

## The Implications of Modern Science for a New World View

Chris Clarke, Southampton, England

Most readers will not be surprised to learn that **the universe is not a machine**. Yet as an intellectual proposition the statement is like "discrimination is wrong": there is a big difference between knowing it and living it in an informed way. Increasingly I am finding, as much in myself as in society at large, that we are permeated by a mass of unquestioned assumptions that are rooted in a mechanistic view of the universe.

"The real Me is my genes" (because I'm a machine governed by cause and effect and the ultimate cause in genes)

Or conversely, "The real Me is quite separate from the physical" (because the physical universe is a machine and I don't want to be one)

"Dowsing must involve some undiscovered field" (because machines work by parts pushing against each other, so any action must go through some sort of stuff that connects things) ... and so on.

I want to argue that the universe **really** is not a machine, and that this matters a lot.

Why the universe isn't a machine \*

There are (at least) four reasons, which work together.

First, things in the universe are fundamentally UNPREDICTABLE. This follows from quantum theory, which demonstrates that at very small scales (at the very least - actually there is strong evidence that it goes further than this) behaviour is indeterministic, combined with chaos theory, which demonstrates that in most physical systems (practically everything except the simple pendulum) what happens at a very small scale gets amplified to a large scale.<sup>1</sup>

Second, things in the universe (particularly living systems) respond in ways that are INTERCONNECTED. This view is slightly heretical and so needs a certain amount of technical argument. The argument has three parts: first, there is conclusive evidence from quantum theory that some microscopic systems behave in this way (the ERP/Clauser-Friedmann/Aspect experiment<sup>2</sup>); second, the results<sup>3</sup> that are sometimes interpreted to mean that this doesn't happen for large systems (like people) are wrong because of the systematic way in which living things connect together the small and large scales, so that living things in particular could be interconnected; and third, when we look at parapsychology we find just the sort of interconnection that would be expected.

Third, SPATIAL SEPARATION IS NOT FUNDAMENTAL. This is a joint implication of general relativity, which shows that space is an evolving dynamical structure just like any other physical thing, with the quantum mechanical basis of interconnection: the fact that quantum "states" are not located in particular things, but can be shared over many things. So, in a way that remains deeply baffling, space is a consequence of some deeper non-spatial reality.

Fourth, the universe is a place of continual ongoing CREATIVITY. By this I mean that totally new things keep coming into being. The strongest argument for this is from the physical cosmology that has developed over the last 15 years, in which physical processes produce first the prototypes of matter, then the different kinds of physical laws, then actual manifestation and structure, and so on down to the swarms of species of life around us now.

Note that in all this we have moved far beyond the old ideas of loose analogies between physics and spirituality: firm arguments can be made, and they involve combining physics with numerous other disciplines.

Note also how these properties work together. Unpredictability is crucial for interconnection to mean anything, because in a predictable universe things are only trivially interconnected (everything can be predicted by the original state of the universe). The first two ideas give a combination of contextual connection and unpredictability which, with creativity then added, opens up human freedom.

The essence of a machine is the precise opposite of this. It has parts which are securely located in absolute space, each one quite independent except where it pushes on another part, and it operates in a precisely predictable manner. The whole is given once and for all in the original design and there is no room for any growth or novelty.

Why does this matter?

At the start I have hinted at the pervasiveness of the machine-image, which clutches most of us in its thrall. Let me expand on this. We often speak today of the mechanistic "paradigm", in an allusion to Kuhn's usage of the word. It is helpful to retain his original usage<sup>4</sup>, where a paradigm was not a thought, or a theory, or a method, but a set of human actions (which includes all these other things) done by particular people in a particular laboratory or university. These people overthrow their past in very concrete acts which in expanding waves inspire other pioneers to do the same. The machine-image is not a paradigm in this sense, but an *ideology* (in the sense of Bakhtin<sup>5</sup> and the succeeding post-structuralists): a set of ideas that shapes the whole nature of reality for a society. Dalal writes "... ideology is always invisible to the conscious mind. Ideology makes it appear that particular categories are 'natural' and inevitable ways of thinking and experiencing."<sup>6</sup> Mae-Wan Ho does not use the term "ideology", but she vividly evokes this imposition of categories of thinking when she describes how the current impetus of genetic engineering is a consequence of the machine-image which "can take hold of people's unconscious, leading them to act, involuntarily, unquestioningly, to shape the world to the detriment of themselves."<sup>7</sup> Society is trying to fix the world as it would fix an automobile, by finding its basic parts and adjusting them, unaware of the harmony that holds the whole in balance.

