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Editorial Introduction

John Ziman tells us, in his opening salvo, that 'Western thought since the seventeenth century has been dominated by *methodological solipsism*'. 'Nowhere', he says, 'is this stance more entrenched than in the philosophy of science'. And again, 'Our epistemological role-models are Robinson Crusoe and Sherlock Holmes, self-sufficient intellectuals to whom their human companions, Watson and Friday, are mere stooges'.

Does it sound a trifle eccentric to attribute so much solipsism to respectable branches of thought? I do not think anyone should doubt that Ziman is right. His remarks reminded me at once of one of Karl Popper's ringing — and very influential — manifestoes about the proper way to do science. Popper speaks of how 'we' should do this, but it is clear that he means how each of us, separately, should confront a scientific problem. 'We' are to do so

> by producing an inadequate solution and criticizing it … [After often repeating this process] we begin to see the ramifications of the problem, its sub-problems and its connection with other problems. (*It is only at this stage that a new conjectural solution should be submitted to the criticism of others, and perhaps even published*)…. At the next step our tentative solution is discussed; *everybody tries to find a flaw in it and to refute it* … [This produces] a competitive struggle which eliminates those hypotheses which are unfit … From the amoeba to Einstein, the growth of knowledge is always the same, we try to solve our problem and to obtain, *by a process of elimination*, something approaching adequacy in our tentative solutions (Popper, 1972, pp. 260–1; emphases mine).

But elimination is not very useful without fertilization, as Darwin pointed out when he sadly recalled his early mistake about the Parallel Roads of Glen Roy:

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> I attributed the parallel lines to the action of the sea; but I had to give up this view when Agassiz propounded his glacier-lake theory. Because no other explanation was possible under our then state of knowledge, I argued in favour of sea-action; and my error has been a good lesson to me *never to trust in science to the principle of exclusion* (Darwin, 1974, p. 49; emphasis mine).

Where, however, do Popper's candidate solutions come from? They seem to be thrown up fully formed, like clay pigeons, and the ones that are not selected are simply shot down. There is no gestation, no continuous growth, no movement in the thought. But above all there is no co-operation. The rich, simmering background of conversation out of which ideas arise has simply vanished. As Ziman points out, 'those tiresome "other" people' are irrelevant until the real action is over. They come in then purely as weed-killer, as destructive outsiders.

This strange scene is not, of course, an invention of Popper's. Though his description gains extra drama from using current evolutionary rhetoric, the ideal of the solitary thinker is much older and more general. It was already crystallised in Descartes' simplified picture of the isolated knowing subject directly confronting the brute passive object — pure active mind dealing with inert matter.

Descartes' simplification was designed, of course, to achieve his central aim of complete certainty. Like many people entrapped in the confusions of the seventeenth century, he wanted a fresh start because he feared the distorting influence of received opinion. He was sure that the muddles and complications of contemporary thought were not due to complexities in the world, but entirely to the accumulated follies of past thinkers. Essentially, the world must be simple. So he planned to start his systematic doubt by rejecting the lot:

> As for the opinions which up to that time I had embraced, I thought that I could do no better than resolve at once to sweep them wholly away…. I firmly believed that in this way I should much better succeed than if I built only upon old foundations, and leant upon principles which, in my youth, I had taken on trust (Descartes, 1937, pp. 10, 11).

The resulting isolation is, he says, not a disadvantage. It provides the best method for thought. Solitude is the path to certainty. 'There is seldom so much perfection in works composed of many separate parts, upon which different hands had been employed, as in those completed by a single master'. Thus — not having seen Brazilia or Cumbernauld New Town — he says that cities designed by a single architect are always better than those that grow up spontaneously, and nations which have 'followed the appointments of some wise legislator' have better constitutions than those that develop them gradually by

responding to experience. In thought as in politics, his was the age of absolutism.

