

# **A review of “Explorations in Information Space: Knowledge, Agents, and Organization” written by Max H.Boisot, Ian C. MacMillan and Kyeong Seok Han, published by World Scientific Publishing Company ISBN 9780199250875 (2008)**

*March 31, 2009 · Book Review*

John Barton, John Barton

Barton J, Barton J. A review of “Explorations in Information Space: Knowledge, Agents, and Organization” written by Max H.Boisot, Ian C. MacMillan and Kyeong Seok Han, published by World Scientific Publishing Company ISBN 9780199250875 (2008). Emergence: Complexity and Organization. 2009 Mar 31 [last modified: 2016 Dec 4]. Edition 1. doi: 10.emerg/10.17357.bc69ef2e7c7973f1054a2641ac8b6ff3.

## **Abstract**

---

OXFORD

# *Explorations* in Information Space

Knowledge, Agents, and Organization

Max H. Boisot, Ian C. MacMillan,  
and Kyeong Seok Han

## **Introduction**

John Seely Brown's endorsement of this volume aptly describes it as an "elegant" book that substantially extends Boisot's *Space* theory to provide a "much more nuanced approach to knowledge based theories of the firm and to institutions more generally".

*Explorations in Information Space* is a collection of six previously published papers five of which are co-authored by Boisot and various contributors, and one paper by Boisot alone. Boisot frames these contributions with a substantial introduction and summarises the principal themes in a very useful conclusion which directs the reader towards suggestions for further research. Consequently, particularly when one adds the substantial reference list at the end of each contribution and the very complete index provided, we have an extremely stimulating and useful volume.

The book aims to do two things. Firstly, to contribute to the theoretical foundations of Boisot's *I-Space* construct and secondly, to "open up a window on the kind of research that *I-Space* lends itself to". It achieves both of these aims with excellence.

Boisot's *I-Space* model addresses the problem that, while mainstream economic theory is concerned with the production and exchange of tangible objects, it does not adequately deal with the production and exchange of intangibles, these being most usefully defined in terms of "knowledge". For example, economists' attempts to treat "knowledge" as just another homogenous factor of production completely miss the point that it is the production function itself that embeds the relevant knowledge. Furthermore, there is no facility for including learning. In contrast, Boisot defines a three-dimensional "information space" using the dimensions of codification, abstraction, and diffusion. Consequently, he is able to describe pathways starting at "personal knowledge" and moving through "common sense" and "propriety knowledge" to the most accessible form of knowledge, "textbook knowledge".

Clearly, a critical starting point is to define "knowledge", particularly in relation to "data" and "information". It is not surprising that these three terms are a source of much confusion—in colloquial terms, data, information, and knowledge are often used interchangeably; in technical terms, each has developed meanings in historically distinct but ultimately related disciplines such as philosophy, statistics, and information theory; finally, texts on knowledge management have adopted problematic definitions such as those that define data, information, and knowledge as a hierarchy.

The exploration of this definitional issue is the subject of the first contribution: "Data, Information, and Knowledge: Have We Got it Right?" (Max Boisot and Agusti Canals). The chapter starts by citing the study of cryptography in which algorithms are used to "bury information in data" and where "knowledge" (of the algorithms) provides the key to unlocking this information. What follows is a sophisticated argument that information "mediates the relationship between the stimuli of the world that reach an agent and register her as data ... and an agent's prior knowledge, taken as a set of expectations that dispose her both to filter incoming stimuli and to act in particular ways. Information can be deemed meaningful to the extent that it modifies in some way these expectations, whether this is by shifting them or actually by reinforcing them" (p. 214).

The observation can be made that this definition can be identified with basic strands of the American pragmatist philosopher Charles Sanders Peirce's architectonic that includes a theory of meaning (the pragmatic maxim) and a phenomenology that is based on a system of three categories: "firstness" (the object of our attention), "secondness" (our reaction to that object), and "thirdness" (the interpretant that connects firstness to secondness) (Hausman, 1993). This leads to what Merrell (1997: 212-224) refers to as the "semiotic tripod" and to the construction of "semiotic information fields". Consequently, when applied to definitions of data, information, and knowledge, data is firstness, information is secondness and leads to action (and further data and knowledge), and knowledge with knowledge acting as the interpretant.

The chapter traces much of the history of these concepts through economics and sociology, and information theory. Significantly, at least for systems thinkers, Boisot and Canals identify the traditional economic constructs as being associated with "closed systems" whereas *I-Space* facilitates emergent behavior as associated with "open systems".

A feature of Boisot's earlier work has been that he has applied his ideas to practical management situations as well as to contemporary thinking in organizational theory and strategy. These themes provide the direction for Chapters 2 to 6. Consequently, there are rich pickings for researchers and practitioners alike. Chapters 2 and 3 provide an insightful and rigorous reconstruction of strategic thinking from the perspective of knowledge management and its relationship to building "requisite variety". This reconstruction lifts conventional strategic thinking out of its neo-classical origins and provides a basis for understanding firm differences based on the cognitive basis of codification and abstraction as sources of epistemic heterogeneity. Similarly, Chapter 4 leverages off these concepts of knowledge to advocate a shift in economics from its focus on homogeneity and markets to one that acknowledges heterogeneity, the primacy of organizations, and emergence. Chapter 5 continues to push boundaries by introducing ordered, complex, and chaotic regimes in *I-Space* while Chapter 6 discusses property rights and how they structure the flow of new knowledge in economic systems. Finally, Boisot introduces an agent-based modelling approach to simulating knowledge creation.

Boisot concludes by inviting researchers to expand on the themes developed in the various contributions as well as considering specific challenges including mapping knowledge assets in *I-Space*, mapping cultural and institutional structures, mapping learning processes, and to further develop the SimISpace simulation model.

It remains to emphasise the importance of this volume to systems thinkers.

Reference has already been made to specific elements of systems thinking—for example, closed and open systems, requisite variety, and agent based modelling, but even more fundamental is to acknowledge the cognitive role of systems as organizing frameworks for knowledge and the importance of dialectic in the creation of knowledge (Barton & Haslett, 2007). In this sense, this volume provides a stimulating adjunct to the field of systems thinking.

## References

1. Barton, J. and Haslett, T (2007). "Analysis, synthesis, systems thinking and the scientific method: Rediscovering the importance of open systems," *Systems Research and Behavioral Science*, ISSN 1092-7026, 24(2): 143-155.
2. Hausman, C.R. (1993). *Charles S. Peirce's Evolutionary Philosophy*, ISBN 9780521597364.
3. Merrell, F. (1997). *Peirce, Signs, and Meaning*, ISBN 9780802079824.