

Book Review:

A useful reference source for systems thinking

Martin Reynolds, Sue Holwell (Eds), *Systems Approaches to Managing Change: A Practical Guide* (Springer, London, 2011).

1st Edition., 2010, XIV, 309 p. 129 illus.

Softcover, ISBN 978-1-84882-808-7

Price: Euro 69,95

Introduction

At the outset, it is perhaps useful in the spirit of a systems approach to begin with perspective that I am taking in reviewing this book. It is as a scholar-practitioner within the broad framework of systems thinking and complexity theory. As such I see myself as an insider reviewing a landscape that I have some familiarity with, rather than as an outsider who is looking at a new landscape. I shall frame this review by providing a description and an appraisal of each of the chapters primarily on its own. Thereafter I shall provide some reflections on the connections between chapters and on the book as a whole. Thus, within a systems tradition, we may say that I begin with parts, then look at the interrelationships between the parts and finally consider the emergent properties as reflected in the whole.

Introducing systems approaches

The first chapter written by the editors, Martin Reynolds and Sue Holwell, introduces systems approaches. It begins with three news stories in Easter 2009 and uses these stories as a backdrop to reflect on big and intractable problems facing the world. The discussion proceeds to make the distinction, common in systems thinking, between a difficulty and a mess. The point is made that system approaches help us in thinking about complex situations, alternately referred to as “messes”, wicked problems, the swamp and resource dilemmas. The chapter contrasts conventional thinking with systems thinking, and also indicates that systems thinking is not homogenous and monolithic, but rather has multiple strands and made up of different schools of thought. Reynolds and Holwell highlight two major strands namely hard and soft systems thinking, or as they put it so nicely, “thinking about systems “ and “systems thinking”. This raises the important point about whether systems are best thought of as ontological entities existing in some objective way in the real world or rather as epistemological devices for learning. It is not surprising that this theme permeates some of the other chapters especially those on Soft Systems Methodology and Critical Systems Heuristics.

The authors then present four typologies and perspectives on systems thinking before offering their own. They motivate their perspective and the selection of the five approaches presented in the book on the basis that there is a rich interplay between the situation, the practitioner community and the methodology of each of the selected approaches. They further argue that all five approaches deal with understanding interrelationships, dealing with different perspectives and addressing power relations in relation to systems intervention in different ways. The chapter ends with a short description of each of the selected systems approaches, namely system dynamics, the Viable System Model (VSM), Strategic Options Development and Analysis (SODA), Soft Systems Methodology (SSM) and Critical Systems Heuristics (CSH).

System Dynamics

Chapter 2 covers system dynamics written by John Morecroft, a seasoned scholar and practitioner of system dynamics. Morecroft studied under the tutelage of Jay Forrester, the founder of system dynamics. Forrester was also his doctoral advisor. The reader is left in no doubt about the credentials and the deep competence of the author. This testimony is borne out in the chapter itself. As a text on system dynamics it is an excellent piece of work, with many useful examples, and good coverage of important system dynamics concepts including feedback structure, behaviour through time, asset-stock accumulation, causal loop diagrams, and system dynamics modelling and simulation. It is not surprising that this chapter will be valuable, given that it draws extensively from Morecroft's own book based on a course run at London Business School for more than 20 years. Herein is the strength of the chapter, but herein lay its biggest weakness as well. Having read Morecroft's book *Strategic Modelling and Business Dynamics* on more than one occasion, I found this chapter in some ways a wonderful summary. While it will certainly be useful for novice systems practitioners, it will be challenging and will not be able to serve as a practical guide without additional support from other resources or some form of apprenticeship in system dynamics. The example of drug related crime will be challenging for even a system dynamics novice let alone a novice not familiar with systems concepts. For example, the graphical input function will be a mystery to such readers. A novice requires a gradual build up from basic constructs before more advanced modelling examples. This could include stock-flow renditions of a positive feedback loop, a negative feedback loop, followed by combinations that demonstrate, for example, shifting loop dominance. This chapter is not a beginner guide to system dynamics.

Viable System Model

Chapter 3 presents the cybernetics-based Viable System Model (VSM) developed by Stafford Beer. It is written by Patrick Hoverstadt, an experienced VSM practitioner. It presents some of the key cybernetics concepts such as recursion, Ashby's law of requisite variety, variety management, and the Conant-Ashby theorem. The different uses of VSM as a means of diagnosis, design and for attaining self-knowledge is noted. The last use is interesting as it highlights that the ability to manage an organisation depends on the ability of the organisation to model itself. This is a direct result of the Conant-Ashby theorem that states that "every good regulator of a system must be a model of the system" (p.88).