That confidence in a fresh start, wholly detached from previous thinking, became, of course, a central inspiration for the Enlightenment. It played a great part in the rise of modern science, making possible many necessary leaps to new ideas. But as time went on — as a succession of bold and confident thinkers were heard disagreeing widely with one another — it became clear that these claims to infallibility and total originality were overstated. Nobody was actually a pure reasoner. Each pioneer had his own approach and brought with him his own selection of past assets. And the topic on which their ideas conflicted most awkwardly was the one on which Descartes had centred his enquiry. It was that troublesome issue which has lately surfaced again after decades of behaviourist denial, and still provides plenty of business for this Journal - the nature of the knowing subject.

Descartes thought that the infallibility of knowledge demanded above all a hot-line between a subject who was a pure reasoning spirit and the brute, alien, physical world that he studied. Direct contact between these extreme abstractions was the only way of avoiding infection by the social world of received opinion that lay between them. There was, of course, then a problem about how to bring such distant and incompatible items together. He resolved this, partly by dwelling on the common structure provided by mathematics, which supplied the abstract architecture for physics, and partly by arguing that God's goodness guarantees our sense-perception, making it adequately reliable for particular facts.

This dualist story did not, of course, give universal satisfaction. What has since become clear, and what Ziman now spells out fully, is that no such link is possible because none is needed. The basic dualistic image is mistaken. 'Mind' and 'matter' are not these remote abstractions, not separate substances. They are interdependent aspects of the world we live in. They operate within a most complex enclosing natural system in which they are adapted to fit each other.

This insight is not, of course, quite new today. Something that looks rather like it is theoretically supposed to have been accepted. Explicit dualism, which was always awkward, went out of fashion when (in a move which would have astonished the devout men who founded the Royal Society) scientists dropped any serious interest in the idea of God. At this point, having parted company with Descartes, they ought to have seen that they needed also to change their view of subjectivity. They no longer had to see it in Descartes' way as something mysterious, something hidden and supernatural. They could now have

accepted it as a normal aspect of the world, one which could be studied like other natural phenomena. They could then also have freely accepted and studied the remarkable communicative powers by which social beings are so strikingly able to share their subjectivity. As Ziman says, this is 'a perfectly naturalistic stance'.

Instead, as so often happens, bits of the supposedly abandoned doctrine survived and confused the new thinking. Having used Occam's Razor to get rid of God, scientifically-minded people promptly turned it on the doctrine of the Ghost in the Machine and tidied that up too, very simply, by amputating the Ghost. They did not notice that these two ideas had been so shaped to fit together that neither could really be used alone. The dualistic idea of matter was designed explicitly as a pure Object to balance the pure Subject. It was incapable of life because, for dualism, life, along with subjectivity, was an alien extra, something spiritual which God had infused only into human beings, leaving the rest of the natural world as inanimate machinery. Yet now, when theorists dropped the idea of spirit, this thin, inert kind of matter was supposed to be the only reality left in the world and thus, of course, the only possible subject-matter for science. Life and subjectivity were either mere surface phenomena or some kind of illusion.

It was this lopsided, one-legged kind of materialism that became a species of orthodoxy for the behaviourist age, as natural to the scientifically-minded in the twentieth century as Christianity had been to their seventeenth-century forbears. Peter Atkins recites its creed - 'Inanimate things are innately simple. That is one more step along the path to the view that animate things, being inanimate, are innately simple too' (Atkins, 1987, p. 53. So subjectivity was often treated as being actually mythical or illusory (but, as Descartes reasonably asked, if it's an illusion, who is it that is being deceived?) Alternatively, it was deemed to be real but idle, not affecting outward actions. Epiphenomenalism shut off our inner thoughts, leaving behaviour safely contained within the world of Objects. Thus Colin Blakemore

> The human brain is a machine which *alone* accounts for all our actions, our most private thoughts, our beliefs … We feel ourselves, usually, to be in control of our actions, but that feeling is itself a product of our brain, whose machinery has been designed, on the basis of its functional utility, by natural selection … All our actions are products of the activity of our brains (Blakemore, 1988, pp. 269–71; emphasis mine).

