What is a Statistician?

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Link / Terry

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In the generation of my teachers, say from 1935 to 1960, relatively few statisticians were trained for the profession. The majority seemed to come from mathematics, without any specialized statistical training. There was also a sizeable minority coming from other areas, such as astronomy (I can think of one prominent example), chemistry or chemical engineering (three), economics (several), history (one), medicine (several), physics (two), and psychology (several). In those days, PhD programs in statistics were few and far between, and many, perhaps most people moved into statistics because they were interested in the subject, or were responding to a perceived need. They learned the subject on the job, either in government, industry or academia. I also think statistics benefited disproportionately from the minority coming from outside mathematics and statistics, but that may be a personal bias.

This diversity of backgrounds seems to have diminished from the mid-1960s. Almost all of my colleagues in statistics over the last 40 years had some graduate training in statistics. Typically they had a PhD in statistics, probability or mathematics, the last two with some exposure to statistics. A few had masters degrees or diplomas in statistics. My experience probably reflects that of most of you.

By the 1960s our subject had become professional, there was a ticket of entry into it — a PhD or equivalent — and many graduate programs handing them out. I know many statistics departments now include people with joint appointments, for example in the biological, engineering or social sciences, but I have the impression that the majority are people who trained in statistics and moved 'away' through their interest in applications there, rather than people from these other areas who were embraced by the statisticians. As is to be expected, there are plenty of exceptions.

Why am I presenting this made-up history of the recent origins of statisticians? Because I have the sense that the situation which has prevailed for about 40 years is changing again. I see a steady trickle, which I predict will grow substantially, of people not trained in statistics moving into our profession. Many have noticed, and I have previously remarked on, the current shortage of bright young people going into our subject. We probably all know universities, institutes or industries trying hard to recruit statisticians, and coming up empty handed. On the other hand, there has been substantial growth in areas which, while not generally regarded as mainstream statistics, might well have been, had things gone differently. My unoriginal observation is that some people from these areas are starting to see statistics as a worthwhile career, not beating but joining us. Computer science, machine learning, image analysis, information theory and bioinformatics, to name a few, have all provided future statisticians to statistics departments around the world in recent years, and I think there will be much more of this.

Recently there was a call for applications for the new United Kingdom EPSRC Statistics Mobility Fellowships, whose aim is "to attract new researchers into the statistics discipline at an early stage in their career". Is this "mobility" a good idea? In my view, unquestionably yes. Not only do we need an influx of talent to swell our numbers, we also need it to broaden and enrich our subject, so that much of the related activity we now see taking place outside of statistics, and threatening its future, comes inside. In his highly stimulating polemic "Statistical Modelling: The Two Cultures" published in *Statistical Science* just 5 years ago (16:199–231, 2001), my late colleague Leo Breiman argued that "the focus in the statistical community on data models has:

- led to irrelevant theory and questionable scientific conclusions;
- kept statisticians from using more suitable algorithmic models;
- prevented statisticians from working on exciting new problems."

His view was that "we need to move away from exclusive dependence on data models and adopt a more diverse set of tools."

One, perhaps over-optimistic, view is that the reform that Leo so desired will come automatically as mainstream statistics is joined by "outsiders" from fields like those mentioned above. Are there risks in this trend? There must be. We want statistics broadened and enriched; we don't want to see it fragmented, trivialized, or otherwise weakened. We need our theorists working hard to incorporate all these new ideas into our long-standing big picture, we need the newcomers to become familiar with the best we have to offer, and we all need to work together in answering the questions of all the people outside our discipline needing our involvement.

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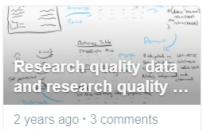
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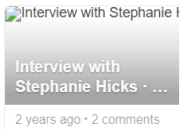

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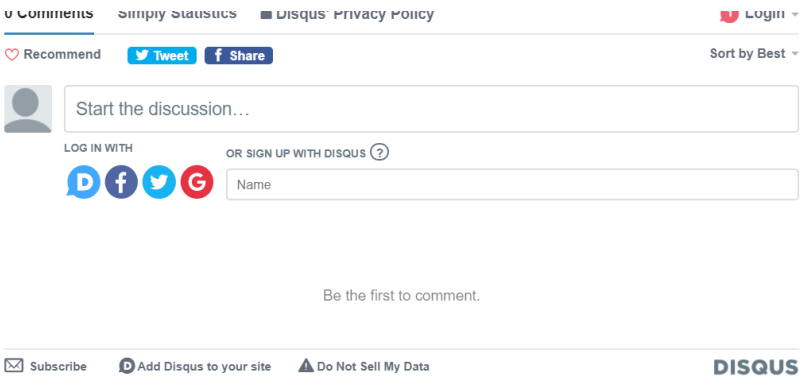
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