

# **KNOWLEDGE, CYBERSPACE, AND ANTHROPOLOGY**

(draft for comment, not quotation)

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## ***THE PLURALIZATION OF ANTHROPOLOGICAL KNOWLEDGE***

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### ***Session Abstract***

Among the most important transformations in the discipline of anthropology over the last hundred years are changes in our conception of what constitutes anthropological knowledge. In the wake of the adoption early in the Twentieth Century of ethnographic fieldwork as something of a methodological standard in social and cultural anthropology came an implicit recognition of the cultural relativity of knowledge, that what counts as “known” varies from cultural to culture. Over the century, this recognition co-existed more or less uneasily with the Malinowskian and both earlier and later forms of commitment to a “science” program in the discipline.

In recent years, we as a discipline have “pluralized,” moving among other things from an implicit, unified conception of what it means for something to be known anthropologically to discourses that explicitly recognize the existence of multiple disciplinary as well as “native” knowledges. Why have these changes come about? To what extent are they a response to developments internal to our discipline, and to what extent part of broader intellectual trends? What are the implications of this change in the conception of what we know for the future practice of our common endeavors?

In this session, scholars who have contributed to this most recent change through research and/or who have recent reflected influentially on anthropological knowledge will address these questions. Given the centrality of conceptions of science--and the relation of anthropological scholarship to it--on anthro-knowledge, it is reasonable that several of the participants have been involved in shaping an anthropology of techno-science. The intent of the session is to assess the cumulative effect of other developments as well as these on knowledge constructs in anthropology.

### ***Paper Abstract***

The theme of this session is recent approaches to anthropological knowledge that stress pluralization. This paper connects this problem to the discourses about knowledge occasioned by the spread of automated information technology and the social changes purported to accompany it. These latter discourses include the notion of a technology-induced knowledge society and political economies that describe knowledge as now the chief factor of production, both ways of thinking that posit profound changes in the

character and/or social functions of knowledge in cyberspace. Attention will be directed to the recent "knowledge management fatigue" in contemporary organizations and to the contrasting rise of the "free software/open source movement" as an emergent, potentially really new form of knowledge networking. To facilitate understanding, these events will be placed within the "knowledge engineering" perspective long central to computer science, as well as the more recent attempts to integrate an ethnographic gaze into this discipline. The paper is based on the author's current action research on knowledge networking in cyberspace.

## **1. Introduction: The Knowledge Question in Cyberspace**

My interest in the pluralization of anthropological knowledge follows from my efforts to answer what I call the knowledge question in cyberspace. For several years now I have been trying to use ethnography to decide whether differences in the character and social functions of knowledge associated with computerization really do have transformative social implications. Indexed by the tendency of late '90s new technology enthusiasts to substitute "knowledge society" for "information society" slogans, the notion of fundamental change in knowledge was key to explanations of the so-called, so quickly forgotten "new economy," for example. Multiple forms of the argument are doubtless familiar to this audience:

1. the simple quantitative case, which for example attributes transformative implications to the accelerated rate of production of new knowledge;
2. the qualitative arguments, like those that see fundamental change in the way knowledge is produced as a consequence of electronic means of scholarly communication; or
3. the social function arguments, such as the replacement of labor and capital by knowledge as the "chief factor of production," leading to what business guru Peter Drucker calls a "post capitalist" society.

My interest in such ideas is not hard to understand. As an academic and intellectual, I find intriguing the idea that work like mine is, all appearances to the contrary, is suddenly acknowledged to be transformative! Because Knowledge Society ideas seemed to have a powerful purchase on social policies—such as those supporting, for example, a prohibition on Internet transaction taxation, the transformation of the US Department of Housing and Urban Development from a providing of housing for the poor to a provider of computer training, the recent appointment of a U.S. "Internet Czar," or extending public subsidies to predominantly on-line educational institutions—I think it important to evaluate such claims. As cyberspace conquers more and more of our cultural imaginary, its actual dynamics need to be understood if we are to influence, not merely be carried along by, social reproduction.

A case for the important role of ethnography to the study of the relationship of automated information technologies to social change can be made on several grounds. One is ethnography's attention to broad ranges of both immediate and more contextual factors, and its insistence on paying as much attention to what people say and think as what they do and the structural constraints within which they do it. In *Cyborgs@cyberspace?*, I also argued for adopting evaluation of "computer revolution" notions as a common, core element in the agenda of cyberspace ethnography.

My recent ethnography of knowledge in cyberspace has also had the dual quality, both basic and applied, characteristic of my previous work. On the one hand, I am committed to separating the reasonable from unreasonable cyber-claims, in part to ferret out misleading cant in the hype over knowledge in cyberspace. I refuse to accept demonstrations of the *potential* for knowledge change as proof of its actuality. On the other hand, I recognize in automated information technologies powerful tools for making profound reforms in the way “knowledging” gets done today; I would like to live in a real Knowledge Society.

There is one important sense in which the potential of a computing-based knowledge society changes how we produce anthropological knowledge, at least of it. In my ethnography of knowledge in cyberspace, I have tried to follow the maxim, that, because we are studying a culture which at most is only under construction, cyberspace ethnographers have an extra ethical responsibility. This is to go beyond mere study of cyberspace to find ways to become active participants in its construction. In addition, then, to executing a basic research project on knowledge management in organizations, I also became involved in action research to knowledge network social service in my local county. This maxim also informs my interest in peer-to-peer computing and the Open Software movement.

The possibility of an alternative way of life based on computing has other implications for anthropology knowledge. The one I wish to focus on today, and which led me to organize this session, also arises from trying to answer to the knowledge question in cyberspace. It turns out that, in order to answer the cyberspace knowledge question ethnographically, we must first develop a more vigorous anthropology of knowledge in general. Further, to get to a serviceable general knowledge anthropology, we need to think more deeply about anthropological knowledge itself. In the brief time available to me, I intend to address

1. Why studies of knowledge in cyberspace need a grounding in a general anthropology of knowledge;
2. What about our concept of anthropological knowledge that has prevented us professional anthropologists from developing the needed general anthropology of knowledge;
3. A few signs suggesting that the requisite anthropological knowledge and anthropology of knowledge are beginning to be developed, and, in conclusion
4. What a tempered, empirically-based analysis of knowledge change in cyberspace can contribute to the more general anthro-knowledge/anthropology of knowledge projects.

## **2. *Why studies of knowledge in cyberspace need an anthropological grounding***

It turns out that one encounters several problems just trying to pose the cyberspace knowledge question effectively. It is not easy, for example, to translate many of the claims for transformation into propositions that can be addressed empirically. Some of the problem is largely rhetorical, like the penchant for exaggeration in claims for, e.g., post capitalism. Some of it, however, is more conceptual, like the simultaneous evocation of apparently contradictory—e.g., both Modernist and Postmodernist—conceptions of knowledge. We need a clearer idea of what knowledge

is—for example, how it differs from data and information—before we can assess how much it is changing.

