



THINKING SYSTEMS

An Organic Language of Harmony for Human Survival

ROBIN ASBY

“Stafford Beer commented ‘I wish people would read my books,’ I do hope people will read this one. Rooted in the timeline of his developing thinking, Robin Asby introduces and explains core concepts in systems thinking, cybernetics and, in particular the Viable System Model to great effect. He elaborates that model, its conception and rationale elegantly and with great clarity.

The ideas of this book are challenging to conventional thinking, the language as complex as is necessary but not more so, and the philosophical shift required to realise the benefits is well indicated. For those new to the subject Robin offers an accessible, clearly articulated and well executed introduction to thinking in the field. For those familiar with the core material he offers a range of insights which create scope for conversation and the potential to provoke discussion and debate. It is rare to find such scope in one book!

This work deserves shelf space from all those serious about exploring the world through the lens of cybernetics.”

Dr. John Beckford, President, The Cybernetics Society and Visiting Professor at
University College London and Loughborough University, UK

*“Three features stand out in this thoughtful and insightful journeying of an experienced systems thinking practitioner. Firstly, **Thinking Systems** is a very timely further contribution to what some might call the more hopeful ‘post-normal’ constructive and corrective stages of our otherwise destructive unsustainable trajectory of the Anthropocene Epoch. The book is part of a zeitgeist of systemic sensibilities reaffirming the impoverished nature of Western rituals of what might be called analycentric (WEIRD, reductionist, mechanistic etc.) ways of thinking and practice that are clearly inadequate and/or insufficient for dealing with our increasingly interconnected and complex World...*

*Secondly, the systems literacy contribution in **Thinking Systems** provides an invaluable retrieval of, and primacy for, the cybernetics tradition of systems thinking – and in particular ideas from Ross Ashby (law of requisite variety) and ensuing modelling from Stafford Beer (viable system model). It seems to me that in our enthusiasm for a rather restricted sense of systems thinking, as exemplified by ‘getting the bigger picture’ and/or system dynamics, we sometimes lose sight of pearls of wisdom associated with the language of cybernetics. Robin Asby draws on his own long experience as a systems thinking practitioner in marshalling these ideas of cybernetics alongside ideas and tools from others including Peter Checkland (soft system methodology) in proposing an alternative, more systemic mode of thinking in practice.*

*My final take-away from **Thinking Systems** is the reminder that the most challenging aspect of developing systems thinking in practice capabilities lies with engaging multiple perspectives. The final chapter in Part 1, 'Recognising the Importance of Perspective', gives primacy to this challenge, and particularly invites us to view systems as conceptual devices. The subsequent chapters (8 and 9) apply the language and literacy of systems thinking developed in Part 1 to two different areas of practice – governance and quantum systems. These two chapters demonstrate some rigour (resonance and relevance, as well as reliability) of the model and language developed in Part 1. A further and perhaps more significant measure of success however might be gauged from ensuing effectiveness of conversations with actual practitioners associated with these two fields (policy makers/ social science advisors, and natural scientists). If this publication can help make a shift from current normalised frameworks of engagement to post-normal framings, then there is indeed hope with possibly realising the sub-title promise of contributing towards a much needed organic language of harmony."*

Martin Reynolds, Qualification Lead for Postgraduate Programme in Systems Thinking in Practice at The Open University, UK and lead Editor of *Systems Approaches to Making Change: A Practical Guide* (2020, 2nd Ed.)

"A really good read, that makes what at first glance appears to be a complex subject easy to comprehend and intuitive and changes the way we see the world and its problems.

Robin uses his extensive knowledge of Systems Thinking, gained through a lifetime of work in the discipline and close contact with Stafford Beer, to change our perspective on the way we think. Using concepts and examples from a diverse range of subjects – from Quantum Physics, Neuroscience, Psychology, Biology, Complexity Science to his own life experiences – Robin takes us on a journey to help discover the value of thinking about our lives and everyday living from the perspective of the systematic relationships within it. He ties in many sources of thinking and examples from philosophy giving a comprehensive background in order to build our understanding throughout the book and then shows us how we can make practical use of this way of thinking in our democracies or by applying it to Quantum Mechanics. Highly recommended."

