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TEN DISPATCHES FROM THE CHIMPANZEE CULTURE WARS, PLUS POSTSCRIPT (REVISITING THE BATTLEFRONTS)

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Introduction

Culture applies equally to being yogurt or watching *kabuki*. A culture-bearer may be a petri dish or an *imam*. Herein lies the problem: The label refers to a wide range of phenomena. Somewhere in this range lie boundaries of uncertainty. The fermentation of bacteria is easy, but the fermentation of ideas raises issues. What is culture? When did it emerge? How do we know it? Who has it?

Add a heavy dollop of strong feelings to this mix, and controversy is assured. The title of this essay is taken from the current preoccupations of anthropology (and the social sciences in general), which is riven by bitter struggle. The “culture wars” in “cultural studies” are about essentials and jurisdiction, and, ultimately, about identity. The same issues affect what is called here “the chimpanzee culture wars.” (For a recent and somewhat detached view of the human version, see Kuper 1999.)

Wars have battles, and from battlegrounds come dispatches, which are meant to be timely and terse. Here, these 10 dispatches are very much the latter, as depth gives way to breadth. Imagine them as being light enough to be flown by carrier pigeon from far-flung battlefields, in anthropology, biology, linguistics, psychology, and so on, amid shot and shell.

Put another way, the aim of this chapter is to look closely at cultural primatology. (Though young, the phrase already has two meanings. Human attitudes, beliefs, and treatment of apes, monkeys, and prosimians, better termed ethno-primatology, is *not* covered here. See Wheatley 1999.) Cultural primatology is analogous to cultural anthropology, as a subset of investigators interested in the culture (as opposed to the anatomy, ecology, genetics, or physiology) of nonhuman primates. However, whereas

cultural primatologists assume that nonhuman primates are cultural creatures, most cultural anthropologists instead presume that only humans have culture. Both cannot be right.

More than 40 populations of wild chimpanzees across Africa make and use tools, from Tanzania in the east to Senegal in the far west. No two populations appear to have the same technological profile. Some use probes of vegetation to harvest social insects; others use stone hammers and anvils to crack open nuts. In neither case is the geography of tool use explained by absence of raw materials or targeted tasks. Even when these are constant, variations in style occur that cannot be explained by ecological factors. Such variation in humans is called material culture and ends up in museums. What to do when it occurs in apes?

Chimpanzee Culture? Absurd!

In this dispatch, from the battlefield of ethnology, culture is taken to be both universally and uniquely human, that is, all *Homo sapiens* have it and only *Homo sapiens* has it. Thus, culture is both a necessary and sufficient condition for humanity. (Modern humanity, that is. There is a problem of what to do with archaic forms like Neanderthals. Whether they were cultural or not evokes some debate.)

Some examples will show how difficult is this stand to maintain: Celestial navigation is neither universal nor unique to humans, as humans living in closed-canopy tropical forests do not show it, but migrating songbirds do. Constructed shelters may be universal to all human societies, but these are not unique, as shown by beaver lodges and orangutan beds. Writing is uniquely human, but not all humans know of it, as there are many non-literate cultures (or were, prior to contact by outsiders). So, what is left to humanity as both universal and unique? How about the space shuttle, or for that matter, the wheel? Or, the computer, or for that matter, the abacus? Unfortunately for this line of argument, most foraging peoples, whether Inuit or San, have none of these. Either they must be excluded from cultured humanity, or we must look deeper.

A skeptical pragmatist might point to seemingly obvious truths, e.g., that all humans clearly depend on culture, while just as clearly other species do not. (This is sometimes expressed cleverly as culture being humanity's ecological niche.) To scupper this proposition, we would need to find only one human society lacking culture, but we cannot, as the ethnographic record shows. However, the same logic applies to chimpanzee

populations; more than 40 have been studied, and all seem to have culture. Therefore, which species is more dependent? Neither one. Moreover, as de Waal (2001) has argued, there is much evidence that chimpanzees do need culture, as unacculturated apes may be at best incompetent, and at worst, dead. Textbooks in social sciences, especially in anthropology, are full of such assertions, presented as “obvious” truths, but these need querying.

A skeptical mentalist might object that all that we know of nonhuman culture is based on behavior, which is the least notable aspect of culture. Much more interesting is the knowledge that underlies and informs behavior. Even more challenging is the meaning attributed to the knowledge that drives behavior. And finally, there are the emotions that color the meanings that pervade the knowledge that is manifest in behavior.

How can any sensible person imagine that all of this exists in animals? Surely, it is said, this is what distinguishes a mating system (pair-bonded gibbons) from the institution of marriage (wedded Mennonites). Surely this is what distinguishes an optional taboo (the English do not eat horses) from obligatory carnivory (tarsiers eat no plants). Surely this is what distinguishes a rite of passage (Maasai initiation of young men) from puberty (adolescent male chimpanzees challenging their elders).

There are several answers to this question. One is that all that we know of knowledge, meaning, and emotion is based on behavior. We have no direct access to human or any other minds, so all is inference. Whether or not we are any better at divining human than nonhuman minds is debatable. We share the perceptual world of our fellow humans (advantage), but we are also susceptible to their mendacity (disadvantage).

It may be that the chimpanzee mind is wholly devoid of knowledge, meaning, and emotion, or it may be that some or all of these phenomena are there, in distinctively apish form. As with our fellow humans, we can only try to draw valid inferences. It would seem that cultural anthropology would be of great help to cultural primatology in this task. At the very least, the former could tell the latter what evidence would suffice in principle, so that primatologists can seek it in practice. There is a history of such aid (flirtation?) in sociocultural anthropology, dating back to Kroeber (1928), but including also the works of Ruth Benedict, Marvin Harris, and G. P. Murdock.

