COMMENTARY

Two cultures?

I enjoyed the piece by Sam Gibbs "Losing Touch with the Healing Art."[1] It merits attention. There is much to agree with but, as with any good commentary, even more to argue about. Gibbs challenges some issues head-on but skirts around one or two others that are worthy of further exploration if not trampling under foot.

The oft-quoted antithesis between art and science,[1] however much beloved of retiring Regius Professors at ancient English universities, should be consigned to the bin of history; like most clichés, it obfuscates rather than illuminates. Medical practice comprises two distinct but interdependent value systems. The first ethical precept is simply stated: other people matter. We don't rely on any empirical content to make this statement, but rather simply report that we choose to recognize the right of autonomy of others and feel a need to relieve suffering as a reflection of our own ability to imagine kinship. This is why doctoring is preferable to selling hamburgers, although seemingly (at least in the UK) not as well paid. We extend this fellowship to all humanity, although we continue to argue where the boundaries are. For me, supporters of systematic reviews are on the wrong side.

The second value system is also simply expressed, namely, that it is impossible to satisfy the first precept: that is, to respect somebody's autonomy as a human being unless one knows exactly what is going to happen (to them) either with or without a particular intervention. The scientific basis of medicine is primarily concerned with solving these latter technical issues: what will happen to the patient if we don't treat and what will happen if we do. The mechanisms by which nature determines these outcomes, and why we can second-guess nature and the intellectual structures we need to do so, are of course fascinating, but in the murky waters of applied biology that is dermatology we remain engineers rather than theorists. Therefore there is no conflict between caring and intellectual cold-bloodedness, indeed quite the opposite: there is little virtue in empathy if there is no correspondence between the statements you utter and the external world.

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Gibbs also discusses reductionism, but I see things differently from him. Being a reductionist may be dangerous, but it's not half so dangerous as not being a reductionist. Science is inevitably reductionist, that is how it works; chuck out the reductionism and you throw out advances from vaccination to phototherapy and, come to think of it, all treatments in between. People like cutting up DNA because it is that which, for instance, allows hepatitis B vaccines and HIV serology. The alternative is that sort of woolly-headed holistic self-intoxication that resides on prejudice and little else. Holism was tried for over one millenium in Europe; it was called the Dark Ages. Let me assure Gibbs, I am older than he is, it wasn't pleasant.

Where I differ from Gibbs is that I believe it is critical to distinguish between reductionism as a methodology and the need to study events at an appropriate level of analysis.[2-4] He provides one example in recalling the tree-like figure conjured up by Hywel Williams[5] to describe dermatology research. Hywel, with all that romance and fancy we have come to expect from the Welsh, pictures the tree as bent over to one side weighed down by all this genetics, cell biology, and immunology. By contrast, the other side has only a few sparse branches of epidemiology and health services research. Now, as the rest of the world knows, the tree is like this because it is weighed down with all the bounty of fruit on one side only!

Special pleading for epidemiology (I will deal with health services research later) will not do. Epidemiology has its intellectual origins in 3 disciplines. First, clinical investigation: that is the classical clinical method of comparing those with and without a disease. This is why the best epidemiology has and continues to be done by clinicians. Second, population biology, including demography, and, third, those branches of statistical theory developed, among other things, to provide the modern synthesis of quantitative genetics by Haldane, Fisher, and others in the first part of the 20th century. Population biology in the guise of population genetics is, of course, just as fiercely reductionist as those who claim they are going to find the cure for psoriasis in an Eppendorf test tube. Gibbs' criticisms are better focused at the level of analysis. Here there remains a real problem about the relevance of many model systems, and the inability of many to under-

stand that in biology, unlike physics, we don't have great general laws or large forces operating that allow us to work from the bottom up in terms of clinical prediction.[2,4] Biology is frustratingly full of details and exceptions. The great physicist-turned-biologist Leo Szilard said that once he changed fields (no pun intended) he couldn't enjoy a long bath as he could when he could dream abstract physics in the bath. As a biologist he was always having to get out to check on some annoying little fact. It is the problem of predicting across several levels of biologic explanation, and the absence of the all encompassing general laws in biology, that accounts for the fact that most clinically relevant discoveries come from the clinic rather than the laboratory and not, contrary to what many believe, vice versa.

I share Gibbs' misgivings about evidence-based medicine and systematic reviews.[3] But again, he is too pleasant for his own good. The idea of a systematic review is a nonsense, and the sooner those advocates of it are tried at the International Court of Human Rights in the Hague (or worse still, sent for counseling), the better. Would you really do a meta-analysis or systematic review of quantum mechanics? Oh dear! Forget wave particle duality and just give an odds ratio of 1.5! Does the earth go around the sun or vice versa? A quick apology to Copernicus and the Ptolemists—they are both right, let's do a Cochrane plot! I suggest those instruments of torture originally earmarked for Galileo might now find a new use. The editor won't allow me the space to expand much further, but the issue can be stated briefly, even if understanding involves hard thinking: theories do not, in the sense of probability theory, have distributions; they are either right or wrong.