The chapter briefly describes each of the 5 major sub-systems of the VSM. These are S1 (Operations), S2 (Coordination), S3 (Delivery), S4 (Development) and S5 (Policy). Hoverstadt refers to the important need for variety management by showing how variety is amplified and attenuated within the VSM, a process that he refers to as balancing the complexity equation. This is followed by a fairly detailed discussion of each of the sub-systems, together with explanatory examples. It is unfortunate that the author does not provide adequate references for some of these examples, and hence his use of them is limited to anecdotes.

There is a section in relation to System 4, entitled *Managing change* covering about 2 pages. It notes some of the problems with conventional approaches to change. These relate to differential speeds of change and boundary co-ordination which turns the intended homogeneous, undifferentiated, whole-company change programmes to heterogeneous, highly differentiated, fragmented change in practice. Hoverstadt attributes these problems primarily to boundary crossovers. He argues that VSM overcomes this problem through what he terms "mosaic change". This, in essence is through structural redundancy (having additional spare capacity) and engaging in change in "discrete" packets. The latter refers to changing one component and all things connected to that component. While the argument regarding structural redundancy based on the VSM has merit, the second prescription seems more far-fetched. This is because a systems approach implies myriad feedback loops, with the variety equations requiring major adaptation even when a single component is changed.

It is curious that in defining the identity of an organisation when covering System 5, Hoverstad draws on Espejo et al. (1999) in applying the mnemonic TASCOI. It is clear that this is a convoluted derivative of CATWOE developed by Checkland, but there is hardly a mention of SSM or the work of Checkland when there is a later chapter on this (See Chapter 5). The Reflections section at the end of the chapter raises an important issue of application of VSM as a model or a methodology. This is an important point in a book about approaches and methodologies for managing change. In summary, the chapter is well-written, and provides a very good advanced introduction to the VSM. Readers knowledgeable about cybernetics and VSM aficionados will likely find this chapter a handy reminder and reference. It will be somewhat overwhelming to the novice to VSM.

Strategic Options Development and Analysis

Chapter 4 presents Strategic Options Development and Analysis (SODA). It is written by Colin Eden and Fran Ackermann, the original developers of SODA. In essence, SODA is a graphical technique for mapping out major attributes and facets of problematic situations. It is based on the underlying techniques of cognitive mapping (inspired by Kelly's theory of personal constructs) and causal mapping. The authors suggest that SODA is made up of four interacting theoretical perspectives viz. the individual from cognitive psychology, organisational and groups as negotiated enterprises, consulting practice in terms of the interaction between facilitator and client group, and the role of technology in the form of a visually interactive model. SODA may be considered a sense-making approach based on an ontology of social construction. In this sense, it shares an interpretive stance with SSM.

The chapter provides detailed coverage of SODA, the underlying methods and techniques, guidelines for mapping and explanatory notes. Although some of the mapping techniques may be used individually, SODA is more commonly applied in group settings. It includes the manual mode of the Oval Mapping Techniques. Detailed guidelines are provided for facilitation of Oval Mapping Technique workshops. Specialised software, *Decision Explorer*, is available for SODA. The chapter also provides coverage of running workshops supported by the software.

SODA is in essence a problem structuring method that enables participants to negotiate meaning through group engagement based on cognitive and, or causal mapping. It is thus flexible in terms of application in a variety of domains and focus areas e.g. strategy-making, and problem solving.

The key issue for me is why SODA is privileged in this text. There are other facilitated group methods that could have equal claim. It is also not clear the extent to which it is a systems methodology. There are a variety of systems diagramming approaches which offer a more flexible approach. The Oval Mapping technique, for example, is not dissimilar to affinity diagramming which is only one of many ways of diagramming. As a counterpoint, similar techniques are also used in a variety of managerial group processes such as scenario planning. While one can see the use of SODA for managing change, there is not an explicit discussion of this in the chapter.

Soft Systems Methodology

Chapter 5 provides coverage of Soft Systems Methodology. It is written by Peter Checkland, the originator of the methodology together with John Poulter, an experienced SSM practitioner. The chapter is excellent as a concise presentation that represents the distilled wisdom of some 30 years of theoretical refinement and practical guidelines for SSM. It provides useful coverage of the historical development of SSM and its early roots as an action-research approach that departed from the then Systems Engineering framework which was originally attempted by Checkland and colleagues in the human and social realm. While SSM is a well-established methodology for understanding and working with social complexity, it is still quite radical when compared to other approaches for dealing in complex problem contexts. Let's consider how SSM departs from more conventional approaches.

