

to the 'slow-goes', the 'no-goes' and, finally, to the mentally-confused 'no-knows'. Whether marketing experts who demonstrate such a complete lack of empathy and respect for their customers can be successful remains to be seen. The authors underline once again that the 50+-costumers represent an extremely heterogeneous group compared to other age groups [see also Wolfe and Snyder 2003].

The last chapter, by Florian Kohlbacher, Pascal Gudorf and Cornelius Herstatt, argues that the Japanese silver market presents an attractive opportunity for foreign (German) companies. Only a few Japanese companies recognised around a decade ago that their country contained the world's largest proportion of seniors. One would expect that by now a large number of Japanese and non-Japanese companies would be exploiting the Japanese mature market as an opportunity to raise their turnover. However, neither local nor foreign companies can be found developing, producing or selling products for older customers in large numbers. The study presented shows that only one in five German companies doing business in Japan offers products or special services for older costumers. The authors argue that the vast majority of German companies acting on the Japanese market have not yet reached their potential. Kohlbacher and his colleagues note that there are several reasons for this but do not explicitly name them. What remains is that companies not only forego the chance to increase their market share in Japan, they also miss the opportunity to test new products and strategies before some of the European countries will overtake Japan in the race of the world's oldest population [see also United Nations 2004].

The volume as a whole thus offers a range of approaches whilst providing concise overviews over the full range of issues involved in the economic consequences of the demographic change, if necessarily succinctly. Whilst the key idea to combine

theoretical and practical approaches is, perhaps unavoidably, executed with varying success in the different chapters, it is on the whole a readable volume which can be recommended to both academics and practitioners.

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Robert Frodeman, Julie Thompson Klein and Carl Mitcham (eds.): *The Oxford Handbook of Interdisciplinarity*
Oxford 2012: Oxford University Press,
xxxix + 580 pp.

This impressive *Oxford Handbook of Interdisciplinarity* is not an anthology of already published material, but rather includes 37 new essays related to the many possible intersections between disciplines. The co-editors explain their goal as follows: 'to introduce a greater degree of order in the field of interdisciplinary research, education, and practice by creating a work that will become

a basic reference for all future attempts at interdisciplinarity ...' (p. viii). And as Frodeman, Klein and Mitcham conclude in their opening remarks, if interdisciplinarity is commonly studied between two given domains at one specific intersection (like, say, the philosophy of science), we see that interdisciplinarity in itself is rarely studied for what it is, according to its specific dynamics, at least in the Anglophone academia (p. ix). Of course, interdisciplinarity was discussed as early as the 1940s by influential thinkers such as Jean Piaget [(1968) 2011] and later by Edgar Morin [1999], two important authors who are barely mentioned here in this handbook (p. 24) (for a variety of perspectives, see Hirsch, Hadorn, Schmied, Frischknecht [2011]).

The comprehensive 'Introduction' written by the three co-editors contains many insights and interesting ideas. For instance, regarding philosophy, the co-editors argue that social epistemology looks like the most rewarding direction in the study of interdisciplinarity; they also state that nowadays philosophy seems to have taken the wrong direction while it should be the leader (or should have been leading) in interdisciplinary research: 'in an *ex post facto* manner, the very search for and challenging of disciplinary standards is (or at least *was*) philosophy' (p. xxxi). A dynamic table situates the grounds of the philosophy of interdisciplinarity in the following section (pp. 39–41). While there is no philosophy of interdisciplinarity yet, we can see how philosophical positions can frame the ways in which interdisciplinarity is conceived by either (1) realists and real-constructivists, (2) rationalists, (3) methodological constructivists, or (4) critical theorists (p. 39). This critique of the philosophy of science reappears elsewhere from other contributors (see pp. 193 and 504).

Most of the chapters are very strong and instructive; the following pages will only highlight some of the most inspiring ones, leaving aside many excellent essays.

The *Handbook of Interdisciplinarity* comes in five parts. The first section focuses on knowledge production and epistemology, providing the historical and philosophical backgrounds which led to the differentiation of knowledge into disciplines (p. 5). As the opening chapter reminds us, 'up to the end of the eighteenth century disciplinary differentiation is only secondary (e.g. Medicine as part of Bacon's Human Philosophy)' (p. 4).

Each chapter presents in a clear fashion the basics and some of the main trends of a specific topic, that is, for instance, interdisciplinarity in religious studies (Chapter 11), in science and technology studies (Chapter 13), in media studies (Chapter 15), or in ethics (Chapter 18). Although there are many ways to conceive it, interdisciplinarity is basically defined here as 'the capacity to integrate knowledge and modes of thinking in two or more disciplines to produce a cognitive advancement—e.g., explaining a phenomenon, solving a problem, creating a product, raising a new question—in ways that would have been unlikely through single disciplinary means' (p. 373). But many authors insist on the fact that there is no single, one-size-fits-all universal method for interdisciplinarity; there are only 'hints and rules of thumb constituting a rough theory ...' (p. xxxi). Chapter 2 offers a useful mapping of interdisciplinarity. Associate editor Julie Thompson Klein situates multidisciplinary, interdisciplinarity, and transdisciplinarity in clear terms, which are respectively 'juxtaposing', 'integrating', and 'transcending' (p. 16). Elsewhere, in Chapter 19 ('Design as Problem Solving'), multidisciplinary, interdisciplinarity, and transdisciplinarity are 'described as three related yet distinct forms of knowing, acting and thinking' (p. 283).