The prospect of chimpanzee culture is absurd only if it is unimaginable.



Figure 3.1 Party of Gombe chimpanzees of mixed age and sex.

Chimpanzee Culture? Of Course!

In this dispatch from the battlefield of ethology, the problem is not exclusion of other species from the cultured, but rather finding the limits of inclusion. In his groundbreaking book, *The Evolution of Culture in Animals*, Bonner (1980) was willing to grant candidacy to slime-molds. That is, depending on definition (see Dispatch 7, Culture Is by Definition),

culture is present not only in primates, or mammals, or homiotherms, or vertebrates, or invertebrates, but also in organisms lacking a nervous system! (This is *not* just word play nor is such inclusiveness limited to culture. See Strassmann and colleagues 2000 for the case for altruism in a protozoan.)

Textbook examples abound. In the same year as Bonner, Mundinger (1980) made the focused case for animal culture based on vocal learning in passerine birds. Invoking the research of pioneers such as Marler on white-crowned sparrows, Mundinger argued that characteristics such as plasticity, diffusion, tradition, and innovation were met. Hundreds of studies have extended these results and teased out the mechanisms of song learning and transmission (e.g., West and King 1996). In mammals, California sea otters crack mollusks on stone anvils but their Alaskan cousins do not. Among the Californian population, most crack while floating on their backs at the surface, but some take their tools underwater!

The problem with these (and others, e.g., Galapagos finch, bowerbird, black rat) marvels of natural history among nonprimates is that they seem to be mostly "one-trick ponies." That is, sea otters are great at anvil use, but do little else that is not species-typical. European blackbirds are wonderfully creative singers, but the rest of their behavioral repertory seems stereotyped by comparison. If one of the hallmarks of culture is its comprehensiveness, then single-trait candidates are bound to fall short.

None of these caveats applies to Japanese monkeys, however. Not only do these primates show an impressive array of cultural patterns, but also some of these habits have been tracked by primatologists for decades. Furthermore, their interpretation as cultural has been asserted as cultural from the outset, by Imanishi and his intellectual successors (de Waal, 2001). It is no accident that sweet-potato washing, wheat sluicing, hot-spring bathing, and so on are to be found in every introductory textbook. We marvel at photographs of snow-topped monkeys immersed to their necks in hot springs and wonder at their ingenuity.

Yet there is a problem with most (but not all; see Nakamichi et al. 1998) of these classic cases. Their origins lie in human facilitation; the monkeys were lured to the beach or into the pools by artificially providing them with domesticated plant foods. This enhancement takes nothing away from what happened next, how the habits spread by horizontal or vertical transmission or continued to elaborate or became fixed. But

one must always wonder: How many of these habits would have occurred without human assistance?

Within behavioral biology, crediting chimpanzees with culture or not is polarized. Ethologists (Boesch, Goodall, Nishida, Wrangham), who study chimpanzees observationally in nature, tend to say yes. Comparative psychologists (Galef, Premack, Tomasello), who study apes or rodents experimentally in captivity, tend to say no. Less of a dichotomy exists among researchers on capuchin monkeys, with field-workers (Boinski, Fedigan, Panger, Perry) largely affirmative but lab workers (Anderson, Frigaszy, Visalberghi, de Waal) of more mixed opinion. In any case, methodology and degree of direct experience are often confounded in investigators.

Notably absent (with a few exceptions, e.g., Boehm) are researchers in cultural primatology who were educated in cultural anthropology. Most primatologists are committed to the neo-Darwinian evolutionary paradigm, as natural scientists. Most anthropologists are not so committed, and think of themselves as social scientists, if they consider themselves to be scientists at all. This is a recipe for misunderstanding.

Illumination may come from a completely different mammalian order, the Cetacea. Despite the obvious logistical difficulties of studying aquatic culture, recent research on dolphins and whales is productive and provocative (Rendall and Whitehead 2001). Cetaceans do things that no ape has been seen to do: chimpanzees form small coalitions; dolphins form larger coalitions of coalitions. Cetaceans do things that we primates cannot even imagine: we can only guess at the networked communicative capacities of an echo-locating pod of orcas.

Culture Is Not Behavioral Diversity

Who can fail to be moved by the richness of human cultural diversity? Nowadays, every city has a wealth of ethnic cuisines, so that even a humble onion can turn up on a plate in a wonderful variety of forms. Satellite television brings this cross-cultural variation into our living rooms. So, it is argued that if we find behavioral diversity in apes, then they must be cultural.

True, field primatologists realized in the 1970s that we could no longer speak of *The Chimpanzee*. (If pressed for a milestone, one might point to Menzel's symposium on precultural behavior in primates, held at the 1972 International Congress of Primatology.) Instead, every study,

whether at Bossou, Gombe, Mahale, or Tai, seemed to reveal a new twist, if not a new behavioral pattern. This eye-catching reporting continues, and the ethnography piles up, so it is hard any more to keep straight which population of apes does what. Surely, there is now a need for a Chimpanzee Relations Area File, else how can anyone keep up with the information?

However, if diversity means differences across equivalent sets, and such sets are hierarchical, there is a potential for confusion across levels. Individual variation is easy to see in primates, as Imanishi and his students showed for wild Japanese monkeys, and Köhler even earlier showed for captive chimpanzees. In chimpanzees, each alpha male has his own style. But individual differences are usually seen as something for personality psychologists to study, not as matters of culture.

