BOOK REVIEW

The Systems View of Life: A Unifying Vision

Reviewed By Frank Stowell, School of Computing, University of Portsmouth, Portsmouth, Hampshire, UK

The Systems View of Life: A Unifying Vision
Fritjof Capra and Pier Luigi Luisi

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This text is an impressive attempt to bring together and reflect upon theories from across the centuries leading us into what the authors describe as a new understanding of life. The text is divided into 4 sections; the Mechanistic Worldview; The Rise in Systems Thinking; A New Conception of Life and finally Sustaining the Web of Life. Each of the first three sections examines key ideas that have contributed to human society [primarily western] and concludes with the final section "Sustaining the Web of Life" in which Systems ideas are presented as enabling a transition to a sustainable future. The authors provide the reader with a vision of a society that could develop in such a way that businesses, the economy, physical structures and technologies do not inhibit its sustainability. This is strong stuff. It can only be achieved by reshaping global capitalism, reviving the traditional purpose of the corporation to serve public good [p400], ecodesign and, importantly with the right political will.

SUMMARISING THE CONTENT

In section one, the Mechanistic World View, the reader is taken through the nature of life from the perspective of the scientific worldview as defined by the teaching of Aristotle and of the church. This was the basis of the framework of ideas established by Aquinas and unquestioned throughout the middle ages. These ideas were tackled by the authors by taking us on a voyage from the framework of Aquinas through to Galileo and Descartes, Newton and the scientific revolution in the 15c then on to the influence of Locke, Smith and Marx that persists today. They call this the mechanistic view.

In section two the authors take us into Systems Thinking. Here we get the first glimpse of holism as they point out that Systems cannot be analysed by reducing them into smaller parts but we should think in terms of the whole. We are taken through Gestalt psychology, ecology and physics concluding that Systems Science

implies that epistemology has to be included explicitly in the knowing [more about this assertion later]. The section concludes that the reason why the Systems approach can be turned into "proper science" is the discovery of approximate knowledge. Whilst I understand what the authors are getting at I find myself wrestling with the notion of science as a precise discipline and approximate knowledge – do they mean fuzzy logic or do they mean 'epistemology' as an example of approximate knowledge?

The third section, the largest at approximately 220 pages, is the New Conception of Life. Here we travel through sections dealing with questions such as "what is life"; "Order and complexity", "Darwin", "Epigenetics", "Mind and consciousness", "Science and spirituality" and "Health" amongst a number of topics of equal importance to us all. This section provides the reader with an interesting journey through ideas that have intrigued us over the centuries and continue to do so. It is not possible to do justice to the ideas and discussions contained within this section in this short book review, but there are many matters that readers will read and stop a while to think about them. As one would expect from this text the authors deal with complexity and self-organising systems, pointing out with the advent of computing power new and complex mathematical models can now be processed which help shed light on our existence. Models are produced that seek to explain non-linear natural phenomena patterns; dealing with qualitative rather than quantitative aspects of human behaviour. The chapter suggests that in the 20th century there was a separation of mathematics from the areas of human knowledge, but ends in the hope that complexity theory will liberate it from its isolation to enable people to realise that mathematics is more than dry formulas but recognise that it helps in the understanding of living worlds [p126]. The spiritual dimension of education within this section argues that well-being and survival of humanity will depend on our ecoliteracy. Whilst this necessitates the understanding of ecology importantly it also requires a deep understanding of the interdependence of all phenomena. This awareness, they argue, has an important spiritual dimension. They conclude that spirituality [they differentiate between spirituality and religion – see pp280 &295] and the nature of spiritual experiences of reality are fully consistent with modern science, and in particular with the systems view of life [p295]. The authors deal with monumental questions and the resultant discussion cannot fail to engross the reader.