The meager results of more than a half century of efforts in informatics (computer science) to engineer knowledge via automated information technologies has much to do with similar conceptual problems. Several high profile but ultimately abandoned projects—from the MEMEX of Vannevar Bush, to artificial intelligence, to expert systems, to the '90s efforts at knowledge integration—have been, in their own terms, spectacular if instructive failures.

The business parallel to knowledge integration, the organizational knowledge management systems of the late '90s based on knowledge engineering, was such an embarrassment that one can identify a “knowledge management fatigue syndrome.” One manifestation of this is the rapid disappearance of CKO (“chief knowledge officer”) jobs in corporations. To some extent, the status of knowledge management as one of the larger, stinking but unmentionable dead elephants on the corporate conference table is traceable to the perennial problem such organizations have with sharing power. For organizations really to “use IT to put knowledge in control,” managers have to relax their control over workers, but they remain loath to compromise their power. Nonetheless, problems of putting knowledge engineering into practice also have deep conceptual roots. Most organizational knowledge management technologies required treating very different kinds of knowledge—say the latest laboratory tests and the retiring regional sales reps embodied knowledge of the drinking and philandering habits of customer—as essential the same.

Interestingly, those organizations that really “get it” about knowledge have taken on board much of the critique of the Modernist scientific constructions of knowledge. A reading of the at least some organization theories (e.g., those publishing in the *Harvard Business Review* or writing recently in *Organization Science*) suggests that these organizations are moving toward a very different understanding of what knowledge engineering is for. They generally accept that:

1. The focus of knowledge technologies has to shift, from presuming knowledge to be a content, essentially a thing, to knowledge networking as a process;
2. To foster any particular kind of knowledge networking, one must first understand it as a social process;
3. Knowledge engineering is really about supporting a social process, knowledge networking (these days often tied to “communities of practice”);
4. To really support knowledge networking, one needs technologies responsive to multiple types of knowledge, e.g., “tacit” as well as “explicit”;
5. Knowledge resides in groups, not in individual minds;
6. The main task of knowledge engineering is not that of communicating what one person knows to another, but of supporting a social networking process through which groups come to acknowledge that “X” is known and build collective activity on this understanding; and finally
7. To design a system that supports multiple knowledge networking processes—such as the production of new knowledge, the adaptation or extended reproduction of knowledge in different circumstances, and the sharing of existing knowledge—one needs deep understandings of both the wide variety of

knowledge networkings in which human/cyborgs engage and their interconnections.

For this last reason, organizations serious about knowledge should also (and some try to) be serious about ethnography. Those that try want to use ethnography as a research methodology with which to understand the complex social processes which they wish technologies to foster. They also want ethnography as a literature, a body of representations—ethnographies of specific knowledge networkings—on which to draw for design ideas. What is becoming equally clear to those who have tried to use knowledge management in “globalized” organizations, especially those operating in multiple nations/cultures—is the need for technologies that do more than avoid the suppression of cultural difference, that recognize, cope with, and even celebrate cultural difference.

Anthropologists like Pat Sachs, Lucy Suchman and Meta Baba have had much to do with helping organizations understand these perspectives. I believe some do passionately wish to represent many varieties of knowledge in ways that communicate their equal value. Despite such awarenesses, organizations still face problems using AITs to network knowledge. Unfortunately, the technology tools they are trying to use to share this knowledge continue to force radical samenesses rather than context-sensitive equalities.

For example, in *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Ikojiro Nonaka and Hirotaka Takehesi effectively critique early knowledge engineering. Ultimately, however, they trivialize the knowledge advantage of Japanese organizations by restricting it to the conversion of tacit to conventional forms of explicit knowledge; e.g., scientific reports. Similarly, Donald Norman in effect reduces the problem of supporting knowledge networking to the creation of community. Genuine knowledge networking fosters creative controversy and reflexive metadiscourse, as well as the celebrations of commonality that Abner Cohen recognized as the hallmarks of community.

Thus, organizations wishing to network knowledge recognize that they need much from cultural studies of knowledge, but they need even more than they currently recognize. In addition to fine-grained case studies of particular knowledge networkings, they also need a thick anthropology of knowledge, including an ethnology of knowledge that provides a theoretically-informed, cross-culturally mature understanding of the similarities and differences of the multiple dimensions of knowledge networking.

### **3. Some of the problems we professional anthropologists encounter when we try to provide a general anthropology of knowledge**

As a whole, the understandings of knowledges which we professional ethnographers have to offer them are not yet thick enough. Our studies on very different cultures, for example, are too subject to the simplistic binary framings—albeit, e.g., between Western and non-Western, rather than “primitive” and “modern—that so often mislead sociologists.

While in several cases concerns related to cyberspace contributes to their interest, explicit attention to the general question of knowledge in anthropology, has stronger, other sources internal to the discipline. The most strident current anthropological

knowledge discourse, perhaps primarily but by no means exclusively based on Postmodernism, questions its very possibility.

Both our ability to deal with this critique, and the broader aim of making cultural sense out of knowledge dynamics are impeded by inadequately articulated and contradictory constructions. Our knowledge constructs are limited in some ways similar to those that limit business, informatics, and foundationalist forms of epistemology in formal philosophy, but they are in some other ways more unique to anthropology. While comparative ethnographic study of knowledge, in both cyberspace and other social formation types, will help us construct a reflexively informed anthropology of knowledge, the value of this work also depends upon development of an adequately reflexive critique of existing perspectives.

To focus on the “unique to anthropology” limits very schematically: As a consequence of its Boasian heritage, anthropology aspired to be both humanity and science. To the extent the relevant knowledge conceptions of these two are defined in contrast to each other, a contradiction has been built into any inclusive conception of anthro-knowledge. The current questioning of anthro-knowledge is a manifestation of the long, on-going tension inherent in what may often seem to be almost an “anti”-discipline.

For example, on the one hand, most anthropologists would agree with the idea that knowledge is among the most culturally relative phenomena, created, communicated, and reproduced locally and with a character heavily influenced by local practice. As characterized by Marilyn Strathern:

“It is of course a convention in social anthropology to take knowledge practices in the plural, and the discipline has a long investment in the study of different modes of apprehension...

“[T]wentieth century anthropology...has taken the contextualisation of knowledge as one of its epistemological foundations...

“Anthropology has long used for its own heuristic purposes (investigating the local distinctiveness of people’s conceptions of themselves) those constructs about person or society that people often offer as the most general or global statement they can make about the human condition” (199:3 & 4).

