important for the health of the discipline. It also enables the societies to offer a broad perspective when consulted by external organizations including governments and on relevant issues of the day.

Ethical Issues

In 1985 the International Statistical Institute adopted the Declaration of Professional Ethics (ISI (1986), http://www.cbs.nl/isi/ethics.htm) described in Jowell (1986). Other statistical societies have adopted Codes of Conduct which are markedly different in nature from the ISI Declaration. For example, in April 1993 the Royal Statistical Society Council ratified a Code of Conduct "to define the behaviour expected of RSS Fellows practising in everyday professional life" (http://www.rss.org.uk/about/conduct.html). This focuses on the 'profession' of statistics with an emphasis on the "good standing of Statistics and Statisticians" but with little attention paid to the positive contributions that statistics can make to society. Perhaps the time is ripe for a review of the efficacy of the various codes of conduct and ethical guidelines. It would be valuable to know in what circumstances they have been used and whether either of them have provided wise counsel.

The societies should promote the coverage of ethical issues in the education of statisticians perhaps by providing relevant material. Consideration could also be given to the inclusion of such material as a condition for course accreditation. It may be helpful to examine the initiatives of the medical profession in this regard. A recent handbook (BMA (2001)) states that the teaching of ethics in UK medical schools has improved since the regulatory body for medicine, the General Medical Council, recommended in 1993 that it should form part of the core curriculum, but that great variations in the quality of ethics teaching exist and that there is a shortage of good materials and experienced teachers. The handbook recommends that anonymous case histories would be excellent as educational material both for those entering the profession and for continuing professional development. The same would surely apply to statistics. Societies could support statisticians faced with ethical dilemmas by appointing panels of wise and concerned members to provide advice in confidence. This could lead to such a portfolio of anonymised case histories.

As mentioned earlier, significant moves are required within the profession to provide methods of ensuring that individuals have adequate expertise for recognition as chartered statisticians. Concomitant with the power to award chartered status is societies' responsibility to monitor adherence to professional standards, to investigate suspected breaches and perhaps (more controversially) to instigate disciplinary procedures where violations are proven.

Jowell R. (1986) The codification of statistical ethics, Journal of Official Statistics, Vol 2, No 3, Statistics Sweden

Lievesley D (2001), Making a difference – a role for the responsible international statistician ? Royal Statistical Society Presidential address, JRSS D forthcoming