The End of Science

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Readers will recall this story from the early autumn. Here Anthony Judge reflects on the ways in which we try to settle differences by comparing the incident with an earlier one in a very different context.

Introduction

On 16th September 2008, the Royal Society of London for the Improvement of Natural Knowledge as the oldest and most eminent body of science, forced the resignation of its Director of Education, Michael Reiss (Royal Society statement regarding Professor Michael Reiss, *Science News*, 16 September 2008). The latter had proposed the inclusion of creationism in the science curriculum in schools (Creationism call divides Royal Society, *Guardian*, 14 September 2008). In 1210, the University of Paris, the most eminent academic body of the time, made a declaration with papal authority to the effect that any person presenting the works of Aristotle to students, or found to be reading such materials, was to be immediately excommunicated.

The following is an exploration of the parallels between these two events and the implications of the action of the Royal Society for the future of science. *Any assumption that this argument is a defence of creationism would be to misunderstand its intent completely.* Nor, however, is it an argument in support of the widely-discussed secularist positions of those such as Richard Dawkins (*The God Delusion*, 2006) or Christopher Hitchens (*God Is Not Great: How Religion Poisons Everything*, 2007) — whatever may be the merits of their specific arguments.

This is an exploration of intellectual censorship and the impoverished quality of thinking that results. In particular it is an exploration of the inherent inadequacy of scientific thinking as taught at a time when there is a call for cognitive skills capable of responding creatively to differences of opinion within science and in society at large. The science that has not learnt how to handle differences, except by excommunication, is clearly of questionable relevance to the most challenging issues of society – especially those reinforced by an 'us and them' binary logic.

'End of Science' vs 'End of History'

In 1992 Francis Fukuyama produced a controversial study suggesting that history has reached a culminating point with the emergence of a perfection of social organisation represented by liberal democracy (*The End of History and the Last Man,* 1992). The advent of Western liberal democracy was seen as signalling the end point of mankind's ideological evolution and the final form of human government. A different exercise was undertaken by the senior editor of *Scientific American,* John Hogan (*The End of Science: facing the limits of knowledge in the twilight of the Scientific Age*, 1997).

Fukuyama's argument is of course questionable – and has indeed been questioned – but it is the questions that it raises, and the capacity to do so, that are more interesting than any particular answers. And in 2008, it is not clear that liberal democracy is the ultimate solution to the challenges that it readily assumes to be an aberration from that perfection. However, as perhaps demonstrated by the non-democratic institutional response to the Irish 'No' vote (on the EU Reform Treaty) and the many instances of electoral manipulation in democracies, one might hope that democracy itself could evolve into a more appropriate process.

The point is not whether science has failed to be marvellous in many respects or to have revealed intellectual marvels which are much to be appreciated. The problem is whether these marvellous capacities are to some degree, deliberately or inadvertently, used as a 'fig leaf' to disguise inadequacies which are systematically denied – notably by the most eminent academic authorities.

The question then is whether the assumption that 'science', or the 'scientific method', has reached its culminating form is inherently problematic – as with the assumption of the University of Paris in 1210 with respect to religion. Are there no inadequacies to science that call for innovations in its methodology or approach – or imply their possibility? Is the future precluded from such innovation by a cognitive approach that is to be considered as having reached perfection? Is there a questionable pattern that underlies both the scientific method of today and that of the religious authorities of the period of the Declaration of Paris in 1210? By what method would this be determined?

Challenged Capacity to Handle Differences

Although not a question of science, the history of science is replete with examples of shameful treatment of innovators in science – whose merits are subsequently extolled as an exemplification of the scientific method. Institutionalised science does not address these issues scientifically – leaving their resolution to problematic dynamics which are equally evident in the wider issues of science that science fails to address. In this context this might indeed be termed scientific Darwinism, as though there was no better mode. Institutionally such transformations are framed *post facto* as 'scientific revolutions' without being able to address those currently emerging.

Whilst this is the case with respect to many innovators individually, somewhat similar processes occur on a larger scale with respect to the relationships between disciplines – notably as determined by a form of long-recognised 'pecking order'. Science has been unable to apply its methodology to the relationships between disciplines. The arrogance of

some, and the marginalisation of others, has long been remarked – although neither arrogance nor marginalisation are concepts recognised by many of the sciences in question. There is little insight into how revolutions in thinking might be handled with greater elegance. In this sense science has little to offer those faced with bloody revolutions in wider society – a matter of irrelevance to science.

What is it that inhibits the capacity of a discipline to handle differences? Is it that the integrity of the discipline is such that differences are necessarily intolerable – especially when they are of a more radical nature? What then of the capacity for radical theoretical innovation? How does this compare with the coherence and integrity that religious authorities feel obliged to defend by every means possible?

