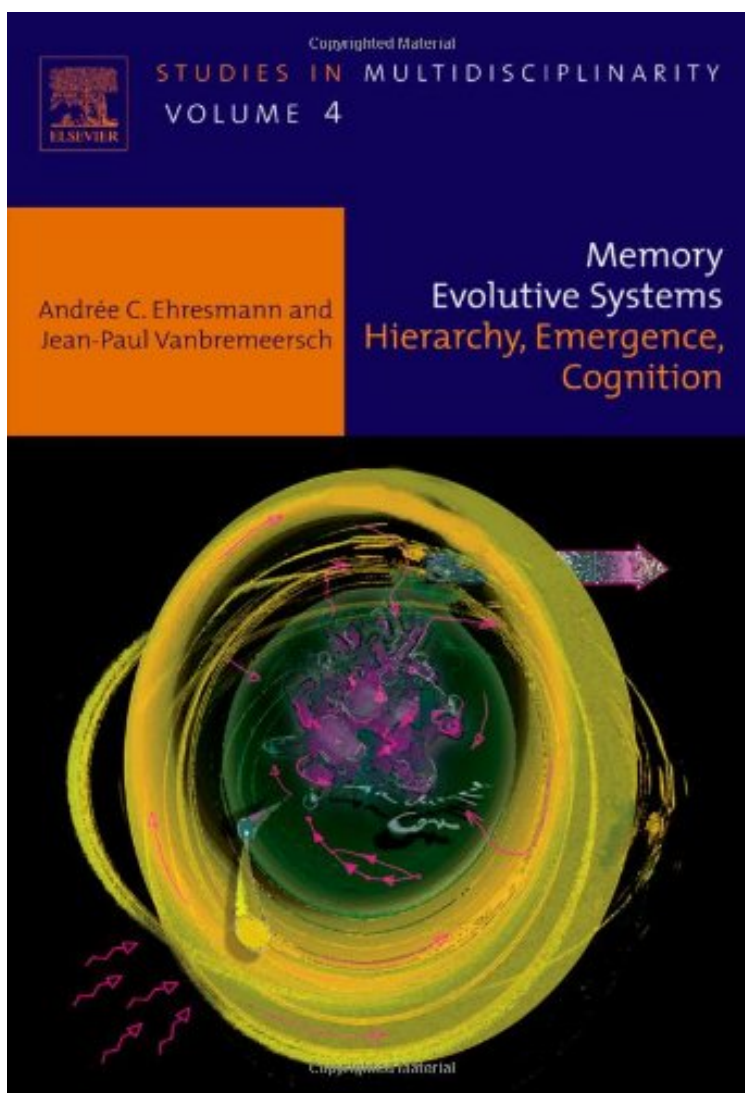


(Ebook pdf) Memory Evolutive Systems; Hierarchy, Emergence, Cognition, Volume 4 (Studies in Multidisciplinarity)

Memory Evolutive Systems; Hierarchy, Emergence, Cognition, Volume 4 (Studies in Multidisciplinarity)

A C Ehresmann, J.P. Vanbremeersch
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A C Ehresmann, J.P. Vanbremeersch : Memory Evolutive Systems; Hierarchy, Emergence, Cognition, Volume 4 (Studies in Multidisciplinarity) before purchasing it in order to gage whether or not it would be worth my time, and all praised Memory Evolutive Systems; Hierarchy, Emergence, Cognition, Volume 4 (Studies in Multidisciplinarity):

3 of 4 people found the following review helpful. Memory Evolutive Systems for Thinking NeuroscientistBy