At the other extreme, species differ in behavior, and sibling species like chimpanzee (*Pan troglodytes*) and bonobo (*Pan paniscus*) provide a pastiche of similarities and differences (Stanford 1999). But these are not cultural matters, any more for primates than they would be for congeneric lion and leopard, and are usually left to comparative ethology or psychology. (Such boundaries are more fuzzy for artifacts found where and when anatomically modern humans and Neanderthals coexisted. Who made what may or may not be cross-cultural diversity.)

More to the cultural point is diversity at the level of community, population, or subspecies. In chimpanzees, neighboring unit-groups at Mahale show different versions of the grooming hand-clasp (McGrew et al. 2001). The separate but nearby populations of Mahale and Gombe have contrasting cultural profiles (Nishida 1987). Far western African chimpanzees (*P. t. verus*) are nut crackers, while the other sub-species (*P. t. troglodytes* and *P. t. schweinfurthii*) show none (McGrew et al. 1997). All of this diversity could be cultural.

However, lots of species show behavioral diversity. In nonapes, hamadryas baboons on opposite sides of the Red Sea in Arabia and Ethiopia differ in group size and composition (Kummer 1995). In non-primates, sea otter lithic technology varies along the Pacific coast. In nonmammals, scrub jay family structure differs from Florida to Arizona to California (Woolfenden and Fitzpatrick 1984). Whether any or all of this variation is cultural or merely reflects environmental constraints is a matter of investigation, but not assumption.

Kummer (1971) also pointed out a third way that behavior may vary, in addition to nature (environmental dictate) or nurture (social learning).

Organisms also may learn much individually from interaction with the nonsocial environment, by trial and error. If such learning (e.g., predator avoidance) occurs in parallel, even simultaneously across individuals, it may appear social when it is not. No one needs to show us that the sun is hot; we all learn this for ourselves at a young age.

A more vexing problem in judging behavioral diversity is quality of data. Anecdotes are of little use, as a single event can be a coincidence, subject mistake, observer error, or hoax. At best, an anecdote alerts us to a possibility. Equally limited in usefulness is idiosyncrasy. This eliminates all the problems of anecdote, but an act done by only one individual, however often, can hardly be cultural, as it is asocial. Even a habit, that is, behavior done repeatedly by several group members, is but a hypothesis. Only customs, that is, acts performed normatively by appropriate subsets within a group (e.g., cooks cook, soldiers fight, elders advise), are evidence of culture. Such distinctions are often ignored by eager reporters and may make ethnology difficult (Whiten et al. 1999).

Finally, behavioral diversity is neither a necessary nor sufficient condition for culture. Kwakiutl eat elephant seal but Bantu eat elephant. This is diversity but need not be culture, as no Kwakiutl ever met an elephant, nor Bantu an elephant seal. All the world now consumes carbonated cola drinks. This is global uniformity, but it is still culture. The custom has spread, not the geographical distribution of Cola trees.

Thus, in seeking culture, behavioral diversity is just a possible starting point.

Culture Is beyond Social Learning

In its broadest sense, social learning occurs when information gained from others of the same species alters one's behavior, thoughts, attitudes, and feelings (although only the first of these is observable!). This contrasts with information gained from the rest of the animate or inanimate world. So, does social learning equal culture?

Social learning occurs in all classes of vertebrates and in several kinds of invertebrates, which lack true brains. In the short term, honey bees learn from their fellow workers where to find nectar. In the longer term, an octopus may learn permanently to avoid a predator, from one observation of another doing so.

Given how widespread is social learning, many investigators have focused on its mechanisms, that is, on *how* rather than *what*. The array of



Figure 3.2 Adult male plays with infant (*right*) while mother grooms her juvenile daughter (*left*), Gombe.

possible means (and their associated jargon terms) by which information is transferred is daunting (Whiten and Ham 1992; Byrne and Russon 1998). These distinctions among mechanisms are differently emphasized, depending on the species being studied. Comparative psychologists studying nonhumans spend much time on thresholds (Is stimulus enhancement enough?) or alternatives (Is emulation *really* imitation?) or rubicons (No imitation, no culture!). This can be confusing to nonspecialists.

On the other hand, sociocultural anthropologists studying humans pay little attention to mechanism, being more interested in *what* is passed on. When information is available on processes, it turns out that most customs are transmitted by a *mélange* of passive observational learning. For example, Aka pygmies of Congo learn most of the 50 most important activities of daily life by watching others, not by being instructed (Hewlett and Cavalli-Sforza 1986).

Of the cognitive mechanisms of social learning, teaching is deified by some comparative psychologists. It is said to be essential to culture and

unique to humans, and so becomes a hallmark of “true” culture. If teaching is defined as acts by a tutor with the goal of improving the performance of a pupil, then much social learning by humans may not qualify. Formal teaching is absent in most traditional societies, except for specific contexts such as initiation rites. This makes sense: Teaching is costly, in terms of time, energy, and emotion. It is the mode of last resort for social learning, when simpler means fail. Teaching is arguably a curse, not a blessing, made necessary by a large, plastic, and expensive brain (McGrew 2001).

Riddle: When is social learning not really social learning? Answer: When human-reared apes are given “honorary” human status for the purpose of developmental cognitive studies. Thus, our closest relatives are put into experimental settings where humans are their models (and caretakers and surrogate parents and kin). Then, their ability to learn socially from human models is compared to similarly aged human children. The apes cannot win in such a setup. If they perform well, it is dismissed as “enculturation,” that is, upgraded ability that is not generalizable to nonenculturated apes. If they perform badly, their inferiority is confirmed. Such an experimental design is sometimes termed “cross-fostering,” but of course it is not, since no human child is ever taken from its kind and turned over to apes for rearing. It makes an interesting thought experiment: Who would show more social learning and cultural superiority, a human infant reared by an ape, or an ape infant reared by a human? Arguably the artificiality of both conditions means that little can be learned about evolved processes of social learning or culture from them.

