play to political dissent. Social scientists, particularly those concerned about poverty and well being, will find this a challenging and valuable polemic.

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High technology and low-income communities: Prospects for the positive use of advanced information technology, Donald Schön, Bish Sanyal, and William Mitchell, eds. Cambridge: MIT Press, (1999) 411pp.

Reviewed By David Hakken, Cyberspace Ethnographer, Professor of Anthropology, and Director, Policy Center, State University of New York Institute of Technology at Utica/Rome.

The articles in this volume were originally presented in 1996 at Massachusetts Institute of

Technology. A colloquium brought together two MIT groups, one with interests in the use of advanced information technology (AIT) in urban planning, the addressing the plight of the disadvantaged in America's central cities. The occasion of their coming together was a change in the attitude of the latter, perceived by the former to be from hostility to AIT to a desire to master of its potentials.

The role of four individuals on the volume is worthy of note. One is Mel King, long-time Boston area activist who initially suggested the colloquium, but who is oddly less a presence in the writing. A second is Don Schön, perhaps most widely known for his theorization of the reflexive moment in the activity of practitioners, who together with King taught a course which paralleled the colloquium. A third is co-editor William Mitchell, whose fundamentally optimistic City of Bits has theorized cyberspace for many architects and urban planners. A fourth is Mitch Kapor, founder of the Lotus Corporation (of LOTUS NOTES' fame), whose joining the MIT faculty as an adjunct at the time of the colloquium was only one of several manifestations of his desire to move beyond the corporate world to a position of greater social influence. This is manifest, for example, in his involvement in the Electronic Frontiers Foundation.

The book's dominant message is outlined in Schön's clear introduction:

that community leaders and planning professionals who wish to guide the uses of the new technologies toward creating more livable cities, vital communities, and improved economic prospects for low-income populations, need to explore the nature of the changes under way and the policy issues at stake; and that they can be helped in this effort by entering into a dialogue with the advocates and developers of cyberspace (p.3).

Given this intent, it is appropriate to review this book from the perspective of social informatics, the approach to the AIT/social change interface that privileges neither technical nor social approaches but seeks to combine them. (I am a cyberspace ethnographer and practicing anthropologists who identifies strongly with the social informatics project.) As social informatics, the main strength (and weakness) of this book is that, with some exceptions, it communicates clearly the accomodationist, meliorist position implicit in this framing. By and large, the authors presume that the urban planner/community activist faces four tasks. One is to accept that foundational social changes of some sort are set in motion by AIT. A second is to recognize the profoundly disadvantageous position from which low-income individuals and neighborhoods confront these changes. A third is to focus, albeit with some skepticism, on the possible progressive futures of AIT articulated by cyberspace prophets. The final task is to conceive of and support social policies that mitigate the second and encourage the third. As Schön acknowledges, these more or less come down to educating, both generally and specifically in techno-envisioning, low-income individuals. Despite a suspicion that the educationist case is developed insufficiently, Schön's and Sanyal's concluding policy recommendations repeat it anyway.

To what extent does the book justify this accomodationist position? What does it suggest about the scope and maturity of social informatics at MIT, the institutional heartland of cyberspace?

The first section of the book is dedicated to structuralist accounts of AIT's impact on society. In the first article, University of California at Berkeley urbanologist Manual Castells, despite some effort, answers "No" to his title question, "The information city is a dual city: Can it be reversed?" The article is a good primer on Castells' influential description of "one of the most fundamental technological and social changes in history" (p. 28), urban dualization. On the one hand, there is an integration of valued econo-informational activities across space, while on the other, a fragmentation and marginalization of AIT-devalued spaces and groups. Castells' meliorative, "civil society" policy program aims to achieve AIT "with a human face." It includes improved general education, spurring of AIT-related entrepreneurialism in low-income communities, community telecenters, corporate-public school partnerships, accelerated use of technology to improve education of the poor, and community-based media. Accepting that his proscriptions seem like dreams, he argues that to accept meekly the current dynamics is to give up

on cities. A more aggressive, alternative politics is not considered.