Posina Recently I began studying the book 'Memory Evolutive Systems: Hierarchy, Emergence, Cognition' (hereafter referred to as THE BOOK). Upon reading, to tell the truth, bits and parts, but, nevertheless, some parts as thoroughly as I "possibly" could, of THE BOOK, it is with great trepidation that I am writing the general impression I formed, of a major advance in understanding documented in THE BOOK, which (my impression), I must note, is admittedly not about the substance of THE BOOK, but of the style of presentation of the profound study of the all too present conscious experience in THE BOOK. THE BOOK in beginning with definitions of familiar words such as graph, category, pattern in unfamiliar terminology tends to intellectually--experientially--disorient many, and those that remain by virtue of being focused on one of the many disparate subjects of empirical study such as neuroscience, economics, social studies, philosophy, or mathematics tend to find the application or indications of applicability of the general abstract theory to those fields of study of which they are not interested (by virtue of their interest in THE BOOK as a presentation of a thorough understanding of a particular body of knowledge that they are trying to comprehend) distracting, if not, again, disorienting. If I may, I think, I cannot help but think how intellectually engaging it would have been to have a "textbook" version of THE BOOK, say, beginning, as it does, with definitions and going all the way, say, in the neuroscience textbook version, to action potentials, via, say, interpreting the theory in the category of vector spaces or linear categories (without necessarily committing to any attendant ontological demands, if so desired). Alternatively, one could go the opposite--to the general-to-particular--way i.e. from particulars to general, or in more concrete terms of our neuroscience textbook version one could begin with the presentation of neuroscience data as particulars, which could then be shown as those that which could be understood in terms of the concepts of category theory, via, possibly, as a generalization or organization of the, say, linear algebra of neural networks modeling action potentials across neurons, which as I "understand" is how mathematics makes its appearance in mathematics and in physics textbooks, which in turn is what gives it (the presentation) the appearance of the "fit", which is not to deny the ontological underlying truth of a great numbers of particular conscious experiences or a great expanse of experience being properly organized and generalized as part of the Grand Old Program of conceptual understanding of empirical phenomena. Before a moment could pass by--as soon as the above noted thought crystallized, it occurred to me that that's what I'd like to do, and as soon as I thought of doing I also realized that it's a "lifetime" project, but I decided to take up the project. This project is all the more important in light of the realization that the reviewed work is a subject of study for the next generation, for the present generation of working neuroscientists are far too cynical--too content with knowing--rarely reaching for comprehension, next-door--for no fault of theirs--seem oblivious to the very notion of comprehension distinct from knowing i.e. collecting pebbles, albeit valuable pebbles on the shores of incomprehensibility--in part, by virtue of being all too cognizant--painfully aware as in seeing and feeling, in the present tense--of the excesses--the still raw wounds on the fabric of the very conscious experience--individual and shared--of extremist interpretations of the concept of ideal--a defining property of thought--an internet connection to the web of comprehension, which terrorized the humanity as a whole and made mankind as a whole less eager to pause to comprehend and more eager to go on and about working. In closing, I feel it important to acknowledge that the above review of THE BOOK reads more like *a* review of *the* neuroscience culture than that of THE BOOK Memory Evolutive Systems. In any case, look out for MEMORY EVOLUTIVE SYSTEMS for THINKING NEUROSCIENTIST, in say 10 years, authored by POSINA VENKATA RAYUDU, the reviewer! Lastly, but, most importantly, I beg the pardon of the authors of THE BOOK, if I--unintentionally--mischaracterized THE BOOK. Thanking you, Sincerely yours, POSINA VENKATA RAYUDU. P.S. For more material reviews and response of the authors to reviewers' critiques see: Axiomathes Vol. 19, No. 3, September 2009. P.P.S. For original and pioneering contributions of the first author Prof. A.C. EHRESMANN to mathematics see: Bastiani, Andre and Ehresmann, Charles. (1972). Categories of sketched structures. Cahiers de Topologie et Gomtrie Diffrentielle Catgoriques, Vol. 13, No. 2, p. 104-214. Bastiani, Andre and Ehresmann, Charles. (1974). Multiple functors. I. Limits relative to double categories. Cahiers de Topologie et Gomtrie Diffrentielle Catgoriques, Vol. 15, No. 3, p. 215-292. Ehresmann, Andre and Ehresmann, Charles. (1978). Multiple functors. II. The monoidal closed category of multiple categories. Cahiers de Topologie et Gomtrie Diffrentielle Catgoriques, Vol. 19, No. 3, p. 295-333. Ehresmann, Andre and Ehresmann, Charles. (1978). Multiple functors. III. The cartesian closed category Cat_n . Cahiers de Topologie et Gomtrie Diffrentielle Catgoriques, Vol. 19, No. 4, p. 387-443. Ehresmann, Andre and Ehresmann, Charles. (1979). Multiple functors. IV. Monoidal closed structures on Cat_n . Cahiers de Topologie et Gomtrie Diffrentielle Catgoriques, Vol. 20, No. 1, p. 59-104. Ehresmann, Andre C. (1981). Partial completions of concrete functors. Cahiers de Topologie et Gomtrie Diffrentielle Catgoriques, Vol. 22, No. 3, p. 315-328. Ehresmann, Andree C. (1997). Colimits in free categories, Diagrammes (Paris), Vol. 37, p. 1-12. The above papers are available for free at NUMDAM. Ehresmann, Andree C. (2002). Localization of Universal Problems. Local Colimits. Applied Categorical Structures, Vol. 10, No. 2, p. 157-172. 6 of 6 people found the following review helpful. Masterpiece Multidisciplinary Book on Complex Systems By Julio Monteiro A comprehensive and amazing summary of the 20-years work on understanding the behavior of complex dynamic evolutive systems, like social organizations, weather simulations or biological or cognitive systems. The result of this work, Memory Evolutive System (MES), is presented with a strong mathematical basis using Category Theory. The book contains detailed formulas explaining the functioning of such