This knowledge construct, heavily influenced by the Germanic/Romantic study of, e.g., “Volkgeist,” has much in common with the Humanities as normally conceived. The Humanities/study of culture aspect of anthro-knowledge had roots in the search for cultural essences; indeed, it was historical framed in an explicitly racist project, that of explaining white/European supremacy in bio-cultural terms. Thus, notions of “cultural self-determination” could be mobilized by white South Africans in their defense of Apartheid.

Malinowski did not really critique this romantic position on knowledge. Instead, his was a methodological “revolution” (Jarvie 1964) that grounded this humanistic content on an explicitly “scientific” process. Thus, modern anthropology was as much a child of the Enlightenment as Romanticism. In contrast to the multiplicity of the knowledges we studied, that which we ourselves created was to be, at least ideally, unitary and transcendent, like other “scientific” knowledge. (See, for example, Sahlins’ critique of his mentor Leslie White’s search for the culturally “superorganic” (2000).)

Malinowski did attempt to explain why fostering a strong emotional dependence of the fieldworker on the native would lead to better data. His advocacy in this regard can be seen as ultimately of some inspirational value to the non-Modern study of knowledge. (See my comments below on Hastrup).

Foucauldian lenses suggest, however, that for most of its 20<sup>th</sup> century history, there was a basic contradiction at the heart of anthropology's construction of knowledge. Under the particularist doctrine of "cultural relativity," it was inappropriate, among other things, to judge a knowledge claim generated in one culture by justificatory criteria from another. Knowledge claims could be legitimately redeemed only in their own cultural context. No wonder anthro-knowledge has been repeatedly seized upon by critics of positivism—e.g., sociologists of scientific knowledge. At the same time, it is ironic that an ethnographic methodology, one originally justified as providing more rather than less science within a discipline, should be chosen as the methodology of preference in many Postmodern critiques (e.g., Rothschild's feminist one of methodology). No wonder so many of the attempts of those outside the discipline to borrow ethnography run into trouble (beginning, I would argue, with the Lynd's attempt in *Middletown*.)

While committed to relativism with regard to *other's* knowledge claims anthropological ethnography justified *itself* as science. This justification enabled, in the United States, anthropological participation in the technoscientification of the academy. This led to a certain kind of positivism that de-emphasized the humanistic side, although less so than in the other social sciences. Thus, even the '60s critique of anthropology, including the "Science for the People" program of the Anthropologists for Radical Political Action in which I participated, adopted Engels call for a "more scientific, less Utopian" anthropology.

To those like myself familiar with and already used to the hurly-burly, more or less continuous "paradigm wars" of the discipline's knowledge discourses, Foucauldian critiques of the power dimensions of knowledge in anthropology were interesting but not particularly devastating. Anthropology had at most only a weak "cannon," and we honored "worthy" ancestors more in the breach than in the observance. The commitment to science was also not all that thick, more to the ideal of disciplined (i.e., rigorous) inquiry rather than "tight ass" scientific method.

We also knew that the degree of actual relativism was often overstated; after all, we had a cross-culturally applicable conceptual armamentarium, honed over many years, which we tended to wield in the same blissful ignorance that Alfred North Whitehead critiqued as typical of science.

However, to those initially outside the discipline like Clifford, or those exposed to it first through Postmodern-era theorizings, the impact of the Linguistic Turn/Postmodernism appeared more telling. The basic contradiction re: anthro-knowledge—externally to relativism, internally to foundationalism—still appears to expose anthropology strongly to the Foucauldian moment of the mid 1980s. This was also the case for those who would appropriate ethnography while ignoring its more scientific epistemological pedigree. ("Foucauldian ethnography" is perhaps a doubly empty category.) For them, ethnography could be a fulcrum on which to purge foundationalism from social science. However, an ethnography purged of any research methodology became merely one writing genre among many. This ethnography shorn of ethnology tends to spawn endless paens to localism. Some descriptive categories being necessary,

ethnographies shorn of explicit ethnological justification are subjectable to more or less constant, apparently telling criticism as based on unacknowledged “foundationalism.” Legitimate “alterity” based on critiques of ethnocentrism was increasingly displaced in a (probably doomed) search for representational media that permanently foregrounded the “native” and backgrounded the ethnographer.

As Chairman of the American Anthropological Association's Committee on Scientific Communication, I saw these dynamics acted out in a rather raw form, as in battles over the editorship of the *American Anthropologist*. The profusion of anthro-talk about either knowledge or networks, even some on knowledge networking, means there are many ways to get lost. Because based on contradictory knowledge constructs, our meta-discourses often do not articulate well with each other. We have multiple, even contradictory conceptions of knowledge, both in general and its proper anthropological form, many with legitimately deep roots in the discipline. All these factors limit anthropology's capacity to provide the comparative study of knowledge networking needed to answer the cyberspace knowledge question.

#### **4. Some hopeful signs for the future.**

My wish is that concern over the status of anthropological knowledge foster new ethnography. The goal of my intervention is to prod more effective, direct, and self-conscious ethnography of multiple forms of knowledge. I believe such a development would engender a more fruitful internal discourse, while providing an essential empirical dimension to current developments in, e.g., the philosophy of knowledge (epistemology) as well as informatics and organization studies.

To overcome these limitations, we must find more consistency in our approaches to both knowledge and networking. This is an eventuality about which we often express skepticism, but it is important to keep in mind that for Foucault, the point was not to destroy disciplined knowledge, but to revitalize it as a tool in the battle to alter power relations. While moments of critique of disciplined knowledge are essential, so are those when disciplined knowledge is turned back on itself to be revitalized. On Paul Rabinow's account, “Rather, for Foucault, the ‘will to knowledge’ in our culture is simultaneously part of the danger *and a tool to combat that danger....*” Rabinow himself (along with, at least, Downey, Forsythe, Hakken, Hess, Heath, Helmreich, and Suchman; see Hakken 2001) has been a central figure in the creation of a distinct anthropology of technoscience, arguably the currently most collaboratorily extensive effort at explicit ethnography of knowledge.

Thus, the emergence of a radical questioning of anthro-knowledge as a central preoccupation of our professional project need not, even in a Foucauldian form, be fatal. The aim should rather be to make it a prod to revitalizing anthropological knowledge. Enough anthropologists, both those studying culture in non- and proto-cyberspace social formations, have called for more explicit attention to cooking up the knowledge soup to make me optimistic that it will one day be thick enough. The internally and externally stimulated discourses discussed above can be brought into dialogue with each other. Thus, while I accept that there is a valid critique of some of anthropology's knowledge constructs, and thus of the ultimate value of some forms of existing anthro-knowledge, I am optimistic about the eventual prospects for moments of real revitalization.

While some like David Hess and Strathern have addressed the changes in the material conditions of anthropological knowledge production, my attention is addressed to more conceptual dimensions. In the remainder of this paper, I discuss some important current efforts to think anthropologically about knowledge.

In particular, we are beginning to construct a shared understanding of at least the criteria by which an alternative vision of anthro-knowledge should be judged, if not yet what that vision *is*. In what follows, I discuss several articulations of these criteria.

