

# INTELLECTUAL SILOS AND BROAD-BASED UNDERSTANDING



By George Ellis

One of the issues in university education is what breadth of understanding is reflected in both the teaching and research. There is a regrettable tendency for academics, having become great experts in their own field, to then remain bunkered down in those fields for ever — indeed often taking a remarkably narrow view even of these specialist fields. This narrow world view is then transmitted to the students, together with an intolerance for other views, or at least an undervaluing of their worth. Many examples can be given from many disciplines: one classic example was the way the world of psychology fell prey to Watson's very narrow views on behaviourism;<sup>1</sup> another is the disdain expressed in some literary circles for scientific thought;<sup>2</sup> a third is the similar disdain expressed by some pure mathematicians for applied mathematics,<sup>3</sup> or theoretical particle physicists for more applied physics.<sup>4</sup>

Naturally this tendency leads also to redoubtable defence of one's academic territory against incursions by newcomers from other academic areas. Defence of academic turf is a characteristic feature of many institutions. The idea of interdisciplinary studies may be praised in theory, but in practice various barriers are put in the way, including a failure of the university system to reward interdisciplinary work; it is often at least implicitly looked down on as of inferior quality.

This is highly regrettable for many reasons. Firstly many of the most

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<sup>1</sup> See Merlin Donald, *A mind so rare: The evolution of human consciousness* (New York: W. W. Norton & Co., 2001), for a rebuttal.

<sup>2</sup> See C. P. Snow, *The two cultures* (Cambridge: University Press, 1960) for a discussion.

<sup>3</sup> See G. H. Hardy, *A mathematician's apology* (Cambridge: Cambridge University Press, 1940) for an example.

<sup>4</sup> To avoid embarrassment I refrain from giving names here.

important questions are interdisciplinary, and cannot be studied in a narrow way — the example of systems biology comes to mind,<sup>5</sup> or any truly adequate studies to do with the brain-behaviour-mind interaction.<sup>6</sup> Secondly the experts in their own field are often even very narrow as regards their own field: the example of insistence on a gene-only centered view of biological development comes to mind<sup>7</sup>, when in fact the situation is much richer.<sup>8</sup> Such a view distorts and cramps the development of the subject itself.

I regard all these phenomena as aspects of fundamentalism, which I define as *a partial truth being claimed to represent the whole truth*.<sup>9</sup> It is very widespread not only in religion, but also in academia. Naturally the partial truth represented as the whole truth just happens to be the one in which you yourself are an expert; thus you claim the intellectual high ground as regards all your adversaries, who may not be similarly expert in your specific academic corner. The fact that you may be reciprocally ignorant of theirs is beside the issue.

The particular dominant tendency is to push a reductionist viewpoint in this way, claiming that physics explains everything about life (if you are a physicist), or molecular biology does (if you are a molecular biologist), or evolutionary biology does (if you are an evolutionary biologist), and so on. But physics can't explain everything<sup>10</sup> because there is top down causation in the hierarchy of complexity.<sup>11</sup> For the

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<sup>5</sup> See Denis Noble, *The music of life* (Oxford: Oxford University Press, 2006)

<sup>6</sup> For example V. S. Ramachandran, *The tell-tale brain: Unlocking the mystery of human nature* (London: William Heinemann, 2011).

<sup>7</sup> Richard Dawkins, *The selfish gene* (New York: Oxford University Press, 1976).

<sup>8</sup> David Sloan Wilson & Elliot Sober, "Reintroducing group selection to the human behavioral sciences", *Behavioral and Brain Sciences* 17, 4 (1994): 585–654; Rob Boyd & Peter J. Richerson, "Culture and the evolution of human cooperation": <http://www.sscnet.ucla.edu/anthro/faculty/boyd/Publications.htm>; Eva Jablonka and Marion J. Lamb, *Evolution in four dimensions: Epigenetic, behavioural, and symbolic variation in the history of life* (Massachusetts: Massachusetts Institute for Technology Press, 2005).

<sup>9</sup> George F. R. Ellis, "Physics, complexity, and causality", *Nature* 435 (2005): 743.

<sup>10</sup> *Ibid.*

<sup>11</sup> George F. R. Ellis, "On the nature of causation in complex systems"

same reason, neither genetics nor neuroscience nor evolutionary biology can fully explain human behaviour

A specific recent example is the claim that the existence of religion can be explained purely in evolutionary terms, thereby showing why it exists and hence showing it is not true, as it has been explained away. But this is a non sequitur, and in fact is a specific example of *the evolutionary origins fallacy*, namely the belief that once you have an evolutionary explanation of some human behaviour, you have completely explained it. This is simply not the case. To see this, realise that this argument applies to any human activity or understanding whatever, including all scientific theories and indeed evolutionary psychology itself. Does this fact mean that evolutionary psychology is explained away? No it does not: for the real situation is that an evolutionary psychology explanation for any human activity, theory, or belief whatever is always a partial and incomplete explanation, and its existence is irrelevant to the truth claims of the theory involved.