In summary, there are two alternatives: If culture equals social learning, then many creatures, e.g., octopus, guppy, and lizard, must be granted cultural status. If culture is more than social learning, then we must look elsewhere for essential criteria. On these grounds, it seems sensible to consider social learning as necessary but not sufficient for culture.

Tradition Is Not Enough

Tradition is continuity over time. More precisely, tradition is vertical transmission of information across generations, from old to young. Rarely, when innovation is youthful, vertical transmission may go in the reverse direction. This occurred with the first spread of sweet-potato

washing by Japanese monkeys, but it seems to be rare (Hirata et al. 2001).

Examples of traditions in animals abound. Every year, wildebeests migrate across the Serengeti, whooping cranes winter at Padre Island, monarch butterflies flit to Chihuahua, salmon surge up the Tweed. Some of these traditions have gone on since before the human species emerged. In some cases, especially with migratory birds, we can monitor how offspring retrace the routes of their parents, or even ancestors. In a few cases, we have detailed information: At Gombe, the termite fishing of wild chimpanzees has been recorded over four generations of the “F” family, starting with Goodall’s observation of the matriarch Flo in the 1960s.

For human beings, the central role of tradition is clear. All human societies emphasize origin myths, however fanciful; attention to tradition, such as appeal to ancestors, is a human universal (Brown 1991). People who tell stories to sociocultural anthropologists often stress that they have always done things a certain way. Conversely, people who fail to keep traditions may be severely punished.

So, does culture equal tradition, and tradition equal culture? No, it is not that simple. First, some information is transmitted genetically across generations. This is deucedly difficult to establish in the wild, where variables of nature and nurture are confounded, even for behavior. Do generations of warthogs wear down a path to a water hole because it is their cultural inclination, or because it is the most energetically efficient or least predator-risky route? Even if we were lucky enough to be there to see them tread a new trail, would it be from whimsy or from changed (but unseen to us) environmental contingencies?

Second, not all transmission of information is vertical. Some is horizontal, within generations and across peers. The power of human “popular culture” is impressive—ask any teenager. But horizontal transmission of culture is more than fad. Opie and Opie (1987) showed that some aspects of children’s culture, such as jumping-rope rhymes, were maintained for centuries by horizontal transmission, child to child. Thus, there is traditional culture, but no intergenerational transfer.

Finally, even if we learn from our elders, and pass on those customs to our successors, those traditions need not be cultural. Whether the models are kin, companion, or even stranger need make no difference. I learned to fish from my uncle, but I now realize that he had idiosyncratic techniques. I make pineapple upside-down cake using the recipe that is a



Figure 3.3 Two adolescent male chimpanzees play with adolescent olive baboon at Gombe. (This is apparently unique to Gombe.)

family tradition, but it is unlike the same dish made by the other matrilineal families in my culture. These are surely traditions, but whether or not they are cultural, in the rich sense, depends on definition. After all, most people are not anglers, and who knows how many folks have ever made such a cake, or passed it on to their descendants? How normative does a behavioral (or cognitive or emotional) pattern have to be to be cultural?

Some particular aspects of tradition as culture have been singled out as crucial, such as the ratchet effect (Tomasello 1999b). Here, information not only spreads but accumulates; thus, with each transmission, either vertically or horizontally, new “mutations” (memes?) enrich the message. We stand on the shoulders of our predecessors, making progress. This is said to be uniquely human, and so is presented as both a necessary and sufficient condition for culture. It is neither. Putting aside the problems of misreplication and maladaptation, ratcheting is neither unique nor universal. Since its invention in 1956, wheat sluicing or washing by Japanese monkeys has elaborated and diversified (Hirata et al. 2001). Imo’s initial technique now looks crude, and successive generations have left it behind.

Equally, the evidence for ratcheting in the human ethnographic literature is slim. Most ethnographers of traditional societies report stasis, not dynamic change.

So, even if tradition is a necessary condition for culture, at least in the long term, it is not a sufficient condition, at least as the term is used here.

Culture without Language

Language is everyone's favorite example of human culture. Each of us imprints upon what we hear in the cradle; some of us go on to learn more than one language. It is all a matter of exposure. No one ever suggests that the brains of infants born in Patagonia might be more genetically receptive to hearing Patagonian than Danish. Instead, we see the results of an inadvertent but global experiment in cross-fostering. A Korean newborn adopted by a Canadian grows up to speak English, or French, or both, but not Korean.

Thus, it was no surprise that the first published response to a claim of a social custom in chimpanzees (McGrew and Tutin 1978) was to deny it on the basic grounds that nonlinguistic creatures could not have culture (Washburn and Benedict 1979). This belief that language and culture are isomorphic is widespread.

For humans, the evidence is too strong to make a claim about the relationship between language and culture. All known human societies have both, so there is no informative variance. One could enable the other or vice versa, or both could be a by-product of a third phenomenon (e.g., big-brained intelligence), or each could be independently derived (e.g., language from vocal communication and culture from extractive technology). We would need to have cultures without language or languages without culture to test the relationship. We could seek correlations between linguistic variables, such as vocabulary size, and cultural variables, such as technological complexity, but this seems not to have been done.

Or, it may be that apes are helpful models. Despite the huge and contentious published literature in "pongo-linguistics," there is no consensus (Savage-Rumbaugh 1998). There seems to be a positive correlation between time spent with chimpanzees and conviction that they are capable of language (but note the careful wording!). Thus, the most dismissive critics have spent no time with apes. On the other hand, there is another

correlation among chimpologists, so that the strongest claims come from the researchers using the most artificial systems of linguistic communication, e.g., Yerkish (Savage-Rumbaugh 1998). Until an open-minded linguist is willing to go to the field and take wild chimpanzees as they are found, we are unlikely to know more. This seems a simple request, but it is yet to be done.