Here, the Great Mechanic himself has gone missing but, strangely enough, his Machine survives and is itself an active agent, a film-

producer, shaped now by evolution and busily adding an expensive, misleading, ineffectual shadow-show to the workings of the brain.

It is not obvious what 'functional utility' this film-industry might have. But, from the point of view of science, something much more serious is wrong here. The trouble is that *knowledge is not supposed to be ineffectual, whatever else may be so*. Notoriously, knowledge is power. It has practical effects. And there is no coherent way of conceiving such knowledge without a knowing subject.

That is surely why so many thinkers gravitated to the compromise position that is Ziman's target here. In order to go on participating in the grand search for infallible certainty that Descartes had celebrated, they helped themselves to an 'axiom of subjectivity'. That is, they took for granted the subjectivity of each individual knower without asking about its relation to the rest of a world that was supposed to consist purely of objects. They were not prepared to work out a new concept of objectivity that involved exploring the middle ground — a concept that would not centre on a mysterious direct relation to an alien object but on the object's being connected with us within a public, organized, fully checkable context. This is the area of intersubjectivity that Ziman explores.

Of course he is not the first traveller to come there. He himself acknowledges many splendid forerunners, and the contributors to this issue tell us of more from a wide variety of fields. Reading them, one might easily suppose that a more social position on the issue was now safely established, and that we could now confine our enquiries to getting a better understanding of this new approach, as other contributors suggest. No further campaigns would then be needed on the general issue.

But I doubt whether we have actually reached this stage. The solipsistic temper of our age has resisted successive waves of criticism with remarkable steadiness. No doubt this is partly because, ever since the Renaissance, individualism in general has gained ground in Western thinking for many reasons. Alan MacFarlane investigates some of these in his article and I cannot do so here. But there is a special reason why scientists in particular have been unwilling to leave their solipsistic fortress.

As just noted, they feel its connection with the grand ideal of infallible certainty, based on simplicity, which has inspired modern science ever since the heroic days of its foundation. They are used to relying on the cast-iron guarantee which dualism seemed to provide – a guarantee which applied primarily to the mathematical element in physics, but could be extended to the rest of science so far as that was reducible

to a physical basis. They have not noticed how thoroughly this guarantee has been undermined — not only by Darwinian understanding of our continuity with the natural world, but also, even more deeply, by physics itself, which long ago abandoned the idea of inert matter.

This is the point at which John Ziman was able to make his special contribution. As a distinguished physicist himself, he was in a good position to say that the special epistemological status which dualism had conferred on physics was distorting and unnecessary. As a politically aware scientist, he saw that the old, individualistic vision of science was dangerously remote from actual scientific practice, which was becoming increasingly corporate and commercial in the modern world. And as a humanistic thinker — a naturally philosophical person who liked his general picture of the world to make sense if possible — he refused to ignore so central a feature of life as the element in which we swim, the communicative network that links each of us continually with the world around us. Of course it is a matter of emphasis how much stress we lay on this context, but it is a very important one. As he says, even if, in a way, 'a network is the same thing whether it is described as a whole lot of knots connected by strings or a whole lot of strings tied together with knots,' our choice between these two ways of thinking can make a deep difference to our lives.

The vastness of his topic evidently concerned him. At the end of his exploration, he apologizes for having touched on so many fields where he could not possibly be expert, and explains why this range has been needed:

> These are all fields that I have found to be relevant to my original question; what are the grounds for belief in science? And even when the experts in these diverse fields have each noted the role played by intersubjectivity in their local intellectual drama, they have not shown any curiosity about the career of this many-sided character in the theatre of life as a whole. So I have had no option but to undertake some of this work myself, albeit in a clumsy, amateurish, primitive way. Or, to put it more positively, if you think that I have got it all wrong in your particular specialty, please do weigh in and tell us all how things really are over there. Perhaps, in doing so, you will even discover new aspects of your own domain of knowledge.

That is the invitation which our contributors have taken up in an interesting variety of ways.

Alan Macfarlane, speaking from anthropology, endorses and deepens Ziman's diagnosis of the West's endemic individualism and

points out the oddity of this attitude by contrasting it with the thinking of other cultures, notably that of Japan.

