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Inference and Schema: An Ethnographic View

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Ethnography as a research process is notoriously difficult to articulate. In the anthropological literature, there are descriptions of its mystique, awkward mixtures of detachment and involvement, and efforts to refine elusive concepts like "participant observation." Because of its emergent nature, and its emphasis on the apprehension of pattern in activities controlled by others, much of ethnography fits poorly into traditional models of "social science."

Partly for this reason, the philosophical tradition called "interpretive" or "hermeneutic" is enjoying a rediscovery. Part of the interest comes from a sense that the model of understanding developed in hermeneutics fits better with the realities of ethnographic work. At the same time, some who explore this literature argue for a rejection of efforts to frame ethnographic work in a systematic, general language. In this article, I would like to offer the outlines of part of such a language. Before doing so, though, an outline of "hermeneutic ethnography" is necessary.

On my reading, the core of a hermeneutic position goes something like this (Agar 1982). Ethnography is made up of an encounter among different traditions. When traditions come into contact, problems in understanding arise. Social action in the context of one does not make sense when viewed from another. Expectations are not met: problems in understanding arise: a "breakdown" occurs.

A breakdown initiates a process of "resolution" where knowledge needs to be changed—perhaps trivially, perhaps in a fundamental way—before understanding can occur. Resolution is a dialectic, emergent process resulting in some new knowledge that bridges the original gap between the traditions. When it is accomplished, the social action that originally elicited the breakdown becomes "coherent." The original difference is adequately connected to the similarities among the traditions so that understanding can occur.

Now, this is obviously an oversimplified sketch. At the same time, with proper elaboration, it has something to do with the core of ethnography. In an

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earlier article (Agar 1982), I used the notion of "schema" in an informal way to move towards a more systematic characterization of traditions, breakdowns, and their resolutions. In this article, I would like to consider the notion of "schema" more carefully. But to do so, I must begin with the notion of "inference," for schemas are made up of groups of interrelated inferences.

INFERENCE AND SCHEMA

"Inference" is a word that calls to mind such elegant formal systems as Euclidean geometry and first order predicate calculus. Inference can only occur in those systems if you follow a small number of rules. Further, the rules are guaranteed to work—if you start out with some truths and apply the rules of inference, then whatever you wind up with is a truth as well. If one knows that "A and B" is true, then one automatically knows that "A" and "B" are true individually. If one knows that "A→B" is true, and one also knows that "A" is true, then "B" must be true as well.

Therein lies the tension in current discussions of knowledge and reasoning, whether the discipline is philosophy, Artificial Intelligence, anthropology, or any other. On the one hand, some want to strive for the simple elegance of traditional formal systems, the mathematical pinnacle of certain knowledge and the goal of positivist science. On the other hand, others want to talk about knowledge as it is expressed and used by humans; but if we stick to traditional logic as the evaluative standard, we are put in the ridiculous position of dismissing most inferences as deviant, faulty, or not up to standard (Tyler 1979).

So what are inferences? From the viewpoint of ethnography they are nothing less than the glue of coherence. Inferences connect together different pieces of knowledge and knowledge with the world. Whenever I assert that if I know or observe one thing, then I know another thing, I have made an inference. For the present, we need to explore inference, but our concern does not mean we are trying to cast ethnography into the formal attire of first order predicate calculus. Quite the contrary.

First of all, the kinds of things linked by our inferences can be of a variety of sorts. Situations, persons, objects, actions, and goals can be connected up in whatever way a particular problem in understanding calls for. The connections, as we will soon see, are much richer than the traditional ones available in classic formal systems. Furthermore, inferences can come in bunches: in fact, one reason why the notion of "schema" was developed in the first place was to articulate the different kinds of "bunching" that occur. Once one has a sense that a situation is of a certain type, or a person is in pursuit of a particular goal, inferences lead away from that knowledge to a wealth of knowledge connected to it.

