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Cognitive Anthropological Fieldwork

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Abstract

In their introduction, Beller et al. point to important issues regarding the problematic interaction of anthropology and cognitive sciences (CS). I address some of these issues in stressing first some limitations of the current state of the fields of anthropology and CS. In the second half of this article, using data from studies I have been conducting among the Yucatec Mayas (Mexico), I present some concrete cases where anthropological and CS methods and approaches are complementary. Finally, I propose some solutions to find common ground and ways to improve cross-disciplinary collaboration.

Keywords: Anthropology; Cognitive science; Yucatec Maya; Space; Emotion; Sociality

1. Introduction

Beller et al. point to important issues regarding the problematic interaction of anthropology and other cognitive sciences (CS), in particular, where incompatibilities are not only theoretical but also structural. I address some of these issues first, by stressing some limitations of the current state of the fields of anthropology and CS. In the second half of this article, using data from studies I have been conducting among the Yucatec Maya, I present some concrete cases where anthropological and CS methods and approaches are complementary. Finally, I propose some solutions that could lead to the two fields finding a common ground and ways to improve cross-disciplinary collaboration.

Anthropology is primarily interested in the public expression and transmission of mental representations rather than their internal form. Consequently, anthropology has always been reluctant to ''cognitivize'' subjects and has developed a methodology mainly designed to study representations and meta-representations (e.g., narrations, artifacts, answers to questionnaires, etc.). As a postulate, anthropology poses the impossibility of accessing

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individual cognitive representations and therefore is a priori not interested in trying. Because of this postulate and because another branch of science claims to do so (the CS), anthropology has found a good justification to step away from the scene of CS and associate itself with a more culturalist approach to internal representations. However, this is a historical decision and it does not mean that the current position of anthropology is the correct one (it is certainly not justified empirically).

CS (taken here as a field composed of peer-reviewers not oriented toward anthropology) has historically focused on identifying universal human cognitive bases and processes without much concern for cultural variability, and therefore has more or less ignored the potential contribution of anthropology. One problem with this approach, however, lies in the definition of these processes and the level to which they are examined, that is, the difference between capacity and performance. Even if we assume that all humans share a similar cognitive architecture and that different individuals can resolve similar tasks under similar conditions, this does not predict how people will use these capacities in real life with locally specific conditions (concrete illustrations are presented below). As pointed out by Beller et al., when cognitive scientists do attempt to make cross-cultural comparisons, it is often problematic as to what is really being compared. Any experiment designed in the frame of a specific culture is not neutral and relies on a set of assumptions that are not always obvious or visible to the researcher(s). An experiment, like any other set of interactions, is a social activity and is treated as such by participants (Clark, 2006; Rogoff & Lave, 1984). Consequently, the more familiar the participants are with the culture of the region where the experiment has been designed, the more the experiment is likely to yield valid results. This is one reason why experiments designed in the United States work fine with undergraduate students there (therefore also the favorite CS population for testing), but why the exact same experiment is often more problematic once replicated in a non-Western or nonliterate context. Indeed, the exact same question asked in a different context or in a different language poses the risk of being (re-)interpreted according to local norms with the answer obtained addressing a slightly different question than the one the experimenters originally intended.

In a similar line, another criticism made to other CS is the tendency of cognitive psychologists to look for ''convenient'' cultures or languages with which to investigate a specific question. In order to narrow down the parameters of the study, psychologists ''scan'' for cultural or linguistic settings to ensure that their experiment will be as successful and contrastive as possible. Theoretically, this means that CS is not interested (at least in a first phase) in studying human cognition as a whole, preferring to focus on good examples and therefore jumping from culture to culture. Structurally, this attitude contributes to the discrepancy in production between anthropology and other CS. Assuming that anthropologists are keen to study cognition in the culture/language they work with, they cannot conveniently choose a particular culture each time they change their domain of study. Anthropologists are, in a sense, ''stuck'' with their field site (because of their investment in making contact, learning the language, etc.) and have to explain every phenomenon within this culture even if it does not provide the ideal comparison population, thereby giving them less visibility in the literature in terms of the number of publications they produce.