Margaret Boden, reporting from social psychology, writes that 'methodological solipsism' is indeed still widespread there, especially in cognitive science. This means (she says) that the truly scientific psychology which Ziman hoped for cannot develop there without an 'ambitious, new, radically interactive account of intentionality'.

About sociology, **Helga Nowotny** is more hopeful, describing a number of more imaginative recent approaches to the topic there. But she agrees with Ziman that the problem there is still serious.

Joan Solomon gives a valuable insight into how Ziman's thought on this matter developed — how, in enquiring about what made Science authoritative, he moved from a naïve reliance on 'experts' to the idea of a 'freely-operating community of scientists' and thence into a far- reaching investigation about how that community could properly gain authority. Convinced that the kind of objectivity which had formerly been attributed to science was inadequate, he was led on to explore the notion of intersubjectivity as the right field where he might find some kind of less ambitious and more appropriate guarantee, as he does in this article. Naturally, his search did not lead to any simple solution. As Solomon says, 'At the end of this paper he is still unable to improve upon his preliminary description of intersubjectivity which seemed to be both impossibly solipsistic and necessarily consensual'. But he suspected that elements of that paradox would have to remain as something that must be lived with. In fact, the relation between public and private is far too complex to be stated in any simple formula.

This very fact of complexity was, however, what Ziman most wanted to emphasize. Especially he wanted to stress the contribution that normative and emotional elements quite properly make to our thinking even in the physical sciences, and still more, of course, in the social sciences and humanities. Solomon herself illustrates this complexity by citing various surveys which, as she says, 'may help us to understand how a community — of scientists, teachers or students — makes up its mind'.

In philosophy, the situation has got easier since Wittgenstein supplied a set of keys for escaping the Cartesian Cage. **Michael Bavidge** uses those keys to fill in a gap where Ziman suggests that we might simply assume intersubjectivity from the start, since this would be quite as rational as assuming primal solitude — why not just say 'cogitamus ergo sumus'? Something more seems to be needed here. As Bavidge suggests, serious attention to second-person inter-

changes, and to the forms of life that go with them, can perhaps supply it.

Peter Lipton comments that, 'Ziman's socialism supports and is supported by a great deal of work in recent philosophy'. Philosophers (he says) are now paying a lot of attention to the publicity of meaning and also to the central importance of testimony in all our knowledge, which of course is crucial to Ziman's account of science.

David Midgley extends this thinking. He suggests that attention to intersubjectivity can lead us to explore further the notion of collective consciousness — the possibility that experiences may sometimes, and in some ways, be 'shared' in more than a metaphorical sense. This is a notion that surely has a place in everyday thinking, though it has had very little formal attention in mainstream philosophy.

Lynne Sharpe also extends Ziman's ideas, but in another direction. She explores the very interesting possibility that intersubjectivity is not species-limited but is something widely diffused among animals, allowing plentiful inter-species communication. Ziman himself certainly does not deny this, and it seems a plausible inference from his repeated suggestions that such communicative ability has been valuable in past human evolutionary history. Sharpe, however, finds a conflict between this insight and his 'residual Cartesianism … his tendency to over-intellectualize the character of interactive relationships, with talk of a "theory of mind", and to imply that such relationships are only possible with other people like ourselves'. She investigates the difficulties which both notions raise.

Marc Bekoff, in a survey which usefully complements Sharpe's argument, documents the reality of interspecies communication, describing a wide range of cases where creatures of various species have been observed communicating effectively both with humans and with one another. As he says, 'No animal is an island. But we can make them an island if we so choose'. Theorists, as he remarks, used until lately to cultivate a kind of selective blindness which excluded these everyday phenomena from science, perpetuating the idea of humans as cognitively isolated, but this exclusivism seems now to be waning.

It is surely of some interest here to note that, during their evolution, all kinds of animals have needed to assess the moods and intentions of others who are unlike them — notably their predators and their prey. It can never have been an evolutionary option to understand only members of one's own species, however grand that species might be.

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