Inferences also may be uncertain. In classic formalisms, one thing always implies something else, and that's that. In contrast to this deterministic view, recent work recognizes "plausible" inferences, as introduced in the work of

Polya (1954) and developed by Collins (1975, 1978). Does changing the oil guarantee that your car won't blow up? Well, no, but it "tends to" prevent it. To further complicate matters, plausability itself comes in several strengths. From A we may "possibly," or "sometimes," or "usually," or "almost always" infer B.

Then in addition to the plausibility of the inference, there may be "hedges" on the As and Bs and links that constitute them (Kempton 1978). If you're polite to the boss, will she give you a raise? Well, maybe you weren't polite enough, or maybe she isn't exactly the boss, or maybe you got a new typewriter which is "sort of" a raise. Hedges and plausability further loosen up the notion of inference.

We have already come some distance from formal logic, leaving the rarified air of certain truth for a better fit with our intuitions about the kinds of new schemas an ethnographer constructs to resolve breakdowns. But we are still left with a theoretical concept—inference—that forces us to pay attention to what sort of knowledge we are linking up in what sort of way as we do our work.

Much recent work in artificial intelligence (Hobbs 1978, Rieger 1975), psychology (Collins 1975; 1978), and anthropology (Colby, Fernandez and Kronenfeld 1981; Hutchins 1981) moves towards looser systems of inference. Typically, though, a list of distinct inference types is offered. We won't concern ourselves at the moment with evaluating the completeness of the lists, but we will take in the more general points: (a) Making sense gets done by linking up some expressed act with a lot of knowledge, which (b) is itself interlinked; (c) Two pieces of knowledge (including knowledge from observation), together with the link that connects them, constitute an inference; (d) Inferences may be plausible, in the sense of their certainty, and hedged in the sense of how well they apply to an instance of attempted sense-making; (e) Inferences will have a content that comes from the traditions of understander and act to be understood, but (f) at the same time the form of the inferences may pattern in a way that leads us in the direction of a more general theory.

From an ethnographic point of view, we are interested in inferences as a way to give more systematic form to the resolutions that we do to make sense of action. From the lists in the articles just cited, we see that the break from traditional formal systems has led to a potpourri of discrete types. To begin to move towards a more coherent view, however tentatively, we first need more of a general sense of inferences.

To begin in a standard way, we can divide inferences into nodes and links, where nodes are the things connected up and links are the things that do the connecting. Nodes may be states, actions, persons, goals, or objects. The simplest type of inference works by asserting a link of an unspecified nature between any one node type and any other. Further, the inference may be constructed on the basis of presence or absence, absolute or hedged, of either node type.

A few examples: 1. "What's he doing pouring whiskey in his tea? He's Irish." Sense is made with a simple action-person inference. Or perhaps "he has

a cold." In this case, we have an action-state inference. Or "he wants to get drunk," action-goal. Or "we always put whiskey in our tea," action-object. Or "so he can serve it to his friend," action-action. These inferences all involve the presence of both nodes: similar examples could be constructed using different mixes of presence and absence. For example, "he's out of rum" would be action-lack of object.

Things get more interesting when we worry about the nature of the link. Two nodes may be tied together because one causes the other, or enables it, or results in it, or evaluates it, or resembles it, or cooccurs with it in space-time. On the one hand, the link may be expressed in a simple linguistic form—"whiskey cures colds," "whiskey gets you drunk," "whiskey is like rum," "whiskey is good for you," or "whoever heard of tea without whiskey." Again, the links could deal with absence rather than presence—"whiskey won't hurt you," for example.

However, there will be other more complicated cases of a variety or sorts, where the inferences needed to make sense come in groups. They will group because some inferences will share a node or link with at least one other. 'He's putting whiskey in the tea because he wants to get drunk. Alcohol does that, and whiskey is alcohol. He had a rough day at the office, and he usually gets drunk after a rough day." As mentioned earlier, this bunching of inferences is what the term "schema" is all about. The typical ethnographic case involves schemas rather than single inferences.