First, there is spreading recognition of the need for new ways to think about knowledge, both in general and in our field, as well as for a more focused ethnography of knowledge in diverse social formations. Acknowledging the existence of a knowledge problem in anthropology is the first step. Indeed, Henrietta Moore begins her recent (1999) *Anthropological Theory Today* with the comment: "It is very tempting to begin a book of this kind with the statement that there is no such thing as anthropological theory." While lamenting the temptation, she identifies an unclear discourses on knowledge as its source:

"Such confusions have only been deepened by debates in the last ten years or so about the purpose and pretexts of anthropological knowledge. The inclusion of the anthropologist and their role in knowledge construction within the parameters of theoretical critique has had the effect, among other things, of linking anthropology as a practice to questions of power, domination and discrimination in ways that have highlighted moral and ethical dilemmas for practitioners individually and collectively. The results have been diverse, but in some sense have involved not only a retreat from theory, but even from the project of anthropology itself."

Moore, however, sees the situation as having improved recently. She has put together an anthology "with several calls for a renewal of theoretical thinking and an emerging note of optimism about the future of anthropology" (pp.1 & 2).

Because of the many contradictions highlighted above, we need to do more than merely highlight reluctance to theorize. Kirsten Hastrup's contribution to the volume is a good illustration of typical grounds for optimism about the revitalizing theory by rethinking knowledge project. She like Moore feels that an effective discipline can emerge from the current epistemological self-examination. Rejecting the mapping, "view from nowhere," "explorer" orientations of Modernist conceptions of knowledge in the discipline, she argues instead that, through a clearer focus on the actual experience of ethnographic fieldwork, we can refine constructs and root out scientific vestiges. In particular, she identifies overt acknowledgement of the bodily experience of the ethnographer as a means to overcoming the mind-body dichotomy. A more nuanced understanding of the embodiment of practice via fieldwork has demonstrated "...the need for dissolving the 'Cartesian anxiety', that is, the fear of not having a fixed and stable foundation for knowledge, a grounding for reference" (199:230). Ethnography's potential access to the way "culture becomes incorporated" in the body, awareness of the way in which the fieldwork experience reshapes "the body's actual ability" opens up "a centre of knowing which has remained obscure" (ibid, pp 230 & 231)

"The important point is to realize that the field-world is not experienced through the fixed coordinates of a semantic space. The world is always experience from a

particular point in a social space... Moreover, the point from which we experience the world is in constant motion.

“The shift to an ego-centric approach to referentiality is a shift from a semantic to a pragmatic view of culture, and of science. This does not exclude ‘semantic’ interests of course; it only integrates studies of meaning in studies of practice...

“The agent of scholarship is a living person, not just a mind” (ibid: 234 & 345).

Such an ethnography, one manifesting the focus on practice described by Sherry Ortner, need not be ideographic because solipsistic. Hastrup hastens to add that

“...fieldwork is quintessentially an intersubjective experience. From there we realize that [to quote Vendler,] ‘subjective states – sensations, feelings, and emotions – cannot be found, recognized, or discovered in bodies but are attributed to them on the basis of certain observable manifestations that warrant such attribution.’ Attribution of feeling demands a degree of personal involvement because particular phenomena warrant attribution of feeling not because there is a scientifically established chain between experience and behavior, but because we have learned what it means to ‘be in pain...’

“To reach maturity, anthropology must work by its own lights and bring to methodological effect the fact that there is no disengaged standpoint of knowing.

We cannot know except by way of our own presence and questioning.

Knowledge is profoundly embodied” (pp. 235 & 236).

Importantly, Hastrup connects her reconstruction of anthro-knowledge as “incorporated” not only to romanticism (“to dignify subjective experience, not to deny reality”) but also to philosophical Neo-pragmatism: “This implies a view of truth and objectivity as based in rational acceptability (Putnam...); and in agreement within a scholarly community of potential dissenters (Rorty...)” (p. 237). (This connection is one basis of my view that a revitalized anthropological ethnography of knowledge can also play a role in regrounding philosophical epistemology.)

As evidenced by many of the comments already referenced, another element essential to revitalizing the anthropology of knowledge is already well on its way to being realized. This is a commitment to explicit epistemological framings of the knowledge question in anthropology. Through their recent, more direct encounter with philosophy, anthropologists are better positioned to understand why they need a more coherent notion of what anthropological knowledge is all about and what benefit they stand to derive from it.

One thing we stand to learn from our engagement with philosophy is the high value placed by contemporary epistemology on explicit understandings or “real” knowledge networking, and thus another external source of support for a revitalized ethnography of knowledge. We need field studies of knowledge networking in as wide a variety of cultural contexts as possible, ones that have a comparative moment like the original knowledge program but yet informed by both modernist and postmodernist critiques. The anthropology of technoscience is suggestive of several new ways to study knowledge culturally. These new, explicit field studies can be systematically related to both the traditional and the emerging discussions referred to above.

The basic ethnographic critique of other social science techniques of knowledge production (e.g., opinion surveys, formal interviews, secondary analysis of data gathered for other purposes, such as unemployment compensation) is that these involve substantial

decontextualization. Abstraction from context tends to turn foster multiple misunderstandings, especially the likelihood that analysis will involve the implicit imposition of inappropriate, ethnocentric questions and framings—e.g., socio-biologists' glib discussion of "incest" and "marriage" among other life forms. (See Helmreich (1999) for an extended discussion of this problem among technoscientific "Artificial Lifeers.") This argument is essentially a restatement version of Whitehead's critique of the way in which at most semi-aware borrowings from the culturally taken for granted inevitably limit all sciences.

Since Malinowski, ethnography's alternative to such research has been extended field study. Initially, this meant largely empiricist study of "whole cultures." Over the years, ethnographers have has shifted away from such simplistic studies toward more problem-oriented ones. This had much to do with recognition of the impossibility of actually "studying everything," but it also had to do with learning ways to avoid the tendency of earlier ethnographers to presume what needs to be established. For example, one tendency was to presume that the culture under study could be understood in isolation, on its own terms as a "primitive isolate."

Arjun Appadurai's analytic points about how culture is now more than ever "at large" in the world are in a long line of anthropological works that question the utility of such assumptions. While for him indubitably, but for others like Ulf Hannerz not so clearly, a "Modern" phenomenon, culture often does seem to function transnationally, not within the frame of a particular geographic group. Critiques of the conventions of earlier "ethnographic present" writing styles (e.g., Marcus and Fisher) constitute genera counterparts of such analyses. As I argued in *Cyborgs@Cyberspace?...*, the presumption of uniformity within the boundaries of a culture has been replaced by attention to how it is that cultures' maintain any sense of coherence in the face of substantial variation. What, indeed, *is* a culture?

