

## Social Scientists, Natural Scientists and Sociobiology

Scientists are generally thought to be people who are unafraid to ask questions. After all science seems to progress by the method of asking questions and seeking answers. Reality is somewhat different. Many of us are afraid to ask questions which might appear to be silly and I am no exception. In seminars, one cannot but help having a sneaking feeling of admiration for the person asking the question that many are afraid to raise, for fear of being dismissively brushed aside by a speaker of formidable repute. I was therefore mildly jealous and greatly pleased when a distinguished and perceptive colleague of mine, Raghavendra Gadagkar, sent me a reprint of a lecture that he had delivered at the Institute for Advanced Study in Berlin (Wissenschaftskolleg zu Berlin). In this talk Gadagkar raises questions which have sometimes crossed my mind and I am sure many others have wondered similarly: Why do social scientists and natural scientists behave in contrasting fashion in their lectures and seminars? Gadagkar, a professional ethologist, used his time at an institution, where equal numbers of social and natural scientists mingle, to observe and analyse the behaviour of his colleagues in colloquia. The Wissenschaftskolleg does not seem to have an equivalent in India; a gap that may undoubtedly be filled in the future. In surroundings where biology coexists with sociology, history, philosophy and music, Gadagkar's observational talents were put to good use to raise three questions:

1. Why do social scientists sit while presenting colloquia, while all natural scientists stand? ('The Sit-Stand Dichotomy').
2. Why do social scientists read from a prepared text, while natural scientists speak extempore? ('The Read-Speak Dichotomy').
3. Why do social scientists use 'numerous quotations from other scholars to make their points' while natural scientist rarely turn to quotations? ('Quote-Unquote Syndrome').

Gadagkar seemed, in many ways, eminently suited to address these questions having begun his scientific career as a student of molecular biology, only to realize rather quickly in the late 1970s that other areas of biology seemed poised for major conceptual advances. Evolutionary biology, animal behaviour, ecology and population

genetics appeared to be coalescing in the newly developing field of sociobiology, promising to eventually provide a bridge over the yawning chasm that separates the molecular reductionist view of biology and the disciplines that lie well within the borders of the social sciences, human behaviour and psychology amongst them. Darwinism and natural selection, operating at the level of genes that determine individual traits, eventually imposing constraints on groups and populations, seem central to sociobiology. Gadagkar's work on social insects, wasps and bees in particular, eminently qualify him to be an observer of the behaviour of living organisms, human beings amongst them, as individuals and in groups. Having spent much of his career in an environment where the social sciences are excluded, he notes that he found his Wissenschaftskolleg experience even more interesting than he had imagined: 'The reason for this was that I became even more interested in how these "strange" colleagues pursued their craft than in what they actually did' (Gadagkar, R., *The evolution of a biologist in an interdisciplinary environment*. In *25 Jahre Wissenschaftskolleg zu Berlin 1981–2006*, Akademie Verlag GmbH, Berlin, 2006, pp. 167–180).

In attempting to 'explain' and 'understand' the contrasting behaviour of social and natural scientists in their seminars, Gadagkar reminds readers that behavioural ecologists are fond of three explanations: 'These are (1) random genetic drift, (2) natural selection, and (3) phylogenetic constraints'. At first glance all three explanations seemed to be shrouded in the complexities of a specialized field. But his translation of these terms for the layman bears repetition: 'Some behaviour patterns are neither particularly beneficial nor particularly detrimental and therefore they are neither lost nor do they eliminate the alternative and go to fixation. The laws of statistics govern the dynamics of their spread and persistence. This phenomenon is called random genetic drift, or simply drift. Other behaviours are maintained (do not disappear) because they are significantly beneficial to the actors and are preferentially preserved relative to alternative behaviour patterns. This is called natural selection, or simply selection. Yet other behaviour patterns exist because of historical reasons; changing them is not easy, perhaps too expensive. This explanation is called a phylogenetic constraint, or simply phylogeny or history'.