Firstly, SSM does not refer to problems but rather considers “problematical situations”. The motivation is that problem implies solutions that may be well-defined. Well, dealing with real life, quite often we have difficulty pinning down exactly what the problem is. Furthermore, even when one or some of us define the problem as we see it, not surprisingly others see the world differently, and hence have different problem definitions. SSM suggests that real life is made up of a flux of events and activities which are constantly changing. Thus, we have different stakeholders who have multiple and interacting perceptions of reality. This gives rise to one of the central and most enduring notions that underpin SSSM, namely that of worldview. Each one of us brings a different worldview to a given problematical situation, and construct our reality of the world as embedded in that situation based on that worldview.

The next radical departure in SSM is its distinction between hard and soft systems. At surface value one tends to associate hard with things like deterministic, pre-defined, and algorithmic etc. and soft with human, behavioural, and indeterminate. While these do help us discern between hard and soft, for Checkland this is not really what it is. Soft systems in Checkland’s view shifts systemicity from the world to systemicity in the mind. He does not consider systems as ontological entities that somehow map isomorphically to some objective real world. Rather, systems are mental constructs in the mind of the perceivers. This puts Checkland firmly in the camp of the social constructivists. It also draws the line in the sand when considering some other systems approaches. As opposed to construing the world as systemic, SSM calls for the process of enquiry about the world to be systemic. More so, the process of enquiry is construed as learning system. This leads to the idea of a never-ending cycle of applying SSM in an action research oriented way. We may tie this into the four main activities of 1) finding out about the problematical situation, 2) constructing purposeful models based on declared worldviews 3) comparing what we found out with the models as a way of creating structured discussions that enable the stakeholders to reach some form of accommodation about change, which hopefully leads to action to improve the problematical situation and the cycle repeats itself. For the purpose of this review it is not necessary to discuss the various tools and methods, covered in the chapter, that are embedded in SSM that enables the practitioner to apply it. Suffice to say that SSM has 3 separate forms of analysis in relation to the intervention, roles and norms, and issues of power. It has sufficient practical power and clear guidelines on applications of these tools. The chapter is replete with the hand-drawn diagrammatic models that are the *sine qua non* of Checkland and SSM itself. These are extremely powerful devices for learning, exploring and applying SSM. Perhaps the strength of SSM is that its essential wisdom has become embedded in a single page as illustrated in the diagram in Figure 5.29 (p.241) of the book.

As has been the case with the chapter on system dynamics this chapter is largely drawn from a previous publication. In this case, it is based on Checkland and Poulter’s, *Learning for Action: A Short Definitive Account of Soft Systems Methodology and its use for Practitioners*. The chapter is an excellent text for those who are already familiar with Checkland's work. For those that are not, it is an exciting chapter, but will be a challenge.

Critical Systems Heuristics

Chapter 6 on Critical Systems Heuristics (CSH) is written by Wernher Ulrich the developer of the framework, together with Martin Reynolds, an experienced practitioner of CSH and an academic at the Open University in the United Kingdom. Reynolds is also one of the editors of the book itself. CSH is meant to be a philosophical framework for supporting reflective practice. It is constructed around the tool of boundary critique, which in turn is about exploring and critiquing boundary judgments. The boundary judgments are guided by a set of 12 questions. These questions are drawn by considering the following sources of influence viz. motivation, control, knowledge and legitimacy, crossed against the following judgements informing a system of interest viz. social roles (stakeholders), specific concerns (stakes) and key problems (stakeholding issues). These yield the set of 12 boundary questions which are meant to show the differing and contrasting judgements about

problem situations, and are a mechanism for understanding how people frame situations. The boundary questions may be asked in two modes the *is* mode and the *ought* mode. In essence, what the boundary questions are intended to do is to understand the multiple perspectives that people bring to a situation, making the boundary judgements explicit, and finding ways to deal with differences in a more constructive manner. The authors locate CSH within two strands of theory, 1) systems thinking as embodied in the philosophical thought of C. West Churchman, and 2) the tradition of pragmatism and practical philosophy in the works of Charles Peirce (1878), William James (1907) and John Dewey (1925) combined with the tradition of European social theory as found in the work of Habermas. The authors suggest that this unique combination of philosophical tradition and thought that has informed CSH has enabled it to significantly influence critical systems thinking. A critical systems thinking approach accentuates that all approaches, methodologies, and models are partial and serve some interests better than they serve others. It is therefore important to explore what is included and what is left out and to explore situations from multiple perspectives. This is what CSH enables systems practitioners to do. The chapter offers two case studies of CSH in practice. The first is an evaluation study in Botswana that looked at participatory planning for rural development in the area of natural resources use. The second considered participatory based decision making in a geographically distributed setting of stakeholder groups in remote areas in Guyana. One of the objectives was to explore how various computer-assisted tools could assist in such kind of distributed decision making. There is a lot of detail on each of the case studies and how CSH and boundary critique was used in two different ways in each of these case studies, respectively. The closing sections of the chapter touches on developing CSH skills and competencies in boundary critique, the ethos of professional responsibility and complementarism with other methodologies to support reflective practice.