So far, then, we have the notion of inference as the linking up of knowledge, whether constituted from memory or from interaction with the world. Inferences consist of nodes and the link that ties them together. They may be asserted with varying degrees of plausibility or hedging, and may involve either presence or absence of the phenomena to which they are matched. Nodes may be actions, states, persons, goals, or objects. In their simplest form, inferences simply assert a link between any two. In their more complex form, the link itself is specified. Usually an inference used to make sense of some act will be tied together with others, giving rise to a schema. Schemas may tie an inference to others in either hierarchical or heterarchical fashion.

This discussion of inference and schema begins to give a sense of what they are that includes most of the specific types mentioned in the lists in the articles cited earlier. (There are other similar discussions, such as Schank and Abelson's (1977), but they are more concerned with complete representations of overly frozen "scripts.") It also begins to give us a handle on the idea of an "ethnographic resolution" of breakdowns. Breakdowns occur when available schemas, either serendipitously or through forced analytic effort, fail to make sense of action. Resolution is the process of tinkering with schemas until understanding can occur.

The notions of inference and schema contribute some clarity to our sense of ethnography as a style of human understanding. But there are some characteris-

tics of ethnography that introduce new problems into their application. Now I would like to turn to a consideration of some of those problems.

SIMILARITIES

So far, the emphasis has been on inferences and schemas. But the disciplines from which these concepts have been drawn use them in a particular way. Whether in AI or cognitive anthropology, the goal is a full documentation of schemas, whether as the core of a story-understander or as a model of "native" cognition. In contrast to this goal, interpretive ethnography uses the concepts to make sense of human differences in terms of human similarities. The emphasis is on bridging traditions, or tinkering with inferences until action in one tradition is understood from the point of view of another. The focus is on differences; inferences and schemas are modified until understanding can occur. The new constructed knowledge that enables this is neither an exhaustive documentation nor a model of anybody's mind; it is a tradition-bridge.

But an ethnography is not just a list of differences, for they must be made sense of "in terms of" similarities. At the same time, arguing that all similarities must be represented is a mistake—it opens the bottomless pit problem for both the ethnographer's and the group's traditions, and such a representation is impossible at any rate. Differences, as they arise in breakdowns over the course of ethnographic work, must be made sense of. The question, then, is how and for what reasons to discuss similarities as well.

The first problem is that there is no clear boundary between differences and similarities. For example, when I was developing a lexicon during my study of heroin addicts (1973), some terms were clearly group-specific and therefore needed to be included; other terms were clearly mainstream American English and could safely be left out. But a few were marginal, and it was hard to decide whether to include them or not. The marginality was made more difficult, since my study was done in the late 1960s, when much street argot was wending its way into standard mainstream English. My strategy was to err on the side of caution and include a term if I thought there was any chance a potential reader would not know it. But the problem remains—sometimes the boundary will be unclear. So, the first use of similarities is to resolve the boundary fuzziness in the direction of caution—if the similarity looks like it might be a difference for some of the audience, then treat it as such.

However, there are some other uses of similarities as well. I would like to mention four, though they are not at all mutually exclusive. Similarities can play a role in ethnography in at least these ways: (a) As a connector in the tradition bridge; (b) As a connector in terms of human universals; (c) As a resolution of a problem in coherence for an ethnographic account; (d) As a primary goal of an ethnographic study. Let me discuss them in that order.

1. Tradition connectors.

Until now we have spoken of "new knowledge" needed in one tradition in order to make sense out of the acts that occur in another. The "new", to borrow and extend Clark's (1975) notion, needs to be connected with the "given." Further, there may be degrees of newness. Some of the knowledge may only require a minimal addition or deletion to knowledge already available. Other breakdowns may require changes that substantially reorganize the knowledge originally brought to the encounter.

To give an example of minimal changes, consider the example of "cooking food" in a South Indian village that I worked in during the mid-1960s. Early on, when I walked into a village hut in the evening, I had no trouble looking at the pots over the fires and deciding that "cooking" was going on. I had to replace some low-level schemas from my tradition, since electric/gas stoves and metal pans with handles were not being used, but on the whole my schemas worked adequately for understanding. Of course, I had to do similar work with "food" and "cooking utensil" schemas as well, but not many changes were necessary.