The final section pulls their ideas for sustaining the web of life together. Here they deal with ecological sustainability, autopoiesis, the Gia system and ecoliteracy and education. This final section of the text puts forward Systemic solutions. They argue for the reformation of corporations, the generation of energy, a renaissance in farming and the reshaping of capitalism. Their argument underpinned by their exposition of a systems approach for a sustainable future.

WHAT DOES IT TELL US ABOUT SYSTEMS?

As a reader might expect from Capra this text is a continuation of his work on finding those connections that are common to our existence. In many respects the general thrust of the text is summed up by the authors in Section 5.3.5Self-organisation. Here the authors ask "Is there a common pattern of organisation that can be identified in all living systems?" Their answer is "…this is indeed the case…whenever we look at life we look at networks" [p95]. Their argument is advanced by taking the reader on a journey through key ideas from science and mathematics, reflecting, as we travel, upon the unreciprocated questions that these ideas uncover as much as to what they have contributed to our understanding of our world. The authors attempt to gather all aspects of human existence from biology, evolution, psychology and societal explanations into a single coherent framework into what they describe as The Systems View of Life. They take us through a broad sweep of ideas including Newtonian physics, Darwinian evolutionary theory, the quest

for the origins of life, mind and consciousness, science and spirituality ending by 'connecting the dots'. The general Systems concept of the book is in the tradition of Humberto Maturana and Francisco Varela in whose memory the text is dedicated.

The authors claim that "….a new systemic conception of life has emerged at the forefront of science." To support this assertion they systematically examine what they consider to be the most significant attempts at explaining our world. The text moves through 500 years of classical theories of natural science, mathematics, biology, ecology, cybernetics, complexity, and spirituality until we finally arrive at the web of life. Each of these ideas is briefly, but critically examined and then takes us towards a unifying set of ideas that characterise a living organism. The authors travel from what they call a "…merely biological and phenomenological point of view..." to Maturana and Varela's notion of autopoiesis and self-maintenance. But I feel that to do this we are invited to adopt the author's observations and experience of the ideas they examine rather than our own. Perhaps their expectation is that by now we will have absorbed their argument and we accept that our reconstituted views and theirs are one and the same. Although there is a constant reference to the Systems approach their approach has more than a hint of ontology in the way they portray the world despite their assertion about systems and epistemology in the section dealing with Systems thinking.

Three of the final four chapters of the book are devoted to the lessons learnt being reinvested into the survival and sustainability of humanity. To do this we are provided with The Systems View of Health, The Ecological dimension of Life and Connecting the Dots. Our journey ends with the final chapter Systemic Solutions where we are given examples of initiatives that have adopted the notion of ecodesign, argoecological farming, building design, renewable energy, business ethics and ecocities. Whilst this is an impressive list as the authors point out they tend to be small-scale projects, even so they are informed by systemic thinking and provide us with working examples of what could be the blueprint for a sustainable future. The reader is shaken out of his/her complacency by the realisation that there is little doubt that more can be done to address the challenges the survival and wellbeing of humanity and the planet

SUMMARY

The authors claim that this is a text written for undergraduates and is essential reading for graduates and researchers. Do they succeed? One question that arises is for undergraduates studying what? Whilst we can argue that a Systems text might underpin all disciplines it is difficult to endorse that view here since, despite the title, the text takes a particular approach to Systems. It approaches the notion of holism and complexity from a mathematical understanding of the world. For example, the authors seem to endorse the view that, "…all questions of pattern, order and complexity are essentially mathematical" [p126]. Never the less it is an impressive attempt to bring together various and significant explanations of what it means to be human. The authors take considerable care in highlighting what they consider to be the deficiencies and strengths of ideas over the past 500 years from Copernicus to Prigogine working towards a unifying set of ideas.