The claim there has to be an evolutionary psychology explanation for the existence of evolutionary psychology does not prove that any specific aspects of that theory are either correct or incorrect! The same holds for an evolutionary psychology explanation of theoretical physics and for religious beliefs.

A second example is the way some philosophers, psychologists and neuroscientists tell us that consciousness is just an epi-phenomenon. Let me quote from Merlin Donald's book *A mind so rare*:

Hardliners, led by a vanguard of rather voluble philosophers, believe not merely that consciousness is limited, as experimentalists have been saying for years, but that it plays no significant role in human cognition. They support the downgrading of consciousness to the status of an epiphenomenon... A secondary byproduct of the brain's

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*Transactions of the Royal Society of South Africa*, centenary issue, 63 (2008): 69-84.  
<http://www.mth.uct.ac.za/~ellis/Top-down%20Ellis.pdf>

activity, a superficial manifestation of mental activity that plays no role in cognition.<sup>12</sup>

Dennett is actually denying the biological reality of the self. Consciousness is an illusion and we do not exist in any meaningful sense. The practical consequences of this deterministic crusade are terrible indeed. There is no sound biological or ideological basis for selfhood, willpower, freedom, or responsibility. The notion of the conscious life as a vacuum leaves us with an idea of the self that is arbitrary, relative, and much worse, totally empty because it is not really a conscious self, at least not in any important way.<sup>13</sup>

But this is not in fact what is implied by the science, which has a long way to go before it properly understands the brain, and has made virtually no progress at all in understanding the hard problem of consciousness (however many of the hardliners even deny there is such a problem). There is not even a beginning of an approach. I prefer to run this whole argument the other way round, starting with our daily experience. Consciousness and conscious decisions are obviously real, because that is the primary experience we have in our lives. This is the basis from which all else — including science — proceeds. It is ridiculous to give up that primary experience on the basis of a fundamentalist theory which ignores this fundamental data. And that theory is not even self-consistent, because if that were indeed the case, the entire scientific enterprise would not make sense: we would have no reason to believe what any scientist says. Thus I take the causal efficacy of consciousness as a given which underlies our ability to carry out science and to entertain philosophical and metaphysical questions. And as a consequence, ethical choices and decisions can be real and meaningful.

A final example is the view that one could live a purely rational life: that emotion, faith, and hope simply get in the way of rationally desir-

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<sup>12</sup> Donald, *A Mind So Rare*, 29, 36.

<sup>13</sup> *Ibid.* 31, 45.

able decisions.<sup>14</sup> This viewpoint that underlies much of present day scientism.<sup>15</sup> It is my contention that this view of a purely rational way of existence is a deeply flawed view of how we can conduct both personal and social life. It is not possible to reason things out and make decisions purely on a rational basis. The true situation is much richer than that. In order to live our lives we need faith and hope,<sup>16</sup> because we always have inadequate information for making any real decision. Faith is to do with understanding what is there, hope with the nature of the outcomes. When we make important decisions like whom to marry or whether to take a new job, we never have enough data to be certain of the situation or the outcome. We can keep gathering evidence as long as we like, but we will never be truly sure as to how many people will buy our product, how people will treat us, and so on. Thus our choices in the end have to be concluded on the basis of partial information and are necessarily to a considerable degree based in faith and hope. This is true even in science: embedded in the very foundations even of science there is a human structure of hope, and trust.<sup>17</sup> Secondly, our emotions are a major factor in real decision making<sup>18</sup> — no decisions are made purely as a result of rational choice; the first factor effecting what we tend to do is the emotional tag attached to each experience, memory, and future plan. For example, the hoped-for joy of successful achievement underlies most work in science; without it, science would not exist. Thirdly, we need values to guide our rational decisions; ethics, aesthetics and meaning are crucial to deciding what kind of life we

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<sup>14</sup> “Rational, *adj.* 1: (of behaviour, ideas, etc) – based on reason rather than emotions: a *rational argument/ choice/ decision – rational analysis/ thought.* 2: (of a person) able to think clearly and make decisions based on reason rather than emotions”: *Oxford Advanced Learner Dictionary of Current English* (Oxford University Press, 2000).

<sup>15</sup> Peter William Atkins, “The limitless power of science”, in *Nature's imagination: The frontiers of scientific vision*, J. Cornwell, ed. (Oxford University Press, 1995): 122-132.

<sup>16</sup> George F. R. Ellis, “On rationality, emotion, faith, and hope: Being human in the present age”, in *Humanity in science and religion: The South African experience*, Augustine Schutte, ed. (Cluster Publications, 2006).

<sup>17</sup> Robert P. Crease, “The paradox of trust in science”, *Physics World* 18 (2004).