Future Methodological Capacity to Handle Differences

As emphasised above, this argument is not a defence of creationism. It is in defence of a methodology that might have been assumed to be scientific but most clearly is not. That methodology is perhaps best framed as critical thinking, namely the capacity to listen to arguments from any perspective, without prejudgement, to weigh their significance and to determine a creative mode of response (*Web resources: Critical thinking vs. Specious arguments*, 2001).

Conventional science, because of its very conventions, holds the view that the argument against creationism has already been completely made to the point of justifying its exclusion from any curriculum – to guarantee the healthy education of young scientists. However, curiously, the argument for creationism is so problematic that consideration of the evidence for it is seen as a contamination of appropriate education in what is known to be true. It is difficult to fail to see the parallels with the attitude of religion in its reaction against the emergence of science. If you already know and possess the truth any alternative claim to truth must necessarily be false and justify whatever sanctions are appropriate. In that sense, has science reached its equivalent to the famous Galilean moment – claiming already to know what it would understand through any cognitive discipline as yet untried?

Curiously also, education in the scientific method is seemingly held to imply exposure only to pre-masticated arguments that have been certified as healthy for young minds. This is reminiscent of what is deplored as dogmatic education on the part of religious authorities. There is no question of educating people in the capacity to deal with unfamiliar materials to enable them to develop the cognitive skills to work out under what conditions they may serve some purpose in the eyes of those who defend that perspective.

This is itself curious in that many scientific subjects are presented in terms of the history of theories that have been successively abandoned and are typically framed as obviously ridiculous – whatever the eminence of those who propounded them at the time. Interesting examples are the concept of 'ether' (which ironically has to some extent re-emerged in the context of astrophysics) and the case of Isaac Newton. To the eternal shame of science, it has been unable to comprehend why a person of such genius attached credence to views – on alchemy and the like – that are now disparaged by many who would not presume to equal his capacities. It has even sought to conceal his interest in such matters.

The argument here is therefore that it is not so much creationism that needs to be on the curriculum but rather a full spectrum of extraordinary views currently upheld in society by some constituencies – in preference to those upheld by science. Only by exposure to those views, and how arguments are made in support of them, can students acquire an understanding of the relative merit of science as it is conventionally conceived. If science is to be relevant to society, and to avoid alienating many who are more convinced by alternative views, it needs to engage with the processes whereby such convictions are formed and sustain their integrity. It is not sufficient for society to act like religion and to simply propound the Truth by fiat – and to condemn those who fail to subscribe to it to some form of excommunication, or intellectual damnation in a nether cognitive hell. Implicit in the position of the Royal Society appears to be a requirement that the Authority of science be accepted by its students unquestioningly – or that only the right kind of questions should be asked.

Indeed, in addition to creationism, some creative thinking could be devoted to the variety of cognitive modes from which students might fruitfully learn, whether or not conventional science immediately emerges as the most credible. As a mirror of society, the spectrum of such modes might even be understood as a form of ecology of the collective mind that merits honourable consideration – however diseased it is subsequently judged to be (*Memetic and Information Diseases in a Knowledge Society: speculations towards the development of cures and preventive measures*, 2008). Other modes of explanation might indeed include traditional modes of knowledge (including shamanism), astrology, alchemy, modes favoured traditionally by other cultures (notably the *feng shui* of China), and modes favoured by disciplines held to be highly questionable by the natural sciences (such as psychology and mythology). These might include the unusual submissions that are the delight of every patent clerk – and possibly the original inspiration for Einstein (*Einstein's Implicit Theory of Relativity – of Cognitive Property? Unexamined influence of patenting procedures*, 2007).

It is surely appropriate as the part of any education to enable students to understand why approaches understood as 'alternative sciences' by their proponents, and those intrigued by them, are so assiduously framed as pseudosciences. The general point has perhaps been best made by Susantha Goonatilake (*Toward a Global Science: mining civilisational knowledge*, 1999) as discussed elsewhere (*Enhancing the Quality of Knowing through Integration of East-West Metaphors*, 2000). Extraordinary perspectives surely merit careful preservation as an

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educational test bed. How else would thinking be developed to enable dialogue with politicians – especially those holding dangerous radical and extremist views, so readily labelled as 'incomprehensible'?