It is not reductionism, let alone science, that dehumanizes medicine; it is ignorance. It is not science that turns people into numbers; it is ideology, as the last, and by the look of things the present, century will continue to demonstrate. Once you move beyond the external test in reality, once you stop trying to find out what really happens by producing theories of broad generalizability, you end up with the sort of intellectual corruption that conflates a summary statistic with a scientific theory. It is of course by these standards that so much health service research fails. Not that the subject is entirely unworthy of attention but that, like many branches of knowledge infected by the dismal science (economics), the methodology is inadequate for the demands placed on it. The problems of the self-referential nature of human beings and their inability to tell anybody what they are really thinking in response to a questionnaire are glossed over ("Have you ever slept with a sheep professor?"). It also seems that the practitioners of Health Services research have very little interest in finding out what really works; rather, they just want the data that allow their political masters to know how they can cut money by denying people treatment and shortcutting democracy. (For those self-righteous weak-willed editors who demand these pious declarations of conflict of interest, please note that being funded by the National Health Service remains a greater source of bias, I wager, than any amount of corporate pharmaceutical funding.) That epidemiology has allied itself with the non-subject of health service research is a source of sadness and a great loss to genuine population biology in which epidemiology had a major part to play. Perhaps the epidemic of genetic case-control and population studies, and nascent interest in the genetics of our own natural selection and population history might come to epidemiology's rescue. I certainly hope so.

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Response

I am flattered that Professor Rees has been moved to comment on my article, although I fear that he has read rather more into it than I had intended. Despite what he says, I think we would actually agree more than we disagree about what constitutes the essential elements of medical practice. The bibliography of my piece betrays the fact that I am no scholar of the history and philosophy of science but rather a general practitioner. My theme was only, in essence, the reflections of a clinician who happens to be more interested in human beings than in molecules, but I hope no less valuable for that. I really

wanted to make a single point, as follows: There is an element of medical practice beyond the purely technical business of diagnosing and treating patients that is extremely important, socially and therapeutically; with increasing technological advance we are in grave danger of devaluing this element and even losing it altogether.

Having said that, I feel I must reply to a few specific points:

1. I am not promoting an antithesis between art and science. On the contrary, my piece clearly highlights the importance of achieving and maintaining a synthesis and balance between technical and pastoral doctoring. I heartily agree with Professor Rees that in medicine there is no conflict between cold-blooded intellect and caring. Similarly, I have not proposed abandoning reductionist "mechanisms" research but simply balancing it with other approaches such as epidemiology (and history, philosophy, sociology, and psychology). The synthesis of immunology and epidemiology, for instance, has proved very fruitful in understanding the extraordinary rise in prevalence of allergic diseases including atopic dermatitis.[1]
2. I am not so sure that the reductionist approach is responsible for the quantity and range of advances in clinical medicine alluded to by Professor Rees "…from vaccination to phototherapy…and all treatments in between." As I am sure he knows, many treatments commonly used in clinical medicine at present, vaccination and phototherapy included, did not originate in the laboratory but were discovered by clinical observation. Of course, further developments and refinements (mass-produced vaccines and narrow-band ultraviolet B) may have subsequently occurred in the laboratory when the underlying molecular mechanisms of these treatments have become apparent. I think it is fair to say, however, that the reductionist bounty weighing down one side of the tree of dermatology represents rich pickings more for those needing to produce doctoral theses than for patients looking for treatments. The movement for evidence-based medicine, ironically, may prove to have been more responsive in terms of setting its agenda according to the needs of patients.[2]
3. I have the greatest difficulty, however, with Professor Rees' bold statement that "the idea of a systematic review is a nonsense…." Although I share his misgivings about the term "evidence-based medicine" and the uncritical drive for its implementation, I was careful to point out in my article the advantages of evaluating therapeutic interventions rationally and impartially rather than traditionally and anecdotally. This, after all, is the sole purpose of a systematic review. Granted, theories are right or wrong, but treatments and other interventions in medicine are rarely polarized between excellent and clearly useless; they are much more commonly somewhere in the middle. For instance, just exactly how effective is liquid nitrogen (that age-old tradition of dermatology) at getting rid of warts?[3]

I am glad Professor Rees shares my concerns about the importance of keeping the governing principles of fast-food marketing and health care provision apart.[4] They have nothing to learn from one another; although hamburgers may pay better, I am sure we all agree that the practice of medicine, even in the modern era, has richer rewards.

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Response

I thank the Editor for letting me make a short comment on the witty and entertaining letter written by my dear friend Jonathan Rees. It is always healthy to debate the different scientific approaches, but if Rees had read the article from which my tree of unbalanced dermatology research was taken,[1] he would have seen my call for population and molecular scientists to work together to make sense of the complexities and exceptions of human skin disease. Lobbing fruit (however rotten) from one side of the tree to the other is unlikely to get us very far, even though it might appear to be good fun. In the spirit of Sam Gibbs' article,[2] I have much compassion for Rees, as he is a brilliant scientist. This romantic (don't get the wrong idea, Jonathan) and fanciful Welshman implores Rees to return

from the world of entertainment to the world of science, and not to be tempted to sell hamburgers or sleep with sheep in the meantime, however attractive they may seem.

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