

Schmidt Jan Cornelius (2022) *Philosophy of Interdisciplinarity: Studies in Science, Society and Sustainability*. London and New York: Routledge. 216 pages. ISBN 978-1032118468.

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Based on the diagnosis that “interdisciplinarity has lost its critical momentum” and has been reduced “to a trendy, tame, and toothless notion” (p. 1), the aim of Schmidt’s *Philosophy of Interdisciplinarity: Studies in Science, Society and Sustainability* is not solely to clarify and classify the hyped terms or provide organization or management strategies. Instead, Schmidt intends “to strengthen critical voices amid the recent hype”, and to argue for “a critical-reflexive program of interdisciplinarity conducive to a sustainable future for our knowledge society” (p. 2). Schmidt refers to the original spirit of interdisciplinarity as an environmentalist concept and supports visions of an essential change in human-nature relations, interested in a sustainable future of our late-modern knowledge society. This understanding of inter- and transdisciplinarity was originally advocated by Erich Jantsch at an OECD conference in the early 1970s, where Jantsch envisioned a ‘self-renewal of the academy’ (Jantsch, 1970; Jantsch, 1972). To similarly substantiate a program for a ‘critical-reflexive interdisciplinarity’, Schmidt makes use of the rich tradition of philosophy for case study analysis and develops a framework to disentangle the various forms of inter- and transdisciplinarity, making his approach a unique contribution to the discourse, being philosophic and interdisciplinary itself. As such, Schmidt’s book can be inspiring for STS as well as for sustainability science, social ecology, environmental ethics, technology assessment, complex systems, philosophy of nature, and phi-

losophy of science – all fields with which the book is explicitly concerned.

The book provides a thought-provoking differentiation, explication, and critique. Schmidt exposes different understandings of the terms of interdisciplinarity and transdisciplinarity and lays the groundwork for a critique of their myriad uses. The plurality of motives behind these notions and criteria characterizing their semantic core are presented concerning the existence of disciplinary or academic boundaries and the transgression or overcoming of those boundaries. Through a dialectic consideration of boundaries, with reference to well-established distinctions in the philosophy of science, Schmidt identifies four types of interdisciplinarity that have not been clarified clearly by other authors – interdisciplinarity regarding objects (1), knowledge, theories or concepts (2), methods or practices (3), and problems (4). He illustrates all four types via research programs that are labeled interdisciplinary, e.g. nano research and sustainability research, as well as many more. The complex relationship between interdisciplinarity and transdisciplinarity is particularly emphasized. On this basis, Schmidt develops his critical-reflexive concept of problem-oriented interdisciplinarity that seeks to go beyond what is typically associated with transdisciplinarity. This unique and clear terminological clarification forms the very basis for the book. In



the following, I highlight and review four dimensions of the book's critical-reflexive perspective.

The first dimension of the book concerns a critique of the knowledge politics of interdisciplinarity. This dimension starts with the consideration that inter- and transdisciplinarity are not solely academic terms but also buzzwords in knowledge politics (p. 41). Schmidt uses his typology and provides a foundation for a critique of research programs that claim to be interdisciplinary. For instance, Schmidt analyses the US National Science Foundation's program for converging technologies, which advocates object-centred interdisciplinarity – the weakest type of interdisciplinarity. He argues that such a reflection on interdisciplinarity constitutes the very basis for a normative review and potential revision of recent research programs. A second dimension of the book then encompasses a critical take on object-oriented interdisciplinarity from a historical angle and relates it to the discourse on technoscience – a central notion for STS scholars (p. 55). Many recent technosciences are based (only) on object-oriented interdisciplinarity, which can be found already in the very core of the modern program of sciences. Schmidt's reflection upon the contemporary relevance of Bacon's ideal from the 16th century serves as a basis for a critique of object-oriented interdisciplinarity and its instrumentalist account. He argues that the Baconian program for the modern age is one-sided and here problematic, and links the historical analysis to the present-day discussion surrounding the label of technoscience. Technoscience and object-oriented interdisciplinarity prove to be twins that are not guided by societal problems, nor are they problem-centered.

