

**Marc J. de Vries.** *Teaching about Technology: An Introduction to the Philosophy of Technology for Non-philosophers.* Springer 2016. 148 pp. \$109.99 USD (Hardcover ISBN 9783319329444).

The philosophy of technology is a relatively new field of inquiry, but it is gaining increased prominence as evidenced by college/university courses on the subject. The aim of this book is to utilize contemporary research, encourage debate, and broaden technology education. The book is divided into twelve chapters, but the final two are ‘Questions and Assignments’ and ‘Resources for Further Reading’. These are two worthwhile sections as they provide readers who happen to be instructors with valuable resources to engage with students as well as broader debates surrounding technology. The primary audience for this book is technology educators.

Chapter 1 defines the basic concepts of the book. What is philosophy? What is technology? How are the two related? For philosophy, de Vries distinguishes between the analytical and the critical function of philosophy. Whereas the analytical function clarifies concepts, the critical function incorporates value judgments. De Vries then contextualizes this distinction according to the division between analytic and continental philosophy, but I suspect this is untenable. De Vries’ commitment to analytic philosophy should be clear in the opening pages when he defines philosophy as a ‘scientific discipline’ (1). De Vries draws on Mitcham’s four ways of explaining technology – ‘as objects, as knowledge, as actions, and as volition’ (6). Anyone who has spent some time reflecting on the scope and meaning of ‘technology’ will recognize that it is quite a slippery concept. True to this, de Vries offers several permissible definitions of technology without privileging one.

Chapter 2 focuses on technological artifacts, which contrast with everything else in the world. Some objects occur naturally in nature and through manipulation by humans can become artifacts. How much manipulation is required? Consider the differences between a walking cane specifically designed in a workshop and a spruce bough one picks up and uses as a walking cane. What are the differences? Is the spruce bough a technological artifact? Relatedly, how does the designer and the concept of function impact the analysis? De Vries offers no decisive answer but is content to characterize the puzzle.

Chapter 3 investigates technology and knowledge, specifically how technology might alter the justified true belief account of knowledge. De Vries cites Ryle’s knowledge-that/knowledge-how distinction. De Vries introduces the role of normativity in technical knowledge, specifying this as concern for ‘adequacy, efficiency, [and] effectiveness’ (26) as opposed to truth. He goes on to develop this account by contrasting the traditional notion that knowledge is belief with the more attractive claim that technological knowledge is more like acceptances. Acceptance amounts to increased concern with utility, context, voluntariness, and discreteness. It would have been worthwhile to contextualize this claim in the context of the classical pragmatists. The work of Thomas Kuhn and Paul Feyerabend is summarized.

In chapter 4, technological processes are analyzed. One essential component of technology is the activities of design, effort, making, and assessing. There is no technological ‘method’ just like there is no scientific ‘method’. Nevertheless, some time is spent reflecting on questions like ‘is all designing technology’?

The first 4 chapters are very analytic in tone and substance. In chapter 5, de Vries engages in the more ‘continental’ question of humankind’s relationship to technology. Is technology intrinsic to humans? De Vries draws on Heidegger’s claim that technological artifacts display how we are both entrenched in our environment as well as apart from it. Consider a hammer. On its own, it is part of the environment, but once I pick it up and begin using it, the hammer disappears from ‘our consciousness and becomes part of us’ (55). A further wrinkle arises when the hammer fails to work

properly. It reverts to being apart from us when it no longer fulfills its function adequately. Heidegger was especially critical of modern technology, insisting that it makes humans see their environment as a potential resource to be utilized. Relatedly, there is also the claim that technology's encroachment has reduced autonomy. This critical attitude is best articulated by Jacques Ellul, the French philosopher.

There is an opposite school of thought, however, which takes the position that technology is intentionally shaped by social agents like interest groups and engineers. One famous example is the early history of the bicycle: there were two competing designs. One had a large front wheel and the other had equivalent sized wheels. Whereas the former was faster, the latter was more stable and therefore safer. The influence of social dynamics here was paramount – was speed or safety privileged? In the last section of this chapter, de Vries looks at social and religious groups who have limited their relationship to technology. Examples of this include certain Amish groups and orthodox Jews. In these contexts, it is important to remember that technology is never wholly rejected, but its scope is limited.

Chapter 5 introduces the central role that values play in humans' relationship to technology. Chapter 6 continues this analysis, focusing on the ethics and aesthetics of technology. One famous ethical case study is the Ford Pinto. In tests, it was shown that at certain speeds, mild crashes could result in a gas tank explosion. Yet to redesign the car would require a lot of money. Two values, safety and economy, were in conflict. De Vries surveys the three main moral theories—virtues, consequences, and duties—in order to show how each conceptualizes moral questions surrounding technology. One of the more interesting sections of this chapter is the intriguing claim of treating 'a moral dilemma as if it were a design problem' (78). What do moral problems have in common with design problems? According to de Vries, they are imprecise. The suggestion is that in order to solve design problems, new alternatives must be created and that this possibility sometimes gets lost in moral deliberation. Recall the Ford Pinto example – it is possible an adequate solution might be to make minor changes, thereby satisfying one's commitment to economy, which could result in increased safety. In terms of aesthetics and technology, de Vries rightly asserts the relative lack of attention paid to aesthetics, particularly in comparison to ethics. Nevertheless, he cites a series of architectural examples (e.g., Sagrada Familia cathedral) as well as new forms of art enabled by technology (e.g., computer art). He claims that any discussion of art and technology would invariably take us into the philosophy of art, which is beyond the scope of the present book.

In chapters 7, 8, 9, and 10, de Vries surveys what non-philosophers have to say about technology. Since the book's explicit aim is to educate non-philosophers about the philosophy of technology, this makes sense. One bias that I think will resonate with readers' is the common idea that technology means high technology like computers and automobiles. Non-philosophers often focus too much on high-tech. Another widely held 'folk' idea is that technology is wholly good and this is true both for young people and adults.

In chapter 8, de Vries highlights the attempt to bring together science, technology, and math under the STEM umbrella (Science, Technology, Engineering, and Mathematics). He also emphasizes the development of historical and contemporary case studies that can be used to better educate students about the development, implementation, and operation of technology. For example, consider Glare (GLASS REinforced Laminates), which is a new and improved material used in aircrafts. It was not uniformly accepted and integrated. There were many obstacles, such as its composite nature, the different interests in the development parties, and even that the word 'Glare' sounds like 'glaire', or slime, in French. In chapter 9 and 10, de Vries examines practical issues in teaching the philosophy of technology. He considers the increasingly central role of educational technology, such as the use of videos in and out of the classroom.

The book is aimed at teachers, either at the college/university level or even at the secondary level. It is no doubt true that technology as a philosophical topic is getting more and more justified attention. For someone untrained in philosophy, this book gives a solid introduction. I think the book would be improved by even more case studies or historical examples to ground the theoretical claims. Also, granting the issue of publishing constraints, I think diagrams and pictures would be particularly helpful.

**Aaron Landry**, Humber College