An explicit ethnography of knowledge can help answer this question. I suggest the following as a useful heuristic: It makes sense to treat a bunch of people who share ways of knowing, share common patterns of knowledge networking, as if they share a culture. Conversely, when dealing with "bunches" among whom it is difficult to identify distinctive patterns of knowledging, we should avoid describing them as "having *a* culture."

One value of such a "knowledge networking" approach to the culture question is that it allows us to mediate what I would call the "preconscious/conscious" divide in the study of culture. That is, anthropologists have long argued that much of culture works "behind our backs." Culture is inveigled into what we do without our being aware that it is there, by constituting what Bourdieu calls a "habitus" (19). Study of "ways of knowing" via participant observation of the activities by which "natives" justify what they believe to be true, provides an entrée into this world of the preconscious. This is because such acts of justification often make the normally-only-taken-for-granted more explicit, raise to consciousness the-already-presumed-to-be-true. Because such acts need to be convincing to an audience, the "natives" themselves explore and often state that which is pre-consciously presumed to be given. By the same token, the absence of any situations in which one can try to convince others of what is *prima facie* evidence of the absence of a shared culture.

Like Sahlins, I would argue that such shared sets and patterns are not sufficient components of a culture, that they alone do not constitute the distinctive feature of each separate cultural unit. Knowledge networking is however central enough to cultural distinctiveness to justify on efficiency grounds studies of knowledge networking in networks of human relations which other reasons lead us to believe *may* be distinct.

There is already an anthropological tradition of studies of discrete knowledge systems. Ethnoscience studies in anthropology (Frake) deserve specific mention. Another locus of their cultivation is overtly reflective (Powdermaker, Read, Bohanon, Stocking) texts on ethnography. Of equal relevance are knowledge-reflexive, applied studies of the use of knowledge about cultural difference to the trans-national operation of organizations (e.g., Baba, Gluesing), studies of knowledge in work and organizational contexts (Suchman, Jordan, Baba, David, Erickson) and of media (Appadurai, Spitulnik, Ginsberg, Turner).

#### 4.1 Beyond Evaluative Criteria to a Real Vision

Peter Worsley's *Knowledges: Culture, Counterculture, Subculture* (1997) is an excellent example of how study of particular knowledge systems can lead to powerful articulations of programs for both the anthropology of knowledge and for anthropological knowledge. Although doubtlessly requiring modification, this book comes closer than anything else to stating an explicit ethnology of knowledge.

Worsley's introductory account of how his study evolved is also indicative of the sources of and changes in contemporary ethnography of knowledge. His book, a recent work, began "with the very limited idea of writing an account, fairly quickly, of the scientific knowledge of one Australian Aboriginal tribe" (p. 1; about his use of the term "scientific," much more, reflexively speaking, below). Early in his distinguished ethnographic career, Worsley had been struck by certain patterns of knowledge among his informants:

"...[I]t was not simply that they had an awful lot of knowledge about plants and animals – in the aggregate, as it were. They also had systematic ways, first, of distinguishing trees and plants from animals and, second, of identifying the latter as either land, water, or marine animals, and creatures that lived in the air. They had, that is, a biological, quite non-religious taxonomy – a systematic way of classifying things" (p. 3)

At that time, Worsley wrote several monographs on these knowledges. He later found himself in dialogue with Claude Levi-Strauss' attempt at "...a new kind of theory, not just about what [Levi-Strauss] called 'the savage mind', but about human knowledge in general." Worsley critiqued, "...Levi-Strauss...[who] was still looking at Aboriginal thought as if it was all of a piece. I argued, conversely, that there were several distinct modes of thought in Aboriginal culture." (He goes on to specify four Aboriginal "ways of thought" manifest in relation to bio-forms: religious, gastronomic, biological, and linguistic (p.3), later adding a fifth, mythological form.)

Two decades after this encounter with Levi-Strauss, a detailed ethno-scientific study of the groups he had studied earlier re-engaged his attention. He moved quickly from an effort to write a non-technical account of Aboriginal biological knowledge to engagement with a broader range of ethnology of knowledge issues. These included the idea that there were "similar modes of thought in other cultures" as well as development

of justifications for serious studies of ethno-science: "...[I]t would have been news to many", he felt, "that hunters and collectors too had their own forms of science" (p. 5).

Yet as he worked further along these lines, Worsley

"...became sensitized to two further kinds of questions. The first was a comparative one, about the social distribution of knowledge: how uniform, in fact was the thinking of people, not just in Western cultures but even in cultures most people think of as 'simple'? Were there not, rather, *subcultures* or even *countercultures*, in any culture? My second question was a simple [!] matter of identification: when we talk about the ideas of this or that 'people', who exactly are we talking about? For thought does not think itself; it is individuals who think. Furthermore, who precisely were the people who created, codified, and transmitted the thinking we describe as the cultural ideas of, say, 'the Lilliputians'...?" (p. 6; emphasis in the original, exclamation added).

Thinking anthropologically about knowledge thus led Worsley to the core contemporary anthro -knowledge issues identified above: the kinds of knowledge pattern differences that are internal to a culture, those that distinguish one culture from another, and what makes such differences significant at boundary markers.

Additionally, Worsley's macro-comparison of Aboriginal and Western food classifications led him to recognize parallels between the debates of taxonomy biologists and those among social scientists. This in turn led to comparison of Western and non-Western medicine, in which he discovered the utility of distinguishing "wisdom" from knowledge (p. 9). Macro-comparison led back to micro-comparison, and a realization of just how rare were anthropology of knowledge "...studies which look at different kinds of thinking, side by side...*within* the same culture..." (p. 8; emphasis in original).

About knowledge in general, Worsley concludes:

"Knowledge, then, is necessarily plural. There are knowledges, not simply Knowledge with a capital K. The social distribution of knowledge is plural, too, for although everybody thinks, not everyone has the same amount or kind of knowledge. It is the distinctive social activity of 'ethno-intellectuals' to develop, consolidate and transmit these systems of thought" (p. 10),

and thus, in an important sense, suggesting that a key task for knowledge ethnographers is to seek out these "ethno-intellectuals."

Such general conclusions led Worsley straight to a strongly Foucauldian 'knowledge/power comment: "There is inevitably an ethical dimension to all this...Making comparisons between different kinds of knowledge in Western and non-Western cultures raises questions about the status of 'our' knowledge." For example, he suggested at a peace conference, that more attention be given to "positive" aspects, like their ethno-science, of cultures such as the Aborigines. A member of the African National Congress responded, "Yes, that's important, but why, Peter, do you call it *ethno-science*?" Worsley is driven to wonder,

"Are the kinds of scientific knowledge which are usually labeled 'ethno-science' simply part of a unitary and universal science which all cultures have developed to different degrees? Or are they different kinds of science? Is Western science always superior, across the board? Or do other knowledges possess special strengths that our science lacks? Is Western science...however distinctive and

powerful a mode of thought, nevertheless only a subculture coexisting with other subcultures...? (p. 13).