Now for an extreme example, let me use some work on the use of methadone in New York (Agar 1977). I had some knowledge from my work with addicts in the late 1960s, but when I began my work in the city I experienced a new breakdown. I kept hearing people in the street talking about methadone, not as part of treatment, but rather as a desirable new street narcotic.

The key to the resolution occurred when I noticed that with a high-level schema change of "heroin" to "methadone", many of the same schemas learned in my earlier work served to interpret methadone-centered activities in New York in the 1970s. The "culture change" that had gone on was reflected, in my understanding, by a sense that the main change was in a high level schema rather than in the many lower-level schemas to which it was linked. There were of course also important differences between the junk scene of the late 60s and the methadone scene of the early 1970s. But it was only after the insight that the key was the high level schema change that these differences became coherent.

These brief examples illustrate how schema changes that resolve ethnographic breakdowns can run from the minute to the fundamental. However, whatever the magnitude of the changes, the point remains. The new knowledge must be presented in such a way that it connects sufficiently with old knowledge available in the tradition of the ethnographer (not to mention the intended audience of a report). This connection occurs when the differences have been resolved so that they connect with similarities and allow a coherent understanding of a social act. At that point, further elaboration of similarities is unneccessary, since the ethnographer/audience can fill in the needed additonal background.

2. Universal connections.

Anthropology has a long-standing interest in the possibility of human universals. People everywhere have language. They all recognize the importance of

such phenomena as sex, birth, human development, and death. They all live in physical worlds where seasonal variation, climate, the diurnal cycle, and astronomical phenomena will be noticed. People everywhere experience emotions like anger, love, fear and happiness. The use of universals as a kind of similarity to link up differences is an important one. Use of universal similarities as a connecting point for the discussion of differences guarantees that any two traditions can be connected.

Returning to the South Indian village, suppose that I am telling you about an instance of conflict, and one of the lines in an interview I am quoting says, "Sakrya's older brother was angry with him for using the cart." I need to be sure that the reader knows that "brother" is used here in the sense of "father's brother's son" rather than in the sense of descendants of the same parents. And of course the "cart" issue is an important difference that will require some schema construction. But beyond that, I can be sure that any (English-speaking) reader will have a sense of brothers as kin and anger as a strong emotion. Anyone is capable of making sense of the statement because they share with narrator and group a common humanity.

Universal similarities are particularly crucial to an ethnographer. For any two traditions that one is attempting to bridge, universals offer a guaranteed link. It is interesting, in this regard, that some of the literature on field methods mentions the importance of "face-to-face" universals in the conduct of fieldwork (Powdermaker 1966, Pelto and Pelto 1973). One can also imagine that they are important in any groups that are constituted cross-culturally, such as international business or diplomacy. However, it is a working assumption of ethnography that such links, the arguments of sociobiology to the contrary, are not adequate to connect traditions except in limited ways.

3. Report coherence.

An ethnographic report is a kind of discourse. Suppose I am giving you a sketch of a videotape of a wedding prior to analyzing it to show the new knowledge needed to make sense of it. "The groom wakes up at dawn. He gets up from his cot and walks over to the clothes-pole." Now, the new knowledge needed to understand this account isn't very interesting—people sleep on cots rather than beds. Houses contain clothes-poles of such and such a form; they don't have closets, and so on. Further, it is not particularly startling to point out that people wake up, stand up, and get dressed in the morning.

However, in giving you a sense of a piece of social action that is going to serve as an anchor for the analysis of differences, coherence requires that certain things be said. Many of these things will represent areas of similarity between the two traditions. However, constraints imposed by the form of the ethnographic report require them to be present. A report has as its goal the presentation of new knowledge to readers or listeners. As such, it is a form of communication, and it is therefore subject to the constraints imposed by the form of communication chosen to do the job.

4. Similarity as an ethnographic goal.

Finally, similarities may serve an overall goal of an ethnographic study. One can set out to produce an ethnography that shows that group *X* is really not as different from the audience group as the audience group might think. The report will emphasize those aspects of group life that either show how group concerns are the same as those of the audience, or alternately show that given the social, physical and biological environment of the group anyone would be doing pretty much the same things. The point of such an ethnography, in other words, would be to elicit a breakdown in the audience.

