

The Consequences of Information: Institutional Implications of Technological Change, by Jannis Kallinikos. Cheltenham, UK: Edward Elgar, 2006. \$35.00 paper/\$95.00 cloth. ISBN 978-1-84720-500-1 paper/978-1-84542-328-5 cloth.

Reviewed by Hamid R. Ekbia

School of Library and Information Science, Indiana University, Bloomington, Indiana, USA

One of the daunting questions facing social science is the relationship between the micro and the macro—between the individual and the collective, the local and the global, situated activity and social norms. While some social scientists seek, in good theoretical taste, to sidestep the question by “unasking” it, the question itself is compelling enough to defy inattention. It resurfaces in new guises and in unexpected places every time analysts come to believe that they have satisfactorily tackled it. One such place is in the relationship between technologically enabled organizational change, on one hand, and the institutional milieu in which organizations operate, on the other. What makes the question in this new guise even more defiant is our very vague understanding of these technologies, well manifested in the conceptual poverty of our accounts and theories of computerization. What makes one optimistic about the prospect of tackling it, however, is the possibility of finding an answer, or clues to one, by examining technology itself more closely. This is what Jannis Kallinikos has set out to accomplish in his writing.

A great deal has been written in the last few years on how the widespread adoption of computer technologies has given rise to (or enabled or facilitated or accompanied—the exact wording depends on the theoretical predilections of the interlocutor) new forms of organizations, practices, and social relationships, commonly referred to as *networks*. This is all well except that, as Kallinikos points out, it leaves the concept of network underspecified and lacking in analytical or even descriptive power. Kallinikos seeks to improve this state of affairs by making two moves: first, analytically sharpening the concept of “network,” in contrast to other forms of organization—specifically, bureaucracies (as bounded and hierarchical forms of organization); and second, and more importantly, situating this

organizational change within the broader social and economic developments of late modernity.

Kallinikos’ first move takes place on the fine line that separates technological determinism from social reductionism. As he argues, social theory has generally regarded technology from a distance, and in so doing has essentially obscured the implications of technology for the organization of work in both industrial and post-industrial capitalism. This has led to what I would call *technological obscurantism*. While technological determinism “traces organizational arrangements back to technical characteristics,” obscurantism pays very little attention to those characteristics. To avoid these dual fallacies, Kallinikos embarks on a careful analysis of computer technologies as “a complex regime of practices and techniques . . . for organizing the relationship between the social, cognitive, and material processes.” He highlights the specific potential of computerization for disbanding, reshuffling, and reconstituting organizational tasks and processes across settings (the famous example of which is outsourcing of service jobs across continents). What allows this kind of historical novelty, according to Kallinikos, is the malleable character of computer-based technologies in terms of standardization and interoperability as well as their capability to provide functional unification. Although the achievement of full interoperability has proved to be a major sociotechnical challenge in practice, theoretically Kallinikos’ argument remains sound, affording a viable alternative account of networks.

Contrary to many other accounts, Kallinikos starts with the premise that the implications of computerization should be understood not in terms of shifts in modes of communication and interaction enabled by computation, but “in its capacity to capture a growing range of operations into the medium of information, and to reconstitute

these operations as elaborate series of automated rules and procedures for processing data." Cast in this light, information is seen not simply as a resource but as a *habitat* for organizational operations, following its own self-referential logic of growth. As such, it becomes a double-edged sword, which can either provide a novel means of centralized control unimaginable in previous (industrial) era or can equally render the center irrelevant and allow the kind of flat, nonhierarchical organizational structure commonly associated with networks in the literature.

Kallinikos' second theoretical move is more ambitious and more provocative, seeking to understand formal organizations as not just functional-structural arrangements but as "instantiations of institutional arrangements" supported by legal, administrative, and other procedural mechanisms." Here Kallinikos aligns himself with recent attempts to correct a deep misunderstanding of bureaucracies simply as vehicles of cold, impersonal, and alienating relationships. Motivated by romanticist concerns over human experience, such understandings lose sight of the fact that bureaucracies provided the first historical opportunity for the noninclusive involvement of individuals in organizations—that is, for people to be able to play organizational roles without bringing to bear their full-blown cognitive, emotional, and social complexity. In so doing, Kallinikos argues, bureaucracies offered "a standardized solution to the key problem of reconciling individual motives with collective action in ways that epitomize key values of the modern social order: freedom, equality, formality" (a distinctive feature that sets them apart from premodern administrations). Bureaucracy, in

other words, is the organizational form of modernity. How about networks?

