

A Critique of Popular Political Economies of Knowledge in Cyberspace, An Alternative Political Economy of Cyberspace Knowledge, and A Demonstration of the Applicability of the Alternative to Study of Free/Libre and Open Source Software in the Malay World

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Abstract

The general social science issue addressed by this article is whether social formations change very much as they take on the characteristics popularly associated with “cyberspace”—that is, as their reproduction is heavily mediated by automated information and communication technologies (AICTs). It also inquires as to the extent to which the changes associated with cyberspace are a consequence of changes in knowledge. The article begins with an extended critique of influential scholarly ideas about the relationship between AICTs, knowledge and social formation reproduction, demonstrating how they all share a capital theory of value masquerading as a knowledge theory of value. An alternative, “real” knowledge theory of value is developed and argued for in relation to potential changes in reproduction dynamics that can be connected to AICTs. Finally, the alternative is evaluated in relation to the author’s current research, on advocacy for and development of Free/Libre and Open Source Software, in the Malay World and more generally. The ultimate aim of the theory developed is to help make studies of AICTs’ cultural correlates more comparative.

Key Words: cyberspace, Free/Libre and Open Source Software, knowledge theory, Malay World

RÉSUMÉ « Une Critique des Economies Politiques Populaires du Savoir dans les Cyberespaces »

La question générale, de l'ordre des sciences sociales, adressée dans cet article est de savoir si les formations sociales changent de façon importante lorsqu'elles endossent les attributs généralement attribués au 'cyberespace' – c'est à dire, lorsque leur reproduction est lourdement relayée par des technologies d'information et de communication automatisées (AICT en anglais : automated information and communication technologies). L'article cherche aussi à comprendre dans quelles mesures les changements associés au cyberespace sont les conséquences de changements cognitifs. L'article débute par une critique des idées académiques très répandues concernant les liens existants entre les AICTs, les savoirs et la reproduction de formations sociales. L'article démontre alors comment ces idées partagent toutes une théorie de la mascarade de la valeur centrée sur la notion de capital en lieu d'une théorie cognitive de la valeur. Une alternative et 'réelle' théorie cognitive de la valeur est élaborée et défendue ici, en relation avec les modifications, liées aux AICTs, des dynamiques de reproduction. Enfin, la théorie alternative est réévaluée à la lumière de la recherche actuelle que mène l'auteur au sujet de la promotion et du développement de programmes informatiques libres et gratuits (Free/Libre and Open Software), plus particulièrement dans le monde malais. Le but fondamental de la théorie élaborée ici est de permettre des études plus comparatives des corrélats culturels des AICTs.

Mots-clés: cyberspace, monde malais, programmes informatiques libres et gratuits, théorie cognitive,

Introduction

Do social formations change very much as they enter cyberspace? If so, are changes in knowledge a central cause of the change; indeed, is the mediation of knowledge processes by automated information and communication technologies (AICTs) the primary source of substantial change in the way contemporary social formations reproduce?

My recent (2003) book on *The Knowledge Landscapes of Cyberspace* is an attempt to answer these “knowledge questions in cyberspace.” My aim was to interrogate the social presumptions behind ideas like, “The Knowledge Society.” As in my other anthropological writing, the book mostly reports on studies of existing, “proto” aspects of cyberspace, those amenable to field research and analysis. In the book, I offer three main answers to my questions about socio-cultural changes, their connections to AICTs, and in the role of knowledge in social formation reproduction. First, field studies demonstrate the great potential of AICTs to change the dynamics of knowledge networking. Second, while it is this potential that opens the way to social transformation, there is at this point insufficient reason to conclude that the long-term implications of AICTs for change in the quality of social formation reproduction are extensive, although they may still be in the future. For example, new forms of knowledge networking do sometimes broaden social participation, but at other times they obscure the process by which the criteria for redeeming knowledge claims are established, in which case they inhibit the extension of social reproduction. Despite all the potential, the degree of transformation has not, yet, been significant. Third, research on the actual implementation of knowledges helps explain why, despite considerable frothy rhetoric, this is so: Substantial improvement in technologies to support knowledge networking, and thus bring about extensive transformation, await the integration into their design of the proper, and properly, social perspectives. The bulk of the book was devoted to saying what these perspectives should be. It concluded with a section critiquing currently popular political economies of knowledge (PEK)

and outlining an alternative PEK on which attempts to deliver on the transformative promise of AICTs could be based.

In this article, I summarize the critique, outline the alternative, and then evaluate it in relation to my current research. Specifically, I am studying advocacy for and development of Free/Libre and Open Source Software, in the Malay World and more generally, to help make studies of AICTs’ cultural correlates more comparative.

The first part of my argument addresses the weaknesses in currently popular analyses that do attribute structural agency to AICTs changing of knowledge. It critiques three influential knowledge-related theories of change in basic social life patterns—that there is a new economy, that we are now a network society, and that a Cybernetic Revolution has fundamentally changed class relations. These theories’ structural explanations of the direction and scope of general social change in the future are critiqued by contrasting them to the ethnography of actual knowledge networking systems contained, among other places, in *The Knowledge Landscapes of Cyberspace*. The theories’ common error is to decentre the importance of capital, a social relationship that they all presume will continue, to social formation reproduction.

While not themselves persuasive, the popularity of these three theories indexes the widespread search for more compelling structural accounts of value, the problem central to any political economy of employment social formations. I next place the theories in the context of previous labour and capital answers to the value question, thereby showing why these alleged knowledge political economies are so often expressed as metaphorical extensions of capital, such as “intellectual capital” and “social capital.” I also explain why these extensions are bad ideas. These steps are necessary to clearing away intellectual ground for a truly independent, rather than “in drag” capital dependent, knowledge theory of value and the role of technology in it.

Next, I articulate the alternative, actual political economy of knowledge promised by the above. While the evidence of a knowledge-driven transformation is not yet sufficient to justify calling ours a Knowledge

Society, there are good indications that technologized support systems, if adequately informed by social design, could change knowledge networking substantially enough to affect social reproduction substantially. Something like the alternative I outline is an essential part of making this happen.

To specify the kind of knowledge society worth striving for, we need truly independent structural perspectives on knowledge, so I also articulate a political economic perspective that theorizes knowledge in cyberspace independently of capital theories. The first analytic step is to account for the most recent social changes not in terms of knowledge but in terms of a vibrant but vulnerable “turbo-capitalism” (Hutton & Giddens, 2000). The second step is to indicate the really different political economy of knowledge (e.g., pointed at by Nick Dyer-Witherford 1999), as well as the knowledge theory of value, whose realization is, for the moment, blocked by turbo-capitalism and distorted by capitalist value mythologies.

It makes sense to be thinking about what kind of knowledge society we want. To approach this question concretely, I conclude with a brief discussion of what my current field research on knowledge networking suggests. My aim here is to illustrate the utility of these alternative structuralistics by illustrating what they suggest about the reproductive preoccupations of social formations in the foreseeable future.

Macro-Structures and Structural Explanation in Social Science

In sum, my goal is to extend Marxist theory to address a key contemporary conjunction and indicate what can be done with it when so extended; e.g., to illuminate F/LOSSing in the Malay World. My account is a structural account, the kind normally associated with the term “political economy.” It accepts the possibility that trajectories of general social change exist and that they can be affected by, for example, adoption of new technologies.¹

1 Much contemporary social thought is suspicious of general talk of this sort, especially that invoking structure. Brackett Williams is typical of those anthro-

Most expressions of a knowledge change-induced transformation of social formation type are quite structural/political economic. Consider, for example, Peter Drucker’s articulation of the Knowledge Society idea (2001): Because they profoundly increase/decrease the social power of particular occupational groups (e.g., manufacturing workers), changes in knowledge usher in a “post capitalist” social formation. Drucker’s notion of a post-capitalist knowledge society is “structural” in that it articulates a fundamental change in the character of social reproduction. Like his, analyses of the structural sort usually include an element of compulsion, evoking, e.g., determining large “systems.” While some talk about cyberspace stresses its voluntary character, knowledge society talk generally posits a new framework for social life, a set of macro-social relations with wide ambit.

Macro-social relations are large, greater in scale than community, organizational, or even regional ones, involving “high level” forces that precede and thus limit human volition, both individual and collective. Any connections between macro-relations and people’s immediate actions or experiences are highly mediated, possibly by the very large structurations (Giddens 1991) that other social scientists call “Totalizing totalities.” Such entities may reach beyond the nation. Macro-social relations involve “systems” that are “general” even if they may function in open, quasi-“organic,” rhizomic, and/or evolving ways. Structural rhetoric evokes forces that function, as it were, “behind our backs.”

The typically totalizing slogans for the primary social formation in waiting—“Information Society,” et cetera—frequently deploy the structural speech forms characteristic of economics. Despite occa-

pologists who, in a Postmodern register, are skeptical of the idea of structure, claiming that, “There are only people and their practices” (personal communication). Sociologist Craig Calhoun similarly uses “post-structural” to describe his influential social theory (1995). Before social cybernauts can decide which among the structural accounts best accounts for the likely direction of future social reproduction, they need good reasons for the kind of structural analysis generally referred to in social science as political economy. While some have attempted to develop non-structural Marxisms, these are atypical.

sional demurrals about how, for example, it is “the local” in which it is actually manifest, such talk (like many uses of the term, “globalization”) often has a strongly foundational or essentialist quality.²

I think it is possible, instead of concluding that social life has no discernable structure and thus that analysis itself might have to be abjured, to ground structure talk non-essentially. Generally I aim to do this through reproductionist readings of social dynamics (Hakken 1987). On social reproduction, since human social arrangements don’t perpetuate themselves automatically (i.e., they are not carried in our genes), frequent intervention is necessary if arrangements are to extend in time. Study of deliberate activities to promote social arrangements’ continuation from one period to the next should provide insight into how continuity is accomplished, denied, or mitigated.³

A reproductionist account avoids essentialism by distinguishing between practices that merely

2 The ease with which structural terms become foundational opens them to the Postmodern critique of essentialism, the erroneous treatment as permanent of characteristics better understood as transient or highly contingent. On anti-essentialism, features normally considered to be part of an object’s “nature” are better understood as artifacts of particular interpretive framings. Discomfort with “structure talk” also follows from its frequent association with discourses of mastery, whose hegemonizing concepts facilitate domination. Postmodern critiques of knowledge talk, like what I call the Knowledge Regression—that we begin with embodied knowledge, rather than with “raw data”—build on various criticisms of the structuralistics of classical social theory. These include, in sociology, the Symbolic Interactionism of George Herbert Mead (1962), the Ethnomethodology of Harold Garfinkel (1984), or the Social Constructivism of Berger and Luckman (1972). Anthropologists like Williams echo these critiques when they claim that there are only actors and their projects, not discernable interests, let alone structures. If its impacts only take place “behind peoples’ backs,” structure is irrelevant to experiential analyses that privilege human perceptions mediated by cultural constructs.

3 Chapter 2 of my *Cyborgs@Cyberspace?* (1999) addressed the need for a theory of social formation reproduction if one is to address successfully the “Computer Revolution” hypothesis, while the sixth chapter of that book put forward the case for developing a macro-structural discourse on cyberspace.

replicate macro-social relationships—simple reproduction—from those that for reasons of context transform them—extended reproduction (Hakken 1987). Practices do sometime have dynamic, structure-transformative implications, but these are to be accounted for in terms of conjunctions of particular circumstances, not essences. On social reproduction, effective structural analysis of cyberspace is not only possible; it is for several reasons also necessary.⁴ To offer a full answer to the knowledge ques-

4 Some at least loose notion of structure is implicit in the very idea that there is a legitimate analytic moment in social studies. In order to take the idea that there may be a transformation seriously enough to examine evidence relevant to it, as *The Knowledge Landscapes of Cyberspace* did, one must admit at least the possibility of something like structure.

Similarly, some minimum notion of structure is necessary to ethnography. To do it, one must presume general things, practices (e.g., knowledge networking) present in enough social formations that their different manifestations can be compared. To communicate across languages/cultures, ethnographers must have available for use categories with substantial overlap in meaning, the kind of overlap that enables meaningful talk about what is or is not generally the case. To explain things holistically—that is, to account for specific practices in terms of broader contexts, the characteristic explanatory trope in ethnography—similarly requires a capacity for general discourse. For example, it is common to speak of “ages” or “eras,” above and beyond specific places or spaces. Differences between “times like these” and “times like those” are frequently explained in terms of the dynamics indexical or at least indicative of different types of social formations. Ethnographers and social theorists are not the only ones compelled to presume the existence of things that have structure-like regularity; to construct policy, one also invariably deploys general concepts.

The cost to social life of labelling as essentialist all discussion of regularity in social dynamics is too high. To do so dooms one to unending ad hoc accounts of discrete events. Such knowledge can only be “local.” However, this presumption itself is essentialist. It can only be rhetorical because it cannot be demonstrated to be true: To establish that every social formation’s reproduction has total local autonomy, one would have to engage in structural discourse. Without identifying structures that generally support local autonomy, the idea remains mere premise. Most attempts to avoid theorizing structure end up merely masking it.

A fourth, still “weak” justification for talk about structure is that a large proportion of humans/cyborgs currently extend their own social reproduction by using

tion in cyberspace, we must consider ways in which knowledge change might result in new reproductive dynamics. At the same time, we need ways to talk about this that don't presume automatically that it does so. This means general talk, discourses capable of accounting for the notions about the structural with which people operate, the consequences of these notions, and the inertiae/momenta that potentially are manifest in "systems as wholes." Finally, we need to be clever enough that our talk does not presume that which needs examination.

concepts that presume structure. At a minimum, structure-based experiential relating engenders structure-like effects. For example, since the late 19th century, most public intellectuals in the West have used models of social formation reproduction framed in the formalisms of neo-classical economics. A notion of "productivity" developed within these models has taken on meaning outside the model's direct use—e.g., in social policy. Similarly, all the talk about cyberspace "causes" certain connections to be made; "Knowledge Society" talk itself engenders quasi-formal, must-be-related-to-as-structural effects. Structure-presuming practices, like policies based on the "human capital" notions analyzed later in the chapter, influence experience irrespective of the concepts' analytic validity. To address the possibility that there may be a gap between talk and reality, ethnographers must generate possible alternative accounts. To open space to criticize dominant discourses, one must hypothesize alternative structuralistics rather than reject political economy a priori.

The arguments for structuralistics made thus far follow from meta-discourse over the possibility of structural talk. They are ethnographically "weak," not derived from demonstrated structural regularities in the reproduction of actual social formations. There is a "stronger" case for thinking structurally: Especially when supported by self-conscious, collective articulations, human action itself produces structure. Human interventions often produce something like inertia, and deliberate action develops momentum, in ways that have a cumulative, material impact on social formation reproduction. On Actor Network Theories of technology (Latour and Woolgar 1979), for example, as particular technology actor networks become central to social reproduction, they incline reproduction in some directions, while making others more difficult. In Langdon Winner's phrase, "Technologies have politics" (1977).

Some New "Structures" Popularly Held to Be Induced by Knowledge Change in Cyberspace

The idea of knowledge change, one so important to intellectuals and scholars today, takes many specific forms. To illustrate the breadth of its articulations, I examine below three diverse contemporary political economics, each of which presumes that new social reproduction dynamics are related to AICTs in ways in which knowledge change is central.