Captain Jonathan Huxley, PhD (University of Portsmouth – focused on Systems Thinking Cybernetics Social Psychology)

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Preface

This is a work about the explanatory power of Systems Thinking, which I hope will enable those interested in Systems Thinking to understand that power. It is the result of more than forty years of effort to understand intriguing puzzles and it follows a path of exploration that that I have travelled in that time. Exploration has always been a driving force for me in my life. The excitement of not knowing what is round the next corner, or over the next hill, has always held a fascination. There is always something new, but occasionally something really surprising. Coming across an unexpected vista is always a rewarding, and uplifting experience for me both in my physical world and in my intellectual world.

Early in the 1980s I set out on a project to better understand Systems Thinking, which had already interested me previously as a young physicist. The project started as a result of my first meeting with Stafford Beer, whom I had sought out because I was looking for answers to questions of government which were puzzling me at that time. In that first meeting, finding out that I was a physicist by training, he made the assertion that Quantum Mechanics was a branch of Systems Thinking. This intrigued me, and started me on the journey described in this book. My explorations over the years following led me to the conclusion that Beer's approach to Systems Thinking was distinct, and of much greater power than generally realised. His approach was developed through spending time in India and studying Eastern philosophy during his Second World War army service. That understanding synthesised with his understanding of Western philosophy and later with the new science of cybernetics gave rise to his Viable System Model and his unique approach to Systems Thinking.

Arthur Koestler's book *The Act of Creation* explores the way in which syntheses of two different perspectives are the root of new insights and steps forward in scientific understanding, as well as the root of humour and art. This explains for me why Beer's approach was unique in the development of the ideas of Systems Thinking. What I didn't expect was that pursuing my understanding of Beer's approach would produce a model of learning that demonstrates this very process of how two different perspectives could produce new insights.

The second surprise was to find the connection to the process philosophy of Alfred North Whitehead. I found that not only was there a connection, but Beer's foundation was a much more usable approach to process understanding. The systemic techniques used in the development of the Viable System Model provide a basis for a much wider, process-based exploration of phenomena of great interest to science in any field where process analysis could be used to advantage. To use process-based analysis tools to explore phenomena which are processes seems common sense, but Western Science does not habitually do this.

Western thinking is doubly disabled: it insists on thinking in terms of static objects, and then categorising in terms of the attributes of these objects. Nature does not do categories and neither really does it do objects. The natural world is an evolutionary processual domain, in which for us as observers time is inherent, so static unchanging things are not the place to start. When we human beings model nature we must remember this. What I have tried to do in this book is to introduce a Western thinker to modelling in terms of process, using the foundation developed by Beer.

Thomas Kuhn writes that a young scientific enterprise starts out with many competing strands of thought, the proponents of each vying for the dominance that will make their approach the accepted way of thinking. Eventually one approach, being more successful in its explanatory power, becomes the dominant paradigm. In historical terms Systems Thinking is just such a young scientific enterprise. The first ideas appeared in Russia in the early 1900s and in the West in the 1930s. It developed quickly during the Second World War, through to the 1970s. Further development has taken place over the last twenty years, particularly in the realm of management understanding and ecology. There are now competing strands exactly in the way Kuhn describes, the proponents of each strand seeking to persuade us of the merits of their version. After nearly forty years of my own exploration, it seems to me that Beer's approach has all the features to make it that dominant paradigm, within which the relationship to other approaches and between other approaches can be understood. I argue this because of my own experience in applying this approach, and also because of the successes I have had in my experience in teaching this approach and helping others to apply it to many different problem areas.

In Part 1, the first seven chapters of the book, I describe this journey, leaving out the blind valleys and the false starts, in a way that I hope can be

understood by those interested in the potential of Systems Thinking as a powerful approach to understanding the natural world in which we live. In Part 2 I describe outlines of the results of applying the thinking to the two areas which got me involved in this project: governing, and Quantum Mechanics. These two areas are far apart in the academic world but in each case surprising insights result from this systemic approach.

