and metabolic relations with human and other ecological processes. Water needs to be seen in *ecological* as well as in bio-political terms. This, in turn, permits the continuing politicization of water while acknowledging the multiple material, bio-physical, cultural, and ecological relations through which the hydro-social cycle operates.

This is a claim for considering the politics of urban metabolism as a socio-ecological project. Reframing water as such, Bakker argues, moves the debate beyond the public–private dichotomy, the limitations of a distributive justice paradigm, and the ambiguities of communal solutions and opens the possibilities for a politicization of water that recognizes (rather than silences) "the inevitable tensions between representation and participation, technocracy and democracy, centralized oversight

and local preferences, and economic exigencies and environmental imperatives" (p. 227). This is a call for a democratization of environmental governance, one that moves beyond the state-versus-the-market smokescreen and insists on the centrality of people's voices in the environmental governance of their life worlds. With a perfect and subtle mix of theoretical argument, empirical analysis, emblematic water "vignettes," and political passion, this book is poised to become a landmark publication that will transform the terrain of urban water analysis and, more important, the vantage point from which to think through and practice urgently needed alternative water strategies.

Key Words: environmental governance, politicization, privatization, urban water supply crisis.

Code/Space: Software and Everyday Life. Rob Kitchin and Martin Dodge. Cambridge, MA: MIT Press, 2011. xiii and 290 pp., diagrams, photos, glossary, and index. $35.00 cloth (ISBN 978-0-262-04248-2).

Reviewed by Taylor Shelton, Graduate School of Geography, Clark University, Worcester, MA.

Mark Weiser, computer scientist and father of ubiquitous computing, famously wrote, "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it." The thesis of Rob Kitchin and Martin Dodge's *Code/Space: Software and Everyday Life* is fairly simple: Computer code has become so woven into the fabric of everyday life that it plays a fundamental role in shaping the conditions in which we live. Although much of the content of the book is culled from nearly a dozen earlier publications, *Code/Space* excels in its meticulous detailing of how software is embedded and enrolled in a variety of objects and processes we interact with or undertake on a daily basis and how this process is decidedly spatial.

In *Code/Space*, Kitchin and Dodge provide a more coherent summary of the arguments and examples offered in earlier articles and chapters on the fundamental intertwining of software, space, and society. From the relatively mundane example of using a computer and word processor to produce the content of the book itself, to more complex assemblages of different software systems such as those used to maintain the global air travel system, Kitchin and Dodge clearly show that software is not simply a mediating force in the world but rather an active constituent of it. Because of this, software is deserving of further attention from social

scientists across the disciplines. Indeed, the book can be read as an attempt to accomplish two objectives: first, to bring the importance of software, or even of technology more generally, to the attention of geographers and other social scientists with an interest in space; and second, to introduce and argue for the idea of space as being central to any social analysis of software.

The book, divided into four sections, opens with an introduction to the concepts to be used throughout and serves as an excellent primer for readers uninitiated in critical human geography or software studies. The book then turns to a more thorough explanation of these key concepts, largely focusing on the ideas of "the transduction of space" and "automated management," which Kitchin and Dodge offer as the primary means by which the interplay of software and space—or "code/space"—can be understood. The transduction of space focuses on the ontogenetic nature of space, the fact that space is not a static thing or a container in which social life happens, but that space is always in the process of being produced. Kitchin and Dodge go on to argue that "[c]oded space and code/space occurs where the transduction of space is mediated by or is dependent on software" (p. 73). The authors go to pains to make sure the reader understands that this conception of software as space-producing is not deterministic but is instead fluid and contingent, nonessential, and

nonuniversal. But it is from these concepts that Kitchin and Dodge offer "automated management" as a shorthand for the primary effect of code/space. They define automated management as "the regulation of people and objects through processes that are automated (technologically enacted), automatic (the technology performs the regulation without prompting or direction), and autonomous (regulation, discipline, and outcomes are enacted without human oversight) in nature" (p. 85), a kind of governmentality with software at the forefront.

The third part of the book provides a series of detailed case studies on the ways that the transduction of space and automated management are borne out in our everyday practices. Examples of air travel and home life are recycled from earlier publications, whereas the final case study, not offered in earlier articles, deals with the ways in which software has altered the spatialities of consumption. The argument here goes far beyond the ways in which software has made the purchasing and shipment of consumer goods via the Internet more convenient. This chapter, if incidentally, actually points to various moments in which software has reconfigured the entire system of global economic exchange, from production to distribution to consumption and disposal. Even though it is repeatedly argued that software, like all other technologies, should not be seen as inherently good or bad but rather as simply productive of new sociospatial relationships, the examples offered throughout the book give the feeling that the most prevalent effects of code/space are largely negative. This is not to say that Kitchin and Dodge ignore the positive outcomes of automated management, such as greater efficiency in the completion of routine tasks. Rather, this foregrounding of the negative at the expense of the positive is likely the result of the increasingly hidden nature of software in the broader social fabric, such that the most positive effects of software have largely been hidden from sight or taken for granted. Regardless, this only underscores the need for more careful analysis of the sort offered by Kitchin and Dodge in *Code/Space,* an attention to those objects and processes that often go ignored.

The final section of the book ends with a call to further engage software studies in smaller scaled "archaeologies of algorithms" or "as full as possible genealogies of the multiple, complex, and sometimes contradictory or paradoxical iterations of software projects—the evolution and contextual and contingent unfolding of ideas, decisions, constraints, actions, and actors that shaped their development" (p. 255). This preferred

orientation to the micro is indicative of one of the few flaws of *Code/Space* that are worth mentioning. Although Kitchin and Dodge provide ample fodder for understanding the different ways in which code does work in the world, there is relatively little attention given to what exactly results from this work. Although there are brief occasional mentions of the unevenness in how software does work in the world, the actual implications for this inequality remain largely unexplored in the book.

