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Book review:
Schmidt, Jan Cornelius (2022): Philosophy of interdisciplinarity

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„We cannot tackle problems with the same kind of thinking we used when we created them." This quote from the reviewed book (p. 5) constitutes, in a nutshell, the challenge of any ambitious interdisciplinary endeavour. Recall, that manmade climate change, impacts of genetically modified organisms on natural biodiversity or societal consequences of broad digitalization are typical reasons for interdisciplinary research. Interdisciplinary perspectives offer here ways out of the shortcomings of ordinary disciplinary research regarding normative questions of risks, ethical concerns and social acceptability of techno-scientifically led innovation. Yet interdisciplinary research has not only become a familiar feature in recent decades; it is also a buzzword – sometimes even a justification for unambitious projects or poor results.
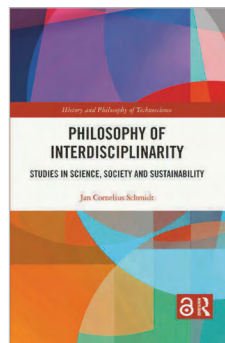
Philosophy of interdisciplinarity – an issue of TA

The *Introduction* of the reviewed publication outlines what philosophy might offer for interdisciplinary concepts and practice. The author stresses specifically its relevance, role, and challenge in connecting the spheres of science, sustainability, and society towards an overarching interdisciplinary realm. In this context, he points out that professional philosophy by itself already provides the necessary broader and more critical perspective vis-à-vis other disciplines. This specific advantage is mostly rooted in the long-lasting cross-disciplinary record of philosophy and its markedly reflexive concept of cognition building and orientational knowledge formation. Therefore, it can be expected that most ambitious interdisciplinary frameworks and efforts – like those of technology assessment (TA) – would highly benefit from the inclusion of philosophical perspectives and expertise.

The second chapter has been captioned as *Philosophy and plurality*. It takes stock of the different types of interdisciplinary and transdisciplinary practice and it provides a systematic clarification of their distinctive features and objectives of investigation. Jan Schmidt differentiates four main types of interdisciplinarity, labelled as object-, method-, theory-oriented and problem-oriented types. The latter type embodies the methods of TA and is seen as a subset of trans-disciplinary, which might either search for effective technological and organisational means of problem reduction (instrumentalistic approach) or which might even challenge the traditional objectives and maxims of our present-day life (critical reflexive approach). Overstepping borders of even distant disciplines and sectors is therefore indispensable for any ambitious interdisciplinary purpose, which finally refers to the author's philosophical claim for "integrative non-reductionism" (p. 38) in interdisciplinary research.

Chapter 3 then moves the reader's attention to the relevance of the specific *Politics and research programs*: It addresses and reflects the relevant knowledge and research politics, which set the critical conditions and requirements for interdisciplinary research, while shaping the technoscientific future of our societies at large. The author suggests using his typology of interdisciplinary frameworks to enable classifications and assessments of corresponding politics and research programmes. He demonstrates a related analysis on a real case of the prominent US nanotechnology research programme as elaborated by the famous Roco-Bainbridge Report (2003) on converging technologies. From his analysis, Jan Schmidt insinuates this influential report a somewhat naïve naturalism. He classifies therefore this report and similar restricted approaches as technologically reductionistic. The author finally outlines needs for a stronger reflexive and normative review of corresponding interdisciplinary science politics.

History and technoscience is the title of the fourth chapter, which delves into the roots of the still dominant object-oriented mode of interdisciplinarity. Thereby, the author criticises the instrumental accord of corresponding interdisciplinary approaches, which constitute for instance the prominent reasoning patterns of current technoscientific efforts. The latter could

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be traced back to the Baconian programme and its fulfilment, which seems questionable regarding hidden trans-epistemic values and the ignorance of side-effects. Jan Schmidt criticises its unconcerned access to new knowledge and pleas therefore "to go through Bacon and deal with his program – in order to go beyond him" (p. 72) and thus beyond the complained hubris of current technoscience.