Even without this intent, ethnographies often portray groups in a sympathetic light. The basic ethnographic goal of showing how group activities make sense reduces the distance between audience and group. In the early pages of *Tally's Corner,* for example, Liebow (1967) sets up a situation where ghetto males are on a streetcorner when a white employer drives by looking for workers. When he calls out to them, none of the men respond, and the driver leaves with his views confirmed that black ghetto men don't want to work. Liebow then shows how, for each of the men, there are good reasons why they didn't respond—some of them, for example, had just gotten off work. The men have reasons for their lack of response—their act made sense.

The uses of similarities to bridge traditions, in short, will always have an overall effect of reducing distance between them. The reader of an ethnographic report gets a sense of links between distinct traditions. When one reads an ethnography of a South Indian village and sees the villagers dealing with their children or anxious about a forthcoming wedding, there is an ease of identification that brings them closer to the reader's own experience.

So, whether as overriding goal or as a natural consequence of the use of similarities to bridge traditions, ethnographies reduce distances between groups. Elsewhere, I have written about the importance of ethnography in complex societies in "humanizing stereotypes." I have also, as have many others, talked about problems in doing an ethnography for an agency and finding yourself criticized for being "overly sympathetic." I hope this discussion shows in more detail why these things occur, and why they are a necessary part of ethnographic work.

For whatever reason, then, similarities provide the ground for ethnography, differences the figure. The inferences and schemas developed in the course of the research will focus on the differences. The problem for an ethnographer is not to decide when a schema is complete; instead, he/she must decide when the differences have been resolved "enough" for understanding to take place.

THE OUTSIDE AND THE INSIDE

There is a recurrent debate between those who, in one form or another, emphasize "actor's meanings" and those who emphasize "objective" characteristics of the world of which the actor is often unaware. One version of this argument in

anthropology marches to the tune of "emic" and "etic"—the former emphasizing "folk concepts" and the latter stressing the concepts of the ethnographer, usually focussing on external (often material) conditions of the world in which the folks live. Another version can be found in the critique of interpretive sociologies for failing to account for power differences and institutions (Giddens 1976). Yet another example can be found in the debates between Gadamer and Habermas, where the latter argues that language is but a part of the world, while other parts have more to do with "causes" of behavior and less to do with their "interpretation" (McCarthy 1978).

Now, the development of inferences and schemas to bridge traditions so far has not addressed this issue. Ethnography is committed to "strips" of group life as the source of problems in understanding and the test of their resolution. ("Strip," following Goffman (1974) and Frake (1981), is simply a name for any expression of group life taken for analysis by an ethnographer.) In this sense, it is always committed to "emic" phenomena. But when building schemas raw material comes both from the folk and from the ethnographer. Consider the many possibilities. An informant might articulate a complex schema that makes sense of a strip, and that schema might be incorporated into the ethnography. Or an ethnographer might construct a schema based on bits and pieces that he/she has heard and seen, together with some insight and intuition. The result might be something that, when expressed in informant language, elicits a strong "aha" reaction, or it might be something that informants understand but strongly disagree with. At the other extreme, an ethnographer might draw on some theory to construct a schema which informants would simply find incomprehensible, even though it is linked in explicit ways with strips that they performed.

In short, the emic/etic issue changes. The world, in the words of a contemporary physicist, is a "participatory" one (Overbye 1981). What it says is in part a function of who is doing the listening. In the case of one human understanding some others, tradition sets limits on what can be heard. Actor's meaning and objective world disappear as anchors for the discussion. However, the issue reappears in another form.

Consider some strips that an ethnographer is trying to comprehend. Several sources might serve for ideas for the construction of schemas, and these ideas might come to light under conscious analytic effort or in a flash of insight. For ease of discussion, let's call those inferences motivated by some theoretical position of an ethnographer "theory inferences" (see Geertz's related discussion of "experience-distant" concepts, 1976). I would like to take two sample theory inferences, with apologies for the oversimplified treatment of the theories they come from, and see what role they play in ethnographic understanding.

