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# GBN AUSTRALIA BOOKCLUB

INTELLECTUAL TOOLS FOR THE YEARS AHEAD

If, as indeed is sometimes claimed, there is nothing more practical than a good theory, then, it is herewith claimed, there is nothing more essential than a sound philosophy to provide the crucial context in which both theories and practices are set. This trinity of relationships between practice, theory and philosophy has lain at the heart of Western Civilisation since the days of the ancient Greeks, but was given a special significance in the age of enlightenment so-called, with the ascendancy of the reason of science and the practices of the scientific method. From seventeenth century Europe came the triumph of reason over superstition and the philosophical realisation that the ways of nature could be known through careful observation, causal explanation, experimentation to test that explanation, and, if it then held up, the acceptance of that theory as the 'truth' of the matter. Through physics and chemistry, (both aided by mathematics) and then on to biology, nature became known with increasing 'certitude', as philosophy accepted the 'truth' of science, and by the late nineteenth century, such claims were being extended from the sciences of nature, the natural sciences, to the science of humankind — the social sciences. The shift in focus from nature to people however, was not without its challenges, as all sorts of confusions now muddied the waters of 'truth'. If life was as deterministic as the natural sciences suggested, then what of free will, and conscience, and of subjective values, and judgement, and wisdom? And what of beauty, and ethics, and virtue, and passion? Were these but artefacts of the great clockwork universe, that was ordered and predictable — forever seeking balance and, equilibrium? Was it possible that there are different ways of knowing that yield different forms of knowledge — some objectively true, like that derived through science, some absolutely 'true' as prophetically derived through God, and some only true in the sense of its relativity to some stated context or another? And if this were so, then which is best for when? Can knowledge of one type, and most importantly, the method used to generate it, be used as a direct substitute for any other? Does the evolution of ideas actually occur through the same processes as the evolution of living organisms, as explained through the theory of natural selection? Does the theory of chaos provide an explanation of how economies actually work, or is it just a useful analog of the mathematical calculations which spawned it? Or are these examples of how one type of knowledge can be 'true' when generated about nature, but merely metaphor when used elsewhere?

Philosophical questions of this nature have tended to become very muted over the latter half of this present century, as technologies born of applied scientific research, have come to pervade and dominate our everyday lives, to the extent that we have built an extraordinary faith in its capacity to deliver and to solve the most intractable of our problems. Techno-science, that ultimate marriage between practice and theory, has become the very essence of our culture, the very indicators of our victory over the adversity of nature, and the very embodiment of truth. Through the use of genetic bio-technologies we have begun to redesign nature at levels never before even conceived, and through information technologies, which are designed to mirror nature in many ways, we are able to tell each other about it all, in ways previously equally inconceivable.

It is the thesis of Kevin Kelly that the lines of distinction between that which is 'natural' and that which is 'synthetic' are increasingly blurred in the techno-cultural era in which we live. The theories which explain the 'true' nature of nature, can, he suggests, be equally true when used to explain the nature of the 'new' machines, designed, as they so often are, with an innate complexity far exceeding the machines of ages past. Do machines evolve? And in similar vein, are e organisations real, and if so, can they learn how to organise themselves?

We take the unusual position in our selections this month, of inviting a critical stance on two works by this popular writer: *Out of Control* and the recent *New Rules for the New Economy* which are significantly different from each other. In the first of the two selections, the author exposes his readers to some important, often radical, scientific theories as he explores the nature of nature, and extends his reason to realms beyond that, into the social and technical worlds. In the second, a much less substantial book, he turns his attention to speculations about the social world — and in particular about economics — while attempting to draw on the same theories, and scientific frameworks to focus the facts that he quotes in defence of those theories. The two books make a very interesting contrast to each other, while illustrating the dangers of uncritical philosophical assumptions about when one should render unto science that which is scientific; and when not to.

We invite the reader to question whether the theories he proposes have rigorous foundations in philosophy? While invoking the methods of science in his descriptions of the application of his logic, should we uncritically accept the observations he makes, the explanations he proffers as the 'truth of the matter' as he sees it? Or is he speaking merely in metaphor? And which is when, and how are we to know?

## Out of Control

Kevin Kelly. Fourth Estate, New York 1994

Towards the end of this pretty hefty text, the author explains the process that he adopted to write it: "This book has been an endeavour to find interesting questions. But on the way, some of the rather ordinary questions stopped me". When he reached such points where he failed to understand, Kevin Kelly would stop writing, and then "wrestled with it, researched it, or read until [he] did, and then started writing again".

The theme of the book is an exploration of complex reality, and how, what once were regarded as metaphors of such reality, such as machines as living organisms, are becoming "profitably real". What was once a clear distinction between what was natural and what was contrived by innovative human beings, is blurring, and that machines are becoming life, so closely do they now "mimic" what we have come to know about nature. Indeed, in increasing numbers of situations, we are coming to know nature differently from that which we are learning from the process of designing machines: be they modest robots or entire synthetic biospheres.