One problem is definition. Clearly, full-blown human language must be both semantic and syntactic. It can be cognitive or communicative or both, but the latter is easier to measure. Only spoken language is universal across human societies, but the acoustic-auditory modality is neither necessary nor sufficient. Deaf people read lips and hearing people make signs. Both vocalize paralinguistically, as do many other organisms.

In principle, many functions of language could serve culture. Cognitively, language could have evolved as a labeling or filing system, whether for numbers, ideas, or identities. Such symbol-use need have no social function. Communicatively, language is a useful way to transmit information, especially abstract and arbitrary thoughts. Such symbol-use is necessarily social, as sender and receiver must share a common language for it to work. So far as we know, all humans normally use language both cognitively and communicatively, but these could be decoupled in apes.

In studying culture, the main strength of language is also its weakness. To get beyond behavior (which is directly observable) to knowledge and meaning (which are not), anthropologists like everyone else rely on verbal report from informants. On the other hand, much information about feelings can be inferred from "body language," especially with training. However, speech is a double-edged sword, as informants may bare their souls or lie by commission, omission, or imprecision. Deception by paralinguage seems to be harder, especially with involuntary responses, such as blushing. If your life depended on detecting deception, which would you trust, the content of a word or its spoken inflection? If you chose the latter, then you might not want to trust entirely in verbal report as the sole indicator of culture, in human or chimpanzee.

This dispatch carefully avoids passing judgment on whether or not apes have language. The aim is to show that language and culture are separable. The two are no more necessarily tied by causal co-occurrence than are language and bipedality. Communicative language may be a sufficient condition for culture, but it is not a necessary one.

Culture Is by Definition

Definitions of culture are a dime a dozen, and most are of little use. Most encapsulate an idea or set of ideas, but few are heuristic for pursuing the possibility of nonhuman culture. Especially exasperating are the epigrams beloved of introductory textbook writers: "Culture is what makes us human," "Culture is the human ecological niche," or, "Culture is to human, as water is to fish." Of what empirical use are these?

Equally frustrating are the historical antecedents. Every textbook of introductory anthropology gives Tylor's (1871) seminal definition of culture as "that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society." Putting aside the inherent sexism, one is left with a vague, all-embracing entity that may include all but digestion and respiration (but then think of antacid tablets and yogic breathing). Something that explains everything explains nothing.

Some have advanced checklists of features, much as Hockett (1960) did for language. Kroeber (1928) tried this for chimpanzee dancing, saying that if it showed innovation, standardization, diffusion, dissemination, durability, and tradition, it would qualify as culture. By analogy, we can recognize a luxury car by ticking off its features, and a BMW will pass and a VW will fail. Does this mean that chimpanzees are 83.3 percent of the way to being cultural if one can tick off five of the six features? Given long generation times in great apes, one would have to wait years, from innovation to tradition, assuming that the other conditions were met along the way. In studying human culture, how many ethnologists in the field have been so patient as to tick off six of six?

More productive in an operational sense may be criteria that approximate essentials, which together capture the gist of culture. Consensually, all seem to agree that culture is *learned* (rather than instinctive), *social* (rather than solitary), *normative* (rather than plastic), and *collective* (rather than idiosyncratic). This minimal combination is a starting point for necessary and sufficient conditions for attributing culture to an organism. Unfortunately for anthropocentrists, the chimpanzees' grooming hand-clasp meets all four criteria (McGrew and Tutin 1978; McGrew et al. 2001).

Another approach is to ask ordinary people what culture (in the rich sense) means to them. When anthropologists do this, and if their informants are patient enough to put up with such a simple-minded question,

then the answer is usually some version of: “culture is the way we do things.” This elegant phrase contains at least four elements: overt action (“do things”), norms and standards (“the way”), collective consciousness (“we”), and sense of identity (as implied by the whole phrase). So, does this apply to chimpanzees? Overt action is the easiest, as it is seen in both the behavior and the artifacts of elementary technology. Chimpanzees have both tool kits and tool sets (McGrew 1998). Norms and standards are revealed by behavioral diversity at the levels of group, population, and subspecies (Whiten et al. 1999). All known chimpanzee groups, populations, and subspecies scratch themselves, but only M group at Mahale in East Africa does the social scratch, which they do often and predictably (Nakamura et al. 2000). Collective consciousness is pointedly manifest in deadly xenophobia. Parties of chimpanzee males patrol boundaries and kill neighboring rivals, but usually only if three or more aggressors can catch the victim alone (Wrangham 1999). A sense of identity can be inferred when an immigrant female changes her style of doing a common behavioral pattern from that of her community of origin to that of her community of adoption. Their old way of doing things becomes her new way of doing things.

Definitions are useful only if they clarify matters. All else is pedantry. Define culture as you must to tackle the question at hand; just make it clear, fair, and most of all, productive.

Culture Is Collective

Culture is social (as opposed to solitary), but sociality is only a starting point. Collectivity implies much more. When 51 percent or more of a group behaves in concert, the act becomes a statistical norm, and therefore is typical of the group. Herring shoal, geese flock, bison stampede. Instead, collectivity entails group-oriented action, often with roles, as in an orchestra, which is more than many instruments being played at once. Empirically, roles are social traits that are not intrinsic to actors, but are transferable, able to be donned, as well as shed, like clothing.