Englishman Peter Hall outlines two positions on the debate of current social dynamics. One sees AIT as only the current face of a long "control revolution," the other frames AIT as something unique. Hall says we don't need to choose, but we do need to accept the profundity of the change implied by both positions. Indeed, other than the problem of further econo-geographic marginalization of those already at the fringes, the emerging world is not so bad. Most cities (those not trapped on a smoke-stack economic base) will not disappear, educators will be freed by technology to truly individualize instruction, males will lose their advantages over females (?), and so on. The policy solution for the marginal is more, and more equal, education, so the low-income folks can adapt more effectively. Even this may happen spontaneously, because "electronic self-paced education, with teachers in new roles as mentors, could be the way to achieve convergence, bringing up the standards of inner-city schools while creating all kinds of new jobs in producing the software and in training, or retraining, the teachers for their new roles" (p. 64).

Julian Wolpert offers a discordant take on the transformatist theme in his summary of social policy data on the low-income community. He presents this urban form as, beginning in the 1960s, on the one hand, a haven where public transfer payments and available low wage jobs could be combined into a livable (albeit only barely) life. On the other hand, it could also be a trap preventing social mobility. Since then, prospects for the haven have contracted, the trap expanded. By contracting the pool of low-income, low-skill urban jobs and thus making it harder to escape the trap, AIT has had some role in this, but a small one. Seeing no AIT-tied or other social dynamic likely to improve the situation on its own, Wolpert opts for an unadaptationist massive expansion of the interventionist welfare state "employed by western European and Pacific Rim nations" (p. 101).

William Mitchell's "City of bits hypothesis" is rhetorically the most overtly adaptationist of the transformationist essays. While initially acknowledging the dangers of attributing social change to technological forces (technicism), Mitchell proceeds to present a blatantly technicist argument for AITs as the next "transforming technologies": "there seems to be little doubt that throughout history new technologies have opened the way to structural and functional transformations of existing towns and cities" (p. 108). In typical Futurist fashion, Mitchell rhetorically converts transformative potential into inevitability. Also a true maven of the market, Mitchell sees little reason to be concerned: "If people are left to themselves, they will make more-or-less informed and rational choices among the available alternatives as appropriate to their particular needs and circumstances" (p. 113). While the digital revolution presents some dangers to low-income communities, "[t]he potential - if there are those with the entrepreneurial skill and vision to grasp it - is that this fluid situation may provide opportunities to break destructive old patterns, and to find new ways to tap and market the talents of community members, and to make productive use of a community's social capital" (p. 124). All this is fit into a largely celebratory, anti-policy framework. (In contrast to the papers on community computing that follow • and correctly, in my view • Mitchell points out how AIT provides opportunities for producing and reproducing community on connections through cyberspace rather than strictly in terms of shared geography or space.)

The final paper in this section serves as another antidote to Castells', Hall's, and Mitchell's techno-structuralistics. Leo Marx takes primary aim at techno-enthusiasm like that of Mitchell. He suggests that extravagant structuralisms are best understood within the context of the long history of technicism characteristically American, about which he would foster a critical awareness. Marx's account of the cultural construction of "technology," illuminates, for example, a tendency to substitute technology for politics. Recounting the disenchanting experience of 19th Century mill girls in Lowell, MA, he concludes that "the more important lessonis that new, innovative technologies seldom if ever have altered the fundamental economic structure, with its inherently stratified - and in recent decades increasingly stratified - distribution of wealth, power, and status" (p. 141). Rather,

It is impossible, finally, to make any sensible distinction between American Îsociety' today

andany major (technological) systemTo speakabout the Îimpact' of the automobile [or AIT] Îon' society is misleading; it is like speaking of the Îimpact' of the bone structureon the human bodyOnly by attacking their problems within the larger historical, cultural, and socioeconomic matrix that generates themare they likely to devise effective ways to use the new technologies (pp. 146-7).

In this way, Marx's deconstruction is also corrosive of the meliorative policy of even pessimists like Castells.