Almost overcoming his British cultural preference for rhetorical question over direct assertion, Worsley concludes, "If, then, there are many kinds of knowledge in all societies, should we not, instead of contrasting 'their' knowledge and 'ours' across the board, specify *which* of their (and our) kinds of knowledge we are talking about?" (p.14, emphasis in original).

In arguing this way, Worsley illustrates the inevitability of an ethnological moment, the development of descriptive categories, as a necessary complement to any ethnographic one. In fact, I find myself somewhat anxious about the ontological finality in Worsley's tone. He seems to merely assume the universality of the four or five forms of knowledge that he has identified and that provide the structure of the following book.

Rather, more rigorous comparative study of knowledge networking is necessary before one concludes that useful descriptive categories like "religious, gastronomic, biological, linguistic, and mythological" are universal ontological forms. After all, these terms are all drawn directly from only one, Western, cultural tradition. One or more of them may not be applicable everywhere, and there are likely other forms which Worsley has not identified.

This illustrates again why the creation of an equally explicit ethnology of knowledge is an essential part of the "symmetrical anthropology," one which brings the knowledges of all cultures into a common frame, for which Latour calls (1991). Such an empirical, "wissenschaftlich" ethnographic knowledge of knowledge activities should greatly expand capacity to place our own disciplinary discussions in the context of both current scholarly movements as well as broader cultural developments—e.g., our possible entry into cyberspace.

Essentially ethnological arguments for greater consistency and rigor in knowledge-related constructs are, I believe, at the center of key contemporary theoretical works in anthropology (Geertz, Clifford, Marcus, Taussing, and Nader as well as Worsley). Implicit arguments for an ethnology of knowledge, they build on the already considerable comparative knowledge research base of, e.g., Frazier Tylor, Malinowski, Morgan, and Levi-Strauss.

Pursuing disciplined, empirical study that is symmetrically both generalizing (ethnological) and yet pays attention to the specific context of cultural practice (ethnography), several recent efforts explicitly articulate useful but still partial anthropological theories of knowledge. Mick Taussig's appreciation of mimesis in ethno-knowledge systems has much in common with Bruno Latour's attempts to articulate a "non-modern"—neither Modern nor Postmodern—science. Laura Nader chronicles various efforts to valorize non-Western anthro-knowledges as an essential prerequisite to urging similar moves on other sciences. Geographer David Harvey's efforts to operationalize "postmodern" conception of knowledge materialistically has found echo among many colleagues (Hakken 1999; see also Allwood 19; Barth).

In sum, the central claim to originality of this epistemologically informed, symmetrical anthropology of knowledge is its shift of attention away from knowledge as a thing, object, or commodity and toward the social process of its creation. This shift is best conceptualized as focusing the contemporary study of knowledge discourses on the process of knowledge networking. In line with the original intent of Africanist/Social

Networkists like Clyde Mitchell, it can document the variable quality of the relations involved in creating, distributing, and reproducing knowledge. As highlighted in Linguistic Turn accounts, intense social networking is recognized as an essential component, perhaps the key moment, in the construction of knowledge, being produced in “communities of practice” (Wenger 1991). Establishment of a sense of shared purpose and trust in co-producers’ talk and action are essential components in construction of techno-science alliances (Latour 1987) and the more or less formal statements, the “knowledges,” which are their public performance faces. Even on many Modernist accounts (e.g., Kuhn), social relationships are essential to continuing acceptance and necessary revisions of the protocols through which information is verified as knowledge.

#### 4.2 Doing Anthropology of Knowledge: Donna Haraway

It is perhaps Donna Haraway’s articulation of the goals of research that has the most echo for the emerging generation of anthropological scholars. For them, an explicit metadiscourse on knowledge is part of every effort to “‘scape” any aspect of culture. They assume that any effort at serious study will be deeply situated, polyvocal, and involve “trafficing.”: “Reading and writing on the razor edge between paranoia and denial, I venture to consider the syntax of intellectual property”, a project she reflects in the form of her 1997 book “...title’s Internet address”:

*Modest\_Witness@Second\_mllenum.FemaleMan©\_Meets\_Oncomouse*<sup>TM</sup>. Haraway describes her knowledge as “contaminated” in that she participates in, while critiquing, “sociotechnical production” of knowledge. A true Foucauldian, she acknowledges the inevitability of “knowledge-power processes that inscribe and materialize the world in some forms rather than others” (p.7). While aware of the limits (e.g., Hawthorne effect) within which she works, she throws herself into the knowledge production process anyway. I share her conviction that, while this may be all we can do, it is nonetheless worth doing.

How are we to relate to the knowledge produced by one both an insider participant in the production of technoscience knowledge and an outsider observer reserving the right to be an ethnographically-informed critic? Such dual positioning is not just a consequence of Haraway’s preferred ethical stance; some substantial professional standing is increasingly a pre-requisite of access to technoscience knowledge production.

#### 4.3 Toward an Evolutionary Ethnology of Knowledge: Hendrik Shinding-Larsen

One of the first anthropologists to articulate clearly the need for a specific study of the knowledge question in cyberspace, and to connect it to the need to revitalize anthropological study of knowledge, was Henrik Sinding-Larsen (1984). Explicating as flaccidly tropic the tiresome question of whether computer thinking will replace human thinking, although one which doubtless needs modification.

Sinding-Larsen switches attention instead to the challenges that use of these machines implies to how knowledge itself as been heretofore approached. Will mediated doctors, like children who use calculators and therefore have difficulty mastering and remembering the procedures of arithmetic, lose the skills of diagnosis?:

“The new information technology has altered the conditions for the acquisition of experience and other learning processes. Currently this technology only affects

very limited areas of knowledge. However, with the developments we are witnessing in ‘artificial intelligence’, many activities which were previously considered intellectual challenges may soon become boring routine work. This may result in large quantities of knowledge being forgotten and disappearing. Knowledge has to some extent always become obsolete and disappeared. However, this can take place much more rapidly and completely today than ever before, resulting in a vulnerability of considerable proportions. This vulnerability follows partly...because increasing standardisation of knowledge leads to rigidity in relation to necessary changes” (1984:95).

There have been numerous over-estimations of AI’s potential similar to that which I believe Sinding-Larsen’s to be. What I wish to focus on is here, however, is that his cyberspace concerns lead him to outline a rigorous, diligent comparative study of existing knowledge as process. He proposes an “anthropology of information technology” that would focus, ethnologically, on the different standards, and thus different practices, by which cultures evaluate knowledge:

“One aim of a comparative study is to clarify the way in which various cultural ways of managing knowledge is (sic) related to various forms of information technology...