This is essentially an investigation into systems — natural ones, social ones and technical ones, which, as Kelly proposes, may in the end turn out to be all the same thing — and the author draws on an impressively eclectic range of scientific theories to support his carefully constructed thesis. An image which is central to that thesis, is that which he refers to as a vivisystem — "that common soul between the organic communities we know as organisms and ecologies, and their manufactured counterparts of robots, corporations, economies, and computer circuits". Each of these, he posits, is characterised by four distinct facets of what he refers to as "distributed being": the absence of imposed centralised control, the autonomous nature of subunits, the high connectivity between the subunits, and the webby non-linear causality of peers influencing peers. As with swarms of bees, or huge whirling, swirling flocks of birds or schools of fish, and you have a sense of the message here, for where, in these phenomena, sits the centre of control? Are they not better envisaged as being out of control? And if this is so for nature, what implications does it have for the way we next make our machines as we continue with our material 'progress'?

As Kelly sees it, "industry will inevitably adopt biological ways" for at least four fundamental reasons: it takes less material to do the same job better, the complexity of built things now reaches the same order of complexity that characterises nature, nature itself is immovable and must therefore be accommodated, and the natural world itself is being engineered and industrialised, "making it easier for industry to finance and appreciate the biological". In support of this thesis, the author explores the applicability of such concepts as swarming behaviour, circular causality, coevolution and coadaptability, as cybernetics and information, as increasing returns, and as artificial intelligence and life. He also draws on theories of evolution, of ecosystem structure, organisation and function, and of intelligence, as well as many from physics, engineering, and of economics, with the economy of the future likely to be characterised by the prevalence of "a few generalised systemic patterns", as he sees it.

At the end of this book Kevin Kelly, from the logic he presents of the dawn of a neo-biological culture, is led to conclude that "all complex things form an unbroken continuum between the extremes of stark clockwork gears and ornate natural wilderness". Where the triumph of the industrial age was mechanical design quite unlike the organic form of nature, the "neo-biological culture welds engineered technology and unrestrained nature until the two become indistinguishable, as unimaginable as that may seem".

And as acceptable or unacceptable to the reader as that may be, from the logic and rigour of the arguments presented by the writer! ●

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## New Rules for the New Economy

Kevin Kelly. Fourth Estate, London 1998

For the theme and essential images of this, his most recent book, Kevin Kelly both draws on a number of concepts and arguments first exposed in *Out of Control* and extends them into the key premise that “the principles governing the world of the soft — the world of intangibles, of media, of software, and of services — will soon command the world of the hard — the world of reality, of atoms, of steel and oil, and the hard work done by the sweat of brows.” Now familiar concepts recur here with new application: Thus readers are encouraged to “embrace the swarm” for instance, and the self reinforcing notion of “increasing returns” among other concepts grounded in science. Meanwhile, the recurring theme throughout this present book is that “as networks have permeated our world, the economy has come to resemble an ecology of organisms, interlinked and co-evolving, constantly in flux, deeply tangled, ever expanding at its edges”. This is a useful metaphor; however Kelly wants us to accept that it is the reality of the matter, and that this results from the way that nature, and that includes the social and cultural artefacts that humans represent, in fact operates.

In stark contrast to his style in the first book, the author on this occasion, rarely summons scientific theories to support his arguments, while the evidence that he does muster to make the cases that he does, is often open to challenge in both its accuracy and the interpretations that he draws from it. From the organic complexity of his former thesis, Kelly is all too frequently now seduced into providing simple causal explanations for the way things happen, or have happened in the past. Can it really be true, for instance, that it was the mere invention of elevators that allowed skyscrapers to be developed, as he claims, or was it more probable that a whole systemic combination of events and circumstances were responsible? And in similar vein, was it just the mere combination of high rise construction and the development of telephone networks that between them led to the corporatisation of American business, or was it much more complex than that? Has the promulgator of complexity and emergence been hoist by his own petard here?

And from writing with scientific rigour about phenomena in the present, as supported by theories often generated in the past, the author here changes focus and writes with an often inappropriate determinism about the future. “The future of technology is networks. Networks large, wide, deep, and fast. Electrified networks of all types will cover our planet and their complex nodes will shape our economy and color our lives”, and as a result it would follow that we need to universally adopt organisational structures and management practices that are relevant to such a situation. Yet again we must question whether it is wise to heed such counsel, just yet anyway, when electrified networks are far from engaging everyone on this planet, and when the impacts of economy-shaping and life-colouring are far from understood let alone universally accepted. Kelly presents an unashamedly technocentric, and one might hasten to add, Amerocentric view of the world, with little indication at all that it is but one scenario of a range of very plausible alternatives.

The future might well lie with networks, and they indeed might shape the way, at least some of us in certain parts of the world, may well operate. But it is by no means certain that this will be the future for all of us on earth, any more than it is certain that machines and living organisms will indeed enter into symbiosis. There are matters of choice, and inequities of access here, just as there are inadequacies in science itself as the basis for fully understanding human nature, and providing the exclusive foundations for technological innovations and their use.

There are important lessons to be learned from reading and from comparing and contrasting these two books by the same author: In this manner, Kelly himself provides, perhaps somewhat unwittingly, an excellent opportunity for the sort of critical analysis of material that he would support in his promotion of the search for scientific truth, as the foundation for an understanding of the nature of nature. ●

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