Jan Schmidt then draws attention to the issue of *Society and societal problems* (chapter 5) as points of departure for problem-oriented interdisciplinary (TA) endeavours. In this context, he reflects on different meanings of the term 'problem' and clarifies this notion in view of the most pressing extra-scientific questions of modernity – often named as 'wicked problems'.

duced) intervention in natural systems. This would even include ethically relevant orientation regarding the problematic human-nature relation – quite in the vein of Hans Jonas' thoughts. The author emphasizes that corresponding re-directions of science could then result in a new era of reflexive enlightenment.

In the final chapter on *Technology and the future*, Jan Schmidt outlines a concept of prospective technology assessment (ProTA), which is based on the above-mentioned considerations. The author's concept is directed to the very early stages of technology development for reasons to avoid any later locked-ins. This approach is accompanied by the idea of precaution as knowledge about the consequences of action is principally uncertain and incomplete – especially in the long-term perspective.

Different, broader and more problem-oriented concepts of research are needed.

His quite broader problem perspective aims at timely answers for better and sustainable practices in society. The chapter ends with an excursus "On shortcomings of the instrumentalist view" (p. 93), which deepens the importance of orientational knowledge, supplied by appropriate frameworks of transdisciplinary research.

The following sixth chapter on *Ethics and the environment* sensitizes readers to the grand challenge to master large ecological crises, which are rooted in our modern technoscientific practice. Hence, the author puts forward the particular importance of ambitious environmental ethics for conceptualising critical-reflexive approaches of problem-oriented interdisciplinary frameworks while addressing the ambivalent consequences of techno-scientific developments. In this context, he strongly defends the relevant theses of Hans Jonas against the different objections of the partly critical scientific community. Beyond some weak points, Jan Schmidt acknowledges Jonas' metaphysical foundation overall plausibility in the sense of the urgent question: "What [new] kind of metaphysics could enable us […] to make our life more sustainable?" (p. 19). That means, that we need different mindsets towards nature, which incorporate the issues of accountability, responsibility, and stewardship. Interdisciplinarity in that sense would no longer stay unconcerned about the condition of the natural world.

In chapter 7 on *Nature and the sciences*, Jan Schmidt elaborates then the contours of an alternative conception of nature, which might better address the human-nature relation. In this context, he criticises established reductionistic approaches for the generation of scientific knowledge, which often miss the intrinsic instabilities and self-organisational characteristics of nature as well as the potentials of phenomenological and more context-related insights. Different, broader and more problem-oriented concepts of research would be needed, which would also reflect the known and unknown consequences of (human-in-

That requires early normative orientation of broader and reflexive interdisciplinary assessments, which critically address not only the means but also the purposes of techno-scientific research. Applying TA-frameworks by this way might therefore help shaping ethically acceptable or even socially desirable developments. The ProTA-approach connects therefore the timely perspective of Constructive TA with the purpose-related focus of Hermeneutical TA, while adding strong normative aspirations of its reflections and outcomes.

Resume

The chapters are well arranged and follow a conclusive 'storyline', which substantiate the author's overall argument.

However, the book's overall message leaves open, how its critical reflexive ambition might be carried-out in practice and how it could *effectively* enter research policies and related techno-scientific innovation. The question is, which incentives or organisational changes could nudge the actors in a competitive world to more responsible innovation beyond volatile appellative considerations.

Some readers might also miss an overall concluding chapter of the book. However, this proves to be a more formal point – at least from a TA-perspective: The last chapter on ProTA could be rather seen as culmination of the reflections elaborated before and therefore as their ultimate result. This book is therefore highly recommended to those who need to have a deeper comprehension of ambitious professional interdisciplinarity.

Reference

Roco, Mihail; Bainbridge, William (eds.) (2003): Converging technologies for improving human performance. Nanotechnology, biotechnology, information technology and cognitive science. Dordrecht: Springer.