1. The "New" Economy

Many mainstream social theorists champion the "new economy" alleged to have emerged in the 1990s, especially during their second half (Lee and Shu 1999). For example, the emergence of a new "knowledge economy" is taken by British sociologist Anthony Giddens as structural "proof" that we are now a "Knowledge Society" (Hutton and Giddens 2000).

Any notion of a "new" economy implies a pre-existing, "old" one. Especially in the U.S., the case for a new economic dynamic was the long-time, simultaneous presence of several positive economic phenomena: continuing expansion, fast growth, low inflation, and low unemployment. According to the "old" neo-classical economics academically regnant in the U.S., these factors couldn't co-occur for long periods of time. A related, apparently also outmoded, "old" law was that of the inevitability of business cycles, of alternating growth and decline. Since the co-presence of the first four phenomena, and the absence of the last, indicated that the old "laws" of economics no longer applied, the new economy demanded a new economics.

As on Giddens (Hutton & Giddens 2000) and Friedman (2005), AICTs are generally treated as one of if not the most important factor responsible for the new economic dynamic. For example, by raising productivity faster than income, profits could continue to increase, and AICTs allow continuous expansion. However, attempts to justify empirically such connections between the new economy and AICTs were stymied for a long time by a problem

that came to be called the “IT productivity paradox.” From at least the 1960s, increased investment in AICTs was associated with declining rather than increasing productivity statistics (Attewell 1994). In the words of Nobel laureate Robert Solow, “You can see the computer age everywhere but in the productivity statistics” (1987).

The embarrassing absence of the expected, AICT-induced increase in productivity was explained, unhappily, by various ad hoc means, indicative of which is the “old” idea of “convergence.” On convergence theory, for a firm to be the application leader is risky because it costs a lot and other firms can quickly take advantage of your efforts at much reduced cost. Such economic calculations mean that the advantages of applying new technologies thus tend to dissipate: It is easier, and much cheaper, for most producers to wait to adopt an innovation until a few have worked out the bugs.

Convergence is not a very satisfactory explanation of the IT productivity paradox. Convergence would predict a slow pace of technology deployment, but firms deployed AICTs quickly in the face of declining productivity statistics. Moreover, convergence predicts declining profits, but these were generally increasing. From its perspective, the actual correlates of AICTs look even more paradoxical.

In any case, about 1995, US productivity statistics started up, and the embarrassing “IT productivity paradox” could be (temporarily, it turns out) put to rest. In particular, “new economy” advocates seized upon the argument that the latest corporate knowledge technologies—inventory control, demand forecasting, flexible scheduling of production, Computer-Supported Collaborative Work, intranet knowledge bases, inter-organizational data sharing—had narrowed the gap between supply and demand so much that a truly epochal productivity surge had finally overcome whatever (e.g., convergence effect) had slowed them (Lee and Shu 1999).

Even skeptics like Federal Reserve Chairman Allen Greenspan began to speak of an AICT-induced productivity increase. The idea of a “new economy” need no longer be treated as hype, because the increase in productivity really did indicate

dynamics quite different from the old ones. These dynamics could be connected to new characteristics/functions of knowledge brought about by use of AICTs. In this way, a positive answer to the cyberspace knowledge question became central to new economics.

2. The Network Society

A review of any large circulation Western newspaper with a business section during the late 1990s would have established the centrality of AICTs to “new economy” popular thought. Arguably the articulation of the links between knowledge and social change most influential in both scholarly and politically liberal policy circles, through his influence on both Tony Blair’s and Bill Clinton’s policies, was that of the geographer/urban sociologist Manuel Castells.

In his notion of the “network society” (2000), Castells strives both to name and to account for the general dynamics for a new type of social formation, one that he believes now dominates social reproduction.⁵ On Castells, in substantial part, the new dynamics derive from a profound shift in the locus of social process. A “space of flows” displaces the grounding of human activity in “particular places”—or, in the phrasing I prefer, space is “decoupled” from place. With globalization, the salience of units like “cities” and nations to social reproduction substantially decreases. If geography is no longer a particularly meaningful framework against which to organize accounts of social relation and interaction flows, what alternative framings replace it?

⁵ At least, he usually does. In line with the title he gives his recent (2000a) British Journal of Sociology article, one could read his intervention as more tentative: “Materials for an *exploratory* theory of the network society” (emphasis added). There is thus some ambiguity re: Castells’ theoretical project (Webster 2002). However, for some twenty years he has been making statements like the following: “The network society is the social structure characteristic of the Information Age... It permeates most societies in the world... as the industrial society characterized the social structure of both capitalism and stateism for most of the twentieth century” (2000:5). Similarly, he characterizes his recently republished (2000 Millennial Edition), three volume *The Information Age* as making the empirical case for this analysis.

“Networks,” Glaser and Straussian (1967) “grounding points” replace geographic ones is Castells’ alternative structuralistics. His justification for calling the new social form “the network society” is not that networks themselves are new. Rather, new forms of networks re-emerge and displace the hierarchical forms so characteristic of organization and governance in the Industrial Society. The new networks can do this because of AICTs, which, even under conditions of capitalism, disperse activity, distribute intelligence, and unhinge knowledge-making from place.

“Network enterprises”—intra- but especially inter-organizational networks—replace firms as the chief unit of capital accumulation and states as the chief units of governance, creating a new, globally operating economy. Network Society has very different dynamics from Industrial Society. Electronic networks facilitate a more individuated identity formation and replace the collective units of organic solidarity so important to Marx, Weber, and Durkheim. The result is consummately Blair- and Clintonite, a capitalism with neither a capitalist nor a working class:

In the last analysis, the networking of relationships of production leads to the blurring of class relationships. This does not preclude exploitation, social differentiation, and social resistance. But production-based, social classes, as constituted, and enacted in the Industrial Age, cease to exist in the network society. [2000:18]

Castells has only recently substituted “network society” for “information society” as his rubric for the new social formation type. On the anthropological ground that “knowledge and information were central in all societies” (p.10), he now feels that the “information society” label is misleading.⁶ Generally deploying network theory in a contemporary sociological, Barry Wellman (1999) mode, Castells holds

6 See Chapter 2 of *Cyborgs@Cyberspace?* for an extended development of this point. For Castells, it was interestingly not misleading enough to require renaming (e.g., from The Information Age to The Network Age) his three volume magnum opus! Below I sketch out similar problems with the “network society” label, more accurately describable as the “automated information and communications technology network-driven society.”

networking to have been the most typical form of human interaction until displaced by the historically recent rise of hierarchies like states and corporations. However, by undermining these latter forms, AICTs compel networking’s re-emergence: “But for the first time, new information/communication technologies allows [sic] networks to keep their flexibility and adaptability, thus asserting their evolutionary nature.... Networks de-centre performance and share decision-making.”

A Castellian network is an oddly autonomous, even self-determining entity: It works on a binary logic: inclusion/exclusion. All there is in the network is useful and necessary for the existence of the network. What is not in the network does not exist from the network’s perspective, and thus must be either ignored... or eliminated. If a node in the network ceases to perform a useful function it is phased out from the network, and the network rearranges itself – as cells do in biological processes.

Despite the last biological analogy, Castells’ networks are essentially informational, not organic, entities (see the dialogue from *The Matrix*): “A network is a set of interconnected nodes. A node is the point where the curve intersects itself.” (All quotations Castells 2000:15.)

Here, as at many other points, imprecision in language, especially about the causes of these dynamics, impedes understanding. Nonetheless, these quotations capture the “foundational” quality of Castells’ account of the implications of AICTs for social reproduction. Liberated from the inefficiency and ineffectiveness of hierarchy, on the one hand, and place-boundedness, on the other, AICT-compelled networks manifest their underlying potential to evolve and remake social reproduction in their own image. The resulting social formation is driven by a “flow, flow, flow!” imperative, replacing the dynamic to which employment social formations were heretofore bent: “Accumulate, accumulate, accumulate—this is Moses and the Prophets!” (Marx 1871).

Like other cyber-enthusiasts, Castells views these changes in epic terms: “[The] new set of in-

formation technologies represent a greater change in the history of technology than the technologies associated with the Industrial Revolution.” (2000: 10).

Most importantly for my purposes, Castells, following Bell (1973) assigns a key place in the ascension of the network society to change in the social functioning of knowledge:

[Characteristic of] this new technological paradigm is the use of knowledge-based, information technologies to enhance and accelerate the production of knowledge and information, in a self-expanding, virtuous circle. Because information processing is at the source of life, and of social action, every domain of our eco-social system is thereby transformed. [2000: 10]

Knowledge changes (predictably fudged to include informational ones as well) generalize their social impact via the network enterprises described above. These new forms (replacements of the firm?) are found “[a]t the heart of the connectivity of the global economy and of the flexibility of informational production” (p. 10).

3. Change in Worker Power?

Knowledge has also recently attained a privileged place in some radical as well as mainstream and liberal political economies. In 1994, once New Leftists Carl Davidson, Ivan Handler, and Jerry Harris (1994) launched *cy.Rev: A Journal of Cybernetic Revolution, Sustainable Socialism & Radical Democracy*. In contrast to leftists critical of AICTs-related knowledge changes (e.g., Noble 2001, Stoll 1996, Aronowitz and de Fazio 1995), *cy.Rev* celebrates the computer revolution. Indeed, for it, the key to the revival of an American left is not to critique cyber-knowledge rhetoric but to embrace it:

An important revolution going on in the world today...[is] being driven by new developments in information technology...Digitalized knowledge has now become the major component in the production of new wealth. The information society is supplanting industrial society as surely as industrial society replaced agrarian society. The depth of

these changes, however, has been largely ignored by much of the left community. [Davidson et al. 1994: 31]

Once their importance is recognized, previous Marxist notions must be revised in light of changes in knowledge:

New insights into the nature of changes in the economic base [occur because] knowledge has become the most important tool of production...[in] what we'll call 'information capitalism.'

The changes here are having a dramatic impact on both the relations of production and the nature of work. There are new social divisions being created along with a realignment of classes and strata around many critical issues. The ground for organizing the class struggle is shifting; there are new dangers of prolonged joblessness, repression, chauvinism and war. But there are also new opportunities creating new possibilities for a democratic and ecologically sustainable socialism. [Davidson et al.1994: 34]

Like Castells and so many others (e.g. the US National Science Foundation), here Davidson and Harris elide the information/knowledge distinction. They go on to add Alvin and Heidi Toffler to the list of important contemporary political economists, taking from them the idea that:

The main reason for today's ongoing revolution in the productive forces was the invention of the microchip. This revolution began in the 1950s with the merging of transistors, themselves the first major practical application of quantum mechanics, with the mass replication of miniaturized integrated circuits... The microchip's impact is changing everything about our world and the way we live. Civilization is undergoing a quantum leap on the order of the agricultural revolution launched 6000 years ago and the industrial revolution launched 200 years ago. We have now entered a third period of human history.

Intellectual capital, developed and held by knowledge workers and encoded in software and smart machines, is the key element of wealth in today's

information capitalism. Physical labor and industrial machinery are now secondary to the value added by information. [Davidson et al. 1994: 29 & 36]

“New challenges for Marxism and radical theory” follow from changes in basic class structure:

Knowledge workers today are in the position of the old industrial proletariat. They are key to the enhanced production of surplus value. Just as blue-collar workers contained two sides—the conservative labor aristocracy as well as the most progressive sector of labor supportive of democracy and socialism—knowledge workers will divide into two as well. One sector will form the social base for the defense of information capitalism regardless of its excesses. Others will deeply understand the potential the new technology has for creating and sustaining a new social order. This progressive side also is born from the conditions of its own labour, which are enmeshed [sic] in the most advanced forms of capital. [Davidson et al. 1994: 30, 31]

As a final jibe at those unable to appreciate how radical the knowledge-induced changes are, *cy.Rev* warns:

What is worse than the dangers posed by the third wave is the attempt to ignore or stifle the information technologies fuelling it. This was a deep flaw in the structure of the ‘command economies’ of the Soviet block... The growth of the new technology requires open, accessible, and decentralized sources and outlets for the flow of information. [Davidson et al. 1994: 31]⁷

7 I suspect a rather more complex picture would emerge of the considerable AIT efforts of the Soviet era in Eastern Europe; this at least was my suspicion when I began in 1987 to develop a project on computing in Bulgaria. Subsequent events wiped out much of the indigenous AIT infrastructure, which is perhaps now, as in places like Gujarat in India, re-emerging as part of the Open Source movement.

Why the “New Economy” Became “The Economy Formerly Known as ‘New’”: The Weaknesses of “Knowledge Society” Political Economies

I am not an economist, but I here intend to point out rather obvious empirical weaknesses of this broad range of economic discourses on knowledge. On a new economy account, in an old economy, any tightening of the labour market would tend to produce inflation and “overheating” of the economy, requiring higher interest rates. With enough increase in productivity, however, employment and wages can rise without setting off inflation. The fact that wages and employment rose while prices didn’t in the late 1990s was taken as “proving” that productivity could increase so much that convergence was no longer a problem.

What New Economy?

Early 2002 was several years after the “Asian economic flu,” two years after the bursting of the “dot.com” and roughly one after the telecom “bubbles,” and just as the last of the (first wave of the?) for-profit on-line universities or “dot.edus” were being bought out or declaring bankruptcy. In a time of continuing economic retrenchment, talk of a “new economy” had more or less disappeared, replaced by a nervous “looking over one’s shoulder,” as in the February 14, 2002, edition of the Wall Street Journal article in which I first encountered “the economy formerly known as ‘new’” phrasing. Yet by 2003, economists’ talk had again become largely Panglossian. It focused again on why the continuing recession wasn’t an “old style” one, why AICTs weren’t the real reason for it, and how in fact they would rescue us from it.

Two related dynamics help account for these rapid changes in patterns of talk. One was that the power of both corporate and individually held capital to promote its own reproduction continues to grow, as manifest in Bush The Second’s energy policies and tax cuts. The second was the increasingly anarchic quality of the world’s economy, especially the gap between economic developments and the

ability of corporations, the US state, or the World Trade Organization to influence them. Rather than being a stable economy in which markets clear and reach equilibrium more quickly, “economic diseases” continued to spread chaotically. Disastrous ecological change was generally (but not universally) acknowledged to be a direct consequence of economic activity. Even computer use had been recognized as a substantial contributor to energy shortages. A social movement against corporate globalization, one highlighting the inability of remaining political structures to influence events, had emerged, one more ambivalent than either Castells or Davidson et al., let alone mainstream economics, about AICTs.

The increased ambit of capital reproduction, anarchy, and economic distress may all be linked. In the age of the Enron revelations, the impression one had was of a world increasingly beyond control. The shrinking ambit of both “old” nation-based and “new” multinational tools to influence shifts in economic dynamics, let alone cushion their effects, engendered a sense of narrowed rather than extended prospects for influencing social reproduction. While not yet displaced by “mythinformation,” this term’s connotations seem as appropriate a characterization of the new millennium as “Knowledge Society.” These conditions revealed (perhaps only temporary but still empirically observable) inadequacies shared by the three political economies examined in the last section. Why, for example, were they not predicted by “new economy” structuralistics?