On a similar note, the authors continually argue that software is the product of particular contexts that influence its character, but it is left unclear how those characteristics written into the software do or do not reinforce these economic, political, social, and cultural conditions. So although Kitchin and Dodge mention the fact that software is largely a product of post–World War II capitalism, there is relatively little analysis of how this might, in turn, be more likely to produce software that reinforces its own importance and perpetuates the politico-economic relationships among the state, corporations, and citizen-consumers. Taken together, these two shortcomings are the only significant flaws in the approach taken by *Code/Space,* although they are certainly understandable given the authors' preference for a more general description of the phenomena rather than sustained analyses of any individual part.

Ultimately, *Code/Space* succeeds most as an attempt to spatialize the study of software, rather than bring the importance of software to an already-established cadre of spatially aware social scientists. The adeptness with which Kitchin and Dodge make clear the spatial nature of software, and the fundamental importance of a concept like code/space, is offset at times by their insistence on inventing a new vocabulary for concepts already familiar to most human geographers. In addition to the variety of potentially confusing typologies of code/space, Kitchin and Dodge tend to shy away from using established concepts. For instance, one of the key concepts of the book, that of the transduction of space, sounds remarkably like the sociospatial dialectic developed some thirty-odd years ago. They even go as far as to substitute "capta" for "data" throughout the book to make a seemingly minor distinction. Although this might indeed be an important distinction for some, the insistence of substituting a term with a commonly understood, if potentially fallacious, meaning the same as a more obscure term only distracts from the issue at hand. Although complaints over diction should be taken with a grain of salt, it is the confusion generated by introducing new terminology and concepts where

unnecessary that potentially obfuscates the otherwise excellent nature of this work.

As the first book-length treatment of these issues, *Code/Space* is an important contribution not only to human geography but also to software studies and the social study of technology more broadly. In reorienting the geographic study of technology away from the potentially deterministic ascriptions of agency to technology and toward the various elements and processes that are constitutive of the technologies under scrutiny, *Code/Space* opens up new avenues for investigating the contingency of the relationship among society, space, and technology. The book might, however, find difficulty in being picked up by those not already interested in

the intersections of technology and human geography due to its highly specialized content. That said, certain aspects of the book will likely appeal to a variety of scholars in human geography across the subdisciplines, as the case is more than adequately made for the increasing importance of software in enabling and transforming a multitude of processes long studied by human geographers, from urban transportation and the management of global supply chains to surveillance and the emergence of new forms of governance and political action.

Key Words: actor network theory (ANT), governmentality, information and communication technologies (ICTs), software studies, space.

Neighborhood and Life Chances: How Place Matters in Modern America. Harriet B. Newburger, Eugenie L. Birch, and Susan M. Wachter, eds. Philadelphia: University of Pennsylvania Press, 2011. xv and 369 pp., maps, diagrams, notes, bibliography, and index. $59.95 cloth (ISBN 978-0-8122-4258-4).

Reviewed by Richard Harris, School of Geography and Earth Sciences, McMaster University, Hamilton, ON, Canada.

As geographers, we are inclined to believe that place matters and so I was naturally drawn to *Neighborhood and Life Chances*. As its subtitle suggests, this collection promises to reveal the interplay of society and space at the urban scale. And, indeed, as the editors indicate in their preface, it "reviews the literature and showcases new research on how residential environments . . . affect the lives of the people who live in them" (p. xii).

Although this work does assemble the results of much useful and interesting research on this theme, it fails to live up to its promise. The unavoidable constraint, of course, is that researchers (both these and more generally) have found it difficult to isolate a "neighborhood effect." Faced with inconclusive evidence, many contributors to this collection are properly cautious. Unfortunately, this limitation is compounded by the narrowly quantitative approach most of them adopt and by the editors' decision to focus the collection almost entirely on areas of concentrated inner-city poverty. The focus of the book might more accurately be described as "life chances in the 'hood."

In fact, as the editors note in their acknowledgments (p. 369), the book began as a symposium, hosted by the Federal Reserve Bank of Philadelphia in 2008, that focused specifically on the "economic challenges facing older communities." This event brought together

policymakers and practitioners as well as academics. This helps explain why, among the thirty-two authors of the seventeen mostly co-authored papers included, nine describe themselves as policy experts and the same number as economists. There is only a sprinkling of specialists in sociology (four), real estate (two), and epidemiology (two) or in planning, business, criminology, education, or social science (one each). George Galster of Wayne State University is the lone geographer. The nature of the event also helps to explain the de facto focus of the book, title notwithstanding.

About half of the papers are surveys of literature. They review the ways in which living in low-income neighborhoods has been correlated with poor social mobility, health, and educational outcomes, together with high rates of crime. A number discuss the effects of policy initiatives that have sought to mitigate the effects of concentrated poverty or circumvent those effects through relocation. Among the latter programs is the much-discussed Moving to Opportunity (MTO) experiment that was mounted by the U.S. Department of Housing and Urban Development (HUD) beginning in 1994. MTO sponsored the relocation of selected low-income households from high-poverty into low-poverty neighborhoods. Given that an enormous amount has already been written about urban poverty, these surveys are sometimes highly compressed but in many cases, and