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Review of "A Companion to the Philosophy of Technology"

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Book Review | *A Companion to the Philosophy of Technology*

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***A Companion to the Philosophy of Technology*. Jan Kyrre Berg Olsen, Stig Andur Pendersen, & Vincent F. Hendricks; New York: Blackwell Publishing, 2009; xv + 571 pages; $194.95 hardcover; 978-1-4051-4601-2.**

Philosophy of technology is a relatively recent addition to philosophy. It was not until the late 1970s that a few philosophers started to consider technology as a potential topic in philosophical reflections. In 1979, Mario Bunge even complained that "[philosophy of technology] is an underdeveloped branch of scholarship… So far no major philosopher has made his central concern or written an important monograph on it" (Bunge, 1979, p.68). However, in the past three decades, rapid developments have embedded technology into human society and even human bodies (e.g. biomedical engineering). Philosophers have thus felt obligated to think about the ways technology fundamentally alters living conditions and what it means to be human. Such a challenge has given rise to the philosophy of technology.

Nevertheless, gaps still remain in the philosophy of technology. On one hand, technological advancement requires intellectual resources to guide its trajectory wisely. On the other, philosophy of technology has not completely been established as an institutionalized field. Contemporary philosophy of technology is attempting to bridge this gap. Since "no major reference work on the philosophy of technology is in existence," this *Companion to the Philosophy of Technology* (hereafter simply *Companion*) edited by Jan Kyrre Berg Olsen, Stig Andur Pedersen, and Vincent F. Hendricks, is the most up-to-date attempt to synthesize all sorts of historical and contemporary efforts and to point toward further research (p.1).

The *Companion* emphasizes the fundamental assumption of the 'empirical turn' that emerged at the turn of the century. Until the 1980s, what existed of the philosophy of technology was dominated by 'classical philosophers' as diverse as Martin Heidegger

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(1889-1976), Lewis Mumford (1895-1990), Herbert Marcuse (1898-1979), Hans Jonas (1903-1993), and Jacques Ellul (1912-1994). Though they successfully raised questions and opened public debates about negative the impacts of technology, since the 1980s they have been criticized for their pessimistic, deterministic, and externalist approaches to technology. They were mainly social and cultural critics (Mitcham and Briggle, 2009), who focused on technology in general and developed philosophical arguments with little empirical detail. In response to deficiencies of such classical approaches, which are not treated in the *Companion*, an 'empirical turn' aimed to understand specific technologies in a more internal, concrete, context-dependent, and constructive ways. In the *Companion*, different aspects and features of the 'empirical turn' are well represented as effectively interpreting technological development in sociopolitical contexts.

The *Companion* explicitly notes how the empirical turn is largely inspired by developments in STS (science and technology studies or science, technology, and society studies), particularly what Wiebe E. Bijker and colleagues denominate as the 'social construction of technology (SCOT)' program (pp.88-94). Thomas J. Misa further points out that "in their more or less essentialistic framing of the problem [how technology brings about social and cultural changes] a generation ago, [classical] philosophers of technology were among the most enthusiastic proponents of the notion of technology as a strong and compelling force for change in history" (p.13). Unlike classical philosophers, the STS-informed philosophy of technology represented in this book is based in a more constructivist approach. As a primary creator of the SCOT program, Bijker argues that the "technical working of machines cannot be explained as being derived from nature but as constituted in social processes" (p.88). Technology should not be considered as autonomous or determining societal development. Instead, it is socially constructed and shaped by various aspects of societal development (history, politics, economics, etc.) in which interested social groups have impacts upon technological change.

As a result, the *Companion* starts with a historical-cultural setting. Rather than trying to offer any philosophical or metaphysical definitions of technology, the opening "History of Technology" section aims at understanding how technological development is historically (e.g. Middle Ages and Renaissance), geopolitically (e.g. the West, China, and Japan), and culturally (e.g. China, Islam, Japan, business, and war) constructed and co-constructed. The first sentence of Bart Hacker's chapter on "Technology and War" makes a co-constructivist argument that challenges technological determinism: "The interplay of military institutions and changing technology has regularly made history" (p.43). Thomas J. Misa's introductory chapter summarizes, "Hacker's model is that military institutions are both key sites of technical innovation and critical vectors that transport and transform technical innovation" (p.13). Such an empirically-based approach that emphasizes micro-narratives of socio-

technical interactions results in a wealth of case studies. This tendency also leads to another feature of the empirical turn that is prominent in the *Companion*. It breaks Technology (with a capital T) into technologies (e.g. environmental technology, agricultural technology, and biotechnology) and thus presents a dissatisfaction with the monolithic position held by classical philosophers.

Besides the effort to unpack technological development in richly-described social contexts that Philip Brey terms 'society-oriented empirical turn' (Brey, 2010), the *Companion* also reveals how some contributors (analytic philosophers) are enthusiastic about moving the empirical turn project further. They propose a more internal approach to philosophy of technology and are interested in analytical interpretations of (inner) structures of technical systems or 'technology itself.' Brey defines this as an 'engineering oriented empirical turn' (Brey, 2010). In the *Companion*, topics in engineering (e.g. engineering science, technological knowledge, engineering design, and technological artifacts) are well described. These topics, especially engineering design, were seldom discussed by classical philosophers or many society-oriented empirical philosophers. Peter Kroes's chapter on "Engineering Design" even considers engineering design as "one of the core activities that distinguishes engineering from science" (p.112). Kroes and some other authors (e.g. Louis Bucciarelli, Anthonie Meijers, Joseph Pitt, and Pieter Vermass) might agree that philosophy of technology should concentrate more on "clarification of basic conceptual frameworks used in the engineering sciences and in the empirical sciences studying technology" (Kroes and Meijers, 2000, p.xxi). Particularly, Kroes thinks that "the outcome of an engineering design process involves typically a material object or its description." Thus philosophical investigations of engineering design should focus on two *descriptive* tasks: (a) "a description of all the physical (chemical) properties [structure] of a technical artifact… a design is a complete description of all the parts and their relations;" (b) "a description of the function of the technical artifact and an explanation of how the physical structure realizes that function" (p.113). Kroes's 'dual nature (structure and function)' model of artifacts even becomes a paradigm of the 'Dutch school' of philosophy of technology and is expanding its influence in continental philosophy.