Productivity

The beginnings of an answer emerge through reconsidering productivity. Its changed dynamics in the mid’90s were taken, as argued above, as the decisive explanation for the new economy. The basic idea was that increased knowledge increased worker productivity so much that, sometime about then, the pent up but yet unrealized potential for increased productivity in AICTs broke through. Because the new AICTed knowledge technologies were being first deployed about this time, the correlation was taken as a causation, the increase in productivity seen to follow from their applications. The “information to knowledge barrier” was finally

breached, and Chairman Greenspan need no longer be an IT skeptic.

Beginning in the summer of 2000, however, productivity statistics in the U.S. began to fall again. One is tempted to attribute this to “knowledge management fatigue syndrome,” but this view, like the argument described in the previous paragraph, assigns too much influence to knowledge technologies. Rather, like the increases after the mid-’90s—and, indeed, the declines from the ’60s to mid-’90s—the 2000 decline is more likely an artifact of the bizarre ways that productivity statistics are calculated than a “real” phenomenon. The measurement problems are most obvious in the service sector. There being no service sector equivalent to the “widget,” the countable, generalized unit of the manufacturing sector set against hours worked, measuring productivity in service remains a fundamental problem for formalists. Productivity economists have therefore generally treated salary as a proxy index of productivity in this sector. Salaries in the service sector, adjusted for inflation, declined through much of the ’60s to ’90s. Consequently, the decline in general productivity statistics of the late 1960s-95 era may be an artifact of the pronounced shift from what to economists counts as goods to services production. This alternative explanation makes even more sense when one recognizes that this was an era of high unemployment and declining trade union power, leading to stagnant/falling wages in both goods and service sectors. Wages in service finally rose only with the general economic expansion of the mid 1990s. After 1995, but especially in the “Y2K” run up of 1999, expansion even slowed the rate of corporate downsizing. The subsequent statistical decline in 2000 productivity makes sense in relation to falling manufacturing employment, especially in the computer industry, and the consequent increase in the proportion of service employment, where salaries returned to stagnation.

In August 2001, second quarter U.S. economy productivity statistics ticked up again. Some Panglossians interpreted this as a sign that the economic decline was “bottoming out” and predicted that convergence effect would again disappear. Other economists pointed out, however, that if, as

was the case in 2001, employment declines while output remains stable, “productivity” statistics always rise. This happens, as it did in the period in question, when massive corporate downsizings reappear.

In short, changes in productivity statistics reflect shifts in employment and social, and therefore economic, power. They do not necessarily directly reflect changes in production technology, including knowledge technology. At the time of writing, Greenspan had not yet re-invented himself as a productivity skeptic. Perhaps were he a mere economist, he would. Because, however, his slightest hesitation can cause a market decline, Greenspan, like other mainstream economists, tends to “get stuck” in celebratory mode. This is particularly true with regard to productivity, even though analyses like that immediately above suggest that what productivity statistics actually measure is not at all clear.

Irrespective of their analytic shortcomings, their ideological importance to the legitimation of existing social reproduction patterns means new economy rhetorics give momentum to the *status quo*. Once performed, the rhetoric of productivity’s alleged automated information and communication technologies (AICT)-induced increase came to play a role in economic discourses, and in the broader social arrangements they justify, one too important to be easily abandoned. That AICTs increase productivity is just too good a story to be deflected by mere statistics. Mainstream structural accounts continue to echo new economy thought, even if the slogan is abandoned.

Instead of the really different dynamics of a new economy, however, we got knowledge management fatigue. To be able also to see around rather than only in new economy structuralistics, one needs heightened critical sensitivities. In particular, alternative conceptualizations are needed if the actual role of knowledge change is to be evaluated empirically.

Network Society?

Talk of a “network society,” like that about a new economy, had drastically fallen off by mid 2001. The rise of the former is explicable in terms

of the struggles of disciplines—and “schools” within disciplines—for space in the “marketplace of ideas,” long an adjunct of capitalism. (See Abbott 2001 and also *The Knowledge Landscapes of Cyberspace*, chapter 6.) The sudden silences in regard to them are interpreted more parsimoniously as “rhetoric fatigue syndromes” than as reflective of important subsequent changes in general reproductive dynamics.

Besides, “network society” is not an empirically useful notion. In essence, Castells confuses the increasing ideological value of computing’s knowledge relationships, an admittedly significant cognitive terrain, for structural change in social reproduction. “Flow, flow, flow” is good rhetoric but not an analytically justified replacement for “Accumulate, accumulate, accumulate.”

This is not the only echo of Marx in Castells. In his Parsonianized but still recognizable “stages” account of cultural evolution, hierarchies displaced networks, the “natural” forms of social expression of early social formations. “Rationalized, vertical chains of command and control” “outperformed” networks “as tools of instrumentality,” (Castells 2000:15) only themselves to be displaced in turn by newly-energized-because-AICTed networks. Through the dictatorship of the proletariat, the mature communism envisioned in *The Communist Manifesto* replicates “primitive communism,” but on a higher level. This is structurally parallel to the relationship that AICTed network societies are supposed to have to “pre-modern” ones.

Two generations ago, we Marxist anthropologists were arguing for attention to “really existing” different social formations, like gathering/hunting, as a remedy for rigidly essentialist Marxist accounts of social evolution (Hakken and Lessinger 1987). We were critical of deterministic, arguably teleological, cultural evolutionary formulations then, and we should be similarly critical of them in Castells. We can acknowledge transformative possibilities without assuming, like Peter Pan re Tinkerbelle, that believing in them makes them so. To argue that society really is profoundly transformed via the new focus on knowledge, one must ignore the embarrassment of knowledge management fatigue, the disinclination to even talk about this management fad after

it peaked in 2001. If knowledge technologies were responsible for the new economy, shouldn't knowledge management's failure, and therefore the "un-networking" of organizations, be held responsible for the world economic slowdown? It seems most reasonable, however, to remain skeptical about the strength of the link between knowledge technology and world economic dynamics.

There is an alternative, less foundational and more descriptively accurate way to conceptualize the changes in production at which Castells points. This is the possibility of an emerging "cyberfactory" stage in the history of the labour process under capitalism, one potentially as distinct as factory-based manufacture was from putting out, or later Fordist machinofacture was from manufacture. Theorizing a new stage within the same social formation type, rather than a new type altogether, means focusing on shifting arrangements within the same basic underlying institutional pattern. It is more parsimonious, albeit of less rhetorical power, than "network society" hype.

Technicist Political Economism

Postmodern social theory properly alerts us to be suspicious of facile transformative determinisms of overly structuralist theory like Castells'. To develop effective alternative structuralistics to the dominant neo-classical ones, one must be equally cautious of the political economism of Davidson and his colleagues.⁸ While to my knowledge *cy.Rev*

8 While these scholars are right to frame their work, as does Alvin Toffler (1983), in terms of evolution, the specific sequence of technological forms they offer, however, is questionable. Like most sociologists, they foreshorten human history prior to the "industrial revolution" into one long, effectively a-technological, "traditional" period. A metaphysical leap in dialectics brings them into an antithetical, "modern, technological" era, the synthesis being the "third wave."

Chapter 2 of *Cyborgs@Cyberspace* outlined a more varied set of evolutionary options for cyberspace: as a new, cyborgified, species; a new mode of production or social formation; a new, "fourth" form within the labour/commodity mode of production/social; or merely another, perhaps more concentrated, manifestation of the existing machinofacture stage of the labour process. Equally important was the notion that cyberspace might

is no longer being published, its structuralistics influenced debate in, for example, the anti-globalization movement.

As argued in *Cyborgs@Cyberspace*, political economic structuralistics interfere with being empirical about computing and social change, whether anti- or pro-capitalist in their foundationalist techno-determinism. In the "lite," Davidson version, knowledge change-inducing AICTs cause a revolution in the forces of production which in turn moves social dynamics onto new terrain. *cy.Rev* adopts the same knowledge theory of value as the pro-capitalist Organization for Economic Cooperation and Development (OECD): "Digitalized knowledge has now become the major component in the production of new wealth." Its naive positivism about AICTs echoes Bernal and the other inter-war socialists committed to a scientific-technical revolution, for whom this "way forward" substituted policy for politics (Hakken with Andrews 1993).

While more pessimistic about techno-scientifically induced changes, political economic "dark siders" Stanley Aronowitz and Phillip DiFazio (1995) are equally presumptive about the determining force of new technology. They see an "ineluctable"

just as logically "devolve" to a prior form. This framing provides much more space to capture the many possible nuances of change than the Castells or Davidson/Toffler options. More nuanced structuralistics enhances our capacity to identify which account best describes the actual, empirically observable relationship between AIT-based actor networks and broader cyberspace-related social changes. Are these highly correlated? If so, what are the implications of their most likely causal links?

Our mid-80s research convinced Barbara Andrews and I (1993) that the cyberspace-related patterns of Sheffield culture were similar to pre-Fordist social patterns of unemployment and class degradation, more compatible actually with a devolution to a previous form of the labour social formation than with some new stage or a non-labour form. At the same time, some interesting interventions and people's general willingness to appropriate AIT discourses in new identity work seemed indicators of potentially new social arrangements. Perhaps the most typical correlate of AIT, however, was to shift the terrain of class power. New skills and jobs rarely carrying the same gender, trade union, class cultural, and/or workplace-based political power as the ones they replace.

tendency in AICT toward the destruction of jobs, especially good ones.

Involvement in the neo-Marxist battles over political economy of the 1970s taught me two lessons. One, from the Althusser wars (Althusser and Balibar 1970), can be stated, if overly simplified, as the priority, in the long run, of social relations over technical relations of production. A second was to emphasize the extended rather than simple moment in social reproduction, to stress the recurrently transformative, richly dialectical character of social dynamics, as well as the relative autonomy of multiple moments within them (Hakken 1987). These lessons are equally lost on Davidson et al. and Aronowitz-DeFazio.

There are occasions when it makes good explanatory sense to abstract the mechanical elements out of an economic congeries, and it may be appropriate to describe the momenta (and inertiae) of reproduction in structural terms. This is only justified, however, as long as one keeps in mind that structural abstraction means simplifying the reproductive complexity of actual social formations. Abstraction is thus a legitimate moment in social analysis, but it should not be taken for the totality of social analysis.

On Actor Network Theory, to give any abstraction analytic permanence, as when one identifies a social property as a part of a machine rather than the broader Technology Actor Network (TAN) of which it is a part, invites essentialist distortion. The technical capability of a TAN is only a potential that must be concretely actualized, not an easily separable “factor.” Further, technical capability, like knowledge, is contested, constantly requiring reproduction, which, in the process, is extended and reconstructed differently. Since TANs vary greatly in their degree of stability, it makes little sense to speak of anything, whether disemployment or free flow of information, as an “ineluctable” implication of AICTs. It is better to concentrate on the various ways in which social groups differentially appropriate artifactual potential and, in the process, actively transform the relevant TANs.

To treat social dynamics as technologically determined while ignoring the processes through

which some technologies are rejected and others implemented is an example of what sociologists call “hypostatization.” There are strong disemploying potentials in contemporary employment-based social formations. However, accounts of these tendencies that trace them largely or fundamentally to something inherent in knowledge technology are facile (Hakken 1999).

These Popular Knowledge Theories as Based on Capital Theories of Value

While there are good reasons to be skeptical of the popular political economies of cyberspace knowledge critiqued above, their popularity is indicative of a need for better structural accounts of contemporary social change. Before a more satisfactory account of how to realize the knowledge potentials of AICTs can be given, the flawed political economy they share must be analyzed.

Employment Economies and Political Economy

In the West, structural accounts tend to begin with the economic. The social science that invented the idea of an economic moment in social reproduction was itself created, about 250 years ago, as a meta-discourse on the rise to reproductive dominance of a particular kind of activity, that associated variously with “markets,” “commodity production and distribution,” “industry,” and/or “employment.” In social formations of this new sort, the employer/employee relationship tended to displace older ones, like that between the serf and the lord or the believer and the church. To call it the “employment social formation” is to label it in terms of its most salient social relationship.

The rise of employment social formation fostered a new discourse that recognized and celebrated the relative autonomy of this new activity. In this discourse, employment’s displacement of other relationships was justified as a new, superior source of “value,” or the *Wealth of Nations* (Smith 1991 (1776)). The task of this new science of moral sentiments, the foundational project to distinguish it from social philosophy, was to account empirically for value’s creation (Toulmin 2002) and thus its cen-

trality to social formation reproduction. Its accounts were to avoid the moralistic approach (Williams 1985) of older discourses, to replace “ought” arguments with “is” descriptions of new “laws of value” determining human events.

The knowledge produced by this project came to be known as “political economy.” Adam Smith and his Scottish moral philosophy colleagues, its chief advocates, believed they were constructing foundational accounts of social value, accounts that broadly paralleled Newtonian understandings of matter.

The Value Question and Labour Answers

In Smith’s 18th century, figuring out where value came from was also a pressing public policy issue. Such knowledge would determine the legitimate activities of the state in a social formation bent to an employment dynamic. Since initially posed, three basic answers have been given to the question of where value comes from: first labour, then capital, and, more recently, knowledge. Until the late 19th century, political economists in general, from Smith and Ricardo to Marx and Mill, adhered to a labour theory of value. This was the idea that the increased value in an employment social formation came from a new productive factor, labour power, analyzed by Marx as a commoditized form of the capacity to do work.

Constructing labour socially as labour power enabled comparison of a wide range of diverse activities. Labour power was perceived as generally displacing land, raw materials, or rent as the most dynamic element of value creation. This new approach to labour was in the common view the factor most crucial to the capacity to accumulate value, now taking the form of profit. Enabling more buying and selling, employment institutions could foster more rapid accumulation of a social surplus than mercantilism or rent-producing agrarianism. Employment allowed commoditization of new markets and exploitation of new productive instrumentalities (e.g. technologies).

In addition to a labour theory of value, these scholars also generally accepted some corollaries about the dynamics of employment social forma-

tions. One was that the capacity of the new arrangements to expand value was not permanent. In the long term, employment-based profits rates had a tendency to fall. As long as there was competition, employers would tend to bid up wages until wages approached the selling price of the commodities produced (an earlier form of the convergence problem discussed above).

Via monopoly, accumulation could be extended into the medium term. In the end, however, the pace of commoditization would inevitably slow, and surpluses would tend to shrink. Smith was enthusiastic about how innovating new technologies of production could further postpone the slowdowns, but, like the other classical political economists, he accepted the long-term tendency of the rate of profit to fall. Thus, on classical political economics, the new society would only enjoy periods of accumulation; it was doomed to both periodic crises of profitability and ultimate decline. This political economy was dismal science.

Capital Answers to the Value Question

An alternative theory of value traced it not to labour but to invested profits, or “capital.” A minority of political economists (e.g., Marx’s target Senior) argued that, when wielded knowledgably, capital was a value-creating factor independent of labour. What one got via a bank loan to buy, say, newer machines or more raw material was control of an entity that had an independent, inherent tendency to expand.

