BOOK REVIEW

Steven Umbrello, *Technology Ethics: Responsible Innovation and Design Strategies***,** Polity Press, Cambridge, 2024, 128pp., £15 (paperback), ISBN: 978-1-509-56405-7

Steven Umbrello's book is a fantastic introduction to understanding (and implementing) responsible design practices with respect to technology. With little or no jargon, and simple but accurate explanations of key concepts, this book is perfect for those wanting to learn more about technology ethics. While experts in the field may find it wanting at certain moments, it still serves as a useful guide to the important debates and positions in the field. In this review, I will outline the main themes and then close with some general remarks.

We are introduced to a classic example in the philosophy of technology: Langdon Winner and his analysis of New York architect Robert Moses' bridges (see Joerges, 1999; Woolgar and Cooper, 1999). Umbrello uses this canonical example to show how technological artifacts can come to embody values, and how these values can come to shape and constrain the ways in which society can develop. For the next three chapters Umbrello introduces different perspectives we might take towards technology, namely instrumentalism, determinism and social constructivism.

The first view, instrumentalism, is one of the most intuitive approaches to technology. Simply, the idea is that technologies are merely tools to be used. That is, the technologies themselves do not hold any value; it is their use, by humans, that gives them value. Thus, instrumentalism about technology rests on the presupposition that technology itself is value neutral. Umbrello thoughtfully rallies against the value neutrality of technology, arguing that 'our tools are not simply bearers of our intentions but rather mediators and partial determinants of what those intentions can be' (p.18). Technologies are part and parcel of our social systems; they can be used for various ends, and not for others. However, this raises the question of just how strongly technologies come to shape and influence our actions.

In the next chapter, Umbrello considers whether technology might be deterministic. This is the view that technologies determine (in some important sense) our behaviour. 'The idea is that technology directs and changes fundamental aspects of our behaviour and our society; technologies direct how we relate and interact with one another, what our values are, how we understand those values, and even shape how we learn, think, and conduct ourselves in broader society' (p.24). This view leaves little room for human agency. Umbrello situates critiques against determinism as re-centring the agency of humans in the development and deployment of technology. Instead of accepting that our actions are determined by technology, we can instead ask whether we should, for example, let increasing automation force people into unemployment.

This brings us naturally to whether we really do have a choice as to how we will develop technology. If so, it seems that the question is a social one. Umbrello unpacks social constructivism, the view that technology ought to be understood as a product of human behaviour, and social and political institutions. For constructivists, it is not that technology determines our behaviour, as the determinist would claim, but rather that the way we design and use technologies is determined by social, political and cultural factors. To understand technology, therefore, we need to get a handle on the way it is embedded in a given context. However, according to Umbrello, framing effects and nudges show the insufficiency of constructivism for fully capturing the impacts of technology (p.40). The reason for this is that 'how a technology is framed or what nudges are employed inevitably involves value judgements, and implicates social values and norms that are deemed morally or politically preferable by decision architects' (p.40). In other words, technology can *also* come to shape social values and culture in important ways.

Umbrello goes on to draw together the strengths and weaknesses of all the previous perspectives on technology, and argues that we ought to understand technology as interactional. In his view, technologies are 'built upon the scaffolding of previous systems, iterations, and artifacts that underpin and lay the foundations for those technologies that we see today' (p.45). Technologies are therefore sociotechnical systems, with social, technical, and even institutional factors coming to shape how they are developed, deployed and used More than this, however, the interactions between these factors can lead to emergent properties that do not necessarily depend on any one factor specifically. In sum, we shape technology, but technology also shapes us, and so there is no essential feature of technology that makes it 'good', 'bad' or 'neutral', even though specific technologies might sometimes have these features. What is central to this perspective is the importance of design in technology: our technological designs have the power to change our societies and who we are (p.48).

With this in mind, Umbrello investigates the broader frame in which this interactional account of technology takes place. Specifically, he explores the idea of responsible innovation, which is premised on the notion 'that technologies have real and material impacts on society, and bring with them a host of ethical (among other) issues which can be exacerbated or mitigated by the design of those systems' (p.58). Key to innovating responsibly, according to Umbrello, is stakeholder participation, which includes leveraging insights from professionals, policymakers, consumers and non-governmental organisations. This links back to the earlier discussion of seeing technologies from a socio-technical perspective. We need not only technical expertise in this process, but also social and political expertise. The outcome of this process, ideally, is that technologies come to reflect the values of these different stakeholder groups. This is achieved by value sensitive design (VSD).

VSD is but one approach to the responsible design of technology. Other approaches that Umbrello briefly canvasses are universal design, inclusive design, participatory design and human-centred design. Umbrello argues that VSD is the most advantageous of design strategies, in part because of how it allows policy to co-develop with technology. This is achieved because at the heart of VSD is the idea that values shape every part of the design process. What this means is that policies are not a reaction to technology, but inform the design process itself. Moreover, the values at stake here are not just any values; they are moral values, not mere preferences, and so they provide a robust grounding for our design practices. But how to put these values into practice, and how to identify values in the first place?

Chapter 8 provides some practical resources and is best viewed as an 'ethical engineer's toolbox'. Here Umbrello goes into detail of the specific steps those involved in the process of designing technology can use to embed the principles of VSD, ensuring the responsible development and deployment of these systems. While I will not go into much detail here, VSD is an incredibly useful resource for those involved in developing technology, and it helpfully articulates practical steps for the design process, such as stakeholder analysis, stakeholder tokens, value scenarios, value-orientated semi-structured interviews, value dams and flows, value hierarchies, and envisioning cards. All of these are methods and practices that can help shape responsible innovation processes, and all are grounded in the principles of VSD.

In the final chapter Umbrello summarizes the main themes of the text and provides some remarks on the most important implications of his argument for the way we ought to view technology. Umbrello reiterates that we understand technology in an interactional way, 'as technology and society do not exist apart, but persistently impact on one another' (p.96). For us to have a future worth having, then, we need to bake this interactionalism into the foundations of our theorizing about technology.

One concern that philosophers of technology might have with the argument, however, is precisely the difference between more nuanced accounts of social constructivism and Umbrello's interactionalist perspective on technology. For example, it seems that a form of technological mediation is compatible with at least some versions of social constructivism, which makes it plausible that more sophisticated accounts of constructivism might be able to incorporate the critique Umbrello levels against it. For example, one might argue that it is indeed possible to

expand constructivism to include certain interactional elements between technology and society. This suggests that the gap between constructivism and interactionalism might be one of degree and not of kind.

Overall, however, this is an impressive and carefully constructed text. It will be useful to policymakers and engineers who have an interest in the thoughtful and ethical design of technological artifacts. Moreover, the text guards against some of the most pernicious myths around technology, such as technological determinism, and rallies support for views that give agency and power to the humans who shape the development of technology.

References

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