The *Companion* well captures the empirical turn as what differentiates contemporary from classical philosophy of technology. But it also does not stop at this point. Though the empirical turn (society-oriented and engineering oriented) successfully opens the 'black box' of technological development and focuses on particular technologies, its descriptivist (sociopolitical and structure-function) approach sacrifices the normative assessment or criticism found in classical philosophers. In extreme cases, descriptive analysis even becomes an end in itself and forgets the 'real end' of philosophy as an activity to seek better lives and society. Fortunately, the *Companion* realizes this deficit and tries to overcome it by integrating ethical assessment into an empirical turn that often lacks normative analysis.

The *Companion* devotes a whole section, Part VI, to "Technology and Ethics," with 23 chapters that discuss ethical issues associated with technology. It should also be noticed that technology and ethics here is not necessarily the same as the applied ethics movement that emerged in the 1970s in the United States. The major problem of traditional applied ethics is that it does not consider technology as a central factor. Instead, ethics and technology in this book benefits from the empirical turn by employing the descriptive approach in analyzing interwoven relations between technology and society where ethical problems arise. This point is well recognized in an introductory chapter to this section by Carl Mitcham and Katinka Waelbers. They criticize the lack of 'careful description' and arbitrary decisions made in popular applied ethics research. As they say,

> there are dangers in general ethical reflections, not just with regard to technology but in any moral assessment that too quickly interprets challenges in positive or negative terms – or even neutral ones. Any judgment deserves to be preceded by careful description. (p.367)

Influenced by the empirical turn, Mitcham and Waelbers recommend approaching current issues in ethics and technology by reflecting on interactive or co-constructive relations between technology and society. Such reflection takes places in response to two related questions: "(1) to what extent do humans shape technological products or processes? (2) in what ways do technological products or processes shape human action and perception?" (p.371). Technological artifacts mediate between humans and the world and they combine society-oriented 'empirical turn' with engineering-oriented 'empirical turn.' At this point, Peter-Paul Verbeek and Pieter Vermaas offer a complementary account: "Our world is full of material objects made by engineers for practical uses, and through these objects technology affects society and our daily lives" (p.165). Critical ethical reflections on technology appreciates empirical turn may be summarized as involving: (a) opening the black box of technological development by looking at concrete development and formation processes of technological artifacts; (b) describing how technological artifacts construct and are constructed by society in which multiple social forces are involved (society-oriented empirical turn); (c) imagining the mediating roles played by technological artifacts in society and the embedding of positive values into engineering design (engineering-oriented empirical turn); (d) integrating feedbacks from use contexts into design contexts so as to make better designs. A typical case in this book that applies such a framework is the chapter "Value-Sensitive Design" by Jeroen van der Hoven and Noeimi Manders-Huits. The whole process makes ethics and technology a more context-dependent, empirically-informed, constructivist, and pragmatic action. This turns the *Companion* towards 'policy' and implies that constructing a better society can be accomplished by analyzing technological roles in societal change.

As the introduction part argues, the aim of the *Companion* is not only "to provide an up-to-date review of the philosophy of technology" but also to "bring it into close contact with cutting-edge technology and contemporary technology policy" (p.1). The *Companion* relates technologies to a variety of policy issues which are generally divided into three areas (environment, politics, and the future). In these areas the two major subthemes are development and risk society. A representative chapter on development is Daniel Sarewitz's "The Idea of Progress" and a basic conflict at its core. On one hand, "the idea of progress is essential to the sustainability of modern high-technology, market-oriented societies… People use [technologies] because they believe they will … improve their life" (p. 306). On the other, "while technologies are intended to solve particular problems within a restricted context, almost any widely adopted technology will have consequences, unintended and sometimes undesirable, outside the context" (p.305). Plus, "most new technologies are not aimed directly at overcoming important obstacles to an improved quality of life … but expanding economic productivity, competiveness and consumer choice" (p.304).

Such a dilemma is easily linked to the other topic in technology policy: how to dwell in a 'risk society.' Sven Hansson proposes that "we need to develop new frameworks that can provide policy guidance in the difficult issues that technological development gives rise to" (p.489). To this end, he offers three possible beginnings: safety engineering, scenarios and contingency planning, and new deliberative processes. Although authors such as Ulrich Beck may describe risk society as "an inescapable structural condition of advanced industrialization" (p.496), strategies like Hansson's are still worthwhile to consider. In the last section of the *Companion*, authors look for future ways to better govern emerging and converging technologies that cannot be disassociated with risks.

However, the *Companion* is not without its problems. There is a lack of consistency in two senses. The first is *structural* inconsistency: some chapters are exceptionally short while others are perhaps too long. Some end with references and further readings, some do not. Second is a *thought* inconsistency: for instance, in the "Ethics and Technology" section, the introductory chapter offers a basic framework for analysis, but few of the following chapters take this framework into account. Indeed, some chapters even make technology into a marginal issue. Nevertheless, such weaknesses do not keep me from recommending the *Companion* as a great reference for students and specialists in the philosophy of technology.

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