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Avant 3/2, 183-186

2012

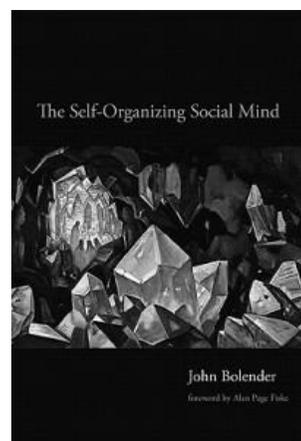
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Bringing sociality into the realm of the brain physics

a review of *The Self-Organizing Social Mind*

Author: John Bolender
Publisher: A Bradford Book
Release date: 2010
Number of pages: 208



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Received 27 September 2011; accepted 29 November 2011; published online 24 December 2012.

How can basic features of social structures be explained? How such structures are conceived and perceived? In his fascinating, new book, John Bolender attempts to find answers to these questions and claims, along the way, that the explanation of the phenomenon of sociability – one of the human's most amazing capability - is findable through the investigation of the physical account of symmetries and symmetry breaking.

1. The Idea

Pythagoras was one of the first of researches, who claimed that physics could shape our understanding, reasoning and behaviour. Since Bolender claims, that the core of social-relation is shaped by symmetries and symmetry breaking it makes him a natural descendant of that line of thought. Let us find out why.

Contemporary physics does vast amount of research. For Bolender's approach, however, the most crucial area of research is the dipping into the very existence of necessities, particularly, the deep ones. Such a notion could be defined as the simplest arrangement possible; an arrangement, which is necessary and which just could be different in no other way. For example, this basic equation of $2+2 = 4$ is deeply necessary and so is the fact that light travels along the shortest of paths. Therefore, inevitability and simplicity are the two intrinsic features, which we might find when we examined the above phenomenon.

As the author puts it, *there is a reason to suspect that there are deep necessities in how humans mentally represent social relations* (Bolender 2010 : 1). He is also right concluding that symmetries are the essentials of such necessities. Symmetries - Bolender says - are the transformations where originals and images are identical in every way possible.

For physicists, the existence of the deep necessities and symmetries in numerous physical phenomena is the *beauty*. For philosophers and, I hope, for these who will go into details of the book, *the beauty* will emerge from the core of sociality and from the way we think about social relations and perceive other individuals. To reflect upon this claim and to defend it is what Bolender intends to do with this work. However, how to substantiate the above points more? Use the very reductionist premise. Bolender goes this way - a success! He concludes that origins of the mental are purely physical.

All the relevant information (data) supports the view that it is wholly biological, both with regards to the growth and development of each individual and with regard to the evolution of the species (Bolender 2010 : 3).

Assuming that mind is explainable only by physics, the same can be said about thought, the direct result of mind activity. Indeed, in view of the fact that entirely physical causes generate similarly physical effects, this assumption is very plausible. Therefore, since deep necessities are found in physics, the laws of physics govern mind, and its origins are physical, then the necessities can be expected to be found in the mind as well. *This includes the social mind*, says Bolender, i.e. the social cognition, or as he puts it, the relational cognition. The presence of the deep necessities, as we learn from the book, accounts for the presence of symmetry. To put it another way, physics shapes the mind and social cognition, but they are also shaped, in a part, by deep necessities and most importantly, by symmetries. *Physics is beautiful. Thought should be too* (Bolender 2010 : 5).

2. Interdisciplinary explanation

The first thing that draws attention is the way the author treats science and modern interdisciplinary framework that the science provides. Achievements of contemporary sciences like physics, biology, neuroscience and philosophy are very important for Bolender and occupy a core position in his narration. With this, the thinker demonstrates how sciences intermingle with one another creating a coherent and a powerful line of thought.

The prime example of the above is found in the explanation of how brain generates symmetries. Bolender has included the symmetries-generating process for a reason. Symmetries make up the fundamental set of patterns that can be found and observed. Look at the pattern of footfalls (*gait*) when you walk. Why does the *gait* look like this? It is because the Central Pattern Generator (CPG) - a network of neurons oscillating jointly - fires at the same time, breaks and creates symmetry; the phenomenon of the *pattern of neural activation* is what generates the symmetry of the footfalls. A single pattern (*neurons*) generates another one (*gait*). Bolender argues that an analogous mechanism exists in the generation of social patterns. He claims that symmetry and (...) *spontaneous symmetry breaking structures the activity of the social pattern generator just as it does in central pattern generator.*(Fiske 2010)' In this explanation, the author links the fundamental physical processes with neuroscience and neuropsychology, venturing from the realm of brain physics into the genesis of social cognition.

There is, however, something more basic and more fascinating in the approach to social relations that Bolender proposes. By structuring his book around examples taken from diverse natural sciences like biology, neuroscience and the theory of evolution, the author demonstrates that despite providing a perfect starting point for the explanation of social relations and their links with symmetries, the sciences cannot explain everything and more fundamental, self-organizing, physical processes must exist in the basis of sociability. Effectively, Bolender sets up a bridge spanning the traditional, structural explanation of social relations and the more dynamic, novelty approach to the matter:

(...) mental representations of social relations are structured by symmetries, which break in determinable order, yielding descending subsets of previous subsets of previous symmetries.' (Fiske 2010)

Thus, the current Bolender's book deals not only with issues fundamental to the genesis of social cognition but also with more complex forms that might arise during processes related to the social cognition.

3. Reductionism

It is a natural tendency to look for weak points while writing a review of anything. In the case of this Bolender's book, it is not easy. The language is very clear, precise and to the point. Every notion, interposed by Bolender, is explained with great care and attention to details. I have no doubt that even nonprofessional physicists, neuroscientist, biologist, or not experts in social cognition can easily follow the main point of this highly illuminating book. It is a real pleasure to read.

However, there is a risk that the deeply reductionist view presented in the book - that the construction and perception of social relations depend on patterns of symmetries and symmetry breaking in the brain - might be dismissed by researches and scientist in the favour of traditional explanations of social relations' genesis. It would be an unfair treatment of the book and a big mistake. Even if further research proves Bolender wrong, the main thesis of his book is far from being illogical or naive because it is strongly grounded in empirical science, powerful argumentation, logic and reasoning.

Whom is this book for? I think it is for everyone who is interested in the connection existing between mind and society, in the mechanisms of social cognition, or in the way, we perceive other individuals. These who want to have an insight into the way we behave, build relations, or think should also read it. As Alan Fiske does, I strongly believe that this book is setting foundations for a new way of thinking about social relations and a new paradigm of thought demonstrating the power of human creativity and imagination.