In the late 19th century, political economic revisionists like Walras and Marshall rose to prominence with a new “economics” based on such capital theories of value. “Modern” in its use of formal models, their neo-classical “Revolution” provided the foundationalism that has dominated Western academic economics ever since. The models presume that the political economic structure of all societies is similar, because they all tend to respond to the universal condition of limited resources or scarcity with the same allocation mechanism, the market. Neo-classical models also presume psychologically that individual exchange of commodities is the prototype human action, and individual exchanger’s

actions are predictable (in terms of what are today called “preference curves”) because one can read them from the choices they make.

On neo-classical economics, the reason economies are not all the same is the existence of complicating mediators “external” to the core market relations. While some externalities can improve market dynamics, these theorists stress the inherent tendency of markets to achieve equilibriums in supply and demand. Consequently, this means neo-classical economics tend to regard collective human intervention as an externality likely to distort the “natural” market. They discourage state policy in principle.

Like classical political economics, neo-classicals think economies are analyzable in terms of laws and can be treated as being not abstractions but “really existing” deep structures. Unlike the classical political economists, however, neo-classicals asserted that the inherent capability of capital to expand frees employment economies from the tendency of profit rates to fall. This is “good time” economics.

AICTs and Capital Theories of Value

Predictably, given their dominance, neo-classical economics were the ones one initially mobilized by accounts of the AICT/macro-social change relationship. Because conditions of scarcity still obtain, the arrival of cyberspace did not mean revising the basic economic model. Like state intervention, new technological developments are market externalities. However, because they create unprecedented opportunities for entrepreneurial virtuosity (new chances for capital to work its value-generative magic), new technologies are generally applauded, as they were in Smith’s political economy.

Consider, for example, the structuralistics of the Organization for Economic Cooperation and Development. The OECD is a kind of “think tank” for leading capitalist economies. Its Jobs Study (1994), conceived as a strategy document for the world’s twenty-five most powerful economies, was the focus of the Spring 1996 meeting of the G7 nations. “Apply new technologies to create new jobs...” is how the US Chamber of Commerce summarizes the Jobs Study, application of new technologies be-

ing primary among the “strategies recommended to overcome rigidities that cause unemployment” (1996). New technologies create jobs because economic growth is attributable to the development of technology and industrial research and development (R&D): “Research and development—and protection of the intellectual property R&D produces—raises living standards, thus boosting demand for labour and generating high-wage jobs” (US Chamber of Commerce 1996).

This is only one example of how capital theories of value privilege enthusiastic performance of Computer Revolution rhetoric. Cheery optimism about cyberspace is possible because technology is “black boxed”—that is, technologies feed real economies’ dynamics but do not independently affect the operation of formal economic laws. While technologies like AICTs change the content of actual economies, their structure remains unchanged. As an externality, technological change does not demand structural explanation.

If capital is more responsible than labour power for extending a society’s reproductive scale, theories of value should privilege the moment of capital’s reproduction over that of labour. Indeed, all other reproductive moments (work, knowledge networking, social interaction) should be subordinated to those social arrangements that facilitate the expanded reproduction of capital. This is usually accomplished by commoditizing these other moments, increasing the proportion of the range of activities under their ambit that is mediated by the employment relationship. In this way, more capital is created. Privileging capital’s reproduction also privileges those who own it. On capital theories of value, general social formation reproduction is mortgaged to the reproduction of capital.

Critiques of Capital Value Theories

Capital theory was the theory of value that Marx critiqued in *Capital*. In his view, capital should not be viewed as value generative in itself because it was really just congealed surplus labour, ripped off from workers. They were forced to give it up because of the vulnerability consequent to not having independent access to means of production.

According to the 19th century critique of political economy, capitalism was not all that different from rent-based feudalism, both possible only via the differential power of social groups. A sharecropper pays part of her crop to a landlord because the collective landlord has the power to force starvation, not because the land produces something on its own. Similarly, an entrepreneur pays interest on a loan because she has no better way to finance her business, not because the loan qua loan adds value. (This of course is the root of the Muslim conviction that all interest is usury.) Similarly, workers accept less in wage than the value of what they produce because they have no preferable choice. Profit comes from this surplus value, not because of any magical value-generative powers of capital.

It was the “something from nothing,” magical quality of capital theories that led Marx to coin an anthro-talk term, “commodity fetishism,” to caricature them. “Fetishization” is the attribution of independent agency to things humans have made, like goods, or made up, like spirits and “capital.” The fundamental critique of capital theories of value is that they treat capital as an independent thing capable of generating its own consequences. This essentialist attribution obscures capital reproduction’s dependence upon an underlying social contradiction, the unequal social relationship between worker and owner. This inequality must be maintained in order for capital to appear to work its magic and the social power of its owners be reproduced, but the same inequality prevents any ultimate social stability.

The radical political economists of the 19th century heard considerable class propaganda in capital theories of value. Rejecting the idea that capital has any essence, they saw capital theories of value as mythic, even mystical. Recently, the interest on the capital theory mortgage has risen. Consider the renewed influence during the economic turmoil of the 1990s of Joseph Schumpeter’s notion of “creative destruction” (1976). On a Schumpeterian reading, a capitalistic social formation can avoid implosion only through periodically destroying the technical basis of the regnant regime of capital accumulation. Innovation is the necessary vehicle for accomplishing survival through this necessary destruction.

Schumpeterianism is a capital theory of value. Like Senior’s, it postpones indefinitely the secular profit decline predicted by labour theories of value. “Creative” destruction, however, means massive institutional dislocation, which in turn undermines the reproduction of many groups and social forms, including important forms of capital. The imposition of an automobile economy marginalizes the foundations of a horse one, taking down the makers of buggies as well as buggy whips. On-line shopping promotes “disintermediation” and endangers fundamental aspects of existing commercial business.

Interestingly, by linking theoretically the extended reproduction of capital to technological upheaval, Schumpeterianism compromises the neo-classical presumption that the economic is autonomous from other moments of social formation reproduction. Schumpeterian capital theories of value lead back to substantive, institutional economics.⁹ The value that capital was alleged by the neo-classicals to produce on its own instead looks quite similar to the admittedly non-productive social relationship of rent.

Expanded Capital Power and Critiques of Capital Theories of Value

If AICT-induced changes in knowledge are not the chief causes of turn of the 21st century social changes, how are we to account for the prominence of knowledge in popular structuralistics? In locating the reproductive dynamic inside of technology, the theories critiqued above divert attention from capital’s problems of reproduction. The alternative political economy of knowledge presented below does not locate the source of dynamism internal to and inherent in AICTs but in change in capital reproduction.

The structural links between technology and the reproduction of capital are not only highly complex; they also stimulate new accounts of value. The growing power of capitalist institutions like trans-national corporations to influence their own

⁹ Users of Schumpeterian perspectives also tend to foster other unwarranted assumptions, such as the notion that new technologies necessarily produce more value than the ones they replace.

reproduction is one recent development that has fostered much theorizing (e.g., globalization). On a capital theory of value, an increase in the power of capital over social formation reproduction is likely to be interpreted as additional evidence of capital's contribution to value, and therefore of the validity of capital value theories.

However, an alternative interpretation is also possible, that the increased influence of capital over social reproduction is a response to the greater reproductive difficulties capital now encounters. On this view, capital's increased power is necessitated by its vulnerabilities rather than its value-generativity, that capital has to exert more influence on the dynamic of social formation reproduction because otherwise it could not reproduce itself.¹⁰ Continuing corporate downsizing and disemployment strengthen capital vis-a-vis labour. Selection of technology continues to be, as Braverman (1974) argued, regularly filtered through a class sieve. These are only two of several ways in which capital appears to be of even more, not less, relevance to current social reproduction. Such economic and technical phenomena are on their face more indicative of changes in the reproductive imperatives of capital than of a decline in its importance. Such an

10 It might well be objected that the phrasing I have chosen here hypostatizes capital—it attributes agency to an abstraction and, in the process, marginalizes human agency. However, more convoluted phrasing, such as “The character of social formation reproduction appears to suggest that the reproduction of capital is the strongest influence on its course,” just makes agency more ambiguous. The problem with any phrasing that attributes central influence to conscious human action—as in, for example, the idea of a class of humans centering social reproduction on the reproduction of capital in order to reproduce their social privilege—is that this kind of account seems to falter in the absence of a general conspiracy.

The value of the phrasing chosen is that it communicates an important Marxian insight, the extent to which things really are in a certain kind of control. That is, the capitalist who fails to maximize his capital by demanding the highest possible return on his investment really does find his capital shrinking. It is in this sense that it is humans who serve capital, even though capital is just a fetishized social relationship.

account is not compatible with “post-capitalist” notions, which imply a reduction in capital's influence on social formation reproduction. On the alternative, instead of indicating the demise of capitalism, the resurgence of Shumpeterianism indicates a discourse problem, a crisis on the legitimating power of capital theories of value.

Popular Knowledge Theories of Value as Capital Theories “In Drag”

Similarly, the emergence of alternative knowledge value discourses like those critiqued above, ones that only apparently trace value to things other than capital as historically understood, may be read as another indicator of this crisis. That is, they may be an indirect acknowledgement of capital's reproductive troubles and subsequently its necessarily greater efforts to impose itself on social formation reproduction. The critiqued political economies of knowledge only appear to be alternatives to capital theories of value. They do not arise because capital reproduction is less important but in response to a need for new accounts of value that overcome the theoretical deficiencies of 20th century accounts.

A critique of approaches that implicitly presume a capital theory of value is a necessary pre-requisite to constructing a valid political economy of knowledge in cyberspace. Terms for talking about value are needed that are less subservient to capital. A critique of knowledge talk concepts like “intellectual capital,” in which the popular political economies trans-dress underlying capital theories of value, will clear the way for a truly new knowledge theory of value.

Intellectual/Knowledge Capital

Indeed, another indication that defence of capital may be entering a manic phase is the burgeoning set of metaphorical extensions of capital—e.g., “Knowledge capital,” “intellectual capital” (sic)—fostered by “new” political economies like those critiqued above. Invention of such notions, like the Knowledge Society idea itself, seems indicative not only of a broad ideological search for more compelling justifications for the role of capital in employ-

ment social formations. Their adoption of “capital” as their constant element underlies the theoretical centrality of capital, not knowledge.

“Knowledge capital” is only one of several metaphoric extensions of capital, but it is the one in which a capital theory of value is most directly glossed by a veneer of a knowledge theory. In conceptualizing knowledge as a kind of capital, “intellectual/knowledge capital” frames knowledge as a thing. This talk encourages thinking of “getting a return from knowledge” in the same way one might “get a return from investing money.” Also implied is that, if benefits can arise from knowledge as a factor of production, it like capital merely needs to be added. Construed along capital theory lines, knowledge, too, “magically” creates value, yet of course talking about it in this way makes it impossible to separate knowledge from capital.

Unfortunately, such terminology exacerbates the impoverishments of the “thing” conceptions of knowledge critiqued in *The Knowledge Landscapes of Cyberspace*. For example, it suppresses recognition of knowledge’s dependence on the collaborative activity of the people having and using it, of the centrality of knowledge networking to knowledge use.

“Knowledge” capital is only one of several forms of capital that appear to have been “discovered” in the “new” economy. To highlight the absurdity of this astonishing terminological effusion, I now refer to resources invested with the intent of making a profit as “capital capital!”

Human Capital

Human capital theory is another extension of the capital theory of value masquerading as something else. It is a concept coined by neo-classical economists to help explain why women, people of colour, those with disabilities, working class people, etc., receive lower wages. On human capital theory, the wage I command is primarily a consequence of my investment in myself, so those who are badly paid are in this situation because they did not take advantage of opportunities for education and training. Were they to forego the gratification of consumption and enroll in higher education, they would be trading small immediate for greater long

term benefits, “maximizing their human capital.” Those who didn’t do so wouldn’t maximize their personal potential to work value magic in the way “capital capital” is supposed to.

On a human capital account, a person’s capacity to network knowledge is also “thinged” and individuated. There is of course a point of view from which one can metaphorically view going back to school as “investing in ones’ self,” but this point of view is limited. Reducing a self to “human capital” has broad identity project implications. It tends to create important silences by diverting attention from a broad range of other considerations equally relevant to such a decision. By placing the onus of responsibility on individual choice, human capital framings marginalize awareness of structural impediments to opportunity, like discriminatory structurations (Giddens 1991). By individuating value discourse, human capital perspectives generally ignore the social institutions that determine why some skills—as well as some peoples’ skills—are valued more highly than others by labour markets.

To judge the extent to which human capital constitutes a reasonable model of how value is produced, consider the situation of white male heterosexuals from at least a middle class background. Even such individuals don’t behave in the manner described by human capital theory, because, as with other microeconomic presumptions, to do so would require possession of perfect information of labour markets. To behave in this way would also mean to ignore other important information. Even the most career-fixated student at SUNY Tech where I used to teach considers other factors, such as his family situation or work schedule, when making his schooling decisions.

Human capital conceptions of value distort perception of social dynamics. Its framings encourage workers to blame themselves for their unpleasant experiences at work. Performances of metaphors like “investing in one’s potential human capital” also facilitate capital reproduction. They do this by making capital (and therefore capital theories of value) appear more “natural,” just what people do. In addition, they indirectly help prevent questioning of capital capital’s “magic.”

As described some time ago by Stephen Marglin (1974), in a corporation, management's chief function is to facilitate the reproduction of capital. It is not to facilitate an individual's redemption of her human capital, and it often interferes with production and even profit maximization (see Kusterer 1978). Braverman's primary message about technology—that corporate decisions about investment are more a function of the long-term reproductive needs of capital than of their technical impact on production—remains as suggestive in the new millennium as it was in the old (1974). Channeling talk about the decisions of individuals or the practices of institutions via “human capital” illuminates little and obscures much.

Cultural Capital

To my chagrin, a social scientist, Pierre Bourdieu, contributed directly to the metaphorical metastasis of “capital”; he might even be described as its “ur” practitioner. He did so in his effort to explain the presence of “distinction” as an important dynamic in modern society (1990). Briefly, Bourdieu asked how it is that, in social formations (like France) formally dedicated to inhibiting the inter-generational transmission of privilege—through, for example, estate taxes—considerable privilege gets so transmitted anyway. That is, the children of high status parents tend themselves to be high status.

Such privilege, Bourdieu answers, is now reproduced indirectly via distinction. Through taking them to museums, reading them books, and in general preparing them for entry tests and other prestige activities, privileged parents “invest” in their children, provide them with additional means to access advantage. The privilege potential is redeemed through apparently egalitarian, meritocratic institutions like schools, universities, bureaucracies, and corporations. The term Bourdieu coined to label the value thus given, his word for the means by which distinction reproduces privilege, was, unfortunately, “cultural capital.”

A confirmed radical and progressive, Bourdieu's intent was to critique the inequalitarian results of this process and its institutional forms, especially in the academy. In its malleability, its capacity to be

latent and even disappear as a consequence of institutional change (say as a consequence of change in elite taste), class privilege does appear to have some mythic properties similar to capital capital. The metaphor Bourdieu chose might be acceptable, were it not so easily co-opted into the general legitimating project of capital value theory. Some schools now regularly refer to their superior “cultural capital” in recruiting students. In the context of “knowledge capital,” “human capital,” etc., “cultural capital” ends up reinforcing that which it would critique.

