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What have we learned from the *Smart Machine*?



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ABSTRACT

Zuboff's (1988) book *In the Age of the Smart Machine: The Future of Work and Power* is one of the most celebrated texts among Information Systems researchers. Despite its significant influence, I suggest that it may have a richer story to tell than has been told to date. Motivated by this potential, my essay has two aims: to explicate the theory developed in Zuboff's text, and to determine how fully it has been used and extended by Information Systems researchers, through an analysis of papers citing her text. My findings show that the theory developed in Zuboff's text has been used in a fairly limited and piecemeal fashion. I discuss how this presents a significant opportunity for research because the theory appears to be just as relevant now as it was when the text was published.

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1. Introduction

Because of the somewhat interpretive character of this paper, I begin with some personal context. This paper commenced in the margins of p. 70 of Zuboff's text, *In the Age of the Smart Machine: The Future of Work and Power*. At the time, I was studying the effective use of information systems in organizations, and while I had often seen citations to Zuboff's book, I had never read it. When I eventually did so, I found on p. 70 that Zuboff had already asked my research question—and went on to provide an answer—years earlier. I was dismayed that someone had already done what I hoped to do, but intrigued that the rich ideas expressed in the text did not appear to be reflected in the literature I had read. I wondered if other researchers were unaware of the ideas expressed in Zuboff's book, and if this offered opportunities for our field.

I was also intrigued by the potential that such a paper might have to reinvigorate the re-analysis of what we know: to reread and reflect rather than just propel forward to study the latest new thing. In many fields, researchers re-examine foundational texts. Economists reread Adam Smith, sociologists reread Weber, Marx, and Durkheim, psychologists reread William James, and so on. The Information Systems

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field is far younger, but we too have our classics. Zuboff's *Smart Machine* is definitely one of them. Willcocks (2004, p. 267) refers to it as "the most cited and celebrated in the whole of the IS field ..." This essay is motivated by the view that Information Systems researchers could learn from re-reading the *Smart Machine*. In contrast to the pursuit of new theory, my aim is to see what might be gained by re-surfacing and re-examining old theory.

Because ethnographic works, such as Zuboff's, contain many detailed insights, some ideas will inevitably get overlooked on a casual reading. One might expect this risk to decline over time, as more researchers read the text, but in practice many researchers fail to read classic texts and cite them more for their symbolic value (Latour, 1987). As Willcocks (2004, pp. 270–271) demurs, "most [researchers] have probably read about, rather than read all the way through [Zuboff's text]." One might argue that this is not a problem in a fast-moving field such as ours. Nonetheless, I suggest that the *Smart Machine* continues to have lessons for us today; indeed it may have an even stronger story to tell now than it did when first published (see also Kallinikos, 2010, p. 1098). After all, Zuboff focused on fundamental characteristics of information systems, such as their representational capacities, and fundamental characteristics of organizations, such as power, that are just as relevant today as they were then. Moreover, Zuboff claimed that her insights could have quite general applicability. She wrote that she was offering a "general appraisal" (p. 71) about "general themes" (p. 424), one that was "highly representative" (p. 283) and "highly relevant" (p. 425). Finally, it would be very informative to know just how relevant her insights remain today. After all, if they are still relevant, it would serve to highlight the enduring nature of phenomena in our field. On the other hand, if they are no longer relevant, it would suggest that things must have fundamentally changed since that time. Either outcome, therefore, would be interesting.

Classic studies serve a vital role in any field. They serve as lighthouses in the sea of studies around us, helping us understand where our ideas have come from and where they are going. For instance, in the field of Sociology, Freese (1972, p. 482) wrote "If sociological knowledge were a puzzle we would have to lean pretty hard on some of the pieces to make them fit. That is why we still read Durkheim. We do not really know how the entire puzzle fits together, so at first we concentrate on the biggest pieces." Likewise, in our own field, Scott (2000 p. 241) writes that "The foundation of any attempt to discuss the distinctive nature of computer-based information systems has to be the evocation of Zuboff's (1988) seminal work."

I am not aware of any study that has conducted an in-depth re-analysis of the *Smart Machine*. Two studies in the Information Systems discipline have had similar goals: Barrett and Walsham's (2004) re-analysis of Star and Ruhleder (1996), and Hansen, Lytinen, and Markus's (2006) re-analysis of Markus (1983). Both studies report findings that resonate with mine. For instance, they find that researchers often cite classic studies in a perfunctory way, often fail to deal with their core ideas, and sometimes cite them incorrectly. Despite these similarities, our studies emphasize different issues. Barrett and Walsham (2004) sought to identify the tactics that Star and Ruhleder used to frame their contributions, while Hansen et al. (2006) sought to discover how researchers from various fields cite a classic work differently and thereby socially construct its contribution. The purpose of my study is different. My aim is to learn what insights were conveyed in Zuboff's text and the extent to which they have been utilized.

Outside of the Information Systems discipline, Anderson's (2006) study offers a good example of the kind of analysis I will report. He examined how researchers in Management had used Weick's (1979) *The Social Psychology of Organizing*. Some of his findings are similar to mine, such as that most researchers cite the text for only a small proportion of its ideas. Our works differ primarily in that he identifies key concepts in Weick's work ex post, by examining the articles that cite Weick, whereas I begin by identifying key concepts and relationships in the *Smart Machine*, and then examine the extent to which researchers have used these ideas. I took this approach for two reasons. First, compared to Anderson's approach, it allows me to identify in more detail the specific aspects of the text that have not been utilized extensively in the literature. Second, while my primary aim was to learn how Zuboff's ideas had been used, a secondary aim was simply to articulate a cohesive model of the theory described in the text because this, in and of itself, could be useful for researchers (e.g., to those who might wish to use simulations or other tools to analyze Zuboff's theory in more depth) (Black, Carlile, & Repenning, 2004; Boland, Goraya, Berente, & Hansen, 2009; Nan, 2011).

Summing up, to examine how Zuboff's insights in the *Smart Machine* have been utilized, we must first know what those insights were. Thus, in the first two sections of this essay, I present a reading of her text.

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