Like all strong ideologies, this one affects not only social structures but our most intimate lives. If I start from an ideology in which I am a quite separate part of the world-machine, then I am from the start alienated from this world, and intolerably threatened by its remorseless mechanism. In such a situation the only responses are denial, flight into addictions, or the desperate attempt to salvage humanity of Sartre<sup>8</sup>. For him the only possibility for freedom was the "nihilation" of the world, in a given situation, in order to allow a freedom that was totally unattenuated. Other people, alien, external, then exist only as impediments to pure freedom. And yet in each of us is a part that knows this is wrong: we can know it a hundred times a day whenever our heart flows out to "dance with the daffodils." And, above all, we know it in mutual human love, that synthesis of pure subjectivity and pure communion. Yet, as each human gropes their way in the world of today, without signposts, they are pulled apart by the conflicting appeals of their heart and the machine-image that rules society. The solution is not to try to resuscitate earlier ideologies, but to transcend the machine-image through a new paradigm that embraces the breadth of what science is now implying.

What can I do about it?

I have just mentioned a new paradigm, which I mean in Kuhn's sense, described earlier. This does not yet exist, except in fragmentary forms that point forwards to something greater. There are fragments of programmes in the social sciences<sup>9</sup> that begin to establish systematic procedures for living and researching in a way that respects the integration of person with world. There are quite isolated pieces of consciousness research<sup>10</sup> that start to engage carefully and critically with the structure of quantum theory as it has emerged in the revolutionary changes over the last ten years. But it is a long way from these to a paradigm, an ongoing, teachable, practical activity, that can compete with the paradigm of Newton's *Principia*. I believe that the construction of this paradigm is the vocation of the SMN.

Past paradigms have all stemmed from single great men. The change we are now embracing requires a new conception based on the integration of the histories and experiences of both genders<sup>11</sup> and on the recognition of the matrix of community in building the world. At this point of redressing balances, a leading role is falling to women. We are discovering a new type of paradigm through participation rather than authority.

Moreover, while Kuhn's paradigms were scientific in a restricted sense, our participation in an interconnected world demands a paradigm, or more than a paradigm, which includes the opening of our own lives to the embodied creativity of the universe  $\frac{3}{4}$  including, that is to say, to spirituality. In the midst of the human-caused holocene extinction (the most devastating of the succession of mass species extinctions that have shaped the Earth) the danger facing humanity is mirrored in the danger facing each one of us in casting out the machine-image and opening to metanoia, transformation in love and joy. But in the end there is no alternative.

*Prof Chris Clarke is Visiting Professor in the University of Southampton and a Vice-Chair of the Network Council*

Footnotes

\* References are mostly to typical non-technical examples and are not exhaustive.

1 Clarke, Chris *Reality through the Looking Glass*, Floris (1996)

2 Penrose, Roger *The Emperor's New Mind* Oxford (1989) p 281ff

3 Omnes, Roland *Quantum Philosophy* Princeton University Press, Princeton NJ (1999) 4

Kuhn, Thomas S *The Structure of Scientific Revolutions* University of Chicago Press (1962/1970) p10ff

5 Voloshinov, V. N., *Marxism and the Philosophy of Language* Harvard UP, Cambridge, Mass (1973)

6 Dalal, Farhad, *Taking the Group Seriously* Jessica Kingsley (1998) p83

7 Ho, Mae-Wan, *Genetic Engineering, Dream or Nightmare?* Gateway (1998) P6

8 Sartre, Jean-Paul *Being and Nothingness* Routledge (1969) p6 19ff

9 Heron, John, *Co-operative Enquiry* Sage (1996)

10 Penrose, Roger, *Shadows of the Mind* Oxford (1994)

11 Tarnas, Richard *The Passion of the Western Mind* Ballantine (1991) pp416ff