By this stage my curiosity was roused. Was Gadagkar going to proffer a sociobiological explanation to rationalize the three striking contrasts between social and natural scientists? He did not disappoint. The 'sit-stand dichotomy' was clearly maintained by drift and history. Undoubtedly, effective presentations could be made either sitting or standing. Historical constraints seem to be operating on both groups. For explaining the 'read-speak dichotomy' Gadagkar chooses 'selection', not drift or history. Here he introduces a term that appeared to instantly bridge the gulf between the natural and social sciences – 'behavioural polymorphism'. He notes: 'The reason why the polymorphism is maintained is that while one behaviour pattern is effective for some individuals, a different pattern is effective for others'. In reflecting on why social scientists read from a prepared text, while their colleagues in the natural sciences speak extempore, he notes: 'I would argue that what a natural scientist says is often more important than how he says it. In contrast, how a social scientist says what she says is often at least as important as what she says'. The choice of gender was undoubtedly unintentional. He adds: 'Even within the natural sciences, one often encounters such differences. My favourite example is the contrast between a synthetic chemist, for whom content is far more important than style of presentation, and an evolutionary biologist, for whom style of presentation is at least as important as content.' Having aspired, somewhat unsuccessfully to be a synthetic chemist in the early stages of my career, I was forced to wonder: Were synthetic chemists generally bad seminar speakers, sacrificing form for content? Almost certainly, the writers views would be prejudiced by personal experience. Curiously, synthetic chemists have always associated 'art' with their craft. Was Gadagkar merely echoing a widely held view of chemists and chemistry? Intriguingly, a beautifully produced book entitled *Molecules that Changed the World* (Nicolaou, K. C. and Montagnon, T., Wiley VCH, Weinheim, 2008) is intended 'to enlighten and instill a greater appreciation in society at large about a difficult subject – chemistry'. The authors note in their Preface: 'Many people remember chemistry as one of their most challenging subjects in college or the class in which they struggled. For others, the mere mention of the word chemistry conjures up images of explosives, poisons, and pollution'. Public perception of the discipline would of course be further influenced negatively if chemists, on average, made poor presentations of their work. Gadagkar, having painted chemists as extreme even among natural scientists, adds that unlike natural science, historical or sociological analyses 'often have the unique imprint of the author and would hardly be the same if presented (orally or in writing) by someone else.

In contrasting social and natural scientists, Gadagkar notes that the 'social scientists' love of quotations and the natural scientists' rare use of them is perhaps the most

interesting of the three differences'. Here 'selection', he argues, is 'the mechanism that maintains this behavioural polymorphism'. The objective criteria available for validating claims in the natural sciences are not readily extended to the domain of social sciences. The tendency to quote and cite precedence appears to be based on the need to garner support for a point of view or an interpretation. C. P. Snow's two cultures thus seem to be characterized by distinct behavioural traits, locked in position by 'selection' and 'history'.

Gadagkar's entertaining, but scholarly, reminder of the differences between social and natural scientists prompted me to turn to the one area that seemed to bridge the two cultures – sociobiology, a discipline 'defined as the systematic study of the biological basis of all social behaviour' (Wilson, E. O., *Sociobiology*, The Belknap Press, Harvard University Press, 1975). Nearly two decades after writing his book that launched the field, Wilson authored a fascinating account of the controversy that followed the emergence of the area of sociobiology. He notes that 'no scientist before... had employed the reasoning of population biology so consistently to account for the evolution of human behaviour by natural selection' (Wilson, E. O., *Naturalist*, Island Press, Washington DC, 1994). But the critics raised the bogey of 'genetic determinism' which Wilson describes as the 'bugbear of the social sciences'. His critics, including some of the best known names on the biology faculty of Harvard, declared human sociobiology to be 'not only unsupported by evidence but also politically dangerous'. Wilson points out that 'in the liberal dovecotes of Harvard University a reactionary professor is like an atheist in a monastery'. What was the goal in attempting to examine the connections between biology and behaviour? Wilson declares that his 'purpose was to celebrate diversity and demonstrate the intellectual power of evolutionary biology... At some point... I came to believe that evolutionary biology should serve as the foundation of the social sciences'. What are the role of genes and culture in shaping human behaviour? Wilson has argued in the past that the 'true nature' of the interplay between genes and culture is 'the central problem of the social sciences'. This area, in Wilson's words, awaits 'the slow accretion of knowledge persuasive enough to attract scholars'. I could not help wondering whether the next generation of sociobiologists would sit or stand while describing their work, if they would read from text or speak extempore and if they would quote extensively from the work of their predecessors. Will sociobiology serve to bridge the natural and social sciences or will it eventually cut itself loose from its biological roots or will it get mired in the complexities of molecular reductionism when neuroscience attempts to explain human behaviour?

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