

## Book review:

### Following a complexity route to transdisciplinarity

Ton Jörg, *New thinking in complexity for the social sciences and humanities: a generative, transdisciplinary approach*, (Springer, Dordrecht, Heidelberg, London and New York, 2011).

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Since the 1980s complexity theory has been at the cutting edge of research in the natural sciences. Theorists of the social sciences and humanities also started responding to some of the critical findings, especially with their incorporation of some of the developments in the fields of chaos and algorithmic theory. There is no denying that complexity has opened up collaborative work by scientists in a variety of disciplines. Moreover, it has contributed to opening up ways of potential interaction between the natural and social/human sciences. In his recent publication Ton Jörg, a theoretical social science thinker, who specialises in causality and complexity, puts his mind to work on the manner in which complexity can contribute towards transdisciplinary scientific work. *New thinking in complexity for the social sciences and humanities: a generative, transdisciplinary approach*, is aimed at promoting the idea of a 'new science' where the accent is on moving away from linear thinking. Jörg argues that complex thinking is a new concept and tool for thinking in the social sciences and humanities (p. 2).

Apart from a wide array of seminal thinkers of science philosophy, such as Edgar Morin and Thomas Kuhn, Jörg uses as a point of departure the fertile thinking of Russian psychologist Lev Vygotsky (1896-1934) and the American social worker, Mary Parker Lovett (1868-1933) to navigate a course in the direction of a 'new science'. At the centre is the concept of complexity – a term etymologically derived from the Latin word for 'interweaving' (p. 10). It is the source of inspiration for the new Science of Complexity (ScoC), which seeks to locate a triangular interaction with the real world and real problems, with the objective of finding solutions (p. 11).

He makes out a strong argument for the development of a new science. The way in which we have been doing science has been responsible for a distorted worldview. He argues that CP Snow's 1959 outline of the division of two types of culture, (science and the humanities) that prevented the problems of the world being solved, is of relevance. Now the time has come to consider a 'third culture' that has benefits for the joint production of culture and society at large. This issue can only be addressed if and when we start contemplating the hidden complexity of reality.

Reality, in itself, presents the scientist with a vast array of problems and Jörg tries to firstly address some of these through complexifying the social sciences and humanities with the ultimate objective of humanising them. Secondly, he explains, it is necessary to reclaim reality by moving into a framework of an expanding understanding of what reality really implies (p. 38). He accentuates the fact that:

Reality is not given but, from an historical perspective, always an invented and constructed reality.<sup>1</sup>

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<sup>1</sup>. T Jörg, *New thinking in complexity for the social sciences and humanities: a generative, transdisciplinary approach*, (Springer, Dordrecht, Heidelberg, London and New York, 2011), p. 49.

The new reality is for him visually manifested in Frank Gehry's design of the Guggenheim Museum in Bilbao, Spain. This structure represents something different, because:

(O)ur new thinking in complexity *about the complexity of the real is a reform of thought, that is reframing complexity of the real, which leads inevitable to a reform of reality.*<sup>2</sup>

Reality is not the only constituent part of complexity that needs to be incorporated into our thinking about a new science. There is, for example, also generativity – a state that represents the capability of human beings to transform them over time. Generativity, Jörg argues, could potentially bring human beings back into states and trajectories that involve concerns, projects and practices (p. 98). Generativity seems to represent a type of energy that drives many of the processes within complexity.

Causality is by far the most detailed component of complexity that features in Jörg's theoretical framework. Interestingly, he moves away from the conventional (and traditional) understanding of causality in historical thinking (the cause and consequence of events, or constructs of historical fact). He is more interested in locating a 'new type of causality' that is multilinear and even 'nonlinear', that can open up paths to spiral developments with sudden leaps and with a capacity to accommodate transformation and even metamorphosis (p. 61). The problem with time, he suggests, is that in the equation of causality, it traditionally tends to be event-sequenced. This type of sequencing is an unreliable guide to the future. It is then that he invokes transdisciplinarity by explaining:

What we really need for opening a new mode of thinking about the new reality and for reflection on this reality is a new trans-disciplinary framework to open up a new, *more complex* reality: that is, the nonlinear complex nature of reality, with its hitherto unknown potential for opening a new horizon of unlimited possibility in practice.<sup>3</sup>

History's disadvantage seems to be situated in the fact that it was partly responsible for framing the history of science that there came a crisis in Western reason. Specific modes of world disclosure were laid down. Those modes are precisely what Jörg is intent on breaking down (p. 100).

In the place of an event-sequenced causality, he suggests, the focus should shift to the process. The new causal framework is continuous and non-gradual and there may even be some nonlinear effects over time (p. 144). Ultimately this implies that the past (time) becomes part of our understanding of what interaction is all about.

Jörg embarks on a comprehensive exposition of causality, after explaining Sewell Wright's contribution, in the early twentieth century to structural equation modelling (SEM), and that of Jöreskog and Sörbom in locating the latent variables in causal networks. Ultimately, he argues in favour of reciprocal processes of mutual relations and circular chains with processes of causal influencing that take place over time (p. 162). He also refers to 'bootstrapping' (somewhat of a free agent) in the process of comprehending the high degree of variability of relevant role players in the process of causality.

Causality is a circular process. Activities are on-going. Instead of determinism, the focus should be on determining and accepting that causality in itself is a self-generating process, operating in networks (p. 164). Although Jörg's thinking in this area could be of value to science practitioners who do not rely extensively on the dynamics of temporality, there is reason to believe that his exposition of

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<sup>2</sup>. T Jörg, *New thinking in complexity for the social sciences and humanities: a generative, transdisciplinary approach*, (Springer, Dordrecht, Heidelberg, London and New York, 2011), p. 98.

<sup>3</sup>. T Jörg, *New thinking in complexity for the social sciences and humanities: a generative, transdisciplinary approach*, (Springer, Dordrecht, Heidelberg, London and New York, 2011), p. 98

causality can lead to more fertile avenues in historical theory. His acknowledgement of Karl Jaspers' statement that causality is part of a reciprocal process, forms an interesting point of departure. But then, there is the need to explore it further through the reflections on the matter by thinkers such as Hans-Georg Gadamer and Reinhart Koselleck, to mention only two. Ultimately it could lead to some interesting debates – areas of reference that are absent in Jörg's theoretical framework.

For the theorist of transdisciplinarity *New thinking in complexity for the social sciences and humanities* is a useful source. There is substantial evidence of creative pathways towards comprehending and applying transdisciplinary strategies in research. Of interest could be his programme for thinking about a new complex way of looking at the social sciences and humanities. He suggests that one should: start to become reflective about the nature of things; escape old thinking about the complexity of reality; become aware of potentially new ways of knowing; think about interaction; think in a new way about causality; and think in a new way about the unit of study (p. 48). This approach could serve as a useful roadmap towards the implementation of transdisciplinarity.

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