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Following up on the Consensus Statements: the role of social sciences

Tony Barnett^{1 2}

The two consensus statements in this edition review the molecular and micro-biology of resistance to anti-microbials and anti-dermatophytes as that is relevant to diagnosis and treatment in the clinic. Follow-up requires engagement with the problem of changing human behaviours which contribute to pathogen resistance. Such behaviours may include *inter alia*: aspects of how owners engage with their animals, how vets engage with owners, vets' behaviours in and around the clinic, and finally vets' prescribing practices consequent upon their own age, gender, the practice's organisation (sole practitioner, partnership, corporate), and the practitioner's contractual arrangement (owner, partner, employee).

The MRS consensus statement notes: "Social aspects of animal-animal and animal-human interaction are difficult to quantify but should not be ignored." Two analytically discrete but overlapping concerns are in play here: first the potential for pathogen transmission within and between humans and other animal populations; second the contribution of human action to development of pathogen resistance. In what follows, "social aspects" are interpreted very broadly to mean cultural, economic, social, political behaviours from the local to the national and even international scales (for of course pathogens do not require passports) and to include behaviours studied through disciplines such as sociology, anthropology, economics, politics, gender studies and social psychology. We should better describe these 'social aspects' as 'social behaviours' and their determinants. This takes us a little further than mere "aspects" recognising that they are not genetic (or even epigenetic) features of our being. Rather they are the result of actions and choices, many but not all of them conscious, and they occur *in relation to other people*. That is the all-important *social part*

Current animal populations exist, are maintained, or increased mainly if not solely because of such human social behaviour. Fashions in pet keeping, choice of animal, having the income to support a pet, and establishment of very large pig or poultry production units to feed growing urban populations in places where animal protein was previously only an occasional component of diet (Liverani et al., 2013), are all examples. Readers of this journal need little reminding that humans first shared diseases with other animals when they began to hunt and later to domesticate various species (Morand, McIntyre, & Baylis, 2014). Today, huge numbers of animals move as commodities, fashion items, bringers of happiness, symbols of masculinity or femininity, wealth or status, along paths and in directions constructed and maintained by what human beings do (Appadurai, 1986). They do not move alone, but with their pathogens. We might think of the entire globe as a complex pathogenic social space (Tony Barnett, 2015) in which human behaviour at both macro (trade policy, tariffs, surveillance systems (T. Barnett & Sorenson, 2011)) and micro-levels affect the distribution of pathogens between and within species (Tony Barnett, 2008).

Interventions to interrupt the flows of pathogens in this zoonotic soup are limited. At the crudest level, culling and quarantining, and more sophisticated and expensive, vaccination and efforts to change human behaviours. But an intervention is never a purely technical activity: it always social. It

¹ Department of Global Health and Development, Faculty of Public Health & Policy, London School of Hygiene and Tropical Medicine; tony.barnett@lshtm.ac.uk.

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is highly political, not party political (although that may sometimes be the case) but rather in the sense that there are likely to be winners and losers. And there are also questions of financial costs; who bears those will often be in contention. Neither are matters of ethics and belief ever far away.

The spread of pathogens between and within human and animal populations is complex and the “social aspects” referred to above require thought if we are to include them in developing effective interventions. We must engage with the complex and highly differentiated nature of human social behaviour. This is important for the epidemiology of both dermatophytes and staphylococci – apparent from the differences in incidence and prevalence of dermatophyte infections as between hunting and working dogs and Persian and other cats (Karen Moriello, Kimberly Coyner, Susan Paterson, & Bernard Mignon, 2016, p. 5) . The social sciences contribute to understanding these problems individually or in concert with each other, ideally as a part of interdisciplinary studies across veterinary and social sciences (Tony Barnett, Fournié, Gupta, & Seeley, 2015). The kinds of problems we are dealing with here bear what the philosopher Wittgenstein (Wittgenstein, 1953) described as a “family resemblance” to those explored by laboratory science; while the latter are often characterised by experimental design and statistical manipulation, the former are more often characterised by discursive similarity, overlapping but different concepts, and pragmatic resolutions rather than “truths”. Rather they are “wicked” problems (Rittel & Webber, 1973). They are problems where values, politics, irrational, differently rational and non-rational beliefs, unstated and unrecognised assumptions and biases (Banaji & Greenwald, 2013; Kahneman, Slovic, & Tversky, 1982) enter into the decision process and policy design; where “rational” science and scientists may be frustrated and puzzled by others’ inability or apparent unwillingness to listen to and act on message built on scientific “truth”. These are situations where the didactic approach works in very limited (and sometimes unexpected) ways: if it works at all.

Most readers will have a passing familiarity with some of the social sciences, perhaps most often with economics. People encounter economics without knowing it in the form of common sense cost benefit analysis, how to get the best value from a prospective expenditure decision. It is the root frame of reference we use in health matters (animal, human and indeed plant) when we consider the relative costs and benefits of deploying a *single* behaviour change intervention strategy for a *differentiated* population against the alternative of a set of interventions tailored to engage with subsets of population. In this situation, social sciences, for example anthropology, can tell us much that is useful about the semiotics of pet ownership and the symbolic meanings of Persian rather than moggy cats, or about the gender symbolism of owning a Staffy or even a Pit Bull Terrier. It may even tell us about the role of *social stereotyping* by people who make implicit assumptions like those in the preceding sentences! And applying cost-benefit analysis to choosing between messaging techniques and the messages to adopt may raise political questions because some people believe that simple didactic messaging should be effective - if only people would act “rationally”, while others believe thinking like that is itself indicative of a particular political view of the world – one where the specialist knows best and others should take their recommendations on trust. This position has always been hard to maintain and now threatens to become more difficult in an internet-(mis?) informed world: more so in a “post-fact” world where the expert opinions may be discounted out of hand and experts dismissed as enemies of the people!