Further, to say that something is collective is not to say it is unanimous, but often just the opposite. How often do all humans in a group act, think, or feel as one? Not all humans ski, even in the Alps. Instead the collective is often a subset according to sex, age, kinship, status, and so on in relation to other subsets. In the short term, such collective action is manifest in convention: gentlemen rise, underlings bow, grandparents

dote. In the long term, there are institutions: marriage, rite of passage, funeral.

The results of collectivity in culture are emergent properties. By this argument, one cannot break up culture into its components and then recombine those components to reconstitute culture. (Any more than one can reduce an animate organism to its constituent proteins, amino acids, and peptides and then bring it back to life.) Cronk (1999) made the same point about culture in another way by saying that we cannot explain behavior in terms of behavior. Thus, culture defies reductionism and is pervasive.

Finally, it is possible to be a collective creature on many levels at once. One is a European, German, Bavarian, and Münchener at the same time, and each may be indicated differently, by passport, language, patriotism, and taste in beer.

All of the above indubitably applies to human culture, whether in the New Guinea highlands or a Manila barrio. To what extent does any or all of this apply to nonhumans, such as the chimpanzee? At first glance, the task seems impossible. How can we possibly know the mind of an ape, if we have so much trouble comprehending the minds of our fellow humans?

The easiest starting point is the “quack test.” The more it looks, sounds, smells, and feels like a duck, the more likely it is to be a duck. For example, grief is apparent in a chimpanzee mother after her infant dies. She is alternately agitated or subdued, distracted or focused. She may be more solicitous to her infant’s body than she was to it in life. She seems to be grief-stricken, but this does not mean that she is in mourning, for that is a collective action, not individual sorrow. A sociocultural anthropologist faced with this set of circumstances would adjust her lens accordingly; cultural primatologists need to learn to do so.

One can be guided by function, for evolution ultimately boils down to outcomes in response to natural selection. Dead humans do not pass on genes any more than do dead flatworms (cryogenics apart!). Territorial aggression toward outsiders is natural; a simple rule of “Welcome familiars, but resist strangers” may be enough. Xenophobia is cultural; it is a social phenomenon based on “we” versus “they,” and so comes down to collective identity. We can see this when chimpanzees immigrate or congregate. Marshall and colleagues (1999) showed that the long calls of a motley assemblage of captive chimpanzees converged to create a recognizable conventional signal. Regardless of their disparate origins, the apes created a collective dialect.



Figure 3.4 Two allied males in a quiet moment of contemplation, Mahale K group.

Lest we despair at the task of operationalizing beliefs and attitudes in other species, there are precedents: Tactical deception seemed intractable until Byrne and Whiten (1988) illuminated it. All is inference; the challenge is to find such ingenious ways to increase the probability of more and more accurate inference. It seems likely that social dominance in chimpanzees is a matter of personalities embedded in a collective context (de Waal 1996a). Accordingly, we are likely to understand it only if we act as cultural primatologists, albeit haltingly. We will likely never interview chimpanzee informants, but we can use ethological methods to seek chimpanzee uniqueness, as well as universals.

Culture Has Escaped from Anthropology

The concept of culture emerged as the core of anthropology in the 1870s, and remained therein for more than a century. Anthropology has been termed the science of culture, and most members of the American Anthropological Association label themselves as cultural anthropologists.

Yet all along, the question of nonhuman culture has lurked in the wings. Morgan (1868), arguably the founder of American ethnology, extolled the technology of the beaver at the same time as he described Iroquois kinship. Kroeber's (1928) consideration of comparative possibilities across species was cited above. Benedict (1935) supported a graduated transition from noncultural lower animals to cultural man. The first primatologist to propose cross-cultural studies was Imanishi (1952), based on early observations of Japanese monkeys. The first explicitly titled book on the subject seems to be *Precultural Primate Behavior*, edited by Menzel (1973a). The first systematic analysis across cultures of chimpanzees covered six wild populations studied for 151 years in total (Whiten et al. 1999).

Cultural primatology is not bounded by anthropology, and the culture concept has diffused to other disciplines. At least three make distinct contributions in very different ways (McGrew 1998): Anthropology asks *what* questions about the constitution of culture, whether these be artifacts in the past or rituals in the present. This is culture as phenomenology. Psychology asks *how* questions about the mechanisms and processes of culture, especially its inventions and their spread. This is culture as information transmission. Zoology asks *why* questions about the survival value and fitness of culture, using the ideas of neo-Darwinian evolutionary theory. This is culture as adaptation. Luckily, cultural primatology calls on all of these points of view.

However reluctant some anthropologists may be to give up exclusive jurisdiction over culture, or to extend the concept to nonhuman species, it is happening anyway. The best strategy for retaining culture in the field of anthropology is to set explicit standards to be met by cultural primatologists and let the chimps fall where they may. Echoing Kroeber, cultural anthropologists should operationalize their criteria and ask primatologists to meet their challenge. The latter are entitled to ask what it would take to satisfy anthropologists and then to go back to the field to seek it among the apes. It is easier to seek holy grails if you know what to look for.

Finally, there is a delicious irony. Some proportion of sociocultural anthropologists find the concept of culture to be outmoded and even obstructive (Kuper 1999). This is hard for nonspecialists to understand, almost as if musical chairs could somehow be played in silence. How strange to think that finally when cultural primatology realizes how much it needs cultural anthropology, the latter may drop its central tenet.

Culture Is Rich and Complex (But So What?)

Paraphrasing Groucho Marx, a chimpanzee thinking of joining the Culture Club might hesitate to do so, on grounds of suspicion of any club that would have her as a member. Quoting Boy George, the androgynous pop star, if embracing cultural relativism, and so becoming, chameleon-like, “a man without conviction,” is the price, it might be too high.

