



Scientists' responses to global financial turbulence

Tradition has established that the annual editorial of this journal appears in the September issue. But these are exceptional times, and as the depths of the crisis engendered by financial turbulence unfolds, many scientists are asking what can they do to alleviate the gloomy world economic outlook.

The immediate response to the question is that scientists should surely continue to work as normal, upholding the values of truth, integrity, impartiality, rigour and objectivity intrinsic to their profession. Since so much of the present difficulty is due to hyperbole lapped up by gullible investors who should have known better, the leavening presence of these values within society should serve as an ultimate support, rather like oaken pit-props in a mine when the rock is shifting.

If any change needs to be made, it is in the institutional environment in which most scientists are constrained to work, which nowadays regrettably tends to be dominated by a bureaucratic administration not sharing these values. This environment includes the state research councils providing the majority of the funding necessary for nearly all experimental and much theoretical work. Although these councils are mostly staffed by former researchers, their view of science is, inevitably, coloured by bureaucratic ("bean counting", as some of my colleagues would less politely put it) exigencies (one such staff member, when asked about the possibility of extending a large grant by a modest sum to allow some work to be completed, told me that "the requirements for justifying spending £10 are as stringent as for justifying spending £10 million").

Possible reasons why many scientists are forced to labour under the unnecessary burden of this layer of bureaucracy have been discussed at length elsewhere: here let it suffice to remark that if economy of expenditure is now necessary (although at a time when millions of currency units are being poured into banking black holes the very phrase "economy of expenditure" has become meaningless), the most obvious route would be to abolish the research councils. Lest the public and government ministers become alarmed at the possibility of scientists thereafter wasting their time on trivia, let them bear in mind that it is anyway part of the duty of a scientist that he or she should only work on problems of importance, something that was vividly impressed on me as an undergraduate by Sir Peter Medawar in his lecture "Advice to a young scientist".

If a single phrase had to be found to describe the present global illness, it would be "short-termism". Given

that the whole ethos of science is directed towards distant goals, seeking after remote rather than proximate causes—in other words, "long-termism"—strengthening the leavening influence of this ethos throughout society cannot but do good. This would include emphasizing the importance, indeed necessity, of examining problems over multiple time scales, from the shortest to the longest. I am doubtless echoing others when in addition I stress the importance of looking at things from a fundamental viewpoint in order to find workable solutions. At the same time I would emphatically repudiate the movement to give scientists a direct rôle in managing affairs—Plato's idea of the "philosopher-king"—although there are distinguished examples of scientists having acquitted themselves in a highly honourable fashion as members of a government, overall there seems to be little to commend any special preference being shown for scientists in this regard.

Leaving aside the "philosopher-king" idea then, the purpose of this editorial is to animate some definite suggestions for alleviating the global crisis. One very obvious (to the scientists) action is for scholars engaged in the humanities (e.g., history) and more practically-oriented subjects such as economics to open their minds to new approaches deriving their inspiration from the methods of the natural sciences. Most journals are at present closed to such new approaches. A correspondent recently reported that a paper of his describing a physicist's approach to the analysis of economic growth (written in collaboration with a *bone fide* economist, who also cosigned the paper) submitted to the venerable *Journal of Political Economy* received the following response from the Editor: "The paper does not do justice to the large empirical literature on economic growth." This seems to be typical, and a sure way of ensuring that new ideas that might make the aforesaid large accumulation of empirical literature appear slightly ridiculous would never get a hearing. Why editors should be afraid to even publish such papers is a mystery: surely if the ideas put forward were erroneous there would be an abundance of scholars willing to demonstrate the error of thought and analysis. That is how knowledge advances, not by suppressing the very publication of novelty.

Strikingly, there seems to be a distinct asymmetry in this regard between the humanities and the natural sciences. The journal *Complexus* (which, as readers of the previous issue of JBPC will know, has now been absorbed by us) published not only papers modelling biological systems, but also social systems. One does not, however, know how influential these papers have been among the community of social scientists. Sometimes

such excursions tend to somewhat discredit the natural scientists involved in them, as happened with the field characterized by the absurd and distasteful term “econophysics”. If it means anything at all, it seems to revolve around the Black-Scholes model in one way or another, but given the dubious validity of the assumptions made regarding human behaviour, it strays too far into the territory of pseudoscientific thought for either physicists or economists to feel truly at ease about it. At best, one can say that this “discipline” has provided an arena for publishing (in certain physics journals) some rather mediocre ideas about economics that would presumably never have been judged to be of sufficient interest to be accepted in economics journals. But leaving aside that perhaps rather unfortunate excursion into the social sciences, there is plenty of unexplored territory around. However, a minimum ingredient for success must be the explicit recognition that such work involves human values, and if the selected values are bad, then the outcomes are also likely to be bad. Surely no-one can now deny that the outcome for the world financial system has been very bad indeed, and it is unlikely to be a coincidence that the values of the protagonists in some

of the biggest collapses are the very antithesis of the sort of thing we should be teaching our children.

Just as life forms have evolved to produce greater and greater complexity while maintaining niches for the simplest forms, science also seems to have evolved in that direction. This seems to be healthy and inevitable. It is perhaps ironical that while any system involving human beings is surely more complex than any inanimate system, a deep appreciation of complexity is to be found among a still small community of natural scientists rather than among social scientists. The most urgent need is for this appreciation to diffuse far more widely than hitherto. The artificially simplifying assumptions imposed upon conceptions of the world by a wrongly conceived desire to simplify has led to a world view far inferior to the seemingly intuitive wisdom possessed by sages of old, such as the author of the *Daodejing*.

Diversity and vitality are inseparable, and even the greatest complexity seems to need the coexistence of a kind of simplicity in order to maintain the greatest possible overall diversity; this simplicity cannot be encompassed within the complexity itself, but needs to have its own autonomous existence and characteristic forms.

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