Bourdieu makes a strong case that the social support of museums, recital halls, and colleges disproportionately afford means to already socially advantaged individuals to privilege their children. These means supplement other institutions—networking introductions, socialization into facile performance of social graces and artful exercises of taste, and admissions into private universities of “legacies”—that already support the generational reproduction of privilege. Both sets of institutions have other value for extending social reproduction, and determining how to support them collectively without reproducing privilege is a significant social policy issue, beyond that of an individual choosing whether to be seen at a concert or stay home and watch TV.

Once again the simile—seeing the taking of your kids to a museum as somewhat like investing capital in a firm on the expectation of profit—may have some descriptive value. As a parent I would urge others not to bet their future welfare on this kind of analogy, however. Focusing functional explanation of support for educational institutions in terms of a similarity to capital also feeds into the cynical, anti-intellectual discourses through which the supporters of unfettered capital like Rush Limbaugh critique “cultural elites.” Moreover, it diverts attention from more direct forms through which such institutions support the reproduction of capital, such as the use of university endowments of stocks to concentrate capital and make it more mobilizable. In conjunction with the other extensions of capital analyzed above, “cultural capital” is an unfortunate concept.

Social Capital

In his famous article and recent book *Bowling Alone* (2001), Robert Putnam metastasizes capital further, tracing much contemporary social malaise to “a decline in social capital.” Even though more frames are bowled than ever before in the United States, a much smaller proportion of them are bowled in league competition. This empirical pattern is presented as a synecdoche for a broader decline in sociality. Americans increasingly spend their time outside of the organized social relations that were previously an important support for col-laboratory activity, whether aid in an emergency or “garage” development of new commodities.

As we celebrate “self” more than group or community, our networks become dangerously less dense. As we individually spend our time commuting to work at a distance or surfing the Internet, our places of residence lose resilience. Much of this used to come through collective experiences, like working with those who live in our neighbourhood or spending time in Oldenbergian “third places” (2000). Our ability to handle difficulty, individual and collective, is indeed generally reduced.

By framing this decline in sociality as “a decrease in social capital,” however, Putnam commodifies its solution. What we need is not more social capital (read, “contributions to charity”) but social relationships of a different, more multiplex quality. Together with the other capital metaphors, Putnam’s extends the reproductive ambit of the value myths of capital and its attendant distortions. The concept “social capital” too closely associates sociality with capital. In doing so, it obscures the relative autonomy of other aspects of social formation reproduction from the reproduction of capital. It shares this property with “cultural capital.”

I understand and sympathize with Putnam’s and Giddens’ desires for more community to moderate the dynamics of both state and market (or more accurately, the reproductive imperative of capital). As a parent, I depend upon other parents paying attention to their kids; when they don’t, my children, too, are at greater risk. To capture the attention of these parents, I might even try the rhetorical ploy of comparing their actions to those of a company that fails to buy new equipment.

However, I would be very unlikely to choose the alienating activity of capital reproduction as a general model of how to approach the problems of raising children. The analytic damage of treating such moderately useful metaphors as core constructs parallels that of accepting the transcendent value of capital reproduction. Places of residence need community, and community comes from voluntary extensions of sociality. Your time and your self are as important as your wealth, and much more important than that portion of your wealth ripped off from others in sufficient quantities to be invested.

Deconstructing “Capital”

The foregoing has critiqued metaphoric extensions of “capital” to other construct realms. In their “thingness,” “cultural capital,” “social capital,” “human capital,” “personality capital,” and doubtless other similar terms, narrow thought and, like knowledge capital, tend to mislead. The thing about a metaphor, as Ulf Hannerz argues (personal communication), is that, like a horse, one needs to get off before it is too late. With a hammer in one’s hand, one sees nails everywhere.

Metaphorically extending the ambit of capital might be defensible if this had analytic value, promoted something more than mere awareness of similarity. The notion “capital” does have some worth. Indeed, understood as investment for profit, “capital” is a construct essential to understanding contemporary social reproduction. “Capital” is not a cultural construct like “ghost,” whose conceptual existence is clear but whose actual impacts are hard to detect, except perhaps in the behavior of those who believe it. There is no doubt that capital matters. In most current social formations, if I wish to bring a commodity to market on any but a modest scale, I really do need access to, in a quite legitimate use of the notion, “venture capital.”

Still, it is not easy to state a “vanilla” notion, a capital “in general.” For example, “money” and capital are often used interchangeably, but they are not the same thing. Nor is it easy to identify the point at which it makes even metaphoric sense to think of capital as “productive.” Not only can one invest one’s capital badly; one can do so deliberately, as

in a tax dodge. But is it then still capital? If it is, then what other forms of “unproductive” capital are there, and how does one separate unproductive capital from any valued thing used badly? Is “capital” just another term for any entity of worth?

The intent here is not merely lexical, to straighten out definitional conundrums. Rather, it is to illuminate how, just as “content” approaches obscure the social dimensions of knowledge, an important range of social phenomena are obscured by “knowledge thing” representations of capital. Consider, for example, what capital has in common with “authority,” or “charisma.” Under the appropriate conditions, the wielder of each of these forms of power can compel the activity of other humans. Like Marx, I think it important to note that, for capital, in contrast to these other forms of power, this capacity depends on its fetishization, upon a collective “forgetting” of from whence it comes. In simple terms, the medieval ruling class became a capitalist ruling class, converting its relative monopoly over land and raw materials into a relative monopoly over access to machinery and markets. Workers accept less for wages than the value of what they produce, because this history means that they have no real alternative. Their relative powerlessness is the reason a substantial portion of the value they produce is alienable from them.

It is true that individuals ripped off in this way tend to become annoyed or “alienated” psychologically. The point of critiquing “thing” capital constructs is not psychological but sociological, to show how they institutionalize the forgetting of indignity (Sennett 1993). Capital theories of value induce worship of capital as a magical thing; they thus obscure how capital is based on institutionalized alienation. To frame capital as a “thing” of any sort is to be complicitous in this alienation. Without this alienation, capital would cease to be: If workers in general had independent access to markets and the means of production, capital would not be necessary to put production in motion, and it would “disappear.” As wealth, of course, money would still have value.

The situation of capital is in some ways similar to the promise carried for years on each U.S. dollar

bill, that it was “redeemable for silver.” For many years, this promise was no longer valid—it was in fact illegal for private citizens to hold “specie”—but most of the US citizenry “forgot” this fact, and a myth served a useful circulatory purpose.

As with money, we perform capital via a collective Wittgensteinian language game. The capital game requires us to ignore alienation and accept its claimed self-generative properties. This game is performed, for example, each time we accept the notion that underdeveloping nations require outside capital, that without it, they have nothing with an inherent tendency to grow. The attempts of Cuba, Brazil, etc. to operate on an alternative view, that “more freedom” for capital means less freedom for peoples, showed how, unless they worship the fetish of capital, nations are frozen out of the world economy.

The authority of a police officer depends upon the sovereignty of a state, and the wealth of a TV preacher depends upon his ability to project certain personal qualities. So, too, the power of capital rests upon certain social arrangements themselves dependent upon acceptance of some myths. Its reproduction is best served when the applicability of its fetishized self image is accepted unquestioningly, when “Accumulate, Accumulate, Accumulate!” is indeed treated as the message of “Moses and the Prophets.”

Of course, those individuals and groups who depend upon the reproduction of capital for their wellbeing tend to advocate social arrangements favorable to the reproduction of their privilege. To the extent that power needs to be exercised culturally (“behind the back” in social formations committed rhetorically to democracy), such social inequality cannot normally be argued for directly. It is in this sense that those who extend the metaphor of capital to other realms contribute to the reproduction of its social hegemony and therefore the dominance of groups highly dependent upon it.¹¹

Instead of giving analytic value, however, the metaphors examined here obscure. While indexing

11 I don’t think this was Bourdieu’s intent, but it is, as manifest in the frequency of citation of his work in organization studies, a consequence for which he has some intellectual responsibility.

important social issues and legitimacy problems, as a group these concepts have a negative analytic impact. Given the extensive complications of this social history, this negativity is perhaps inescapable. Like vanilla capital, its metaphorical extensions' overuse and underauthorization are suggestive of a rear guard defence of a mythic pattern of thought, of capital value theorizing under stress.

The over-enchantment of contemporary social science with capital metaphors undermines critical faculties: The more they are used, the harder it is to see their limitations. When all resources are presented as alternate forms of capital, social science becomes social apologetics. These new, noxious weeds in social science's conceptual garden are indexes of the stresses on capital reproduction. We can acknowledge their limited rhetorical value, but, in order to clear ground for a real alternative knowledge theory of value, not a capital theory "in knowledge drag," they need to be uprooted.

Toward a "Straight" Knowledge Theory of Value

Just as social science originally congealed around a new answer (labour power) to the value question, talk of a new economy has often pointed at potentially new characteristics and roles, including in value creation, for knowledge in cyberspace. Searches for a new knowledge structuralistics are also responses to the shortcomings of the dominant theories of value, such as their failure to account for important, Shumpeterian, institutional phenomena.

Unfortunately, popular cyberspace knowledge talk holds over discourse conventions from the regency of capital theories of value. Instead of offering truly new political economies, they merely place a knowledge gloss on what remain basically capital theories of value. Just as skepticism was warranted with regard to the new economy, it is proper with regard to theories that merely dress capital theories of value in "knowledge drag."

At the same time, although knowledge may be labelled a form of capital ("knowledge" or "intellectual capital") in accounts like these, one can also perceive in them a strong impulse to make

knowledge a replacement for rather than a form of capital at the center of production. As argued in *The Knowledge Landscapes of Cyberspace*, a quite liberating resocialing of work, one facilitated by expanded use of knowledge technology, is indeed possible. This possibility is an important reason behind the refocusing of the value debate on knowledge. The switch in the focus of value discourse to knowledge is further facilitated, perhaps even compelled, by all sorts of ideas about teams, dispersed work, virtual organizations, participatory design, collaborative work, etc.

A clearer, thorough perspective on knowledge and value would have other consequences. It would force a new discourse on management, one in which the necessity of management was no longer presumed a priori. Management's place in production would become narrower and more contingent, dependent upon its success at mobilizing expertise in particular forms of labour. With management reduced to the labour of coordination, thorough development of more comparable notions of management and workers, knowledge would change class dynamics as well as our understandings of them.

Such accounts, however, put at risk current legitimations of management that associate it with the self-generative magic of capital. Instead of risking a thorough rethinking of management in knowledge terms, some may wish to retain the idea that management possesses privileged knowledge about how to unlock the magic of capital. They might be inclined to deploy notions like "knowledge capital," either overtly or metaphorically, in ways that presume the inevitability of the social relations of (capital) capital. As long as management is tied to a capital theory of value, the liberatory potential of organizational knowledge technologies will be severely limited.

Approaches that link knowledge to capital, including those that construct knowledge as capital, obscure rather than illuminate the potential of knowledge in the transition to cyberspace. To take advantage of the potentials of AICTs to facilitate knowledge networking, as well as to foster the broader social development that this would make possible, we need truly independent knowledge theories of value. These in turn could generate po-

litical economies more appropriate to the extension of contemporary social formation reproduction.

To create such knowledge theories, it is necessary to liberate knowledge constructs from enslavement to capital reproduction. Freedom will not come by restating capital theories of value in terms of knowledge. Once “knowledge capital” has been deconstructed, knowledge structuralistics like those critiqued above are recognizable as first steps toward articulating a third, distinct, neither labour nor capital but knowledge, theory of value.

New knowledge theories should be evaluated in terms of whether they offer a more satisfactory discourse on where value comes from. Indicating what a genuine knowledge theory of value would address is the task of what follows next.

Current Capital Reproduction

The Place of a Capital Theory in a Knowledge Theory of Value

Several of the theoretical critiques of capital theories of value outlined in the previous section have been around for a long time, yet capital theories remain dominant. While the chapter raised the possibility that interest in knowledge political economies is a manifestation of problems in the reproduction of contemporary social formations, it also acknowledged an increase in the overt influence of capital reproduction in general social formation reproduction. The notion that the power of capital over social reproduction is increasing seems to contradict the idea that capital-based economics should be replaced by knowledge ones.

I suggested above, however, that capital’s increasing ambit may be necessitated by new weaknesses in its ability to reproduce itself. The rise of new knowledge theories of value, even if they turn out to be ultimately based on capital theories, is nonetheless an indirect recognition of problems in capital value theorization. But doesn’t the expanded centrality of capital in contemporary social formations empirically justify capital theories of value?

Were this so, the search for new, knowledge-based alternative theories of value would make no sense. Moreover, the influence of capital on the

marketplace of ideas may itself have compromised discussion of value. The failure of critiques of capital theories of value to become economic orthodoxy may have less to do with their analytic quality than with economics’ ideological service to the reproduction of capital. An inability to recognize directly the momentousness of capital’s contemporary problems would also explain the contradictions in the knowledge theories of value identified above.

In short, to specify what a knowledge society would really be like, and thus what a knowledge theory of value would have to account for, we first need an adequate account of the contemporary role of capital in general social formation reproduction. This account must explain capital’s current power at the same time as it avoids being dazzled by, e.g., metastasizing capital metaphors.

The Recent Expansion of Capital’s Reproductive Ambit

Throughout the history of employment social formations, capital’s influence on general social formation reproduction has tended to grow. It is arguably greater now than at any other time. The increased centrality of transnational, corporate capital to most social formations today is arguably the most distinctive aspect of what is called “globalization.”

Computing Myths, Class Realities, Barbara Andrews’ and my 1993 study of Sheffield new technology, examined various predictors of the social correlates of computing initiatives. The best predictors of outcomes were the workspace groups that a computing initiative mobilized and whose interest it served. In the second decade of the 1980s, even in “Labour’s Home” in the North of England, the group most able to influence the technology/employment nexus remained the private owners/controllers of means of production. It was workers who most strongly felt their effects.

Thatcherism and Reaganism were two very visible examples of a general 1980s tendency, the use of state power to accommodate the expanding reproductive ambit of transnational capital. In *Cyborgs@Cyberspace?* (1999), I described a prodigious expansion of the influence of capital over general social formation reproduction in the

Nordic countries. This expansion was an important reason for the declining influence of Nordic Working Life legislation on the way AICTs were actually used. Both books made similar points about unemployment, especially that the alleged disemploying/job creating tendencies in new information technologies were so highly mediated by the reproductive dynamics of capital as to have little independent effect. Similarly, chapter 8 of *The Knowledge Landscapes of Cyberspace* described local government projects in the Upper Mohawk Valley of the US unable to use public means to influence how technologies get institutionalized.

The current situation is illustrated clearly by 1990s changes in Wallenberg family-controlled—which is to say virtually all—capital in Sweden. Early in that decade, the Wallenberg corporations abandoned the national-level bargaining that had purchased social peace since the 1920s. Instead, they reoriented directly to a world market. This development was indexed vividly by the emergence of the trans-national firm ABB, particularly its chameleon-like attempt to be “the best corporate citizen wherever we happen to be.” This was a very different face for what some anachronistically insist on still calling “Swedish” capital. Danish and Finnish social formations similarly accommodated to the more globally exercised ambit of capital. Despite the potential for relative autonomy provided by nationally owned oil, even Norwegian enterprises and state institutions increasingly adapted themselves to the demands of capitalist institutions.