Networks are indeed more continuous with bureaucracies (understood in the sense just described) than current theorizing would have it. For, as Kallinikos suggests, networks effectively satisfy the demands of the current age for mobile, contingent, and reversible (temporary) patterns of behavior by strengthening the bureaucratic premise, whereby individuals are tied to the organization on non-inclusive terms. By reaching the limits of its flexibility, bureaucracy generates networks, virtual relations, and virtual organizations, all of which rely on the principle of the separation of role from the person. Coupled with current trends toward deregulation, contingency of work, and the consequent re-traditionalization of organizations (that "reclaim not only the skills but the soul of their employees"), networks might at some point depart from their bureaucratic origins, but that does not seem to be on the immediate horizon. What *is* on the horizon instead is the increasing penetration of organizations by informational processes, the extreme partitioning and itemization of the world into informational tokens, and new modes of action and control at a distance. The stakes are quite high, indeed.

The image that emerges from this analysis is not necessarily rosier or more encouraging than that of alternative accounts, but it is thorough, realistic, and provocative. Behind the smoke and mirrors of the prevalent *network talk* of the last few years, it reveals a much more complex, nuanced, and conflict-ridden reality that is yet to be understood and tackled. This book might not answer all the questions that it raises about that reality, but it certainly takes a good step in that direction.

Global E-Commerce: Impacts of National Environment and Policy, edited by Kenneth L. Kraemer, Jason Detric, Nigel P. Melville, and Kevin Zhu. Cambridge: Cambridge University Press, 2006. xxii + 444 pp. \$75.00 cloth. ISBN 0-521-84822-9.

Reviewed by Thomas R. Leinbach

Department of Geography, University of Kentucky, Lexington, Kentucky, USA

A quick search on almost any database will show that over the past 5 years or so there has been a surge of book, not to mention journal article, publications related to e-commerce. These publications range widely in their emphases, from technology and supply-chain management to modeling strategies and e-business applications. In browsing these titles it is actually encouraging to see the expansion of published work related to the impact of e-commerce on and in the developing and transitional economies, specific industry sectors, and sizes of business, for example, small and medium-sized industries. There are several older book length treatments of this theme (e.g., Leinbach & Brunn, 2001; Schiller, 1999; Westland & Clark, 1999). Perhaps the volume most comparable to the one under review is that by Westland and Clark (1999), where the authors provide a balance of theoretical perspectives and case studies from seven countries. The basic theme that is emphasized is the shift in wealth creation and redistribution as brought about by information technology and e-commerce. In this book, global e-commerce is discussed within the context of four major issues: electronic channels, technology infrastructure, electronic markets, and e-commerce business process supporting functions. The value of this 1999 volume lies in the attempt to provide new knowledge and experiences on and about e-commerce while the tool was still in its infancy. The theoretical perspectives, while interesting, do not offer dramatically new insights.

This newest *Global E-Commerce* volume by Kraemer et al. attempts “a systematic analysis of the impact of the Internet and e-commerce across firms, industries, and economies.” Moreover, the editors suggest that the volume “provides an understanding of the topographical [sic?] patterns of e-commerce across diverse economies and industries in order to assess the evolution of e-commerce

(transformational versus incremental change) and examines the extent of U.S. hegemony and the degree to which globalization diminishes the power of nations, shapes local economies and re-aligns national cultures.” Needless to say, this is an impressive set of objectives.

The research from which the book is derived, the Globalization and E-Commerce (GEC) Project, was largely supported by funds from the National Science Foundation (NSF) Information Technology and Digital Science and Technologies (DST) Programs. It is indeed good news and not widely known that the Directorate for Computer Information and Science (CISE) at NSF does support social science research. In addition, the European Information Society Technologies programs of the European Commission committed funding to the project. Basically, the research program focused on eight economies (United States, France, Germany, Japan, China, Taiwan, Brazil, and Mexico), where three industry sectors (manufacturing, distribution and finance) in each were examined through data gathered on both large and small firms. The research program was driven by several “value propositions,” and these were to provide systematic understanding of the relationships between national policy environments and the use and impact of e-commerce. In addition, the goal was to provide insights for firms, industries, and global e-commerce markets. The remaining two goals suggest that the study will serve as a benchmark for future studies and as well “provide a snapshot in time to preserve the early facts of the e-commerce and Internet revolution.” The research approach developed and used a common survey instrument that applied to diverse economies; in addition, comparable secondary data were collected, and finally a set of case studies was used to provide national details. As the editors note, various partnerships with organizations were established to aid in this mammoth undertaking. The

book is comprised of 10 chapters, including an introduction, eight individual country chapters, and a summary, plus three appendices.