“It is not the first time in our history that new information technology has altered the rules for the management of knowledge. However, it may be the first time that this has happened so abruptly that the process has become apparent to the extent that it has become the object of a comprehensive research program” (ibid.:97).

Sinding-Larsen program focuses attention on the increasing extent to which knowledge is “externalized,” is no longer “stored intracognitively.” This is a question in cultural evolution, illustrating how any ethnography not only requires an ethnology but an ethnology with evolutionary dimensions. He sketches this externalization from early forms, such as the geographic semiotics of baboon water source location, through Mesopotamian writing systems:

“What we regard as knowledge is typically the structures which guide us when we are carrying out specialised tasks. Since structures can be stored in written form, we do not need to remember all of them, we can ‘look them up’ in a book and just follow the procedure given by the text. But we cannot escape the fact that we must understand the structure in order to be able to carry out the operation...We must possess knowledge about both the structure and the process...This is not the case with knowledge stored in the form of computer programs. In this case both the structure and the process can be stored and we can have operations carried out without us human beings having to understand or be aware of what is happening. The process of externalization is more complete...” (p. 99).

While phrased in terms of “an anthropology of information technology,” Sinding-Larsen is clearly not talking about a narrow focus on artifacts. His comparative discussion of what is at risk when humans change how they “manage” knowledge is clearly linkable to the implications of using of AIT in organizations to promote “knowledge management” and the fatigue this produced. Just as important as the analytic advantages of thinking about knowledge by studying knowledge networking are the empirical and practical ones (the focus of Section III). Our ability to understand what is

going on in such situations is nonetheless dependent, Sinding-Larsen argues, on the existence of an independent, less design-driven study of knowledge processes in general. The challenge then, is not to construct an ethnography of knowledge in cyberspace that avoid issues of evolution or change in type of social formation, but to construct such a discourse in a way that escapes the Procrustian bed of foundationalist, teleological evolutionisms.

#### 4.4 Toward an Ecology of Knowledge: Lucy Suchman

Lucy Suchman outlines an alternative, somewhat more artifact-centered approach to the study of knowledge in computer-rich environments. Her artifacts are also not simple machines encased in metal or texts embodied in print. Rather, a computer or a document like an environmental impact statement is a point of entry into complex “ecologies of social-material relations” that, if we are to understand them, demand a different approach to knowledge:

“Recent practice-based theorizing includes a reconceptualization of knowledge and action as located in ‘ecologies’ of social-material relations (Fujimura, 1996; Star, 1995). These relations are not given by nature, but are the product of ongoing practices of what John Law has termed, ‘heterogeneous engineering’ (Law, 1987...), drawing attention to the diverse discursive and material, human and artifactual elements that must be assembled together in the construction of stable organizations and artifacts... The intellectual traditions that underwrite these reconceptualizations...view knowing and acting as always and necessarily embodied, and therefore as located in particular, historically and culturally constituted settings. The generality of knowledges, in this view, comes not from their contextual disembedding but from the extent and stability of relevant social-material relations.

“At issue here is not knowledge as a self-standing body of propositions, but identities and modes of action established through ongoing, specifically situated moments of lived work, located in and accountable to particular historical, discursive, and material circumstances” (2000:312-3)

To restate a Law comment in a form that Suchman encourages,

“Perhaps there is knowing, but there is certainly no knowledge. This is because...knowledges are never complete. Instead, they are more or less precarious and partial accomplishments that may be overturned. They are, in short, better seen as verbs rather than nouns” (p. 313).

To see the direct relevance of such approaches to the knowledge question in cyberspace, consider the case of allegedly more sophisticated automated information technology-based knowledge networking products, such as Computer Supported Cooperative Work (CSCW) systems. CSCW systems designed in Japan aim fundamentally to create simulacra of face-to-face interaction. Lorna Heaton (1999) argues, for example, that these systems are implicitly designed to facilitate the sensitivity to the views of high status individuals characteristic of organizational interactions there. She contrasts this design orientation with that of Nordic CSCW systems, which give priority to promoting the collective participation in work of stake-holder groups, downplaying the contributions of any particular individual, including the boss. Both types of systems give greater attention to the thickly societal than do standard data bases.

However, they do so in such substantially different ways that it is difficult to say what CSCW is if they are both CSCW. Heaton argues that ignoring such cultural differences is a main problem in getting CSCW systems to work, as well as constructing a meaningful “knowledge base” for computer science. Her case suggests that we will only be able to build really useful knowledge technologies when we know how to deal more adequately with knowledge in culture.

Work in several other fields is as relevant to analyzing knowledge networking as is that in anthropology. Like many philosophers, I find the pragmatist tradition of Peirce and Dewey of particular interest (especially its newer practitioners like Calhoun and Frazier). Perhaps no group of scholars have raised more pointed questions about knowledge than those feminists who assert its inherent “situatedness,” drawing attention to, for example, how claims for universality can also be claims for intellectual “turf” (Smith).

### ***5. An Anthropology (Both an Ethnography and an Ethnology) of Knowledge in Cyberspace, or Why a tempered, empirically-based analysis of social change and AIT is essential and Focusing on Knowledge is a Good Strategy for Doing it***

As the prominence of technoscience ethnographers among my exemplars attests, there are several dimensions of the knowledge question foregrounded by the development of cyberspace and worthy of attention at the current moment. One is the commodification of knowledge that would seem to be an almost necessary component of current attempts at “distance learning” and other mediations of knowledge sharing via AITs. This is only one of several practical knowledge questions made pressing by the spread of computing.

An array of empirical studies of e.g., the history of techno-science, as well as phenomena like “invisible colleges,” have emerged in STS (Science, Technology and Society, or Science and Technology Studies) and related fields. These of course inform and are informed by studies in the sociology of knowledge (Mannheim) and science (Merton). Along with the anthropological ethnographies of knowledge described in this chapter, these provide important empirical materials for a reconceptualized, more self-conscious, comparative study of knowledge, a study necessary if we are either to take full advantage of AIT’s potential and avoid discourse failures of Scientism identified by Whitehead.

One might be tempted to try to hasten the new analysis of knowledge by imposing a priori one of the more orderly intellectual frames suggested in this chapter or some other knowledge “paradigm” of preference. Intellectuals are seldom successful in such endeavors; others pay little penalty for ignoring us. Moreover, the extensive discourse disparity outlined above is suggestive that transformations in how knowledge comes about may indeed already be underway. Their outcome would inevitably be pre-judged by an imposed standard.

Revitalization of the study of knowledge in anthropology must instead proceed empirically, through study of existing knowledge practices. Fortunately, knowledge networking, the actual discourses and other practices that create, reappropriate, and spread knowledge, is highly accessible to empirical study.

One way to initiate study of knowledge networking empirically would be to identify a set of practices as “about” knowledge and observe and analyze them. To do this, one could try to operationalize one’s study by defining abstractly what it is about a practice that makes it “about” knowledge. However, as suggested by Whitehead, any such a priori approach would inevitably distort the emergent picture of the general knowledgescape.