As loci of decision-making have accommodated to increasingly assertive supra-national corporations, the influence of nation state structures, including state-sponsored participatory institutions to promote economic democracy, has contracted. Capital’s increasing influence contrasts with the decline of trade union power and the narrowing of the range of options available to previously influential working people’s (e.g. Labour, Social Democratic or, in the US, Northeast Democratic Party) politics. Ideologies inhibiting working-class influence also gained wider ambit.

Turbo-Capitalism, not Knowledge, as Dominant

The structural theories of cyberspace critiqued at the beginning of this article asserted that knowledge was the generative source of recent change in social reproductive dynamics. Is it reasonable to trace developments like those described immediately above to new knowledge technologies? This is the view of knowledge revolutionary Anthony Giddens, who exercises a substantial theoretical influence over British “new” Labour. Giddens highlights “the new role of knowledge as a factor of production” (Hutton and Giddens 2000:4). He speaks of the “new knowledge economy that almost certainly operates according to different principles from the industrial economy” (2000:1), one that is “changing the very character of how we live and work” (2000:5). Like Davenport and Prusak, Giddens accounts for revolutionary change in terms of something more broadly spread: “Most companies know pretty quickly what other companies are planning, because of the general profusion of information. Secrecy is much more difficult. Given the global nature of contemporary communications, there is no geographical isolation any longer” (2000:26).

Here Giddens, like so many of the writers already examined, blurs the difference between information and knowledge and invokes popular but simplistic space/place contrasts. More substantively problematic is his ignoring of how the chief ostensible task of corporate knowledge technologies was to prevent general dissemination of company knowledge! On Giddens, world-transformative changes are traced to the abject failure of knowledge technologies to accomplish their intended goals.

Giddens’ interlocutor Will Hutton offers a different structuralistics. For Hutton, knowledge’s influence is not causative but instead is mediated through its role in what he, following Edward Luttwak, calls “turbo-capitalism.” This “very particular kind of capitalism” is one that “has emerged victorious from its competition with communism.” It is a triumphant form,

a capitalism that is much harder, more mobile, more ruthless and more certain about what it needs to make it tick. ...It’s overriding objective

is to serve the interests of property owners and shareholders, and it has a firm belief...that all obstacles to its capacity to do that—regulation, controls, trade unions, taxation, public ownership, etc.—are unjustified and should be removed. [Hutton and Giddens 2000: 9-10]

Hutton regrets the eclipse of forms of capital alternative to this share- (stock-) oriented turbo-form:

I would say that communism, although it failed, did have one good impact; it kept capitalism on its guard—in a sense it kept it aware that it had to have a human face. [9]

The alternative tradition of Catholic capitalism, social market capitalism, or stakeholder capitalism...is [also] retreating. [10]

Hutton does acknowledge a connection between this resurgent capitalism and AICTs. Unlike Giddens, he stresses that turbo-capitalism drives technology rather than being driven by it. Steroidal capital takes advantage of the opportunities to extend its reproductive ambit that are opened by technological change. In a Schumpeterian register, Hutton comments that Turbo-capitalism

is particular powerful at a time of great technological change because not only does it encourage new entrants into markets, it also shakes up the sometimes powerful but sleepy companies who currently hold a lot of market power [13]

Technological change sometimes has the effect of producing a sort of quantum leap, forcing a sort of restructuring of the whole of the capitalist economy. A quantum leap of this kind is happening through the impact of the information revolution at the moment...although...it has as much to do with the spread, character, and ambition of capitalism as the march of science. [20]

Thus, while for Hutton there is a connection between change in knowledge technology and turbo-capitalism, the connection is not the simple, one-directional, “cause-effect” one described by Giddens. Indeed, to present knowledge as if it commanded capital is to obscure what is taking place:

Of course I agree that there is a dynamic sector of the economy where knowledge is very important, and all firms can access and use the new processes to some degree. But I am also not sure that the inference we are meant to draw—that everything is cleverer and more knowledge-based and therefore that the fundamentals of capitalism have wholly changed, is right[,]...that the rules of the capitalist game have changed. [23-24]

Hutton’s analytic point is that knowledge-related phenomena are bent to the reproduction of capital, rather than that capital is being bent to knowledge networking. He goes on to comment that “although commoditization is an ugly word,... it does capture the process by which capitalism tries to turn every relationship into a commercial exchange. (17). Intellectual capital is not a new form of capital. While “intellectual property rights are increasingly what makes capitalism tick,” it is “control of the idea rather than what the idea gives to production” that counts. “All the difficulties about exploitation, private ownership, and instability remain remarkably the same” (25).

Instead of a Knowledge Revolution,

what really took place in the 1990s was a great power play: Asian capitalism versus American capitalism. US capitalism wins, with the Asia crisis of 97/98 actually being the flashpoint and the financial markets working in a way that furthers US interests... I think it puts an important question mark over globalisation. There is a dimension of globalisation that is about opening up the world to American interest in particular and Western capitalism in general. ...[U]nderneath the glitz there remains the exercise of raw power. [Hutton and Giddens 2000: 41]

Hutton rejects the idea that new technologies are the primary force for change. For him, this remains capital, a still nation/region-linkable but newly active form of it. Capital’s increasing active role has developed because, contra neo-classical economics, capitalist systems don’t tend toward neo-classical “equilibriums”:

The rationality of capitalism doesn't lie in any ... tendency to produce a stable equilibrium. Its rationality lies in its inherent capacity to accommodate risk, to experiment over investment for the future, and to be creative about new forms of production and consumption. [19]

In the relentless pursuit of its reproduction, turbo-capital especially is generative of instability, the chief driver of and problem for extending social formation reproduction:

The notion that capitalism should be seen as a creative process rather than tending to unimprovable equilibria is one of the great strengths of the [Second, late 20th century] Austrian school of economists' championing of capitalism. Friedrich Hayek says that markets are brilliant means of capturing the collective judgments of individual intelligence because they allow decentralized decision-making, but we should not think of them as stable. [20]

Rather than "markets working to produce a self-correcting equilibrium, what you have watched is a wild process of experimentation and overshoot involving some crazy and avoidable risks and economic pain. Heaven knows what will happen next and to whom" (40).

One casualty of the accelerated instability of turbo-capitalism was the institutions of social democracy, including the "welfare state": "It was more or less inevitable that the whole policy nexus would become unsustainable as soon as the financial deregulation caused asset price booms—bubble economies really—property booms and the rest of it" (40). Hutton consequently is critical of those like Giddens, those whose knowledge theory encourages a "naive trust in markets" that provides ideological cover for greater capital power. Rather,

the injustices you [Giddens] want to correct are not independent of the capitalism you admire – they result directly from its operation. [45]

Beneath the technological change some rough and tough old capitalists truths are being reasserted... [and] beneath the glitz of modernity a lot of people are as exposed as ever to some hard brutalities. [30]

Calling for structural reform of labour markets and the welfare system as stand-alone recommendations...really mean...that non-wage costs should be lowered, work made more insecure, and the...system of social protection weakened. [35]

In sum, on Hutton, phenomena like globalization are not caused by an emergent political economy of knowledge before which all must fall, but by contingent changes in the dynamic of capital reproduction. Technology change, the increasingly global reach of the corporation, and increased competition—all of these are real. However, they do not follow from any particular inevitable dynamic "laws" endogenous to knowledge technology. Rather, they follow from deliberate policy interventions, including the weakening of nation-based trade unions (the only effective trade unions there are, yet) to control access to labour. These interventions have also weakened the capacity of geography-tied capital to enhance the conditions of its reproduction, e.g., through tariffs. Forceful performance of knowledge "mantras" do impact social reproduction, but not because they reflect structural "truths." Rather, they are an ideological influence in policy discussions, one that diverts attention from the increasing ambit of capital and therefore of any attempt to mitigate its undesirable consequences.

In Marxist terminology, readings like Hutton's stress "social relations" rather than the "technical relations of production" of central interest to Giddens and the theorists critiqued initially in this article. The contemporary era is one of renewed, very great if not unprecedented, capital dominance and hegemony, certainly comparable to the 1920s in the US, Britain, and even the Nordic countries. This centrality is associated with several phenomena, including defeat of the Soviet Union, new limitations on states' actions, and assertion of new capitalist cultural legitimations (e.g., intellectual property) in the face of the challenges of the '60s.

Turbo-capitalism does take advantage of the Gideon Kunda (1992)-type AICT-enabled reorganizations of the labour process explored in *The Knowledge Landscapes of Cyberspace*. Yet while AICTs add options for reorganizing the labour processes, they do not compel them to take place. It is

only ideologically, via the notion that such reorganization is necessitated “ineluctably” by technology, that AICTs influence comes to appear structural.

A Cultural Theory of Contemporary Value Contradictions

While AICTs clearly can be used (as they have) to legitimate reimposition of a strong capital regime, they do not have to be used in this way. Their obvious ideological value alone should prompt doubt about “knowledge as technological imperative” lines of argument.

Hutton more parsimoniously analyzes the dynamics of contemporary social formations than social revolutionaries like Castells. That is, he properly attends to capital’s expanded power capital without extending it mythically, by giving capital knowledge clothing or by deploying metaphors that terminologically exaggerate its influence while also diverting critique.

Hutton’s kind of analysis can be restated in more anthropological terms. Doing so allows greater specification of the responses that distinguish the reproductive dynamics of contemporary employment social formations from previous ones and thus the actually new challenges to capital accumulation.

Value and Culture in General

On a general social reproductionist account (Hakken 1987), human social reproduction depends on cultural reproduction. That is, what differentiates the dynamics of the reproduction of human from other types of social formations (whether species specific plant or animal, or general ecological) is the extent to which human ones depend upon culture. Human social formations only last if existing humans convince new ones (whether “recruited” through sexual reproduction or immigration) to adopt compatible sets of cultural constructs. That is, the “newbies” are convinced to accept, or at least to act as if they accept, that the cultural constructs of their elders accurately describe actual social reproduction. This is one example of the kinds of deliberate interventions necessary to promote social formation reproduction.

Moreover, for any particular human social formation (what anthropologists call “a culture,” as opposed to the general human type of social formation) to perpetuate itself, it must withstand both natural and cultural “selection.” That is, it must meet the (culturally structured) biological needs of its adherents as well as the threats to its reproduction in its cultural environment, the other cultures with which it is in contact. This is equivalent to saying that new types of social formations arise by displacing older ones.

Anthropologists use “myth” to describe the stories that humans tell that account for cultural dynamics. Because, as argued above, human social formations must reproduce socially, myth development is a necessary component of cultural and therefore of social formation reproduction. To an anthropologist, the political economics developed to account for the rise of the employment social formation constituted the early mythologies of capitalism. As described above, it was neither money, markets, production of goods for sale, nor even forms of mass production that were the distinctive feature of the new “employment” type of social formation that came to prominence in the 18th century; all existed in previous social formations. What was new was the extension of the commodity form (mediation by markets) into two new arenas of social practice:

1. Actual human labour became labour power (the capacity to do work), and
2. The difference between the value of what workers produced and the value of their wages and other costs of production, or profit, became open to mobilization for investment, or capital.

That is, once the institutions of labour and capital markets came into existence, one could buy and sell work in the form of labour power, and lend out surplus value (profit) in the form of capital.

The Cultural Contradictions of Capital Mythologies

To become widespread, mythologies must provide convincing, if not necessarily accurate, accounts of the dynamics of social reproduction, accounts convincing enough that they themselves are also reproduced. A contradiction at the heart of the repro-

duction of capital has limited the cultural reproductive ambit of employment social formations' myths, particularly the labour theory of value. On the one hand, sellers had to convince potential buyers that the things they wanted to sell were worth the asking price. On the other, producers had to convince workers to produce these things at pay rates lower than the sale price.

In the social formations in which the institutions of labour and capital first developed, the markets were largely in luxury goods, and de-serfed uncommoned new workers had little alternative but to accept the wages offered. As the commodity form penetrated more aspects of social reproduction, however, workers became important as consumers as well as workers. They extended their collective ability to influence general social reproduction, specific labour markets, and states.

Capital markets require stability. This was initially provided by states that, e.g., promoted sufficiently transparent banking and meaningful exchange rates (the necessity of which is vividly illustrated by the experience of the ex-Soviet Union). States also periodically served as crucial sources of investment, first in canals, later in Internets.

As 19th century workers were able to exert influence, the contradiction at the heart of the labour of value became more pronounced, and the theory's value as a justificatory myth correspondingly declined. The capital theories of value that displaced labour theories mythically resolved this problem. Under them, value arose not from ripping off workers, but from value-generative qualities inherent in capital. Moreover, freed from having to be moored in the real worth of things produced—that is, as its reproduction became mediated by ever more dense narratives and thus decreasingly corresponded to events in the real world—the mythically powerful entity, capital, also becomes more malleable.

However, as illustrated in the capital metaphors critiques offered above, this mythic malleability has engendered new contradictions. If public entities can lower interest rates to stave off recession, why not keep rates low so small business stay afloat? If public moneys can be used to guarantee the profit level of military contractors, why can't they also fund

worker cooperatives? If they can rescue Savings and Loans, why not communities?

Such questions indicate how vastly extended myths of capital reproduction are more difficult to control. Its continuing actual dependence upon labour to produce the value turned into profit makes capital increasingly difficult to reproduce in the real world. It can only do so by bringing more and more domains of existence within its ambit, as is fitfully now happening in education. The gap between the cultural reproductive potential of "capital" in its latest mythic forms and the reproductive demands of so-called "late" capitalism as a social form increases, threatening the reproduction of entire social formations.¹²

Why Reconstructing Capital as Knowledge Doesn't Work

We now can see why knowledge has recently been theorized both as capital and as value. Encouraging and feeding off twenty years of actively "metaphorizing" capital, its theorists developed "knowledge capital" as a way to help organizations address a serious problem, one that becomes obvious as soon as one acknowledges a place for knowledge in production.

Once one has analyzed the "knowledge resources" of one's organization and acknowledged them to be significant, it makes cultural sense to think of them as "capital" and therefore as something to be protected from the competition. However, knowledge is hard to secure. For example, given that it can be transferred without being lost, one's security department can't even rely on its presence to indicate that it has not been stolen. One can't prevent leaving employees from taking it, either. Indeed, if knowledge really were the chief form of capital, the capitalist system would probably be doomed.

12 A number of radical political economists have followed Ernest Mandel (1978) in referring to the current era as "late capitalism." This terminology is intended to suggest that contradictions like the above are so overwhelming that capitalism's state is one of senility at best. I do not choose this terminology because the last decade has surely demonstrated capitalism's resiliency, in both symbolic and political economic domains. Its long-term fate remains doubtful, but its demise not imminent.

Indeed, however much cultural sense it makes, theorizing knowledge as capital is a conceptual trap. Knowledge theories in an “intellectual capital” register merely further extend the ambit of an apparently infinitely malleable, and therefore increasingly, mythic substance—witness, e.g., the “value” of dot.coms and the “vaporware” on which many were based. Saturating the world with capital metaphors only increases the difficulty of reproducing actual capital.

Steps toward a “Real” Knowledge Theory of Value

If knowledge is to be recognized as having a central role in cyberspace, it will not be by treating knowledge as capital, either overtly or effectively (as capital in knowledge drag). The promise of a knowledge theory of value can only be realized if it resolves rather than further complicates the contradictions of capital theories of value.