A third dimension of Schmidt's book reflects upon the notion of 'problem'. Since the seminal work of Gibbons et al. (1994), the practices of *The New Production of Knowledge* are regarded as 'problem focused' and 'problem solving'. The discourse of inter- and transdisciplinarity is in particular a discourse on problems, which Schmidt explicitly focuses on. But what does a problem mean (p. 75)? According to Schmidt, a more critical-reflexive answer is possible and needed. He starts by elaborating what problem-oriented interdisciplinarity is not: object-, theory-, or method-

oriented. The essential difference concerns the reflection on and revision of problems and, related to this, the focus on ends, goals, and purposes of interdisciplinary knowledge production. What follows is an in-depth explication of the notion of a problem as it relates to three knowledge elements: systems, targets, and transformative knowledge. Schmidt shows that this matches perfectly with the classic characteristics of action theories and a means/ends rationality. He critiques the instrumentalist orientation but also shows that some present-day practices and concepts of problem-oriented interdisciplinarity inherently carry a critical-reflexive momentum. This critique serves as an entry for his further argumentation in favor of critical-reflexive problem-oriented interdisciplinarity. To substantiate his approach, Schmidt refers to the critical-materialist, pragmatist, and phenomenological tradition, in particular to Jürgen Habermas' pragmatist discourse theory and the concept of communicative action.

Finally, a fourth dimension of the book is concerned with society-nature relations – and a critique of the dominant view of nature and humans (p. 102). Schmidt shows that (the discourse on) inter- and transdisciplinarity originally emerged in environmentalism. As part of this, Schmidt aims to push the problem-oriented type of interdisciplinarity beyond instrumentalist shortcomings. He argues that a novel understanding of nature is necessary to change the society-nature relations and human action in nature. Equipped with Hans Jonas' non-reductionist and non-disciplinary view of nature, this dimension advocates a critical-reflexive account. Sustainability problems reveal a fundamental cultural crisis in the human-nature relationship, mirroring a crisis of the academy and the university. Schmidt shows that a critical-reflexive type of problem-oriented interdisciplinarity can address this crisis. These theses share much with Latour's (2004) view that also aims at overcoming various dichotomies and argues for a new mindset.

Although the fourth dimension is based on a critique, namely the deficits of modern society-nature relations, Schmidt's book shows a direction in which we can proceed: a novel way of viewing nature based on alternative concepts of science and scientific knowledge (p. 123), and

knowledge politics and technoscience assessment (p. 157f.). Schmidt argues that the sciences not only play an ambivalent role in the advancement of modern technology but are also intertwined with the environmental crisis: the way the sciences conceptualize nature is culturally constitutive of the human-nature relationship. Schmidt thus seeks alternative concepts and presents a case study of scientific developments beyond the mainstream since the 1960s: the interdisciplinary field of self-organization theory, nonlinear dynamics, and complex systems theory. These approaches advance a critique of the established classic-modern sciences and question central presuppositions relevant to methodology. The new interdisciplinarity approaches offer groundbreaking prospects, as for example instability is seen in a positive light. It is the source of complexity, pattern formation, and self-organization, which leads to a synthetic, process-ontological view of nature that resonates with the human experience of being a participant in nature.

Another direction of the above-mentioned fourth dimension of the book concerns a critical-reflexive approach in Technology Assessment (TA). TA is a perfect case for problem-oriented interdisciplinarity at the science–society interface. Schmidt discusses a specific approach in TA, namely Prospective Technology Assessment (ProTA), which includes critical-reflexive elements in a prospective assessment of science and technology in very early phases of new and

emerging knowledge fields. He argues that the critical-reflexive concept of interdisciplinarity incorporated in ProTA can be regarded as ‘meta-instrumentalist’. In sum, ProTA contributes to the self-critique and self-reflexivity of the science/technology system.

Concludingly, Schmidt develops in his well-structured book a new, unique, and critical approach to interdisciplinarity that goes far beyond other recent contributions (cf. Klein, 2021; Repko and Szostak, 2021). Schmidt argues that “inter- and transdisciplinarity signify a thorn digging in the heart of the academy and the sciences”, and intends to “facilitate a new critical-reflexive practice in and of the academy” (p. 12). Therefore, the book can be seen as an extremely valuable read (not only) for STS scholars, as it follows a program of ‘engaged STS’ (Sismondo, 2008: 13), including the goal of bringing the sciences into democracy (Sismondo, 2008: 25; Latour, 2004). Critical-reflexive interdisciplinarity for a sustainable future of our late-modern societies frames nature and politics not as two separate domains, as Latour (2004) often stresses. Additionally, the book gives substance to – and clarifies – two central notions of STS: interdisciplinarity and transdisciplinarity¹. As such, it contributes to foundational issues of STS. What is missing is a final chapter that would bring the different aspects together again, but the introduction and chapter summaries serve this purpose sufficiently.

References

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Notes

- 1 For instance, the diagnosis of shift of knowledge production, such as ‘mode-2’, is strongly based on the notion of transdisciplinarity (Gibbons et al., 1994).