Culture may be a curse, as well as a blessing. Chimpanzees at Bossou have invented “pestle pounding,” in which the crown of an oil palm is the mortar smashed by a detached frond as the pestle (Yamakoshi and Sugiyama 1995). The result is a rich, pulpy soup and a good meal, but it likely kills the palm in the process. This is short-term gain but long-term loss, as the palms, like all large organisms, are slow to replace themselves.

Culture may be overrated in several ways. For example, culture is not an explanatory variable. One cannot explain behavioral diversity just by saying that culture made them do it. Cultural determinism is just as silly an idea as genetic determinism. Furthermore, there is often a misplaced value judgment: Culture does not make an organism cooperative any more than nature makes it competitive (Wrangham 1999).

Finally, culture may not be the key to understanding chimpanzee society anyway. As with humans, the more informative level may be one step down, in subculture. Just as it may be simplistic to assume that there is such a thing as (North) American culture, so it may prove for chimpanzees and other species of primates. There is plenty of evidence that shows life as a whole among lower-ranking members of the group to be very different from that of the high-rankers, from sex ratio manipulation to leisure-time pursuits. It may be that cultural primatologists will have to take account of caste or class among their subjects, and seek help from sociologists.

In any event, if nonhumans have culture in any form, then we must be concerned with cultural survival. Just as cultural anthropologists are active advocates on behalf of the traditional societies that they study, so must cultural primatologists do the same. Conservationists may seek to save the species *Pan troglodytes*, but cultural primatologists must seek to preserve cultural diversity. This means going beyond a few famous, long-term study sites like Gombe or Tai. It means safeguarding Tenkere, where the apes make cushions and sandals (Alp 1997), and Tongo, where the apes dig up tubers for moisture (Lanjouw 2002). Both of these

populations are unprotected and on the verge of extinction. What a pity it would be to lose them.

Conclusions

So, are chimpanzees cultural creatures or not? We cannot yet say, to everyone's satisfaction, but the mounting evidence gives a rationale for cultural primatology. If this trend continues, then we must move on from doing beginning ethnography to doing full ethnology. Chimpanzees may use kinship terms (and a guess is that these will be found in their soft grunts, so far undeciphered), and they may have worldviews (for they seem to spend enough time musing). It may be that the ultimate function of culture for community-living apes is social identity. Just as human languages proliferated in areas where there were many distinct human groups, so may it be for our nearest living relations, where cultural identifiers tell who you are and where you come from. It is up to cultural primatologists to find ways to pursue these questions, and so to draw ever-stronger inferences.

Finally, if any of these arguments has merit, then we humans may need to re-think the boundaries of multiculturalism. We may need to be more inclusive in extending our appreciation of cultural diversity beyond anthropocentrism to admit our cousins, the great apes.

POSTSCRIPT: REVISITING THE
BATTLEFRONTS; OR, FRESH DISPATCHES
FROM THE CHIMPANZEE CULTURE WARS

It is a measure of the interest shown in the potential of nonhuman culture that after only six years the accompanying chapter (McGrew 2003) needs serious revision. When presented at the Chicago Academy of Sciences conference in 2000, the essay was intended to be provocative and reflective of 10 key issues that were then facing cultural chimpologists. Many of the issues that were featured continue to throb and have engaged a much wider audience (e.g., Laland and Janik 2006). The aim of this brief update is to summarize and to critique some of the new developments, as seen from the viewpoint of a long-standing chimpanzee chaser.

Chimpanzee Culture? Absurd!

This dispatch sought to convince social scientists of humanistic persuasion that the prospect of the cultured chimpanzees was *not* absurd, but rather that it was a thinkable proposition. However, although recent textbooks in biological anthropology take note of cultural primatology (e.g., Boyd and Silk 2006), there is little indication that sociocultural anthropologists do so. The latest mainstream review of the subject (Perry 2006), although specifically addressed to sociocultural aspects of the topic, for example, social norms, is written (yet again) by a primatologist, with little if any engagement by others who focus on human primates.

There is some irony here, because the nascent field of ethnoprimateology continues to grow. Cormier's (2003) book *Kinship with Monkeys* is a fascinating account of the Guaja foragers of Amazonia who raise orphaned howling monkeys like children after having eaten their parents.

However, chimpanzee ethnography goes marching on, now from over 50 populations, and new study sites that report exciting new data continue to emerge: Ebo (Morgan and Abwe 2006), Fongoli (Pruetz and Bertolani 2006), Gashaka (Schöning, Ellis et al. 2007), and Goualougo

(Sanz et al. 2004). It is now hard even for specialists to keep straight which group of apes does what and where, so that the case for a comprehensive cross-cultural database is even more compelling.

Chimpanzee Culture? Of Course!

Meanwhile, the ethnographic paradigm (describe behavioral variation in nature and then compare and contrast across populations) has expanded notably beyond *Pan troglodytes*. Hard on the heels of the 2000 conference came Rendell and Whitehead's (2001) treatment of whale and dolphin cultures, which stimulated notable discussion. Van Schaik, Acrenaz et al.'s (2003) report tackled orangutan culture, making use of Whiten et al.'s (2001) comparative coding format but extending the ethnography into tentative ethnological analyses. Similarly, Perry, Baker et al. (2003) compared behavioral variations across populations of white-faced capuchin monkeys, which took them into new areas, for example, "games." Notably absent are comparable treatments of the other two great-ape species, bonobo and gorilla, although the former was given a tentative two-site comparison by Hohmann and Fruth (2003).