The introductory chapter is very informative, for, among other insights, it lays out the theory and conceptual framework of the research program. Very broadly, the approach is to ask what environmental and policy variations influence innovation outcomes (Berger & Dore, 1996). One effect is that globalization forces are leading to convergence across countries, but another view is that differences in economic, social, and political contexts will insure significant differences in economic organization (e.g., the progress of e-commerce). While, intuitively, convergence should take place under the forces of globalization, one school of research argues that differences do occur along the value chain in particular sectors. For example, upstream activities such as design, engineering, and manufacturing are considered more likely to converge to common practices because they entail more standardized processes and will be optimized to achieve economies of scale. On the other hand, downstream activities are considered inherently more likely to diverge across countries, as they involve adjusting products and services to local consumer preferences, business practices, and cultures. For example, one important barrier to the diffusion of retail e-commerce in the transitional and developing economies is not only the limited access to the Internet by the broad population but also the different culture of retailing (bazaars, mini-shops in neighborhoods), as well as different scales of manufacturing with often limited technology. The first chapter is somewhat unique also in that the major findings are nicely encapsulated for the reader. An assessment of these results is discussed later.

As one could anticipate, one of the richest and more informative chapters is that dealing with the United States. The authors make the point that initially e-commerce applications were fueled by what they call the Silicon Valley model, that is, the use of venture capital, emphasis on entrepreneurship, and access to university research. But the authors quickly point out that these initial mechanisms for diffusing e-commerce have been supplemented by a now common pattern of "adaptive integration" whereby firms use the Internet and other mechanisms to incorporate new technologies and business models and extend or revamp their existing strategies, operations and supply and distribution channels. This chapter is useful because it provides, for the United States, a discussion of the drivers and barriers to e-commerce adoption. This includes short but updated discussions of B2C (business to consumer) and, more important in terms of volume, B2B (business to business) e-commerce. Researchers engaged in research at the firm level will find the discussions of firm-level impacts interesting but indeed too succinct. Subsequent chapters provide information on the state of e-commerce

in the individual countries already mentioned. While the developed country case studies are useful, so too are those that deal with the transitional economies, and here Brazil, China, and Mexico are offered as examples. Another interesting example country would have been India so that the comparison with China could be made. And by adding Russia (as in the Westland and Clark book), the BRIC (Brazil, Russia, India, China) economies would have been covered. As a footnote, there is little overlap in the case studies between the Westland and Clark (1999) book and this one save for China.

The final chapter of the volume examines the broader picture of e-commerce by carrying out country comparisons in the context of convergence and divergence, where the simple model stated at the outset is applied. Emphasis here is on explaining e-commerce differentiation through contextual factors, global forces, and national policies. The editors do an excellent job of pulling together the findings, in both the last section of the introduction and this last chapter. All in all, this is an important book, which those moving toward an interest in and beginning to research e-commerce will want to have for their bookshelf. On the other hand, readers who already are familiar with many of the patterns of e-commerce will hunger for more. Too often the conclusions suggest almost obvious insights. For example, did the authors need huge funding to report (from a 2003 study) that firms with higher technology readiness, larger size, and broader scope while facing greater competitive intensity are more likely to adopt e-commerce? And that adoption costs and security concerns discourage adoption? Or that B2B e-commerce seems to be driven by global forces whereas B2C seems to be more of a local phenomenon? Or that greater liberalization in trade and telecommunication regulation is likely to have an impact on e-commerce adoption? Clearly, the intent of the research program was to examine e-commerce and its diffusion with a fairly broad brush. But in the last analysis the book achieves its impressive objectives in only a minimal way. Certainly, one essential goal of the research (and the book) should have been to offer some future research paths and questions on this important theme. It does not. The development of a more rigorous and inclusive theoretical framework is needed so that we may move beyond basic description. For example, the value chain and upstream and downstream activities are raised at several points but nothing really comes of this in terms of analysis. The explication of a new research path in this and other directions goes beyond the obligations of this review, but indeed research is underway (Leinbach & Zook, 2005).

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The New Argonauts: Regional Advantage in a Global Economy, by AnnaLee Saxenian. Cambridge, MA: Harvard University Press, 2006. 432 pp. \$18.95 paper. \$27.95 cloth. ISBN 978-0-674-02566-0 paper/978-0-674-02201-0 cloth.

Reviewed by Yong Jin Park

Department of Communication Studies, University of Michigan, Ann Arbor, Michigan, USA

In 1271, Marco Polo took the Silk Road en route to China. After 17 years in China, Marco Polo returned to Venice. He brought back to Western civilization silk, compass technology, and, more importantly, knowledge about the East. Now Marco Polo's path from the West to the East is reversed. Every year, thousands of East Asian students apply for F-1 visas to study in the United States. In *The New Argonauts*, AnnaLee Saxenian traces these people. The story is not about how "smart brains" from poor countries sell tech-junkies and get rich overnight. Instead, Saxenian stages an enriched debate about cultural and regulatory conditions that are conducive to regional championing of once-peripheral economies in the digital era.