The second section of the book seems to turn micro, the articles here appearing to be case studies of specific efforts to bring AIT to low-income communities. They are perhaps more accurately described as efforts to interpret particular arenas in a manner compatible with the transformationist structuralistics and meliorative politics which dominate the introduction, conclusion, and first section. Mitchell, again, cheerily begins by framing the problem of access to AIT for low-income people in a technicist fashion, as a problem of connecting to a new kind of utility with appropriate appliances and software. A true marketeer, he rhetorically balances likely low usage in the absence of a universal access policy against the threat of no advanced service in the face of "overly restrictive regulation." In this way, he avoids the sticky problem of devising appropriate regulation. Like Pangloss, he stresses the web as a means to universal publication, ignoring the considerable disparity in resources to draw attention to one's publication, a phenomenon accelerated by recent portalization. While appearing to accept, like a good American, that more education is an appropriate policy option, he undercuts even such minimal meliorism: "In the long termdigital technology should have a powerful equalizing effect by delivering services and opportunities to those who would otherwise be excluded by location or lack of mobility, and by creating products and services that can be shared widely at very low cost" (p. 162). Any information rich, information poor problem is of only short-term concern.

Joseph Ferreira hums a similarly upbeat tune in "Information Technologies that Change Relationships between Low-income Communities and the Public, and Nonprofit Agencies that Serve Them." While the title suggests an empirical case of a technological determinism, Ferreira abjures any such argument. Also, while he wishes to go beyond merely establishing that a positive "use of IT is possible" in the case of urban planning • rather, he would explore whether "it might empower or disenfranchise low-income communities, promote efficiency through improved self-governance, or further centralize authority in the hands of government and other large-scale data providers" (p. 165) • this is more or less all he does. The positive potential derives not simply from "automating government services, nor is it a question of whether or not to introduce IT. Shaping planning processes to capitalize on IT is crucial in improving local governance through reduced bureaucracy and devolution of authority" (p. 165). A "middle-out" strategy of using lookup tables to deal with the truly pedestrian problems - e.g., multiple spellings - of land-use data sets turns out to embody just such potential. In Ferreira's eyes, it is a "robust strategy for decentralizing city data in ways that empower end-users to analyze data through the lens of their own interpretations and accumulated knowledge" (p. 183). Thus will poor folks become Postmodern revolutionaries! I think it unlikely, let alone the implied argument, that such systems "change" social relationships of communities and agencies.

Michael Shiffer's "Planning support systems for low-income communities" is content to make the more typical moderate claims - e.g., how emerging ITs can, but are not necessarily likely to, invigorate planning discourse. He focuses on how relevant knowledge - reflexive, locally constructed • can be delivered via IT to "grassroots" community groups, via community networking, collaborative planning, and representation. While his examples, drawn from several community freenets, etc., are illustrative, they tend to avoid tough issues. For example, while IT can be used by community groups to make video presentations as slick as any multinational property company, Shiffer blithely presumes that the stories they tell will be representative. Indeed, they provide "an effective evaluation mechanism" presumably merely because the are created by necessarily good community groups (civil society) rather than the bad

public planners (p. 204). Perhaps his inadvertently most telling story is about an interface approach called "Leo," who turns out to be a human being!

Alice Amsden and Jon Clark provide a welcome antidote to all the shadenfreude, concluding after the examination of extensive economic data that prospects for poor and minority people to become successful software entrepreneurs are not very bright and getting worse. Yet even they get into the meliorative swing of things: After recognizing structural barriers to effective performance, they argue that individual-level inadequacies in "human and social capital" - lack of education, training, and job experience - should be dealt with first. So the solution is - education! Interestingly, they acknowledge that, were education successful, a short run consequence would be a educated brain-drain, making low-income communities worse off. The alternative - addressing structural barriers at the same time as individual inadequacies - is not considered.

Jeanne Bamberger's "Action Knowledge and Symbolic Knowledge: The Computer as Mediator" is initially equally corrosive of low-income community techno-optimism, especially about the contribution of AIT to overcoming existing education problems. Citing contemporary constructivist educational theory, she argues that virtual interaction via computered education may be just what poor kids don't need. Slower pace and well-anchored social relations may make more educative sense than rapid, windowed experience. Despite this promising start, she concentrates attention on a specific case of computer-assisted learning in an after-school program to make an excellent argument for computer's having a useful role in helping low-income students make the transition to the abstraction characteristic of much school-based learning. Unfortunately, she never returns to the question of whether such benefits outweigh the disadvantages she initially cites.