systems, at the same time being completely understandable even for a undergraduate student, requiring only basic skills in mathematics and set theory as the first chapter contains a very well written introduction to Category Theory, that is much more enlightening than many other books on the subject, really recommended for reading even for the pros on the field. The book is divided in three parts, the first begins with the presentation of the tools for understanding and working with complex hierarchical systems, like graphs, category theory and its fundamental concepts, an emergent view of reductionism, and the complexification process on how this systems can evolve in a stepwise manner. The second part introduces the Memory Evolutive System, giving an extensive, detailed explanation on how the model works, starting with evolutive systems, modeling the evolution of natural systems, leading to the notion of hierarchical evolutive systems and the memory evolutive system per se, explaining how a pervasive memory with differential access from coregulatory units (CRs) in various hierarchical levels and operating in cycles in different timescales can evolve into complex patterns enabling semantics and even cognition. The third part brings and application of the MES to cognitive systems up to consciousness, in the line of Edelman. The specific adaptaion of the MES for neural systems is called MENS: Memory Evolutive Neural System. It models the successive complexifications of the neural system giving rise to category-neurons, able to express more and more complex mental objects in a robust, flexible way. This book has been a key resource for my Ph.D. work, as I seek means to implement cognitive systems using computer simulation, and a mathematical model as detailed as this could not be more helpful.

Memory Evolutive Systems; Hierarchy, Emergence, Cognition provides comprehensive and comprehensible coverage of Memory Evolutive Systems (MEM). Written by the developers of the MEM, the book proposes a mathematical model for autonomous evolutionary systems based on the Category Theory of mathematics. It describes a framework to study and possibly simulate the structure of living systems and their dynamic behavior. This book contributes to understanding the multidisciplinary interfaces between mathematics, cognition, consciousness, biology and the study of complexity. It is organized into three parts. Part A deals with hierarchy and emergence and covers such topics as net of interactions and categories; the binding problem; and complexifications and emergence. Part B is about MEM while Part C discusses MEM applications to cognition and consciousness. The book explores the characteristics of a complex evolutionary system, its differences from inanimate physical systems, and its functioning and evolution in time, from its birth to its death. This book is an ideal reference for researchers, teachers and students in pure mathematics, computer science, cognitive science, study of complexity and systems theory, Category Theory, biological systems theory, and consciousness theory. It would also be of interest to both individuals and institutional libraries. Comprehensive and comprehensible coverage of Memory Evolutive System Written by the developers of the Memory Evolutive Systems Designed to explore the common language between sciences