Saxenian defines an Argonaut in terms of three criteria: (1) a group of foreign nationals, (2) U.S.-educated engineers, and (3) businesspersons spending "more time in airplanes than at home" for flying across the East and the West. For Saxenian, the Argonauts represent the very spirit of entrepreneurship in the knowledge economy. The role of Marco Polo as a 13th-century messenger of transfer of technology and culture is revived here. The Argonauts transfer what they learned in the United States to their countries and spill over their "know-how" in business models, while maintaining professional ties to the United States. The central proposition by Saxenian is that a global network of professionals embodies "knowledge transfer" of entrepreneurship in and out of their nations. In short, viability of the network economy depends upon whether or not a nation can produce, encourage, and incorporate dynamics of such transnational labor forces in a national economy.

The book consists of three illustrative cases. In Chapters 4 and 5, the Taiwan venture capital industry is described

as a regional incubator. In Chapter 6, the China case is offered in relation to the Taiwanese economy. The question is whether China leaps beyond the role of subservient suppliers for the Taiwan IT sector. The India case in Chapter 7 has a different take. What is highlighted is the ironic contrast between immigrants' successes in Silicon Valley and decades of economic downfalls entrenched in the domestic market. Each case offers journalistic accounts of individual entrepreneurs, but the anecdotes build toward a coherent social network theory. If Taiwan functions as the ideal "Silicon Valley Sibling" that creates miniatures in the region, the China and India cases are offered with more caution, given constraints of government-oriented regulatory legacies in institutionalizing entrepreneurship in the domestic sector.

Two premises underlie Saxenian's proposition. First, the network economy differs in its flexibility and adaptability from the industrial mode of hierarchical production. Second, viable flow of innovative knowledge is maximized in networks of individuals who are adaptive, flexible, and self-programmable. Innovation policy, then, should be confined to nurture conditions for championing educated minds of global citizens. Thus, Saxenian recommends developing nations with a policy model that approximates the Silicon System—alternative to the dichotomy of "the state versus the market." In other words, socio-individual forces are the conditional variable for developing nations in surviving the network economy. If Hollywood is characterized by "one-way" domination of the world, the Silicon Valley system generates centrifugal forces that diffuse knowledge and wealth to its adoptee.

In this sense, Saxenian is implicitly updating viability of a Weberian bureaucratic state (e.g., Evans, 1995). The premise was that the highly organized fashion of

administration, embedded in the minds of elites, resulted in system efficiency of the East Asian developmental model in the 1990s. Put differently, it was the role of technocrats in alliance with big business like Chaebol or Keiretsu who brought advantages of state involvement. Note that Saxenian proposes the opposite. Hierarchical organizations hardly catch up with efficiency of the Argonauts coordinating in small but global scales. Indicative of a majority of elites taking guaranteed paths of success in Chaebol or Keiretsu is lack of dynamics in labor forces. For Saxenian, the very state apparatus that brought success to industrialization plays far less role of a in the network economy. The largest contribution of the New Argonauts is evidencing this force of change.

Nevertheless, as in most other pieces, this work has areas of contention where future scholarship may challenge. First, the category of Argonauts seems dichotomous rather than continuous. Keynesians in East Asian nations would be quick to point out the co-presence of technocrats and entrepreneurs in the continuous success of planned economy. Policymakers in underdeveloped nations cannot afford the opportunity cost of experimental innovations. For those in the early stage of infrastructure development, straight leapfrogging from industrialization to network economy may be a fantasy. Second, the role of culture is less specified for explaining entrepreneurship. In other words, certain cultures value technical innovation or risk taking more than others. It is critical to

ask "why" certain nations generate more mature environments that embrace entrepreneurship to begin with. Regulatory support is a necessary, but not sufficient, condition to explain variations. Third, the United States functions as the ideal against which to measure the effectiveness of innovation policy. Each case of three nations is presented and evaluated depending upon the degree of deviation from or approximation to the Silicon Valley system. In this case, it is logical to ask how long the Silicon Valley system will sustain and whether or not we already have a hybrid model within which other models can survive.

Broad implications of this book will make their way in course readings in the field of information economics and management as well as in adjacent disciplines such as comparative policy and communication studies. Policymakers will also be fascinated by Saxenian's question of whether the East Asian model can transform itself to incorporate the agent of change that resists the path-dependent impulse of industrial success. After all, what Saxenian offers is the modern history of Marco Polos—how those who wait in a long line in front of U.S. embassies for American visas can create wealth across the West and the East.