It is difficult not to be seduced by Capra and Luigi's argument, which is well researched and presented. The text will make a good edition to anyone's library with an interest in Systems, and it is important to anyone specifically interested in this particular neo-scientific view of Systems. But it is here I must declare a disappointment. Whilst there is much to applaud in this text and it will find many supporters within the Systems community and beyond, as I read it I had a feeling of being steamrollered into accepting a set of ideas, albeit seductively portrayed, along a predetermined intellectual journey whose ideas did not always hang together, for me at least. For example, whilst the authors provide us with an account of Systems ideas from a "non-scientific" perspective there are never the less

constant references to ecology and biology and they omit much, if not all of the work from other important systems developments. The authors start from a point of view of how the world is and how it can be set right; The problem is taken as given. Yet despite the clear examples of the dangers that they highlight it is not certain that everyone sees it that way. For example, it seems to overlook power of individual and groups to dominate. The section on power [pp311-314] is somewhat brief especially given the history of mankind. Every member of a social group soon learns what they have to do to influence people, to get their own way, to stop things happening that are not in their interest. It has always been this way and there is little evidence that it will be easily changed. Tonnes notion of Gemeinschaft and Gesellschaft highlights the role of humans in different social settings. Mans ability to act in an uncivilised way cannot be ignored. For example, at the time of writing one source of energy, oil, is being used as a basis of political power and its use is having a major effect upon the economy of nations. Even so these actions are unlikely to sponsor an increase in the use of alternative sources of energy because of the immediate benefits individuals who gain from the lower cost of energy, no matter what effect this may have upon the planet. Whilst information technologies provide a force for good there are reports of the beginning of a cyber war as computer systems are infiltrated and data stolen. Sadly history does not support the assumption that humankind will adopt an holistic view for the planet, no matter how sensible when faced with personal gain. Whist it is hard to naysay the argument put forward in the text one wonders if it is a little romantic? My impression is that *The Systems View of Life* may not be universally accepted and as such stands little chance of success. The authors themselves echo this concern in the closing paragraphs, "*To be sure, the transition to a sustainable future will not be easy. Gradual changes will not be enough to turn the tide; we also need major breakthroughs. The task seems overwhelming but not impossible*."

It is a capable text, but it is not The Systems View of Life but A Systems View of Life. Whilst this might be because of the influence of their intellectual sponsors Maturana and Varela, in a book entitled The Systems View of Life it is unforgivable. No mention is made of C.West Churchman, Russ Ackoff, Stafford Beer, or Peter Checkland or any of their research undertaken over the past 30 years or so. Perhaps the authors did not feel the contributions of these Systems thinkers would add to their particular view of Systems. Ironically much of the work of these Systems thinkers has attempted to address the key obstacle to change, namely attitude. Omitting reference to their work seems to be an important oversight.

Who is the text for? Perhaps it is intended as a general reader for students studying all subjects, but if so there are other texts that fall into this category too. Checkland's text *Systems Thinking Systems Practice* provides us with an equally informative account of the evolution of ideas and the emergence of system thinking since Bertalanffy and before. There is no mention of in this text despite his ideas on hermeneutics takes it to a new level. Nor is there mention of C.West Churchman's exploration of method in his excellent text The Design of Inquiring Systems; both Gadamer and Churchman's work is directly relevant to the development of Systems ideas and also to the way we make sense of things. Agreed it would be a difficult task to incorporate all the ideas that have shaped the Systems community and this is not the authors' intention, but the title might persuade a new reader that this is the case. I feel that the Capra and Luisi text is done a disservice by its overly ambitious title. There are some niggles too. For example, they do mention Husserl and Heidegger within the text but we are not given specific reference in the bibliography to the work they are embracing. So too with hermeneutics, the authors refer to Habermas and hermeneutics but we are not given reference to the specific text and ideas they are incorporating.

Would I buy it? Yes, and I encourage you to do so too, it is a welcome addition to any serious student of Systems thinking. But if was my only Systems text then my inclination would be to say no, as it requires accompanying text to stimulate an internal debate in the mind of the serious student. This is not to reject, or dispute many of the well-made arguments, but the difficulty I have is in accepting that their vision of Systems alone is the only way to address these important issues.