2. The neglected role of language

In cross-cultural studies, both in anthropology and other CS, the importance of language has not been fully considered. Although anthropology is concerned with concepts, it often reduces the role of language to a collection of (technical) terms and too often assumes a direct equivalency in the translation (rarely are the full implications of the semantic variations in different contexts explored). Besides a specific subsection of anthropology, linguistic anthropology, grammatical features of the languages studied are rarely taken into account, nor are the way certain concepts are or are not expressible. A quite similar reproach can be made to other CS, notably in the field of psycholinguistics, where the tendency is too often to select a semantic field (or only part of it) without providing any description of the structure of the language as a whole and its range of expressibility. Scarcely do anthropologists or psycholinguists ever rely on data from natural corpora, that is, the reader does not know how the linguistic structures nor the lexicon examined is actually used, by whom, and in what contexts.

3. What to study then and how?

Because, as Beller et al. put it, ''we don't know what we're doing,'' it is wise to start with issues that are not too narrowly defined so that any a priori assumptions remain malleable.

Some candidate domains for cross-cultural studies in cognitive anthropology include space, time, or mathematics. For instance, in the domain of space, the Kantian view that location in space is encoded egocentrically from the individual's point of view was almost unchallenged until Levinson and colleagues (see Levinson, 2003) showed that individuals from many non-Western cultural and linguistic backgrounds primarily use nonegocentric systems based in fixed aspects of the environment (e.g., north–south).

Another area of interest that is well suited and productive for cross-cultural and even cross-species studies is the domain of ''sociality'' (Enfield & Levinson, 2006; Goody, 1995; Tomasello, 2008). This domain posits that human cognition is primarily dedicated to social interaction and oriented toward the other(s). Consequently, humans tend to analyze the world in social terms (through universal processes of inference, attribution of intentions and beliefs). Because it lies at the intersection of various fields of research (ethology, psychology, linguistics, and anthropology), sociality offers a rich field to study how cognition develops within the context of a particular culture. The postulate is that the cognitive processes underlying human interactions are universal in their structure, but they need to be defined and connected by cultural knowledge.

4. Cognitive capacities versus everyday cognition

In the domain of CS, one major aim of cross-cultural studies is to test whether and how culture can influence cognition. However, there often lacks a definition of what is meant by

cognition. In most cases, only the cognitive capacities are considered and not the cognitive processes in use (i.e., the way cognitive capacities are actually used in real life and how).

To discuss this issue, I consider the domain of spatial cognition contrasting what I call cognitive ''capacities'' and the ''use'' of these cognitive capacities. The examples are taken from studies conducted among the Yucatec Maya.

Yucatec Maya is a language spoken in Southern Mexico and in Northern Belize. The data presented in this article were collected from the village of Kopchen, where the author has been conducting fieldwork on a regular basis since 2002. In this area, the Yucatec Maya language is still widely spoken. Younger generations receive some schooling in Spanish, but everyday interactions in the village are carried out in Maya. The village is surrounded by tropical forest. The terrain is flat and vertical relief never exceeds a few meters. In central Quintana Roo, Yucatec Mayans still perform slash-and-burn subsistence agriculture. Ethnographic information pertinent to this area can be found in Le Guen (2006).

In order to test cognitive ''capacities'' in the spatial domain, I used experimental procedures from cognitive psychology. I used two experiments to show that Yucatec Maya men and women can perform spatial tasks in a similar way.

4.1. The ''animals-in-a-row'' rotation task

A nonverbal task was conducted in order to test cognitive preference in the spatial domain. It makes use of a ''rotation paradigm'' that forces subjects to make an implicit choice between two distinct types of conceptual representation of a spatial scene, in other words, their preference for frames of reference (FoRs) in nonverbal situations. The task consists of presenting subjects with a stimulus array oriented in a particular direction on a table and asking them to reconstruct/orient it on a second table after they have been rotated 180°, so that the response array matches (''is the same as'') the stimulus array. The animals-in-a-row task was designed to reveal participants' preference for either an egocentric FoR (reproduction of the array is based on the participant's point of view) or a geocentric FoR (reproduction of the array is based on reference to cardinal directions).

Twenty-one men and 10 women participated. Overall, participants were much more likely to choose a geocentric FoR (85% of all choices), that is, they recreated the array using an axis based on cardinal directions rather than their own point of view. No gender differences were observed, and there was no correlation with age (more details can be found in Le Guen, 2011).