The two examples reflect two different possible relationships of theory inferences to resolution. On the one hand, some might be offered as part of the schemas directly used to understand strips. On the other hand, theory inferences might take as their problem the schemas used in understanding and lead to the construction of other higher-level schemas that connect with them. In principle

we could expand into an infinite regress. For example, one could demand schemas that connect with the schemas that connect with the schemas used in understanding strips. This would be something like the domain of epistemology. The chain could ascend even higher, but for now we will deal with the two lowest levels.

For our example of theory inferences with direct application, consider one that comes from a clinical perspective on heroin addicts. "Junkies have undeveloped superegos." This is an inference that often plays a role in understanding junkie social acts. What does an ethnographer do with it? First of all, we notice that the inference names some schemas, but it doesn't tell us much about the inferences contained within them or any of the conditions under which they might apply. In fact, in its vague present form we have a candidate for "self-fulfilling prophecy."

Ethnography requires that the schema be developed in coordination with the analysis of strips. Let's say we use a life history interview with a heroin addict. In analyzing a segment of the interviews, we see an elaborate description in which people are manipulated to get money. Our analysis shows that we can understand the text with a fairly straightforward means-ends type of schema. Concerns with interpersonal ethics, considerations of the emotional consequences for the victim, and so on are not required.

We decide that our analysis is in fact well served by the "lack of superego" schema. But then we apply it to a new strip contained in the life history, and see the informant giving an elaborate description of why he didn't want to take money from somebody. This analysis leads us to an initial rough schema about junkie interpersonal morality, yet our "lack of superego" schema should apply and lead us to expect quite a different interpretation. Now what?

Well, first of all we have just complicated the superego schema. That is exactly what we want to encourage, and it is one of the strengths of ethnography that this sort of thing frequently happens with the oversimplified schemas so characteristic of traditional social science theory. However, the new "junkie morality" schema doesn't justify a "not my people" critique of psychiatry, and a "your theory is too simple" response doesn't get us very far either. Instead, we require even more iteration of the schemas against strips, with an eventual schema resolution that shows how the two (and others) interrelate such that certain acts are understood in terms of one, others in terms of the other, and still others in terms of the conflict between the two.

Now consider an example of the second type of theory inference, the type that doesn't connect directly with strips. We saw that in certain situations junkie acts can be understood in terms of a "no superego" schema and in others they are better understood in terms of an "interpersonal morality" schema. Why? We have constructed the schemas we need for understanding, but now we back up further and seek theory inferences that link them up to something else.

Suppose we have a theory of American society that runs something like this. Most junkies come from the slums, barrios, and ghettos of the urban U.S. They

learn that economic survival will not come from occupational roles available in the larger society; instead, they seek alternatives to survival which rely on the clever manipulation of those persons or institutions that have such resources. Stealing money from someone is nothing personal; it is just an easily available way to get resources, made more salient by the absence of alternatives. This does not mean that junkies have no principles about who they steal from. They do, and when they steal from such people we expect an account of the extraordinary circumstances that warranted it. On the other hand, when they steal from the usual victims, we expect no such account.

Now, this theory schema, let us say, does connect with the schemas used to understand the text. However, it sets up new questions which can only be checked out against other ethnographies of other groups. Just to list a few of them—not all junkies come from impoverished backgrounds; not all from impoverished backgrounds act in ways that the schema suggests; not all who act in ways that the schema suggests are junkies; junkies often steal primarily from other poor people; and so on and so forth.

The schema, in short, sets up comparative questions that are the stuff of "ethnology." It suggests some theoretically motivated issues for another ethnographic study. The point for now is simply that the use of inferences and schemas presented here fits into this time-honored ethnographic issue in an interesting way. It recognizes that schema construction is an accomplishment of the ethnographer, but allows drawing from informant accounts, social theory, or any other source. Then rather than insisting on a division of ethnographic statements into "emic" and "etic," it emphasizes their many connections in any ethnography and requires that the connections be made explicit and eventually anchored to those strips that constitute ethnographic data.