I found this chapter rather dense and quite difficult to understand. It makes one feel that CSH is not for the faint-hearted. While I accept the value of boundary judgments, and see the utility of some of the tools such as the framework of 12 questions for boundary critique and the “eternal triangle”, I find the rest of the presentation of CSH rather abstruse. It seems to me that it should be left to those who prefer high-end philosophical musing and intellectual abstractions rather than the focus on the more prosaic issues that practitioners will be more comfortable with initially. Admittedly, from all of the systems approaches covered in the book, Critical Systems Heuristics, is the one that I am least familiar with.

Epilogue

The final chapter and Epilogue of the book begins to look at the commonalities between the five approaches. Some of these include:

- Long established practice
- Rooted in systems concepts such as emergence, hierarchy and communication
- Focus on the 3 significant orientations of inter-relationships, multiple perspectives and boundary judgments
- Not static but have been subject to ongoing development based on learning from practice.
- Assume that complex situations cannot be resolved without iterative and cyclic processes
- Use of models and diagrams (with a particular focus on them as a means of learning)

The chapter also considers the interaction of a particular methodology with its own practitioner community, with the wider systems community, and finally with other communities of practice. These distinctions are captured in three influence diagrams. The final pages of the book revisit the three media stories with light reference to each of the five approaches.

Reflections on the sum of the parts

When picking up the book the first question that it begs is who is this meant for? This is not clear at first glance, and indeed still remains somewhat of a mystery even after having finished the book. Herein, lay the first difficulty: what stance should be adopted in reviewing the work. Given that the target reader has not been explicitly identified, one has to surmise by looking more closely at the title. I shall leave the first part of the title, *Systems Approaches*, aside for now. The title indicates that it is a *practical guide*, thus the book is really targeted at practitioners – but what type of practitioners? *Managing Change* hints that it will be a fairly broad sweep of practitioners i.e. managers in organisations that are involved in designing, implementing and overseeing change. The preface seems to confirm this as it refers to improving intervention to help change situations for the better.

At one level, therefore, this book is about change management. It is curious that the book barely references any change management literature *per se*. This in itself speaks volumes. Firstly, it indicates that there are domains and practitioner communities that are inherently concerned about change and improvement that are far removed from systems approaches. The accusation is levelled the other way as well. One notices that despite all the talk of change amongst systems scholars and practitioners, we tend to also not fully immerse ourselves in the context of our would-be adherents or beneficiaries in both scholarly and practitioner communities. There is hardly any mention of the vast change and organisational development (OD) literature, or of authors such as Lewin, Kotter, Bennis, Moss Kanter, Schein and others. No mention of whole systems change *a la* Emery and Trist, future search, search conferences, appreciative inquiry, open space or scenario planning. While one may not expect a systems book to explore any of these in detail, they do warrant a mention if only to identify their shortcomings, in a book that is purportedly about managing change

The editors state that:

... this volume is an accessible exposition of the fundamentals of five compatible but different approaches and in addition is an opportunity to update guidance on the use of each approach (p.1).

I have some difficulty in fully understanding the choice of the five systems approaches despite the apparent motivation about the rich interplay between the situation, the practitioner community and the methodology of each. Surely this applies to a variety of other approaches as well. For example, I believe that a chapter covering whole systems change approaches needs to be included in a book devoted to systems approaches to change. This, like an array of other approaches would also meet the criterion cited for inclusion in the previous sentence. I am also not as convinced about why a whole chapter was devoted to SODA, as indicated in my discussion earlier.

For a book about systems there is a paucity of accentuating the systemicity within the book itself. There is insufficient discussion about the relationships between the various approaches, how they may or may not be used in combination with each other, and what their strengths and weaknesses are in general and relative to each other. There is hardly any cross-referencing between chapters.

I also believe that there was a missed opportunity that if pursued would have significantly enhanced this volume. There is a growing body of literature and an extended community of practitioners that draw on complexity theory and complex adaptive systems for working and dealing with complex, problematical situations. Such work certainly warrants at least one chapter in the book. It is noteworthy that here was not even a mention of complexity theory or complex adaptive systems. This is regrettable as although systems scholars and complexity theorists are sometimes in contention, both fields of endeavour are also complementary in many ways and can enhance each other.

Finally, despite some of the minor misgivings that I have referred to in this review, my final observation is that, overall, this is an *excellent* resource that will be valuable to systems scholars and

practitioners alike. It should at minimum be a reference source alongside other systems thinking resources such as Jackson's *Creative Holism for Managers*, and Senge's *The Fifth Discipline*.

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