<sup>18</sup> Antonio Damasio, *Descartes's error* (New York: Harper Collins, 2000) and *The feeling of what happens* (New York: Random House; Vintage, 2000).

will live. They are the highest level in our goals hierarchy, shaping all the other goal decisions by setting the direction and purpose that underlies them: they define the *Telos* (purpose) which guides our life.<sup>19</sup> They set the framework within which choices involving conflicting criteria will be made and guide the kinds of decisions which will be made. These highest level understandings, and the associated emotions, drive all else. Thus the desire to free us from irrationality leads to the myth of pure rationality, suggesting pure reason alone is the best basis for a worthwhile life. But this is a completely inadequate understanding of causation on which to base a full life. Rationality, Faith, Hope, and Doubt as well as Imagination, Emotions and Values are all important in a full understanding of human choices and decisions. They all interact with each other and are causally important in the real world.

There are many limits to what we can know within the sciences, because science deals with the generic, the universal, in very restricted circumstances. It works in circumstances so tightly prescribed that effects are repeatable and hence can be reliably duplicated and tested. But most things which are of real value in human life are not repeatable. They are individual events which have meaning for humanity in the course of our history. So science does not encompass either all that is important or indeed all that can reasonably be called knowledge. In particular, ethics is outside the domain of science because there is no scientific experiment that determines what is right or wrong.

The source of values is a key point; I do not have space to discuss it here, but refer to a talk I gave in Australia where it is covered.<sup>20</sup> Correspondingly, aesthetics is also outside the boundaries of science. No scientific experiment can say that something is beautiful or ugly. Both are related to the way we understand meaning in our lives – what is valuable and what is not, what is worth doing and what in fact makes

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<sup>19</sup> Nancey Murphy and George F. R. Ellis, *On the moral nature of the universe* (Minneapolis: Augsburg Fortress, 1995).

<sup>20</sup> George F. R. Ellis, *Faith, hope, and doubt in times of uncertainty: combining the realms of scientific and spiritual inquiry*”, James Backhouse lecture at the Australia yearly meeting of the Religious Society of Friends [Quakers](2008): [http://www.mth.uct.ac.za/~ellis/Backhouse\\_Lecture\\_rev2.pdf](http://www.mth.uct.ac.za/~ellis/Backhouse_Lecture_rev2.pdf).

life meaningful. These are areas of life which cannot be encompassed in science: they are the proper domain of philosophy, religion, and spirituality

So crucial issues lie in the interfaces between subjects, requiring a truly broad-based understanding for adequate interrogation. But there are dangers here. It is easy for the expert in one area to behave as a true novice in another, as they do not have the in depth understanding of issues involved and discussions that have taken place. How can one enter a new subject at adequate depth, without being irrelevant because you just don't understand the issues adequately?

It is absolutely key that before jumping into another academic area, one becomes sufficiently *au fait* with key issues and controversies that one does not appear just ignorant. There is a fine line to be drawn here: too long an apprenticeship while reading about a topic will not only take a great deal of time, it may tend to sap the original thoughts and new insights one might contribute if one becomes embalmed in the orthodoxy of the field. One can learn much of what is needed on one's own, if given guidance by someone in the field. But the best is to engage in a research project with someone who is deeply imbedded in it.

An example of how to do this is a twelve year program run jointly by the Centre for Theology and Natural Sciences (CTNS: Berkeley) and the Vatican Observatory (Castel Gandolfo/Tucson). Every second year a meeting was held on a relevant scientific topic, with a core group of scientists, philosophers, and theologians who attended every meeting, and a number of top level experts in each subject area (quantum cosmology, quantum physics, neuroscience, etc.) joining in the specific meetings on that topic. Draft papers were prepared six months in advance by each participant and circulated, responses came in at four months in advance, and a revised paper two months in advance. After the meeting, one more revision of each paper was undertaken to produce the final volumes.<sup>21</sup> So a true interdisciplinary dialogue was possible, with experts in each area listening to each other. To be sure

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<sup>21</sup> <http://www.ctns.org/books.html>.

there were problems with use of different language for the same topics — but understanding these language differences was an essential part of the learning experience. And this then led to further truly interdisciplinary collaborations, for example when I teamed up with a professor of theology and philosophy to write a book<sup>22</sup> on the issue of the origin and nature of values. She had the research depth in those subjects to ensure that the product was not simply foolish from a philosophical viewpoint — something I could not do on my own.

So I recommend becoming an expert in some subject area first, understanding it in full depth, and then broadening out and seeking the deeper relationships and understandings that come from a more broad based engagement across subjects. But in doing so make sure you engage experts in the new area, and hopefully co-author papers or even books with them to ensure that you know what the relevant historical and current debates in the other areas are.



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<sup>22</sup> Murphy and Ellis, *On the moral nature of the universe*.