AD HOC AND THEMATIC SCHEMAS

Nothing has been said about schemas—whether provided by ethnographer, informant, or some collaboration of the two—to indicate much about their range of applicability. Some inferences and schemas might be put together to enable understanding of a strip, but they might be ad hoc constructions that give us a sense of that strip and little else. At the other extreme would be inferences and schemas that we will call thematic—structures that seem to routinely apply to a wide range of strips and yield an understanding of them with less attention to idiosyncratic detail. Of course the distinction is an idealized one, but it will serve the purpose for now.

The issue of level has been mentioned in earlier sections. However, we now see that part of what leads a schema to be more thematic is that the nodes and links of the inferences that constitute it are general enough to connect with a variety of strips. The reason for mentioning this point here is that higher-level thematic schemas are a traditional goal of American cultural anthropology.

Since the work of Franz Boas in the early part of the century, much of American anthropology has sought general statements that characterize the pervasive, recurrent patterns that arise in an ethnographic study. Although many terms have been offered for these high-level statements, the one I prefer is Opler's (1959) notion of "themes." In a recent review article, Black (1973) has noted that themes are notoriously difficult to characterize, but that nonetheless each generation of cultural anthropologists struggles with the problem. I am one of this struggling horde, and it strikes me that casting ethnographic understanding in terms of inferences and schemas points towards ways to begin to systematically articulate themes and show their links through other schemas to the many strips that go into ethnographic analysis.

CONCLUSION

We began with a sense of ethnography as focussing on breakdowns—problems in understanding. The breakdowns lead to a process of resolution that yield a coherent understanding of social acts in one tradition from the point of view of another. Within this framework, the notion of inference seemed a useful concept in terms of which both the nature of the breakdown and the process of resolution can be characterized. The concept becomes even more useful when it breaks from its traditional rigid uses in classic formal systems, and when we note that inferences can be bunched into schemas.

However, recent discussions of inference show that for the most part they have been considered as a list of types. We moved towards a context for the lists, as have others, by developing a vocabulary of inference nodes and links and considering the different ways they might interlink into schemas. While only a beginning, the vocabulary draws on recent concerns with knowledge representation to begin to formulate a more precise way to characterize ethnographic breakdowns and their resolutions.

The use of the vocabulary differs from its uses in most areas of cognitive science, though. It is not intended to model anyone's mind, nor to exhaustively document the knowledge necessary to understand a story. Instead, it is used to characterize and then resolve problems in understanding human acts that are observed by another human. As such, it applies only to the schema and inference modifications needed to resolve the differences. The systematic treatment ends when adequate ties into the similarities of the acting and observing human are made so that understanding can occur.

Further, the incorporation of the concepts into ethnographic work leads to some new constraints on their use. Two were mentioned here. One had to do with the need for careful attention to the different traditions that serve as sources for inferences and schemas—those of the ethnographer, the informants, and the potential audience of a report may all mix in complicated ways in schema construction. A second had to do with those conventional higher-level schemas that are "themes," a traditionally important goal of ethnographic work.

There are other issues as well. For example, the presentation of an ethnography as a large chart of interrelated schemas and strips would guarantee that no one would read it, with the possible exception of the author's parents. The vocabulary introduced here is not intended to prescribe the form of an ethnographic report; rather, it is intended to serve an analytic language for professional ethnographers. There are other problems as well, not the least of which is the relationship of this framework to the appropriate methods for ethnographic inquiry (Agar 1983).

However, even though problems remain, the notions of inference and schema appear to fill a theoretical void in ethnography. They point towards a language to give systematic shape to ethnographic work while at the same time fitting comfortably into a broader epistemological framework appropriate to it. If this is correct, then ethnography, though different in its goals from much of cognitive science, shares with it a concern for the issues of knowledge representation. At the same time, the concern centers on knowledge representation as an abstract language of pattern and purpose, not as an investigation of actual internal mental processes.

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