A first step in constructing a knowledge theory of value is to acknowledge the important contribution of labour to value, as theorists like Davenport and Prusak do. An important additional intellectual source of the shift of value attention to knowledge is the “turn to the social” of the institutional “neopolitical economics” of the 1960s. One important aspect of this development, the anthropologies and sociologies of work described in *The Knowledge Landscapes of Cyberspace*, underlined the knowledge similarities between what workers and managers give to production; each, for example, depends on “know-how,” albeit of different sorts—how to coordinate vs. how to habituate (Kusterer 1978).

Recognition of the interdependence of capital and labour would inhibit the metaphoric effusion of increasingly empty capital forms, but this is not enough. This section develops a knowledge theory of value in cyberspace alternative to both labour and capital theories.

A Summary of Elements Already Presented

Many parts of this “real” knowledge theory of value were presented in *The Knowledge Landscapes of Cyberspace*. These include the negative practi-

cal consequences of knowledge management’s efforts to treat knowledge as fungible, as composed of discrete, easily equatable and transformable bits. This tendency follows from analogizing knowledge too closely to capital. Instead, a practice approach to knowledge was proposed, a process one built on deeply contextualized knowledge networking.

This practice approach to knowledge can be situated in the multiple intellectual contexts that any knowledge AICT structuralistics must take into account (Section II of *The Knowledge Landscapes of Cyberspace*), and this complex theorization of knowledge has been applied in multiple research and practice domains (Section III). Finally, by indicating the major drawbacks of trying to fit contemporary social formation reproduction dynamics into a “capital” straightjacket, the argument presented thus far indicates the theoretical benefits of an alternative value account.

Just as the output of individual workers varies with their competence, so the group output depends upon how well work is coordinated. As neo-institutional work social science showed, both labour’s and capital’s reproduction depends on what individuals and groups know and their ability to put this knowledge to use. If, under genuine competition, productive units were to have access to similar labour powers and comparable machines and raw materials, “know-how” could easily be the main factor differentiating one firm from others.

Framed as “know how,” knowledge is a substantial factor in production. Awareness of the potential of new automated information technologies to “leverage” deployment of know-how, in part a consequence of the publicity surrounding the preoccupation with knowledge in informatics, certainly contributed to the resurgence of general interest in knowledge. This interest was also a consequence of the entry into markets of knowledge products overtly based in informatics.

Another source of knowledge value interest is recent organization theory, especially its increasing acknowledgement of the dense sociality of organizations and of organization itself as a process. Abandoning the effort to identify a rational, positivist management science based on discovery

of ONE BEST WAY, organization theory has recently moved beyond mere grudging recognition of the modicum of informal organization that inevitably accompanies formal organization. Instead, theorists have come to view not the knowledge that an organization holds but its capacity to learn new knowledge as its chief asset. With recognition of the profound sociality of this capacity to learn comes acknowledgement that organization knowledge is not merely a nominal collection of knowledges bounded by the heads of individual organizational members. Knowledge has an important locus in individuals, but its locus in organization is perhaps even more profound. Moreover, because the non-formal knowledge of individuals, work groups, and the organization is substantial and often decisive, it becomes difficult if not impossible to separate organization knowledge from organization itself.

Organization as Knowledge Networking

In other words, at base, organization is knowledge networking. This is the key point in a political economy of knowledge. Further, to the extent that organization dynamics are bent to some other imperative—whether the reproduction of capital or labour—knowledge networking is “distorted.”

In the possible new phase in the employment social formation that I refer to as “cyberfactory,” organized knowledge networking would initially still be bent both by computerization and turbo-capitalism. Still, like other new stages in an evolving social formation type, cyberfactory may nonetheless lead to a more profound transformation in organizational knowledge networking. Some current knowledge networking strategies respond to the contradiction between “deplacing” work, on the one hand, and reliance on more collaborative (e.g. “team”) forms of coordination on the other. In my view, these have real potential to compel a “resocialing” of work. By loosening the ties of know-how to current worksite politics, these strategies could open the way to overt recognition of the substantive skills of all workers, including the unskilled. This recognition would logically lead to pay schemes that compensate individual workers for all they actually contribute to value, rather than schemes that primarily reward or-

ganization members (disproportionately managers) for their contribution to profit. Were such schemes broadly applied, they might well indicate a “post-capitalist” social formation (to borrow Drucker’s phrase but not his argument).

Such developments are not out of the question. The “Call” to the OECD Conference discussed above acknowledged concerns about the new economy. These included how “innovation destroys some jobs” and how the “technology equals jobs” formula has a down side, such as the social psychological costs to workers of lost workplace identity. These are identified as reasons for wanting alternative narratives: “There is a need for a debate on alternative ways of organizing labour and the use of technology.”¹³

At least some participants saw the conference as a breakthrough in the introduction of alternative perspectives in the jobs/technology debate. Keith Smith, head of an important policy group funded by the Norwegian Research Council and chief conference rapporteur (1996), summarized the conference as:

- Presenting innovation as a learning process, one cumulative over time, which leads to the idea of spatially differing technology paradigms;
- Viewing technology as flexible; e.g., much of it is tacit, not easily constrained, so there are questions to be asked about how or even if it can be codified;
- Seeing knowledge as not individual; rather, it’s creation is collaborative, inhering in organizations as much as people; and therefore
- Recognizing how the use of knowledge rests on specific, even cultural, infrastructures, on concretely different systems of innovation.

With their increasingly strong economy and oil wealth, the so-called “Sheikdom of the North” was in a position to think very differently about jobs and technology. In his conference paper of 1997, Norwegian economic historian Francis Sjersted

13 By defining “innovation” in purely neo-classical terms, as “the creative process through which additional economic value is extracted from the stock of knowledge,” the conference organizers did themselves no favor in the search for alternatives, however.

argued for a radical experimentation with ways to conceptualize social participation in which the job was much less central, beginning the process of decoupling access to social wealth from the particular job one finds oneself with (or without).

Sjersted's argument seems to have had little effect so far. Still, the explanatory strategies of these institutional economists in Oslo were not oriented toward identification of the presumed formal, machine-like processes "built in" to all economies. Rather, the search was for new capacities for and exercise of alternative social power based on different national/cultural dynamics. It is for such projects that knowledge theories of value hold most promise.

A Classical Knowledge Theory of Value

"Knowledge as the key productive force" perspectives like those outlined above can be alternative, rather than subordinate, to capital theories of value. One example of an attempt to theorize such notions explicitly is Nick Dyer-Witherford's *Cyber-Marx: Cycles and Circuits of Struggle in High-technology Capitalism* (1999). The book's chief relevance to the current era is its presentation of what Marxism offers to answering the knowledge question in cyberspace.

Dyer-Witherford begins with a footnote in *Capital* on the work of the early informatician Charles Babbage:

Commenting on capital's ever-increasing use of machines, [Marx] notes that "mechanical and chemical discoveries" are actually the result of a social cooperative process that [Marx] calls "universal labour...all scientific work, all discovery and invention. It is brought about partly by the cooperation of men now living, but partly by building on earlier work." The fruits of this collective project are, Marx argues, generally appropriated by the "most worthless and wretched kind of money-capitalists." But the ultimate source of their profit is the "new development of the universal labour of the human spirit and their social application by combined labour." [Dyer-Witherford 1999:3-4]

One can see here the germ of a theory of value that gives substantial weight to knowledge while still tying it to the collective and social dimensions

of labour. Dyer-Witherford describes how, in other comments in the *Grundrisse*, Marx

foretells the future technological trajectory of capitalism...At a certain point, Marx predicts, capital's drive to dominate living labour through machinery will mean that "the creation of real wealth comes to depend less on labour time and on the amount of labour employed" than on "the general state of science and on the progress of technology." The key factor in production will become the social knowledge necessary for techno-scientific innovation—"general intellect." [4]

Contrasting Marx's attention to universal labour to Babbage's allegiance to the reproduction of capital, Dyer-Witherford poses a "contest for general intellect" between Marx and Babbage. The contest was, in essence, over how a theory of knowledge was to be inclined—toward capital, or toward labour.

In concluding his general defence of the relevance of Marxism in a high-tech world, Dyer-Witherford glosses Marx's view of intellect as an evolutionary account of employment social formations. That is

at a certain point in the development of capital, the creation of real wealth will come to depend not on the direct expenditure of labour time in production but on two interrelated factors: technological expertise, that is, "scientific labour [sic]," and organization, or "social combination." The crucial factor in production will become the "development of the general powers of the human head"; "general social knowledge"; "social intellect"; or... "the general productive forces of the social brain" [Dyer-Witherford 1999:219-220]

Thus, in the mid 19th century, Marx began to develop a knowledge theory of value. "What Marx describes is eminently recognizable as a portrait of what is now commonly termed an 'information society' or 'knowledge economy'" (221). However, just as both labour and capital would decline in importance as society developed, this knowledge theory would not only supersede the labour theory of value; it would also obviate any need for a capital one.

A Contemporary Knowledge Theory of Value

However, as articulated, this Marxian knowledge theory of value is ambiguous, having very different implications depending on which of the “two interrelated factors” is stressed. Modernistically, in the vein of the “scientific” Marxism of Engels, the theory could emphasize the content of “the general state of science and the progress of technology.” Indeed, “the power of knowledge” could even be “objectified” against labour and for capital. On first reading one might indeed see Marx as stressing how “the accumulation of knowledge” gets “absorbed into capital.”

Alternatively, non-Modernistically stress could be given to the social side, neo-pragmatically critiquing scientism and emphasizing “social application by combined labour.” Dyer-Witherford prefers this latter reading, an “optimistic” Marx:

However—and this is the whole point of Marx’s analysis—such a level of technological advance... contains within itself the seeds of a capitalist nightmare. By setting in motion the powers of scientific knowledge and social cooperation, capital ultimately undermines itself... First... as advances... reduce the requirement for direct labour, ... the very basis of capitalism’s social order... is eroded...

This is reinforced by a second tendency, the increasingly social nature of activity require for technoscientific development, which unfolds not on the basis of individual effort but as a vast cooperative effort... [B]oth private ownership and payment for isolated quanta of work time appear increasingly as irrelevant impediments to the full use of social resources. [Dyer-Witherford 1999:220]

An Extended Contemporary Knowledge Theory

Dyer-Witherford argues that the contemporary case for transformative optimism is most fully developed in the theoretical work of the largely European journal group *Futur Antérieur*. For them, it is true that “the revolutionary tendencies Marx identified... are occurring, but [still] in forms prescribed by an order that continues to organize itself on the basis of the wage and private ownership,” the reproduction of capital. They go on to critique Marx:

In this situation, it is not enough to focus, as Marx did, on the objectification of social knowledge in new technologies. Rather, the critical issue is that of the nature of the human activity required to create, support, and enable this technoscientific apparatus... [H]ere... we encounter [a] paradox. While capital has developed machines to subordinate and reduce labour at the point of production, this development itself demands the emergence of a new range of social competencies and co-operations—the cultivation of ‘general social knowledge’... [or] ‘mass intellectuality.’

“Mass intellectuality” is the ensemble of “know-hows” that supports the operation of the high-tech economy. It is “the social body” as a “repository of knowledges indivisible from living subjects and from their linguistic cooperation..., ‘immaterial labour.’ [Dyer-Witherford 1999:221]

On Dyer-Witherford’s reading, for social formation reproduction today,

the crucial question thus becomes how far capital can contain... “this plural, multiform, constantly mutating intelligence” of mass intellect within its structures... [I]t “appears to domesticate general intellect without too much difficulty.” But this absorption demands an extraordinary exercise of “supervision and surveillance,” involving “complex procedures of attributing rights to know and/or rights of access to knowledge which are at the same time procedures of exclusion.” [Dyer-Witherford 1999: 221]

As opposed to the dialectical idealist views that dominate current thinking on management, debilitating because contradictory, *Antérieur* offers the following critique:

Good “management” of the processes of knowledge consists of polarizing them, of producing success and failure, of integrating legitimating knowledges and disqualifying illegitimate knowledges, that is, ones contrary to the reproduction of capital. It needs individuals who know what they are doing, but only up to a certain point. Capitalist “management” and a whole series of institutions (particularly of education) are trying to limit the

usage of knowledges produced and transmitted. In the name of profitability and immediate results, they are prohibiting connections and relationships that could profoundly modify the structure of the field of knowledge. [Dyer-Witherford 1999:222-223]

Interestingly, the writers of *Anterieur* go on to analyze “teams” and “participative management” as sites in which these contradictions are particularly manifest. Beginning in a Kundaesque vein, they speak of how sometimes

new team organization is even more totalitarian than the old assembly line...

However...[i]n delegating...certain managerial responsibilities to workers, capital is partially relinquishing its claim to act as the mediator and coordinator of production. There is a potential tension between capital control of enterprises and the increasingly self-directed nature of work...

[A] massive contradiction arises for capital: it has to stimulate and harness subjectivity by encouraging increasing worker responsabilization, even creativity, in order to grasp a social and communicational surplus value in the workplace... This...comes to constitute a competitive edge in the global fight for shrinking ...markets. But in doing so, capital has to be careful in depriving worker subjectivity of any implication in terms of power and control...In this way, capital silences subjectivity just at the same time it calls it into life. Capital has not found, yet, the ways to deal with this contradiction.” [Dyer-Witherford 1999: 224]

Knowledgers of the World, Unite!

The *Anterieur* writers go on to argue, like good Marxists, that some workers have been able to mobilize “cooperative” aspects of the new work organization to create a social movement for counterpower. In my view, Free/Libre and Open Source Software (F/LOSS) development and advocacy shows some aspects of such a movement. On Dyer-Witherford’s reading, the *Anterieur* group also provide a theory of what might lead such knowledge networking to be transformative. This they see as arising via the heightening of the contradictions of “general intel-

lect,” as these are worked out in

media and communication. General intellect is “a labour of networks and communicative discourse; it is not possible to have a ‘general intellect’ without a great variety of polymorphous communications...communications to use in a creative fashion the knowledges already accumulated, communication to elaborate and record new knowledges.”

Capital has developed technologies of information—mass media, telecommunications, and computer networks—to consolidate markets, an ideological control. But here too it has been unable to develop the objective, fixed, machine side of “general intellect” without also involving the subjective, variable, human aspect...[*Anterieur* writers] reject media critiques framed only in terms of “manipulation.”