4.2. The localization task

Another task was conducted where participants were asked to locate one distant entity (the Figure) in relation to another (the Ground). The question asked was the following: ''In Felipe Carrillo Puerto [a town located 30 km north], where is the Azulero (a store) in relation to the gas station?'' (*Te' kàariyoo'*, *tu'ux yàan le àasuleroo' te' gasolinerao'?*). Participants were free to respond; however, they liked as long as they explicitly mentioned both the figure (the shop) and the ground (the gas station). The focus of this study was specifically on the

production of gesture. Although participants were not aware of this focus and were not asked to gesture, every participant produced a verbal and a gestural answer. Participants in the task included 9 women and 11 men. Participants were divided into two groups, one facing west, the other south. Results are of two types: verbal and gestural. Although a variety of strategies were used in speech (intrinsic and geocentric FoRs, as well as manner and spatial deictics, but no egocentric responses), all the participants' gestures were consistent with a geocentric frame of reference (see Le Guen, 2011, for a detailed description).

In these experimental tasks, Yucatec Maya men and women tended to rely on a geocentric FoR. One hypothesis that follows is that they constantly compute their position in space nonegocentrically to locate not only themselves but also a distant figure with respect to a distant ground. But what do these results tell us about how Yucatec Maya men and women use their spatial cognitive capacities in real-life situations? To explore this issue, I examined what strategies Yucatec Maya men and women rely on when orientating themselves in the forest. I relied on anthropological methods, using interviews, collection of natural discourse, and narratives as well as participant ethnography (see Le Guen, 2006, for a complete description). The hypothesis, on the basis of the results from the previous experiments, is that both genders would be able to orient themselves in the forest in similar ways using a geocentric FoR. However, although men and women *can* use these capacities, I found that they *do not* in specific cases due to cultural constraints.

Among the Yucatec Maya, the forest space contrasts with the socialized space of the village or of the crop field. The ways people use the forest space vary considerably according to their social status, gender, and age. The forest is the place where people go to hunt and to collect firewood, construction materials, medicinal plants, or vines. But it is also the typical place of illicit sexual intercourse. It is thought to be populated with numerous kinds of spirits and it is considered a dangerous space for women and children. Men go daily into the forest, whereas women only occasionally enter the forest space to collect wood and plants.

To orient themselves when traveling in the forest, men say that they pay attention to a number of cues: They note the position of the sun, they calculate the distance they travel, they count how many turns they make, and they rely on their knowledge of local landmarks (breach, path, trees, etc.). Women, on the other hand, say that they only tend to rely on known landmarks and to venture in known spaces and always take the same paths.

When disorientation occurs, both men and women assume that it is the work of supernatural entities. Both men and women say that their perception is affected and that they cannot perceive the environment normally. However, women say that it is the guardian spirits of the forest (or *nukuch báalmo'ob*) who are responsible for them getting lost. One woman interviewed (W), who got lost along with her mother some years ago, justifies her misadventure by the fact that the very presence of women is enough to irritate the guardian spirits of the forest. According to W, the guardian spirits intentionally caused her and her mother to become lost in order to punish them (*tukàastigarto'on*). In her narration, W mentions that they did not pay attention to environmental cues (e.g., the position of the sun) because they thought they were lost (*minna'atik tu'ux yàan le' k'ïno'* ***tumen*** *sàatlo'on*: ''I did not understand where the sun was **because** we were lost'').In other words, the women did not use their capacities to orient themselves on the basis of their cultural reading of the situation.

Men rely on a similar ethnotheory about disorientation, namely that spirits cause them to get lost, but they attribute the fault to some kind of evil spirit living in the forest that tricks them: an evil lizard called *sïïp tóolok*. To put an end to the disorientated state, men say that they should search and kill the lizard. When men say that they get disoriented, they consider their perception to be altered and see the sun rising in the opposite direction, trees appearing on the other side of paths, etc. In contrast to the women, men's explanations focus on a geocentric, although inverted, representation of space.

What the ethnographical data show is that, although Yucatec Maya men and women rely on a similar ethnotheory about disorientation (i.e., people are disoriented on purpose by supernatural entities), there are gender differences in the way they handle disorientation. Men, when disoriented, still rely on a geocentric conception of space (seeing the environment as inverted), whereas women, because they think they are being punished by supernatural entities (i.e., attribute the spirits with intentions and motives), are more passive and do not actively seek cues to orient themselves. In other words, although men and women have the same cognitive tools to orient themselves, it is because of the local understanding of the forest and of their relationships with the spirits that they use these capacities in a different way.

