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## Technology and Human Development

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alongside Carl von Clausewitz's *Vom Krieg*. The sheer diversity of references is striking, and readers familiar with Western philosophy will be hard-pressed not to find at least a few familiar references.

When it comes to histories, many seem to contain—whether implicit or explicit—a moral to their stories. In this case, the book is explicit with its aims. Laid out in the introduction and the final chapter, the survey of Chinese thought is spurred by “the postmodern, or perhaps post-Western, problem of knowledge” (p. 5). The moral of its history is two-fold. First, the preoccupation with transcendental or eternal truths in the history of Western epistemology is, at least in Chinese perspective, stuck at a dead end. Variants of this criticism are quite easily found in the philosophical literature of the past several decades. More novel and exciting, however, is this book's attempt to demonstrate its second moral on the possibilities gained by exploring non-Western thought. In this case, Western epistemology and its postmodern problem are viewed through Chinese philosophical perspectives in search of potential solutions. The result is, relative to Western conceptions, a more dynamic and action-oriented conception of knowledge that bears some semblance to the ideas of Nietzsche and the pragmatists. A discussion of its nuances, however, is perhaps best left to the text itself.

All things considered, this book presents a welcome contribution to the English-language literature on comparative philosophy. In a postmodern climate where critiques abound, the book's attempt towards a positive solution is a breath of fresh air. As a work in Eastern philosophy, some may take issue with the author's various interpretations of the many (and sometimes obscure) Chinese texts. The larger aim of the work, however, is used to warrant some creative licence, and indicators of its subjectivity (e.g. “I take this to mean ...”) are dispersed liberally throughout the book. The consideration of related Eastern traditions also remains a tantalising but ultimately brief affair. This is perhaps a direction to be explored in future editions or other works. On the whole, however, this book provides a valuable contribution not only as an accessible history of Chinese thought, but also as a demonstration of how foreign ideas—whether across time or space—can help inspire creative thought. In this, the book succeeds admirably by offering readers plenty to think about.

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### **Technology and Human Development**

Ilse Oosterlaken

*London and New York: Routledge, 2015, pp. 148, ISBN 978-1-138-78058-3*

Ilse Oosterlaken, currently a post-doctoral researcher at Vrije Universiteit Amsterdam, is a highly regarded expositor of the capability approach, and her latest book fits in nicely with this project. In *Technology and Human Development*, she explores how the capability approach can enrich the study of appropriate technology, engineering design, human development, and information and communication technology. She has outlined these themes in previous publications, and her latest book brings this research together into a dense yet highly intelligible discussion.

In the introduction, Oosterlaken establishes four goals. First, she sets out to “examine the strengths and limitations of the capability approach as a critical lens to technology” (12).

Technology has a strong impact on the values of well-being, agency, and justice, and the capability approach “provides a powerful conceptual framework to assess and evaluate technology” using these standards (9). But this conceptual, normative framework has limitations. By itself, the capability approach is “not able to explain why or when technology contributes to poverty reduction, or when it exacerbates existing inequalities” (11). Nevertheless, as Oosterlaken shows in the podcasting (113–126) and micro hydro-electric cases (29–30), the capability approach can be combined with other development frameworks such as appropriate technology to provide a useful standpoint from which to assess development projects.

Oosterlaken’s second goal is “to put [the] capability approach to technology in the context of some historical and current debates about technology and human development” (12–13). She outlines, following Melissa Leach and Ian Scoones, three competing approaches to development: the “race to the top,” the “universal fix,” and the “slow race” (19–23). Appropriate technology, because it focuses on the fit of a technical artifact to its surrounding socio-technical environment, favors the slow race. It shows that the best technology may not necessarily be the most advanced or modern but what Ernst Friedrich Schumacher terms “intermediate.” Appropriate technology rightly brings the socio-technical system into the assessment of development projects, but requires additional frameworks to provide a fully normative standpoint. The capability approach can fill this normative gap by integrating the values of well-being, agency, and justice into the overall assessment of development.