Nowhere has [the need for such rejection] been more apparent than in the field of computer-mediated communications...[I]n the development of this extraordinarily powerful technology capital has depended on a mass of informal, innovative, intellectual activity—“hacking”—on whose creative commerce [it; sic] constantly draws even as it criminalizes it. It was out of capital’s inability to contain such activity that there emerged the astounding growth of the Internet. This is surely the quintessential institution of “general intellect... [or]... collective intelligence.” [Dyer-Witherford 1999: 227-228]

Dyer-Witherford finds substantial grounds for optimism about “the capacities of mass intellect to reclaim advanced capital’s means of communication.” A potentially explosive

volatility arises not only from a dynamic of emiseration [as in classical Marxism]—with more and more people being expelled from production by automation—but also from a reappropriative process in which ‘mass intellect’ begins to fold back into itself the organizational and technological knowledge necessary for the running of society... [Such a] “constituent power” ...[means]...the task of radical politics [is] the creation of a “republic” that dissolves both capitalist command and state

authority. [Dyer-Witherford 1999: 230]

Dyer-Witherford concludes,

In the era of mass intellect, a purely Luddite stance is not enough. To grasp the tactical and strategic changes present by capital's failure to control the technological dynamics it has set in motion, activists must be...Luddites on Monday and Friday, cyberpunks the rest of the week. [Dyer-Witherford 1999: 236]

Free/Libre and Open Source Software in the Malay World and the Knowledge Theory of Value

As indicated above, I concluded my initial field studies of AICTed knowledge networking convinced that, if there was one of its forms that was most figurative of what a real Knowledge Society would be, that form is advocacy for and development of Free/Libre and Open Source Software. Since 2002, I have been carrying out virtual and in situ field research on F/LOSSing in the Malay World while also encouraging comparative study of F/LOSSing grounded in other non-North Atlantic contexts. In other texts (e.g., Hakken, submitted) I have made the case for why the study of F/LOSSing should be privileged for those interested in AICTs, knowledge, and social transformation, and I have discussed at length the patterns of the F/LOSSing in the Malay World that I have observed and participated in. In these accounts, I have drawn attention to overt regional patterns, such as the general availability of access to F/LOSS projects, and the strongly held opinion that the number of F/LOSS developers in the region is insufficient to sustain a sufficiently vibrant "community." I have also drawn attention to aspects of the context of southern Southeast Asian computing that appear to be equally relevant to the patterns of F/LOSSing, including the large presence of the state in the economies of the region, distinctive ethnic and gender patterns, and the relative weakness of civil society institutions.

Both overt and context factors must be attended to if we are to understand what the experience of F/LOSSing in, say, the Malay World suggests

about what the F/LOSS experience indicates about movement toward social formations in which value is based on knowledge rather than capital or labour. This is of course not the place to offer a full account of the Malay World patterns or to make general comparisons between "Western" and non-Western F/LOSSing. Nonetheless, I think it appropriate to give at least a flavour of what such an analysis might look like.

Malaysian F/LOSS in Cultural Context

For example, assessment of F/LOSS community dynamics depends upon understanding their connections to broader economic dynamics. A recent survey of F/LOSS firms in the Kuala Lumpur area established that there were close to 200 of them. A similar survey was carried out in Penang during the in situ fieldwork (5 months in early 2005), oriented, as was the KL survey toward the question of whether F/LOSS was an economic sector likely to become big enough to justify substantial public support. While the presence in the regional AICT market of big OS-oriented organizations like IBM, Novell, and Intel does help demonstrate F/LOSS market viability, it also tends to make things harder for small, independent F/LOSS businesses. While indigenous organizations can claim more familiarity with the regional context than transnational ones, they are inconsistent in their localization activities, both actual and potential, beyond mere translation of existing F/LOSS code (e.g., Open Office). Their market marginality, in combination with lack of clarity about what and how to "localize" F/LOSS, means the Malay F/LOSS community has less leverage. Exacerbating the business problems is the large role of the state in the economy and thus the extent to which IT procurement decisions are state dependent, which informants described as like having to depend on "patronage" to win contracts.

The available research indicates that another characteristic of F/LOSSing is its dependence upon the kinds of open discourse characteristic of a public sphere. Unfortunately, the small number of cosmopolitan discourse sites in the Malay World with a F/LOSS tinge are regularly threatened. Award-winning blogger Jeff Ooi has twice been under po-

lice investigations prompted from within the state. Despite laws banning Internet censorship, on-line news service Malaysiakini has had its servers seized, as were those of the publisher of “MalaysiaToday.com.” The nation’s draconian security laws are still in use, and their existence is regularly pointed to as part of discouraging a broad range of activities, from religious groups to those who would protest hikes in the price of petrol.

There are several reasons why Malaysia’s civil society is generally underdeveloped. Controlled print and mass electronic media and weak civil networks mean a restricted space for “free” culture. On several occasions while in the field, I heard leaders of important state and state-sponsored organizations argue against the very idea of a public sphere, saying that Malaysian multiculturalism and racial pluralism was too fragile to withstand the pressures that might result from open discussion.

In part, I regrouped my cyberspace ethnography in southern Southeast Asia because of an interest in the Islamic connection. I was particularly interested in whether the debate over Islam and knowledge would impact on the general debate over technology policy and specifically on F/LOSS. While Malaysia had been a key site in the vigorous debate over Islam and knowledge during the last quarter of the 20th century, I encountered very little during the field period that indicated that this debate had fostered alternative conceptualizations of technoscience. The closest thing to a debate in this area was the discussion surrounding “Islam Hadhari,” a term used by Prime Minister Badawi to characterize the Malaysian approach to Islam. Translated as “civilizational Islam,” and projected as an alternative to fundamentalist forms of Islamism, Islam Hadari was arguably an initiative in llobalization, an intervention with local roots being projected on an international scale. “Debate” on Islam Hadari, however, was mostly over traditional areas of policy concern, only tangentially related to technology. The impressive array of Islamic Institutes, both the independents and those associated with public universities, intervened in public discussions primarily to reinforce generally conservative, text-based interpretations of Islamic law and learning.

“Knowledge society” rhetoric had figured heavily in justifications for major state investment in development projects like the building of Putrajaya, the new administrative capital, and its neighbour Cyberjaya, whose Multimedia Super Corridor, as the names imply, were to become the Malay “Silicon Valley.” However, I was unable to identify any concerted effort to spell out in detail what the Malaysian Knowledge Society would be, beyond simple indicators like an increase in the number of university graduates. Nor did I find any materials in which discussions on the particularities of Islamic knowledge intersected with those about the knowledge society; my queries in this regard were met with bland comments about how good Muslims were highly educated and conversant with the latest developments in science and technology. On several occasions, I suggested that, were one interested in developing a specifically Malaysian/Islamic approach to AICTs, F/LOSS would be an excellent way to do this. Informants generally responded by saying that, while they could see what I meant, they hadn’t thought in those terms. I inferred that they didn’t expect to. (I have elsewhere spelled out this argument and attempted to figure out why these silences exist (ms)).

Malaysian F/LOSS in Comparative Political Perspective

These are among several substantial issues regarding the Open Cultural Imaginary, issues relevant to F/LOSS anywhere, which can be glocal-ized¹⁴ in Malaysia.

Further light was cast on this complex of conjunctions by what went on at a political event that took place during the field study. The occasion was formally a series of presentations on “Reformasi” in the region. This term, used to address similar political movements of the late 1990s, was addressed

14 “Glocalization” refers to a process whereby activities taking place on a broad, trans-national (global) scale are grounded in a particular area. This term, along with its obverse, “llobalization,” in which a process distinctive on one place or community takes on global purchase, have been introduced to broaden discussion beyond the “global-local” dichotomy.

by activists from Indonesia, Thailand, and Malaysia. The general assessment was that the movement had been most successful in Indonesia, where an authoritarian state had been overthrown and substantial progress made toward political freedom (rule of law, a free press), although much remained to be done. While the movement in Thailand had managed to eliminate a military dictatorship, authoritarianism was again on the rise, with potentially devastating consequences for the Islamic minority in the south, just across the border from Malaysia.

The speaker who addressed Reformasi in Malaysia was Anwar Ibrahim, making his first public speech in Malaysia after recently being released from six years in prison. (Testing his ability to speak in public on politics was arguably what the event was really about.) Ibrahim had taken off the mantle of leading Malaysian Reformasi after having been cast out of his position as Deputy Prime Minister in the ruling coalition. In his view and that of the other panelists and the audience, Reformasi had made the least progress in Malaysia. The meeting was sponsored by Keadilan, a political party led by his wife, which was part of the opposition coalition.

In general terms, the relationships among Islam, technologies like F/LOSS, and civil society are refracted in the first instance through a sieve of politics, like the one displayed at this meeting. As several of the speakers commented, there was good reason to expect that the meeting would be disrupted by the police, as it might have been in Thailand but not, at least for the moment, in Indonesia. I left Malaysia feeling that a working out of an “Islamic way to compute,” one that would make sense throughout the region, awaited resolution of several, more pressing matters. Some, like many of those pointed out above, were national. Others are arguably global, the world’s reproductive dynamic—at least rhetorically—being dominated by the dialectic between a new American Empire and Islamic fundamentalism. These are additional indications of how the character of F/LOSSing in this region is dependent upon a wide variety of socio-cultural contexts, most obviously but not only the histories of the region’s post-colonial states.

Conclusions

The goal of this article has been to sketch out a knowledge theory of value appropriate to analyzing the structural dimensions of cyberspace. While not generally seen as a core political economic discipline, anthropology is a practice that in general aims to recognize the importance of both emics and etics, the cultural elements with which humans collectively construct their world and the multiple physical, biological, and material conditions that limit what is culturally constructible. As such, anthropology shares more with institutional/political economic perspectives than with neo-classical economics. A group of self-identified anthropological “substantivists” arose in the 1970s (e.g. Sahlins 1972) to counter the simplistic adoption of neo-classical terminology by ethnographers. These scholars, for example, critiqued the presumption of a universal “social surplus” whose allocation was the scarcity-driven, necessary preoccupation of economic activity (Hakken 1987).

Because a satisfactory ethnology of cyberspace has to account for both dynamic change and the form that change takes, it, too, is more properly grounded in such substantivist political economics. What Michael Blim (1999) calls socio-cultural economy, an approach that acknowledges a plurality of capitalisms, is a more promising engagement with cyberspace than Castells’ theoretical project. Anthropologists should relate to Castells’ ideas as suggestive hypotheses demanding critical evaluation, not as ethnologically demonstrated propositions. Such evaluation may support some of Castells’ arguments. For example, the deplacating affordances of AICTs-in-use do in my view justify Castells’ developing disenchantment with analytic categories, like “cities,” that privilege geography of the old style.¹⁵ Mimi Ito’s (1999) efforts to theo-

15 Such a contention is quite debatable. Saskia Sassen (2000) has argued that the globalization of finance re-privileges a small number of core cities that effectively facilitate the face-to-face interaction that is paradoxically essential to the high level of trust required. Similar arguments have been made in regard to the small number of “hot house” loci (the Boston Route 128 corridor; Silicon Valley, Fen, and Glen; the Grenoble region of France; Kista in Sweden; etc.) of apparently central importance to the “new economy,” whatever it turns out to be.

ribe “networked localities” is suggestive of another strategy for coming to terms with the “decouplings of spaces from places,” the glocalizations as well as llobalizations, that are new in social relations.

In use, AICTs can support diverse tendencies, including that of capital markets to “go global” and new forms of workplace deskilling. AICT-based technologies of surveillance at work can tilt power even further toward capital. At the same time, AICTs are technically just as compatible with expanded work humanization, expanded state intervention (e.g., computerized monitoring of the environmental effects of production), and expanded worker control, as demonstrated by, for example, Nordic systems development projects. Elsewhere (Hakken 1999, Chapter 5) I have discussed data suggesting that analyses of the wellspring of value added are shifting toward the collective performance of the workforce. Chapter 8 of *The Knowledge Landscapes of Cyberspace* similarly argued that already the successful organization is held to be the one able to realize capital by getting its workers to participate most actively while at the same time convincing customers of the genuineness of workers’ performance. Such organizations eventually confront the conflict inherent in all attempts to promote worker control while still keeping work subjugated to the reproduction of capital. A unionism less tied to collective bargaining would find here terrain on which a social activism for the contemporary era might be built. Social activism on these grounds, combined with social experiments which de-couple income from labour, would be indicative of a truly different cyberspace political economy.

The Knowledge Theory of Value and the Future of Social Formation Reproduction

In short, the approach to knowledge developed here can provide the basis for a viable knowledge theory of value. If it were applied to policy and in organizations, what would be the result? Could such knowledge theories of value extend the reproductive ambit of employment social formations into the future? The obstacles to be overcome are formidable. The commodity form continues to expand its long march through the institutions of social

formation reproduction, colonizing new arenas like education. Turbo-capitalism eliminates or severely weakens institutions with some independent ability to influence social formation reproduction (educational institutions, governments, families, voluntary organizations/not-for-profits).

Because it continues to foster anarchic practices, capital’s continuing dominance does not bode well for humans. Our capacities to extend social formation reproduction via AICTs depend upon reversing the dominance of one social relationship, that of capital, and ultimately displacing it by a process, that of knowledge networking. In Sheffield, Barbara Andrews and I saw the beginnings of something like this (1993). When the computers came, the most important determinant of what happened was not the technology qua machines, social relations in the abstract, nor the iron laws of the market. What was most important was how the technology was perceived and which potentials were actually appropriated by the people in actual social relations. While the dominant social relations clearly marginalized some constructions, and economics and mechanics certain others, there was still a broad range of interpretive flexibility in the actual performance of AICTed actor networks.

How momentous is the task of replacing a capital with a knowledge political economy? Does it necessarily mean ending capitalism? Like Megnad Desai (2002), Hutton doesn’t think so:

Obviously globalisation favours shareholder [US: stockholder]-value-driven capitalism and...is being driven by it, so it’s hardly surprising that variants of capitalism that try to balance the other interests in the enterprise, like those of the workers, and to behave more ethically – stakeholder capitalisms – are under pressure. But that doesn’t mean that the principle of stakeholder capitalism is wrong; it means rather that some of the means of achieving it have to be updated and modernized. [Hutton and Giddens 2000: 31]

For Hutton, “stakeholder capitalism” is a form of capitalism in which capital reproduction doesn’t run rampant. Instead, it is designed and disciplined in a manner that equally benefits all social

stakeholders. Because turbo-capitalism is neither a technologically-driven inevitability nor an unstoppable structural imperative, there remains considerable opportunity, as well as pressing need, for the “greater governance of the global economy...” The question remains

to what extent we can modify capitalism so that it can live with other values like quality and social justice. [19]

Every form of capitalism must possess a legal framework in which to do business...[C]orporate, banking, pension fund, employment, trustee, contract and commercial law reflect conscious choices about what kind of capitalism any particular society wants – and my contention is that it can be biased significantly to favour interest other than property owners and private shareholders” [34-35]

On Hutton, it is possible to re-domesticate capitalism. Such a project could use knowledge technologies to construct substantial counters to the reproductive influence of capital.

One need not share Hutton’s optimism about pushing the turbo-capitalist genie back into the bottle. Nor, in theoretical terms, does acceptance of interpretive flexibility with regard to the political economics of AICTs mean, “Anything goes.” Just as turbo-capitalism and “post capitalism” are not the only possible social formations of the future, so Cyberspace structuralistics are not forced to choose between neo-classical capital mythology, political economic technological determinism, or chaos. One can be subtle about causation without abandoning it altogether.

AICTs are better viewed as terrains of contestation than as ineluctable, independent forces. Technologies do have politics, but like all politics, they manifest multiple, contradictory tendencies. Their role in particular situations depends upon how multiple constructions play out, and contexts influence, through conflict. Capitalism is an inherently anarchic political economy, the “new economy” a mirage, but contradictory forces and conflicting constructions mean the future is yet to be determined. Such moments of under-determination can be moments of opportunity.

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