This example points to the necessity of a complementary approach using anthropological and cognitive psychological methodologies. Indeed, the prediction that could be drawn from the results of the experimental tasks is that men and women would behave in the same way when facing a similar situation. On the other hand, ethnographical data predict different cognitive capacities. The complementary approaches provide us with a more fine-grained and challenging analysis. Although men and women potentially have similar capacities, their conception of local space orients and constrains these capacities in real-life situations. The impact of such constraints has been highlighted in a more familiar context: Dar-Nimrod et al. demonstrated empirically that the exposure to gender stereotypes affects North American[1] women's mathematical performance (when first presented with gender stereotypes, women perform more poorly than when they are not; Dar-Nimrod & Heine, 2006). Culture-specific expressions are therefore more than just trivial: They can have an important impact on how abilities are expressed and perceived and on their subsequent development.

The second study pertains to the perception of emotions, more precisely to the recognition of facial emotional expressions. In Yucatec Maya, there is no dedicated lexicon to designate the (supposedly) basic emotion labeled ''disgust'' in English (Ekman, 1992). The Yucatec Maya informants, when presented with a still picture of the facial expression DISGUST[2] refer to it using the general term *p'uha'an* ''angry, unhappy.'' Furthermore, there are no cultural practices that would sustain the recognition of an emotional state like ''being disgusted.'' Significantly, there are no interjections that would index a disgust situation or emotion (Le Guen & Pool Balam, 2008). However, does this mean that Yucatec Maya are unable to recognize the facial expression of disgust or distinguish it from the ANGER face? To investigate this question, along with my colleague Disa Sauter (a psychologist from the MPI for psycholinguistics), we investigated the categorical perception of emotional facial expressions, comparing German speakers to native speakers of Yucatec Maya (Sauter, Le Guen, & Haun, 2011). In a free naming task, speakers of German, but not Yucatec Maya,

made lexical distinctions between disgust and anger. However, in a delayed match-to-sample task, both groups perceived emotional facial expressions of these and other emotions categorically. The magnitude of this effect was equivalent across the language groups, as well as across emotion continua with and without lexical distinctions. These results show that the perception of affective facial signals is not driven by lexical labels, instead lending support to accounts of emotions as a set of biologically evolved mechanisms.

However, the fact that Yucatec Maya *can* recognize the emotional face DISGUST does not imply that they themselves *experience* this emotion. It seems on the contrary that disgusting situations, because they have no lexical label (name or interjection), are not easily pinned down by speakers of Yucatec Maya, and therefore such situations tend to be diluted in everyday life (either not recognized as a specific event or analyzed as part of another event).

5. Implications and future orientations

The two examples taken from my fieldwork experience among the Yucatec Maya show the necessity for a complementary approach to study the interaction of culture, language, and cognition in non-Western settings. It seems that anthropology and other CS are not in competition, but rather, focus on different levels of analysis, and the predictions that can be drawn from one approach should be tested against and moderated by the predictions of the other.

In conclusion, I propose the following suggestions:

1. A more complete training should be provided to students regarding topics and methodologies related to the study of culture, language, and cognition. The main factors that led to the alienation of anthropology from CS are that anthropology students are not exposed to cognitive psychology or psycholinguistic studies and experimental methods are not taught. A change in the orientation of the programs would, if not train cognitive anthropologists, at least help foster interdisciplinary collaboration.
2. Cognitive scientists, linguists, and anthropologists should be encouraged to work in teams when conducting cross-cultural studies. Working in teams implies that researchers should be familiar with the other(s)'s methodology and aims. It also requires individuals to be tolerant and to acknowledge the other's qualities and competences.

As a scientific project, the study of human cognition needs to take into account all the parameters that define cognition, including its cultural context and environment, that is, to consider some ways to ease the collaboration between anthropology and other CS.

Notes

1. We can only assume that participants are North American (from the United States or Canada) as the authors only refer to them as ''women'' or ''people,'' following a

common practice in CS papers. Note that if participants are not North American, peer reviewers and editors usually urge the author to provide information regarding the ethnic or linguistic origin of the participants at the sentence level (i.e., not write ''people'' but instead ''speakers of x'' or using the name of the cultural group).

2. The name of an emotion in capital letters refers to the universal emotion in contrast with the English label that defines the local understanding of this emotion.

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