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Encyclopedia of Gender and Information Technology, edited by Eileen M. Trauth. 2 vols. Hershey, PA: The Idea Group, 2006. 1451 pp. \$525.00 cloth. ISBN: 1-59140-815-6.

**Reviewed by Rhoda Reddock, Deborah McFee,
and Cathy Ann Radix**

*Centre for Gender and Development Studies, University of the West Indies,
Trinidad and Tobago, West Indies*

BACKGROUND TO THE VOLUMES

The production of the *Encyclopedia of Gender and Information Technology* edited by Eileen Trauth is a timely response to the revolution in information technology in which we are all involved in some way or the other. This two-volume reference work aims at providing an all-encompassing perspective on gender and information technology in all its diversity and the ways in which these two important phenomenon impact upon each other. There are 213 entries and over 4700 references indexed and organized by topic.

The United States (146), Europe (42), the United Kingdom (29), and Australia (21) account for the majority of the contributors, while there are some contributors from other countries such as Canada, Israel, New Zealand, South Africa, Nigeria, Singapore, China, Malaysia, and India. There is one contribution from a Trinidadian author, Gillian Marcelle, which we were pleased to see, but generally the Economic South, in particular the Caribbean, South and Central America, and other parts of Asia and Africa, are underrepresented. While this may be a reflection of the international digital divide, it is more likely the result of the networks with which the editors were familiar. Hopefully, future such collections would have a more truly global spread.

Relatedly, there may also be the need for a less restricted standpoint on the part of some of the authors, whose concept of developing country is basically a poor country. There is a need to question the assumptions underlying notions of “development,” to recognise the diversity among developing countries, some of which are not exactly “poor.”

A GENERAL OVERVIEW OF CONTENT

Contentwise the collection, nevertheless, reflects a real attempt to be as comprehensive as possible. The entries are organized under 12 main themes: Gender and Computer Science, Gender and Computing History, Gender and Distance Education, Gender and Global IT, among others. The structure is not intimidating to persons who are not in the field of information technology (IT). All jargon and field-specific terms are explained in the index or somewhere in the volumes, in particular the lists of key terms at the end of every article. These terms include some foundational gender-related concepts such as gender blindness, gender relations, standpoint theory, etc. However, the context of these gendered terms is enriched by the addition of the language of technology. Therefore, the least technologically savvy becomes acquainted with the meaning of interesting terms such as cyberfeminism, cyborg theory, avatar, technological determinism, and technophilia (see p. 764), as well as various categories of online sex, such as cybersex, in Netsex (pp. 931, 939)

The definition/scope of IT is not consistent across all the entries but varies with the focus of each author. It has been variously interpreted as: Internet/TV or radio receiver/phone connectivity (Access and Use of ICTs Among Women in Jamaica/Nancy Muturi), Internet content provision/search; tele-working (Digital Divide, Gender and the Indian Experience in IT/Rekha Pande); web/computer-based learning; data entry; programming; systems/information analysts; and IT hardware/software engineers. This is broad, but one of the accepted problems with IT is its unclear boundary. All these definitions and this wide scope are valid, and one cannot think of any that have been omitted.

Much of the work goes beyond the gender and ICT discourse that addresses the “have nets” and the “have nots.” The contributions tend to detail ongoing and previous research specific to the area being examined. Of particular importance is the wide range of services that can be encapsulated under the term *information technology*. One paper addresses, for example, the use of technology to ascertain the sex of babies in India, which also falls, it is suggested, within the category of information technology.

The majority of articles tend to focus on identifying contributing factors, or suggesting/evaluating corrective measures for gender imbalance in employment—for example, the number of persons, male and female, pursuing or afforded the opportunity for IT careers and education; the number departing the IT sector; the number utilizing IT as a tool in other sectors; and levels of remuneration in IT sector/related jobs. Because the primary focus is gender imbalance, the causes and corrective measures suggested are primarily social. These entries make little or no reference to specific technological developments or advances in IT. Although this is disappointing, it is true to say that the editor did allude to this when she stated in her introduction that “The objective of this research agenda is to develop theoretical tools that help us uncover the meaning behind statistics about the underrepresentation of women in the IT workforce” (p. xxix).