Indeed a creative educational approach would be to invite students to present alternative modes of knowing for consideration and discussion. As it is, the Royal Society is reinforcing a precise imitation of the behaviour of fundamentalist religious groups who exclude as totally inappropriate any mode of knowing that does not reinforce their predetermined worldview. Within any one religion, the consideration of the perspective of any other is considered totally inappropriate. Alternative perspectives are necessarily to be condemned as misguided and worthy of sanction. In repeating this pattern, is it any wonder that a scientific education is inadequate to the challenges of society and to handling emergent differences intelligently and proactively?

As commentators have noted with regard to the forced resignation of Michael Reiss, it would appear that establishment science is now in a state of paranoia and defensiveness – which may indeed be terminal. It would appear that scientists are now seriously lacking in self-confidence if they are incapable of engaging with those holding other worldviews and have clearly failed to engender the requisite thinking skills so desperately needed in wider society, as argued elsewhere (*Guidelines for Critical Dialogue between Worldviews*, 2006).

Beyond 'Science' — the Search for 'New Thinking'?

Is it then to be expected that there will be an evolution in cognitive capacity 'beyond science' in quest of the 'new thinking' for which many plead? Clearly scientific methodology, and the educational processes favoured by the Royal Society, are not equipped to engender such new thinking. Indeed, just as science is locked into a particular theory of 'evolution' it might be argued that it is locked into a particular understanding of its own evolution – again a form of methodological Darwinism, but with no sense of what the future may bring. Such thinking even precludes the kinds of surprising advances in understanding for which science purports to seek

Is it possible to envisage a cognitive modality 'beyond science'? Or is the current scientific method to be understood as holding until the end of time? How might such a new modality be framed, if only speculatively? Where might one look for reflection on such matters – given that science alone cannot be expected to engender it?

One approach is to consider the process that the Royal Society has made evident through so clearly sounding the death knell of science. Science emerged in response to restrictive cognitive patterns exhibited by religion – exemplified by the Declaration of Paris of 1210. Science has gone through a complete cycle to the point of implementing the excommunication specifically identified in that Declaration – a cycle of 798 years. In so doing it has effectively gone through a process of *enantiodromia*, taking on the characteristics of that which it originally opposed and from which it broke away. However religion has itself evolved in curious ways to the point that creationism, for example, is now a more credible mode of belief for many than science. Science, like any particular religion, has as yet been unsuccessful in persuading the ignorant multitudes of its relative merit – although deeply committed to doing so as vital for the survival of humanity. There is an elusive truth to the dynamics of this common pattern that may offer a key to whatever is 'beyond science'.

Is it possible that the fundamental cognitive difference between science and religion could engender a new mode of thinking that partakes appropriately of both but transcends their respective constraints? Again this is not an argument for creationism or intelligent design. *This is an argument for a more creative way of responding to difference, to relative ignorance and to the dynamics of disagreement.* Arguably this is more relevant to the challenges of the future than science and religion separately, especially given their incapacity to resolve these very issues within their own disciplines.

Conclusion

Although this argument is entitled the End of Science, it is – as pointed out with respect to any End of History – a simplistic framing of the challenge. However science is itself guilty of just such simplicity in so readily promoting the belief in the End of Religion. Both science and religion are challenged by the encounter with such mindsets. Both have adopted simplistic modes of response that are an honour to neither of them. More interesting understandings of 'end' in that connection are those associated with the horizon effects of such topological paradoxes as the Moebius strip or the Klein bottle. History might indeed note the paradoxical irony of an 'end of science' heralding the 'end times' scenarios of religion – whose methodology it had so strenuously disparaged.

Curiously it is religion, or less well recognised branches of theology, that points to subtler cognitive modes that might be said to be more open to the tremendous possibilities of an unknown future. This more fruitful cognitive posture is to be found in apophasis (as originally recognised by Aristotle) and apophatic theology – in contrast with the kataphasis characteristic of both religion and science. Apophasis is the recognition that conceptual closure is appropriately to be avoided under certain circumstances – notably with regard to the possible nature of divinity and even to any understanding of personal identity (*Being What You Want: problematic kataphatic identity vs. potential of apophatic identity?*, 2008). The modality favoured is what has been termed 'unsaying', namely indicating what a phenomenon is not (Michael Sells, *Mystical Languages of Unsaying*, 1994) and avoiding premature closure. It is possible that the 'new thinking' that will emerge 'beyond science' could benefit from such recognition of its own methodological limitations – rather than becoming locked, once again, into the forms of arrogance commonly characteristic of both religion and science. And it is ironic that science has trapped itself into premature closure despite the elegance of studies on the probabilistic theory of truth sensitive to both perspectives. Perhaps one way forward is for science to articulate guidelines for critical dialogue with alternative perspectives, as suggested elsewhere (Guidelines for Critical Dialogue between Worldviews, 2006) – and to encourage those with whom it engages to do the same.

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