It is clear from the state of the world that things are amiss in the arena of government. Fault lines have been highlighted by the events of 2007-2008, and those now of 2020. But for me discovering in 1969 the work of Rachel Carson and Jay Forrester, and later that of the Club of Rome and others on the probable evolution of our stewardship of planet earth, was an experience which changed my outlook. 50 years later the warnings contained in those works about our probable disastrous evolutionary path now looks highly likely to be correct, and time to change is short.

One real surprise is that I have yet to find in mainstream writing on government the word '*cybernetics*' and yet the comparison to steering a ship, the Greek origin of the word, appears in the writing of Plato on governing, and the word itself in the writing of Andre Marie Ampère on governing. Norbert Wiener defined cybernetics to be the discipline of "control in the animal and machine". Governing is a cybernetic study so perhaps if we take a look at governing through the lens of cybernetics the new thinking might help us to achieve change. This is the subject of Chapter 8.

The situation in the realm of Quantum Mechanics is also problematic. Quantum Mechanics began its development around the same time as Systems Thinking, in the late 1890s and early 1900s. Whilst there is now an accepted mathematical paradigm, there are many proposed interpretations of what those mathematical models actually mean. Again, there are a number of competing paradigms in exactly the way Kuhn describes. My own interest was sparked by the fact that the derivation of the equations governing the area of electrodynamics is a seriously flawed process, but one which gives rise to models that accord with experiment to a remarkable extent. As before, different paradigms have been proposed to interpret the results of these equations. But there has not been a systematic exploration of the systemic approach in the way that I have undertaken it and report in Chapter 9.

In both these cases this systemic approach shows promise and there seems much more to explore. But the journey described in this book ends, standing on a ridge waiting for the mists to clear to see what this new vista contains; maybe nothing, but perhaps more surprises.

About the Author

Robin Asby has spent a lifetime in problem solving. He is a systems thinker and researcher, a retired consultant and academic.

He started his career with a degree in Mathematics from Cambridge University (1965), and a PhD from London University in 1968 in Mathematical Physics which formulated the basic modelling of a focused laser beam. Subsequently he moved to the University of Rochester, NY and began research in optics and electrodynamics. His experience of a new culture, and the growth of



interest in ecology sparked a new interest in systems thinking, politics and government. As a result of his experiences in the USA, when he returned to the United Kingdom in 1970, he became a political activist in the Labour Party. Moving to West Wales he spent 16 years training teachers and became familiar with the theory and practice of learning.

In the early 1980s he came across the systems thinking of Stafford Beer, and introduced systems thinking into his teaching. From 1989 to 1994 he established and ran a small enterprise working in the growing Information technology sector. Finding that West Wales was not fertile ground for such an enterprise, and that the problems of business were in the large majority problems of management, in 1994 he co-founded a new business department in a higher education college with courses designed from a systemic standpoint.

From 1998 to 2006 he worked as a consultant in conjunction with Hull University mentoring senior and middle managers in the Middle East, Far

East, and UK as they developed their understanding and use of systemic management theories in their own organisations. In 2001 he became an Open University tutor, then a contributor to the development of systems thinking courses. He chaired the development of the Open University MSc 'Systems Thinking in Practice'. He was a joint author of one of the courses in this degree.

He has a continuing interest in education. From 2000-2015 he was a governor of two secondary schools. In 2018 he was a founder member of Todmorden Learning Centre and Community Hub (tlchub.org.uk). TLCCH expects to establish a learning centre for research, development and practical learning in the former Todmorden Community College for those interested in building climate change resilient communities.

THINKING SYSTEMS

A guide and exploration for newcomers and experienced Systems Thinkers alike.

In *Thinking Systems* Robin Asby explores Systems Thinking from a process perspective and shows how this perspective generates new insights, particularly into the problems that we face in the stewardship of our planet. It explains how a process-based approach allows us to think differently and how it can be widely applied.

Part 1 introduces Systems Thinking and the systemic process modelling of learning and managing. This is an up-to-date and accessible introduction for anyone interested in the subject.

Part 2 describes the effect of applying Systems Thinking to two areas where problems of understanding exist: government and Quantum Mechanics. Whilst these two are far apart in the academic world, in each case surprising insights result from the systemic process approach.

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