One of the great opportunities presented by these volumes was the possibility of bringing together a truly multidisciplinary approach to the subject. However, this challenge, we would suggest, was not fully taken up. These articles make little reference to specific technological developments or advances in IT and their gender implications. Only three areas were identified where specific IT technological developments or advances are discussed or assessed. The three areas in which technology is explicitly mentioned are:

Web/computer-based learning, where it is suggested that IT use can constructively alter gender imbalance due to accommodation of gender-specific learning styles (Gender and Discourse Styles in CMC Learning Groups/Lim Yong-Kwan and John Lim), gender-specific preferences (Addressing the Gender Gap in IT via Women’s Preferences in Video Games/Rashaad Jones, Ivanna S. Terrell, and Erik S. Connors), gender-related group roles/participation (Community and Gender in the Virtual Classroom/Alfred Rovai and Jason D. Baker), and where the technology primarily involves discussion boards, chat sessions, and learning management systems.

Internet content provision/search, where there is some discussion of different gender attitudes (Race and Gender

in Culturally Situated Design Tools/Ron Eglash) toward Internet (i.e., browser, search engine, HTML page development, e-mail) usage, and the tasks that different sexes choose to achieve, given equal opportunity (IT for Emancipation of Women in India/Anil Shaligram).

Programming, where there is a discussion about how gender affects the programmer’s ability to perform using Agile software development models (Empower Gender Diversity with Agile Software Development/Orit Hazzan and Yael Dubinsky) and to contribute to open source development (Questioning Gender through Transformative Critical Rooms/Cecile Crutzen and Erna Kotkamp) initiatives.

The reason for the omission of the remaining five areas is unclear. It may be because the primary research tools are discourse analysis, interviewing, and survey (Preface) method, which do not lend themselves to identifying and assessing technology use unless specifically directed by the researcher. The imbalance should not, however, detract from the quality of the work presented; rather, one could suggest that the encyclopedia could benefit from more input on these aspects.

From an engineering perspective, the expectation (based on the title and one author’s background as an engineer) was that the encyclopedia would focus on the ways in which gender has affected the development of IT (basically looking solely at the eighth category of IT). While some studies attempt to document the contribution of women to development in IT (Women’s Role in the Development of the Internet/Shirine Repucci), there is little examination of the ways in which gender influences the type and extent of such contributions. Although the reasons for the more inclusive definition of IT and the importance of addressing factors that lead to gender imbalance are understandable, the fact that the more technological issues were not addressed is regrettable.

True to the encyclopedia’s stated objective, however, much attention is given to women in the IT workforce, incorporating the experience of both the economic North and the South, using qualitative and quantitative methods of research. The work is based on the actual experience of women within the industry, allowing for the application of theory to praxis. One example is the case of Australian women, who comprise 20% of the ICT jobs in an industry that has enjoyed an annual growth rate of 12%. These women feature at the lower end of the industry and also at the lower end of formal qualification within the industry. This indicates a clear sexual division of labor within the Australian industry.

This approach therefore goes beyond the analysis of why women lag behind men in knowledge of and access

to ICT as a Third World development challenge. Rather, it is identified here as a global concern, clearly shown in the piece on Females in Technology Courses in UK Colleges or that on Female Retention in Post Secondary IT education, which addresses the plight of U.S. women in IT education.

GENDER AND IT

As stated by the editor in her agenda-setting piece (Trauth, *An Agenda for Research on Gender Diversity in the Global Information Economy*, pp. xxix–xxxiii), the research agenda on which these entries was based aimed to examine not only intergender differences but also intragender differences among women, as in this excerpt:

It is being achieved by focussing attention on the *differences among women*, that is, the variation that exists within a gender group rather than across the two gender groups. In so doing this approach stands in contrast to the body of gender and IT which focuses attention on the differences between men and women.

This was a helpful approach borne out well in contributions such as “Understanding the Mommy Tracks in the IT Workforce.” This piece used in-depth qualitative research to create categories such as nonparent, back-on track-parent, and off-the-track parent as conceptual tools for comparisons among working female parents within the IT field.

This approach also allowed for a broad cross section of themes to be interrogated through the research. The entries therefore raise issues such as the differences between IT and IS and ICT, and issues of identity such as the challenge of women distancing themselves from other women in the IT field, that is, seeing themselves as managers versus IT professionals. The research also explores the situation of women in IT in higher education spaces, where the number of women is higher than that of men, in all areas except IT. Clearly in the areas where the work focused on its area of emphasis, the coverage is quite comprehensive.

There is a mix of new and old gender concerning women that emerges, such as women trying to balance home and work by pursuing their options as teleworkers in Malaysia and ICT and gender inequality in the Middle East, which locates the restriction of women’s access to ICT within a larger framework of illiteracy, educational disempowerment, and economic, political, and infrastructural limitations. This is also seen in “Women’s Access to ICT in an Urban Area of Nigeria.”