Alternatively, one might operationalize as “about knowledge” all those things that “natives” call knowledge. This approach would likely founder on the many contradictions and silences in knowledge discourses in actual cultures.

Haraway’s arguments are only one example of a broader recognition, how the general problem of how to conceptualize anthropological knowledge today is given further impetus by changes in knowledge networking associated with automated information technologies. This returns us, of course to the cyberspace knowledge question. Good accounts of the dynamics of past and present knowledge networking are not only central to understanding the general dimensions of knowledge(s). They are also essential if we are interested in the cyberspace knowledge question, whether current changes in knowledge’s production, reproduction, and/or sharing are of transformational significance.

At the same time, efforts to answer the knowledge question in cyberspace can make a distinctive contribution to the general anthropology of knowledge and the clarification of anthro-knowledge in particular. A Foucauldian-engendered preoccupation with the knowledge question in anthropology intersects directly in Haraway with the broader implications of new, technoscience forms of knowledge. Often hobbled by the same implicit presumption of transformation manifest in the broader cyberculture, however, examination by contemporary anthropologists of cyberspace change in knowledge has emerged only slowly. Why this is so is an issue taken up at length in *Cyborgs@...* For example, the cyberspace-change-in-knowledge issue has gotten mixed with the more general issue of whether knowledge is situated or independent. We need to extricate the change issue, the idea that knowledge(s) is/are situated substantially differently in cyberspace, from the debate over / to which all knowledge(s), whether previously existing or new ones, is/are context-independent (Gross and Levitt 1994) or situated (Suchman 1987). This is another question we will only be able to answer when we have accumulated a sufficiently broad understanding of the (likely very different) ways in which diverse forms of knowledge networking are situated. The approach outlined here is anthropological (ethnologically informed ethnographic) study of already existing knowledge networking, especially those practices in which people justify what they hold to be true. As an experiential way of knowing, ethnography has developed ways to hold both people’s practices and their cultural constructions of them in the same frame (Hakken 1999). By refusing to subordinate either the moment of action or that of cultural construction, ethnography constitutes an appropriate approach to the study of knowledge networking. One does ethnography by first identifying an issue of importance (e.g., knowledge networking) and then locating a site (e.g., organizations) where one can observe and participate in the practices of interest and talk about them. Reconceptualizing contemporary knowledge discourses is an area of potentially important anthropological contribution, both to the specific issue of making

organizational knowledge networking more effective and also to the broader question of how to use the information we generate with AIT more effectively.

The “thin” knowledge networking, practices in 1990s organizations failed to come to terms explicitly with the social, tending to be merely slightly more complex, even merely renamed, forms of information or even data sharing. Such difficulties are foreshadowed in previous attempts to conceptualize knowledge in purely technical ways, as documented by Dubinkas (1988) and Forsythe’s (1993). In brief, the systems’ failures are often a consequence of their creators’ lack of sensitivity to their own actual knowledge networking at work, which tend to be ignored by formal representations of work and therefore of attempts to use these to automate. More generally, despite all the cyberspace hype, careful studies of computer-mediated communication are as likely to document their continuities with pre-AIT communication as some new social dynamic (Hakken 1999, pace Sproull and Keisler 1995?).

Even organizational systems that do attempt to simulate real life tend to conceptualize the knowledge networking too narrowly. Instead of trying, like Heaton’s Japanese CSCW, to create virtual face-to-face practices, systems might aim to discover new, AIT-based practices, ones that support collective production and effective dissemination of knowledge in distinct ways that take advantage of new, AITed capabilities. (I have made a similar critique of attempts at community computing (e.g., Schuler 1996; Rheingold 1993), which in my view too quickly presume that the goal of community AIT networks is to reinforce and rebuild place-based local or physical community (Hakken 1999). The alternative (or rather, the complement) is also to use technology to build communities based on relationships different from those of place, or what Mimi Ito (2001) calls “networked localities.”)

It is possible to see the Modernist and the Postmodernist conceptions of the data/information/knowledge interface not as competitors but as complementary. To do so, the Modernist notion of “raw” data must be recognized as a culturally constructed silencing. Latour’s and Woolgar’s (1979), Traweek’s (1988), and Heath’s (1994) as well as Forsythe’s (1993; 1996) ethnographies all uncover ways in which data are produced socially, the particular contexts in which they are initially situated and from which they are abstracted, and how these abstractions are disappeared in subsequent “raw” constructions. However, it is also important to acknowledge that scientific knowledge is still made useful in the world, and that this is done by re-situating it in existing sets of social relations and practices, like labor processes. Existing ethnography shows that, far from being either a unidirectional abstraction or concretization, knowledge emerges out of a networking dialectic that moves between various moments of abstraction and concretization.

## 5.1 Doing the Ethnography of Knowledge in Cyberspace

Can knowledge networking systems incorporate technology to support practices delinked in space and time and still give appropriate attention to all the moments in the complex, neither strictly Modern nor Postmodern, dialectic of knowledge? Are the parameters and dynamics of such systems distinct enough from existing systems to justify arguments for a fundamental shift in the character of knowledge?

To most encouraging sign that this is possible is the emergence in informatics of a bunch of activities variously labeled the Free Software or Open Source Movements,

connected in various ways to the rise of LINUX as an operating system. These activities to various degrees attempt to distance computing from the demands of capital reproduction, linking instead to various alternative social values, especially the notion that the source code at the core of computer programs should be openly published for all to see, not treated as “intellectual capital.” Connected to this different conception of computing is an ideal regarding how technology should be developed, in open freely accessible knowledge networks. Much of the movement has been devoted to creating technical infrastructures that support the social ideals, perhaps the key one of which are dispersed, ad hoc development teams. In dispersed discussion groups in which anyone can participate, a particular coding problem is identified, alternative solutions considered, and consensus regarding the best solution developed. This alternative, knowledge networking approach, now the key competitor to the proprietorial approach of Microsoft, is coming to be the standard in important areas of computing, such as server software.

These are all reasons why addressing forms of knowledge networking in what I like to think of as cyberspaces like Free Software/Open Source/Linux is my personal knowledge project of preference. I recently completed a workshop which produced specifications for a prototype infrastructure to support networking in the anthropology of knowledge. This infrastructure will soon be available for use at the URL at which this paper is posted.

The focus of this paper has been a broader set of knowledge issues, those confronting the disciplined social practice called anthropology. My ability to help answer the knowledge question in cyberspace depends upon the work of the colleagues discussed here who are attempting to develop a new anthropology of knowledge in response to the current challenges to anthropological knowledge. Their work justifies support for further basic research on knowledge networking itself, as both an important moment in social reproduction and one whose understanding is essential to the revitalization of our discipline.