Bamberger's is the first of three pieces whose focus is on computers in learning, each of which narratively portrays the potential benefits to individual learners of well organized projects that interject computing into low-income circumstances. Mitchell Resnick and his colleagues discuss a drop-in clubhouse for self-paced, informal computing by low-income children run in conjunction with the Boston Children's Museum. Bruno Tardieu discusses the integration of computing into "street library" efforts in New York City. Sharing, for example, an implicit acceptance of Basil Bernstein's ideas regarding how "restricted codes" are characteristic of the cognitive styles of low-income people, these pieces are mutually self-referential. Like the pieces on community computing that follow, they are heavily informed by Seymour Papert's constructionist reading of constructivism. (The "tionist" reading stresses the active posture of the learner implicit in the "tivism" of Piaget; not of the readings offered are stress sufficiently the social dimensions of the "co-constructivism," which I prefer.) The overall impact is to support socializing poor kids into use of these devices. Going beyond valuing exposure to practices whose presence is obviously increasingly important in daily life, the analyses support indirectly the meliorist idea that computers can make up for the failures of formal educational and existing neighborhood structures.

These meso-analyses close with three considerations of community computing. Pace Mitchell, they all presume that such efforts must be evaluated in relation to "reclaiming the village" (Alan and Michelle Shaw) - that is, extending the reproduction of locales and neighborhoods. Computing is presented as reversing the urban decay presumed to be largely characteristic of low-income areas. Shaw and Shaw focus on how an enriched computing demonstration project, funded by the federal national information infrastructure (NII), supports schooling and what used to be described as community organizing. Sherry Turkle points out how community computing can recapture some of the transformative energy of the initial personal computer movement. Anne Beamish concentrates primarily on a typology of community computing approaches, only secondarily raising problems, like the tendency of community computing projects to gloss merely exposing low-income people to computing as success.

In sum, the book's chief value is its introduction of a very large set of the important issues that must be addressed by a social policy on computing, as well as many of the important perspectives to be considered in constructing such policy. For teaching purposes, the book has the

apparent a coherence of perspective, as well as the good writing, that makes its breadth accessible to students.

As social informatics, however, the book falls short. Partly this is a consequence of its author's inattention to Leo Marx, Wolpert, and even Amsden and Clark's dissents from a too easy embrace of the rhetorics of Computer Revolution, whether by celebrants like Mitchell or semi-critics like Castells. Schön and Sanyal are correct in their conclusion that the book, and the seminar it reflects, never quite succeeds in creating the dialogue between academics and activists it hoped for. Almost twenty years ago in Sheffield, England, a similarly critical academic group in Sheffield, England, Computers for People, went out to warn the working class about the bleakness of a computered future. They encountered polite attention from workers losing their jobs to the Tory's run-down of the steel industry, but real enthusiasm for offhanded ideas to help their kids get cheap, assemble-it-yourself computer to run games. Computers for People academics rethought what they were about, coming to a fuller appreciation of the situation of the activist. In a social formation dominated by techno-talk, talk that colonizes the very dreams of young people who see very little positive in futures like those of their parents, activists like Mel King of course have to come to terms with computing. In such a situation, one form or another of short-term accommodation to the terms of contemporary discourse is likely. Such necessary rhetorical accommodation does not eliminate the need for, nor should it displace, strategies for "attacking their problems within the larger historical, cultural, and socioeconomic matrix that generates them." Only then, as Leo Marx argues, are activists "likely to devise effective ways to use the new technologies."

Schön and his colleagues at MIT remain fixated on the initial situation out of which the seminar and book grew. They confuse acknowledging a need to appropriate computing as a cognitive terrain with its acceptance as a structure. A truly valuable analysis of AIT and people without security in contemporary social formations will be built on a more equal dialogue than that presented in this volume. Such a dialogue will acknowledge not just what activists can learn from computer gurus, but also what the structuralist analysts of computing have to learn from those engaged in contemporary battles over political economy or political ecology.

Law and the Environment: A Multidisciplinary Reader. Edited by Robert V Percival and Dorothy C. Alevizatos, Temple University Press, 1997; xvi + 439 pp.

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This volume makes an important contribution to the works on environmental ethics, law, policy, risk assessment, and regulation. It is a compilation of excerpts or complete articles from