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## Commentary 1

THE author has skilfully put forward an argument expressing the frustration of many healthcare providers feeling somewhat attacked by the growing focus on concepts of postmodernism, complexity science and qualitative analysis in the literature. One cannot take issue with his conclusion that constructing simplistic, decontextualised arguments will misrepresent positivist and reductionist medical science. Equally, the same holds true for the theoretical perspectives the author himself is critiquing. The constraints of word length have perhaps contributed to Hopayian running the risk of committing the same mistake with the theoretical underpinnings of emerging views of health and illness. In regards to complexity science in healthcare, Sweeney clearly states that:

> *'It's not about debunking science, or relegating the contribution of science in medicine to the intellectual shredder.'*[1]

Rather, complexity science is about recognising that health and illness require a range of approaches, responsive to the unpredictable and idiosyncratic aspects of both the individual and society. A dispassionate review of the literature clearly demonstrates that complexity science does not seek to refute the phenomenal achievements brought about through applying reductionist scientific methods in medical research. What is contested is the linear dichotomy of reductionist thinking prevalent in biomedical thinking. 'If it were simple, word would have gotten round' (Derrida in [2]). Because health is not simple, more flexibility and less infighting is imperative.

Hopayian's essay serves a vital role in flagging up the unrest (perceived or overt) inherent in any challenge to the conventional way of thinking. Complexity theory offers a route for reconciling and legitimising the diverse range of theoretical perspectives currently applied to healthcare and helps clinicians avoid the counterproductive sparring inherent in either/or linear thinking. The myriad of interacting and idiosyncratic elements that make up health and illness require a range of explanatory models depending on the circumstances and context. The focus is on 'this', as well as 'that', and understanding the relationships that move systems in certain directions. Management strategies for influencing outcomes in complex systems focus on flexible simple rules as opposed to highly structured and micro-engineered solutions. The concepts of 'good enough vision', balancing between control and flexibility, safety and risk, valuing diversity and free flow of information, accepting paradox and dissent as opportunities for innovating new ideas, implementing small actions as opposed to one big solution and accepting the power of, and working with, informal organisational systems are all tools for effecting change in complex adaptive systems.[1,3-8] Developing simple rules that can be creatively addressed in ways that accommodate local context and circumstances is a philosophy clearly articulated by the NHS Modernisation Agency's statement of five simple rules[9]:

1. See things through the patient's eyes.
2. Find a better way of doing things.
3. Look at the whole picture.
4. Give frontline staff the time and the tools to tackle the problem.
5. Take small steps as well as big leaps.

The director of the NHS Modernisation Agency, David Fillingham, stated that: 'the NHS is the epitome of a complex adaptive system. Such systems do not always respond well to mechanistic formulae'.[10] Complexity science, and linearity and reductionism and positivism and the hypotheticodeductive model of science are all here to stay — it's just a matter of learning to use the right tool at the right time.

**Cary A Brown**

## Commentary 2

I think Kevork Hopayian, for all his erudition, has got a problem. He is seeing legitimate attempts to improve the scientific understanding of reality as attacks on science itself. Many people, especially people working in general medical practice, find orthodox models inadequate to describe the subtlety, complexity and (in Iona Heath's sense[1]) the mystery of face-to-face human experience. This is important today because so many official initiatives and media attitudes are founded on a profoundly unscientific illusion that science can provide definitive answers to human problems. So attempts to improve the models are not merely legitimate but essential if science is to make progress. Hopayian provides here an example of the almost paranoid counter-response of those who see themselves as protectors of the sepulchre of science from heretical attack.

He talks repeatedly of 'straw men', but in truth it is he who is setting up ridiculous caricatures simply to knock them down. Gray in his *Lancet* paper[2] did not, by any stretch of the imagination, 'repeat the postmodernist rejection of science'. It is a simplification to assert that postmodernists 'reject science' anyway. Nor are there the slightest grounds in Gray's paper for saying that he would stand in front of an oncoming bus, maintaining to the end that it was no more than a 'social construct'. And nor would any of the other distinguished authors Hopayian attacks and patronises; Chris Burton, Tim Wilson, Tim Holt, Trisha Greenhalgh, and so on — a long list. No-one that Hopayian or we need concern ourselves with is suggesting that an external reality does not exist. But what sensible people are saying is that science goes on and on showing us that the