The second section of this extensive handbook investigates the interdisciplinary dimensions which already exist in domains such as physical sciences, biological

sciences, engineering, but also religious studies, art and music research. Among the most interesting contributions, Craig Calhoun and Diana Rhoten's chapter 'Integrating Social Sciences' provides many practical, methodological, and theoretical remarks about the emergence of Area Studies as a clear example of Interdisciplinary Studies (p. 106). The third part contains eight essays centred on interdisciplinary knowledge. Sociologists and social scientists will especially appreciate Chapter 13 on science and technology studies because it revisits the salient works of Thomas Kuhn, Bruno Latour, and Steve Woolgar, which paved the way to the school of sociology of scientific knowledge, emphasising the influence of one book, Latour and Woolgar's *Laboratory Life* [1979] (p. 193). This chapter is full of hints and sociological demonstrations, noting for instance that some very popular books in the field of science and technology studies (STS) were reviewed in non-academic journals and magazines such as *Science*, *Nature*, *New York Times Book Review*, *Times Literary Supplement*, thus allowing these interdisciplinary works (and therefore interdisciplinary thinking) to gain a wider audience through these media (p. 197).

The third part of this handbook contains some interesting case studies concentrated into thematical texts, shorter than chapters (only 3–4 pages each), focusing on examples and possible applications of interdisciplinarity into various practical actions: an academic journal, a research centre, etc. For instance, one of these boxes presents a very dynamic research centre located in Northern Germany, the Zentrum für interdisziplinäre Forschung, in Bielefeld (ZiF), in which Norbert Elias used to be affiliated between 1978 and 1984 (pp. 292–293). Its principles of openness and international dialogue are creating interdisciplinary bridges between 'the natural and social sciences, engineering, and the humanities'; and a model of its kind in Europe (p. 292).

The fourth part, 'Institutionalizing Interdisciplinarity', is very important because these contributors are well aware of the many resistances towards interdisciplinarity within academia, where scholars who practice and/or promote interdisciplinarity are often left behind or rejected outside their discipline(s). But as Deborah DeZure demonstrates in Chapter 26, a positive change seems to be ongoing in many universities, especially since the mid-1990s, and 'particularly in the humanities and social sciences, leading to the emergence of constructivist teaching and assessment methods' (p. 375). Indeed, chapters 25 and 26 concur to argue 'that interdisciplinarity curricula are increasingly mainstream in higher education' (p. 375).

Giving the reader more than initially expected, the final section of this book is focused on transdisciplinarity. This is perhaps the most rewarding section. Many uses and definitions of transdisciplinarity are proposed. For instance, in Chapter 32, we read that transdisciplinarity aims to develop between scholars within a working team some 'shared conceptual and methodological frameworks that not only integrate but also transcend their respective disciplines' (p. 474). Here again, the authors situate and articulate the differences between multidisciplinary, interdisciplinarity, and transdisciplinarity, providing the basic methodological elements in order to reach scientific quality and validity (p. 474). And philosophy as a discipline is praised in this 32nd chapter, being 'by nature a transdisciplinary endeavor' (p. 463).

Among many topics discussed in this final section, two interdisciplinary domains must be highlighted for social scientists: environment studies and risk studies (p. 494). The chapter on the environment concludes with some exciting tasks for scholars in interdisciplinarity research, and especially philosophers: 'to construct the new architecture of interdisciplinarity; to

translate multiple disciplinary argots into a common language; to identify and codify stakeholder values', and finally 'to make the epistemological aspects of interdisciplinarity thinking (e.g. modeling) transparent' (p. 506). In Chapter 36, 'Risk', Sven Ove Hansson argues that 'in addition to being interdisciplinary, risk studies have another feature that will be of interdisciplinary concern, they are strongly connected with normative issues', and that particular dimension brings in other issues related to acceptability and measurement of risks (p. 536). As the author aptly demonstrates in its interdisciplinary essence, risk is twofold since it 'is both value-laden and fact-laden', as the things perceived as 'undesirable' reminds us that 'undesirability is a value concept' (p. 543).

There is no conclusion as such in this hefty book, but every chapter carries its own concluding remarks and future issues to be addressed. My only quibble about this otherwise excellent *Handbook* is about its lack of references in languages other than English. If scholars are aiming for a knowledge that is interdisciplinary, international and possibly globalised, we should as well try to include ideas from academics who do not use English as their language of writing and publishing. Here, more than half of the contributors are from the United States and very few are non-Anglophones (with some notable and welcome exceptions from Switzerland, Finland, Germany, Austria, Chile). The editors ought to have targeted a broader spectrum of scholars. This is of course easier to say than to accomplish, and it might be the next challenge for scholars in interdisciplinary research.

One of the strengths of this book is its highlighting of the interdisciplinary dimensions of many domains (and therefore professions); for example in the 35th chapter on law, broadly understood as 'the regime that orders human activities and relations through systematic application of the

force of politically organized society ...', Marilyn Averill argues that 'law thus constitutes an early and unique form of transdisciplinarity grounded in the creation and exercise of political and social power' (p. 522). In fact, almost every chapter offers an interesting and original direction in the understanding of interdisciplinarity (and some authors generously give more than one direction). A groundbreaking book, this *Oxford Handbook of Interdisciplinarity* is perhaps the most innovative handbook I have read in years. Any university professor should read it, no matter which field they are practising. This timely book is perhaps the best cure against the overspecialisation of some scholars that we witness in so many fields nowadays. In sum, Frodeman, Klein and Mitcham have clearly delivered the merchandise in their ambitious task to create a basic reference in the field of interdisciplinarity studies (p. viii). At this moment, there is no better resource or more accurate reference book in interdisciplinarity studies. This unique handbook is obviously essential for university libraries and will remain a basic reading for generations of graduate students in about any field.

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