Thus, the problem of defining ‘social aspects’ is not insignificant. This applies as much to the minutiae of treating dermatophytes and staphylococci and the possibility of resistance as it does to any other realm of social behaviour. “Behaviour” is not simple; it occurs in an environment of complex social, economic and cultural differentiation and difference may be very important in the design of interventions. While an observed behaviour – client demand, practitioner negotiation of

the consultation - may be relatively easy to identify, understandings of its aetiology may be framed in a number of ways, perhaps most readily in one of the following three categories: rational, evolutionary or socio-cultural. "I prescribe because I am rational and that is what my clinical judgement tells me to do", "I prescribe because I have evolved to survive by doing what other people ask of me and my employer expects me to make money", or "I prescribe because I want my client to believe I did something for their pet and I want them to be happy - but the chances are it won't resolve the problem". Of course, none, all, or some these (plus other factors) could be working together to produce the practitioner's behaviour.

To really understand the aetiology of behaviour and how to change what we (and others) do, we must (figuratively at least) engage with matters of blood, lust, greed, disgust and other such elemental aspects of human motivation. Indeed, it may come down to engaging with these more than with the publicly admired and approved "rational" kernels of our existence and actions. This insight should be important when we consider the practical implications of the Consensus Statements and how best to take them forward into practical interventions.

To do this is to keep in mind those "lower", apparently non-rational, drives and motivations which intersect at odd and unpredictable angles with the civilised spaces of our professional lives. The social sciences often consider these problems (part of the 'wickedness' buried in the pragmatic realism of policy) in terms of local rationality, non-rationality, irrationality and the diverse meanings of what it means to be *differently* rational. This is a world of empirical observation (sometimes via use of qualitative ethnographic methods (Hammersley & Atkinson., 2007)) resulting in insights about 'social aspects' via theories at times seemingly as counterintuitive as those of the quantum universe. Behaviour and its modification is at best likely to be concerned only partially with rational activity and symbols and motives may be as fluid and probabilistic in their existence and effects as mesons in the quantum universe.

We know that human beings are complex in their behaviours. Not only do we lie to and deceive others, we also lie to and deceive ourselves. And "behaviour" modifications may range from stopping smoking to altering vets 'prescribing behaviours, or owners' expectation of what they can expect vets to do. While around 83 different theories of behaviour change are available to policy makers and practitioners (Michie, West, Campbell, Brown, & Gainforth, 2014), any enthusiast for the boxed set TV series *Mad Men* (Weiner et al., 2007-15) will know that the advertising industry has for more than a century (Scott, 1908) been going beyond even this number of theories into a universe of engagement with the non-rational (which is not to say *irrational*) aspects of our being, engaging with our feeling about status, fairness, romance, hope, aspiration and love - and then some others; drives we may be less able or willing to identify with or admit to figuring in our personal motivations. These include blood, disgust, lust, hoarding, and, on the more publicly acceptable side, curiosity, comfort and hunger (Aunger & Curtis, 2015; Changeux, 1997; Denton, 2009), all essential baggage from our evolutionary past.

Very profound issues are in play here. While Descartes (Descartes, Anscombe, & Geach, 1970), Kant (Kant, 1784), Spinoza, Hume, and others, laid the foundations for the intellectual and scientific world we inhabit and which forms our thoughts and how we are, hope to be and hope that other see us, we do not always act rationally. Indeed, appealing to reason along may not be the main way forward when it comes to behaviour change. The 19th century German sociologist Max Weber famously commented that as social beings we act in relation to the "meaning of the situation" as it is for us at a particular time and place, both in terms of an immediate time and place and the greater time and place of "history". This "meaning" determines what is 'rational' for us at that time and in that place

and affects our choices and our social behaviours. No wonder it becomes rational to behave in ways which from another perspective might seem quite irrational, for example smoking or supporting a political movement which appears to us as “extreme”. Rationality is not a simple thing. What is “rational” today may not be “rational” tomorrow or in a hundred years’ time. And this may apply as much to the micro-world of the “prescribing moment” as it does to the macro-world of ethics or politics.

At the very least, this means that for effective follow-up to the Consensus Statements we must indeed take account of those “social aspects”. There is a broad rule about behaviour change interventions which can be learned from the social sciences. This is that general programmes of intervention are probably too homogeneous to engage with the diversity of ‘social aspects’ which influence behaviours. Effective interventions should be designed to engage with the life worlds of different population segments. While it may be *cost-saving* to have a one size fits all message, that route is less likely to be *cost-effective*. Heterogeneity of design is vital; interventions must engage with the “meaning of the situation” of the target group (whether practitioner, client or both) rather than assume both or either is “rational” in some Cartesian sense – or indeed that the advice itself has been arrived at in an entirely rational way. Systematic reviews and modelling go some of the way to strengthening rational decisions: but we should never forget they too result from human social behaviour and the macro-world in which it is acted out.

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