There remains little attention to one significant sector of women in the IT field across the Third World or economic South. This is the women who are heavily represented in IT jobs in assembly or telemarketing, which are outsourced

from the economic North, much like the women written about in the datamation gender recruitment issues in the Indian IT sector. Therefore, while much time is spent on trying to isolate the issues contributing to the small numbers of women in IT, there is this very large category of women within the sector who remained largely unmentioned.

The small number of women in positions of power and decision making within this sector is identified as a fundamental challenge to gender equity and equality in development. It is addressed in articles such as Gillian Marcelle’s “The Feminist Agenda for Reducing the Digital Divide.” However, while this author provides a comprehensive understanding of the parameters of the gender divide, she also recognises the digital divide as existing between rich and poor, urban and rural, young and old, as well as literate and nonliterate. Marcelle’s conclusion sums up quite well the significance of such a project: “The question becomes not what ICT can do for women, but what can women and social movements do for the ICT sector. The answer is clear,” she suggests. “A gender perspective can improve the responsiveness and integration with the goals of human development, so bringing the ICT sector into the vanguard of development” (p. 331).

RECOMMENDED AUDIENCES

These volumes may have been more aptly named *The Encyclopedia of Gender and Information Technology Research*, as they are particularly useful to scholars, teachers, graduate students, and other persons interested in engaging in IT research. They allow for a critical appreciation of the up-to-date and ongoing research in the area.

For persons interested in what is often referred to as “gender mainstreaming,” these volumes allow for an entry into the area of IT as a gendered space. The application of recurring themes linked to the sexual division of labor are represented in articles such as that on gender and E-shopping, which underscores the reinterpretation of the notion of leisure time when it examines who in the home who has the time to engage in the “leisure” of net shopping. The use of the language of gender deepens this analysis and provides some insight on where women cluster in the IT market. The entries also complicate accepted IT concepts by, for example, examining the gendered dimensions of hacking, cyber-stalking, and surveillance. It expands the debate beyond a general ethical one toward the application of feminists’ ethics.

Researchers and individuals interested in integrating qualitative and quantitative methodologies would get a lot of food for thought and ideas for consideration (see *Methodology*, p. 766). The uses of home visits, focus-group discussions, survey research, and forms of

triangulation are all evident in these studies. Readers thus are allowed to effectively explore how these research methods are woven together to enrich the research process. The style of writing and the short length of the entries make them accessible teaching tools for integration into classroom exercises and group discussions. We strongly recommend these volumes to all libraries and research centers in the North and the South. They would be particularly welcome by our cyber-savvy students in today's women's studies and gender studies programs.

Virtual Methods: Issues in Social Research on the Internet, by Christine Hine. New York: Berg Publishers, 2005. xiii + 242 pp. \$28.95 paper. ISBN 1845200853.

Reviewed by Venkata Ratnadeep Suri

Department of Telecommunications, Indiana University, Bloomington, Indiana, USA

This anthology is a collection of case studies and reviews initially presented in a series of seminars between 2001 and 2003 at various universities in southern England. Each case study provides an example of the challenges faced when a particular traditional research method was adapted to conduct online research. These case studies “draw upon situated responses to a particular methodological issue in a research study” and then draw “methodological lessons” based on the “situated response” to the research question at hand (Hine, 2005, p. 1).

In the overview, Hine discusses several themes and issues surrounding the application of traditional research methods to new media such as Internet. She describes the current environment surrounding online research as one that is characterized by “excitement” as researchers adapt traditional research methods to study online communication. Hine also notes the “anxiety” generated by breaking away from past research traditions and the “uncertainty” that comes with the lack of precedent to validate the application of traditional research methods to new media studies (Hine, 2005, pp. 1–5).

Hine’s introduction describes how the online media’s inability to support rich social interactions proves to be a challenge when adopting qualitative research methods to the online context. The first part of the book contains six chapters that explore online relationships between researchers and their subjects and how these relationships influence research encounters. The second part of the book encompasses the remaining eight chapters, which examine how researchers can apply various qualitative and quantitative research methods and strategies to make virtual spaces amenable to research endeavor.

Important topical issues discussed in the first part include the importance of, and strategies for, establishing trustworthy meaningful relationships with subjects, which

is critical to the success of qualitative research methods; combining offline and online research strategies for enhancing the quality of research and data collected; defining what constitutes an ethnographic field site within an online context; and ethical issues surrounding online research strategies.