Oosterlaken’s third goal is “to argue that understanding the technology–capability relationship requires iteratively ‘zooming in’ on the design details of technical artifacts, and ‘zooming out’ to the embedding of technical artifacts in socio-technical networks” (13). “Zooming in” and “zooming out” metaphorically express how technical artifacts are inseparable from the socio-technical systems in which they operate (82). Zooming in on the details of design is the subject matter of Chapter 2, while zooming out to the socio-technical system comprises the focus of Chapter 3. Oosterlaken uses cases such as “One Laptop per Child” (87) and the silk reeling machine (88) to show how the success of technology-driven community development projects depends on the conversion factors present in the surrounding socio-technical systems; these conversion factors play a key role in whether technology can transform capabilities into functionings (115). Technologies shape social practices while social practices guide the evolution of technical design. Oosterlaken’s metaphor emphasizes how society and technology influence one another, resulting in a nuanced and pragmatic approach to technology assessment and technology transfer.

Oosterlaken’s fourth goal is “to show that various technology and design accounts may fruitfully supplement the capability approach” (13). Here, “capability sensitive design” (54–58), value sensitive design (58–64), and participatory design (68–72) complement one another and expand the technical horizon to encompass the social, ethical, and global. The capability approach evaluates technical design in terms of capabilities expanded or blocked. For example, in Bolivian micro hydro-electric projects, the capability approach helps development specialists assess how three projects using almost identical technologies can, nevertheless, issue in different community impacts (29–30). These different impacts become intelligible when the projects are assessed on the basis of the capabilities they expand and contract.

Oosterlaken succeeds admirably in making the capability approach accessible to “engineers and designers” as well as “development scholars and other non-technologists” (12). She addresses the first group by showing how the capability approach can come to play a central role in engineering design, especially how it ties in with value sensitive and

participatory design. She shows development scholars and non-technologists how the capability approach embraces the “slow race” because it avoids the extremes of the “fast race” and the race to the “universal fix.” Finally, she strategically chooses case studies in community development to show how the capability approach can provide development scholars with a normative framework based on agency, well-being, and justice.

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### **Subterranean Struggles: New Dynamics of Mining, Oil, and Gas in Latin America**

Edited by Anthony Bebbington & Jeffrey Bury

*Austin: University of Texas Press, 2013, pp. 343, ISBN 978-1-4773-0206-4*

This is an essential book about the complexity of social struggles in the wake of the expansion of extractive industries in Andean countries. It consists of a collection of case studies on Peru, Bolivia and Ecuador (Chapters 3–9), a historical chapter that provides a broader perspective on the development of extraction in the region (Chapter 2), and three chapters that draw on these case studies to provide an analytical framework to comprehend the dynamics of mining, oil and gas (Chapters 1, 10 and 11). As a whole the book presents a coherent and strong argument about the importance of the subsoil for political ecology as a discipline and for understanding social transformation in Latin America. In this sense, the book also contributes to grasping the complexities of politics and policy-making of development in countries where the political economy of extraction is deeply embedded in the state and socio-economic structures.

As stated in Chapters 1 and 11 the struggles in question are subterranean in two senses: they are located around and are mediated through the subsoil, and they contain hidden elements such as identity, memory and underlying political projects or everyday practices. The metaphor is fine because many crucial elements of these struggles remain invisible—an issue that is deeply analysed in Chapter 6 (Ximena Warnaars) and Chapter 3 (Thomas Perreault). Yet most chapters do not seem to focus sufficiently on these “subterranean aspects”; they emphasise more visible elements related to concrete claims and negotiations (particularly Chapter 7 by Anthony Bebbington and Martin Scurrah). Other chapters focus on concrete institutional arrangements relating to the deficiency of state instruments to evaluate environmental impacts (Chapter 8 by Derrick Hindery), the ambiguities of legal frontiers for defining conservation areas (Chapter by Jeffrey Bury and Timothy Norris), the relevance of tenure rules governing the surface and sub-surface (Chapter 9 by Julio Postigo et al), and land-use frontiers between agriculture and extraction (Chapter 5 by Jennifer Moore and Teresa Velásquez).

The consequence of this emphasis is the definition of these struggles in institutional terms. Chapter 10 draws on case studies to elaborate a framework in which social conflict reflects different motivations, grievances and incentives. Such conflicts might be sparked by loss of territory or livelihoods, or may result from rent seeking or political activities (amongst other things). In this framework different actors (indigenous peoples, market oriented small farmers, artisanal miners and regional political movements) present different demands, such as consultation, fiscal redistribution, territorial planning, amongst others, that are conceived as competing claims to be managed by a strong state (that is able to provide order, rights and social inclusion), instead of utopic demands of romantic subalterns.