Joinson’s chapter is a literature review on the psychological processes related to online behavior. The author urges researchers to conceptualize online research as a social encounter and provides examples of how psychological aspects that influence online behavior become critical inputs for designing questionnaires and data collection methods to facilitate increased online disclosure by subjects. Kivitis describes her experiences with using e-mail as an interview tool and provides specific strategies that researchers can adopt for enriching the researcher–subject relationship online and increasing self-disclosure by subjects in online research contexts. Combining online and offline interactions to enhance rapport and cultivate meaningful relationships is discussed in chapters by Orgad and Sanders. Sanders’s discussion about the challenges that come with adopting snowball sampling techniques to an online setting for studying a clandestine sex workers community is particularly informative. Rutter and Smith examine methodological and ethical issues concerned with notions of “presence” and “absence” rooted in the traditional “canonical conceptions of anthropological fieldwork” (p. 91) as they are recast in an online ethnographic setting. The authors imply that the definition of a research field site is not merely a starting point in an online ethnographic project but something that the ethnographer has to continuously reexamine throughout the project. The authors imply that traditional notions of ethnographic conduct are very much applicable when ethnographic methods are adapted to online media research. Forte’s chapter ethnographically examines the

social relations and dynamics associated with the production, circulation, and consumption of information by different stakeholders of a Caribbean Amerindian Internet information portal. This chapter also bridges the two parts of the book by highlighting the social aspects of the Web: its structures of information links and patterns of social interaction.

Hine introduces the second part of the book by reiterating the importance of viewing the Internet as a research site and a "culturally shaped social space" (p. 111). At the same time, she implies that such a view must not segregate the Internet as an isolated social sphere, but as something that factors into users' offline social context in distinct ways. The subsequent chapters demonstrate how various qualitative and quantitative methods can be applied to study this new space and its social relationships, "when to stop and how to combine research into online and offline contexts" (p. 109). Dodge highlights how mapping can be an effective tool for visualizing and analyzing relationships and information linkages in virtual space. Dodge posits that relationships constituted in cyberspace are independent of the "real world" context. This notion is challenged by Mackay, who emphasizes the importance of recognizing how online activities are integrated into individual's offline social contexts. Guimarães explores a Brazilian multimedia web-site users' network of social relationships and the group's shared practices and "systems of meaning" through which the group derives its identity and defines its boundaries (p. 149).

Three chapters discuss various methodological approaches for analyzing the process and social dynamics undergirding content production on the web. Schneider and Kirsten introduce web sphere analysis to explore a set of "dynamically defined digital resources spanning multiple web sites deemed relevant or related to a central event, concept or theme, and often connected by hyperlinks" (p. 158). They demonstrate this methodology's effectiveness for investigating the relationship between producers and consumers of information on the web. Park and Thelwall demonstrate the application of network analysis methods to web hyperlinks, while Beaulieu discusses how hyperlinks make evident the complex social connectedness that characterizes cyberspace. Together, these three methodological approaches ably demonstrate that analyzing hyperlinks could be one effective way to reveal the complex social nature of the Internet.

The volume concludes with an epilogue that reflects on some of the broader issues and concerns surrounding different methodological innovations explored in the previous chapters. The authors begin by developing a typology of methodological innovations delineated at three different levels: The macro level pertains to epistemological innovations; the mezzo level pertains to research design and strategies; and the micro level pertains to specific methods and techniques. Drawing from their experiences in developing a multinational Internet political communication research project, the authors draw our attention to the differences in academic cultures that have impeded the development of cross-national and multi-method studies for studying the Internet. The authors conclude by developing an agenda and provide several suggestions for furthering methodological innovation in Internet research.

One important drawback of this book is that it lacks methodological variety. Given its title, one would expect to see case studies that apply a wide variety of online research methods. However, most of the book's cases approach online research from an anthropological and ethnographic perspective.

Hine's anthology is rich and noteworthy because of the diversity of field sites, data, and traditional research methods adapted to an online context found across its case studies. The wide range of case studies presented in this book challenges dualistic thinking about "online" and "offline." Specifically, the discussions in the chapters by Orgad and Mackay provoke us to think about the complex connections between offline and online experiences of individuals.

Lastly, *Virtual Methods* contributes to the emerging field of online research by "setting the precedent." Each chapter implicitly validates and invites the adoption of traditional ethnographic methods to the online context. These case studies address both the excitement and the anxiety surrounding the application of traditional research methods to new media studies, as Hine aptly notes in the introductory chapter. In sum, this volume offers a number of detailed, illustrative studies that show how traditional social science research methods can be innovatively applied to, and reinvigorated by, online research. *Virtual Methods* demonstrates not only what old tricks of the trade can do for new media studies, but also what new media studies can teach disciplines with well-established traditions and pedigrees.