On the nonprimate front, the undoubted star of nonhuman cultural studies is the New Caledonian crow, which makes insect-extraction tools (Hunt and Gray 2003). Multiple populations have been followed, mainly through their artifacts, and ratcheted evolution of extractive technology has been inferred. As with apes, the possibility that social learning is involved has been investigated in parallel, experimental studies of captive birds (Kenward et al. 2005).

Culture Is Not Behavioral Diversity

Despite clear statements to the contrary (e.g., "Behavioral diversity is neither a necessary nor sufficient condition for culture," McGrew 2003, p. 426), critics continue to assert that cultural primatologists seek variation and then try to rule out alternative genetic or environmental explanations in order to invoke culture by default. This mischievous misdescription of the "ethnographic method" then goes on to show that such trichotomizing is naïve, as of course it is (Laland and Janik 2006; Byrne 2006). Oversimplification of causal mechanisms may have been a problem decades ago (e.g., McGrew and Tutin 1978), but no one seriously asserts now that nature and culture are independent of each other, either in human or nonhuman animals.

The chief and widely cited justification of such finger wagging is Humle and Matsuzawa's (2002) report that variation in the technology of chimpanzees' dipping for army ants is a function of the differential antipredator adaptations of the prey. Earlier reports (e.g., McGrew 1992) had assumed that army ant behavior was a constant, so that population-specific ant-dipping techniques must be culturally determined. Humle and Matsuzawa's demonstration that ape tool length, for example, was a reflection of ant pugnacity was hailed as evidence of environmental determinism, thus rendering any cultural explanation unnecessary. This "refutation" of chimpanzee culture quickly leapt into secondary (Byrne 2006) and tertiary (Boyd and Silk 2006) publications. As it happens, later studies that compared ant dipping at 13 sites across Africa show that variation in techniques and tools used by the apes cannot be explained by the ant taxa present (Schöning, Humle et al. 2008).

Culture Is beyond Social Learning

One of the most exasperating skirmishes in the culture wars is the repeated assertion that social learning equals culture. Although no one would deny that social learning is a necessary condition of culture, it is equally likely that it is not a sufficient one. To dumb down culture to equivalence with social learning is to reduce a complex phenomenon to a caricature.

If culture as a concept means anything, it is collective. That is, it is characteristic of a set (or subset) of social learning creatures, preferably one that subsists and persists in the real world. Similarly, culture is pervasive, so that the social transmission of customs among the members of the set spills over into all or most aspects of life. From this flow emergent properties such as identity, as manifest in societal behavioral patterns as diverse as xenophobia and ostracism. No one claims that empirical investigation of such tricky topics is easy, but other equally thorny social phenomena, such as tactical deception, have been clarified by ingenious analyses. To show that a guppy will learn from another a route through a maze is nice, but to equate that with culture is tantamount to saying that kicking a football is equivalent to a soccer match.

Meanwhile, clever studies of a variety of organisms, some very far removed from primates, show us yet again that simple dichotomies are usually wrong, and that graduated criteria are more likely. The rubiconic status of teaching as a means of transmitting culture, one that separates

humans from other species, seems less and less tenable. Meerkats teach their young to deal with potentially dangerous prey by sequential, ratcheted exposures that take account of the growing competence of the pupils (Thornton and McAuliffe 2006). Even ants use bidirectional feedback in tandem running between teacher and pupil in transmission of crucial information about food finding (Franks and Richardson 2006). Given this, the apparent rarity of teaching by apes is all the more puzzling and so all the more deserving of investigatory scrutiny. When will someone do an experiment in which captive subjects, apes or otherwise, are put in situations in which teaching another is made rewarding to the knowledge holder?

Tradition Is Not Enough

More and more, one sees the term "tradition" used interchangeably with "culture" as if the two labels were synonymous. Previously (McGrew 2004) I argued that tradition is neither a necessary nor a sufficient condition for culture: behavioral continuity over generations can exist without social learning, and "pop" culture transmitted horizontally exists without intergenerational transmission.

Further, some researchers seem to equate tradition with nonhumans, while culture is reserved for humans, thereby reerecting old speciesist barriers. This is made easier when tradition is defined loosely, for example, "a distinctive behavior pattern shared by two or more individuals in a social unit, which persists over time and that new practitioners acquire in part through socially aided learning" (Fragaszy and Perry 2003b, p. xiii). By these criteria, a successfully completed course of tennis lessons between instructor and pupil would qualify as a tradition. For behavioral patterns to be traditional, surely they have to endure across generations.

A good place to look for full-blown tradition is to track cumulative cultural change, that is, the ratchet effect. Although there is evidence of this in Japanese macaques (Hirata et al. 2001), the ethnographic record over more than 50 years at Koshima is overdue for pointed scrutiny in this regard. Further, there is archeological evidence of ratcheting from the New Caledonian crow (Hunt and Gray 2003). Finally, one wishes for cleverly designed experimental or observational studies of cumulative cultural change, both adaptive and maladaptive, that go beyond mere cultural drift.

Culture without Language

As research on artificial language acquisition and use by apes ("pongolinguistics") has declined, more sophisticated studies of natural communication have increased (Slocombe and Zuberbuehler 2005a, 2005b). Studies in captivity and in nature suggest that chimpanzees make functionally referential calls of various types (grunts, screams) in varied contexts (foraging, agonism).

Nonprimate mammals besides cetaceans are known to be capable of vocal learning, for example, the gray seal (Shapiro et al. 2004) and the African elephant (Poole et al. 2005). There is even anecdotal evidence of an elephant that mimics human speech, having learned spontaneously to produce Korean words by blowing air from his trunk into his mouth ("Polly pachyderm" 2006). In a wide-ranging review of language faculties, Hauser et al. (2002) concluded that the capacity of recursion (syntax) is the only uniquely human aspect of language, which otherwise shares with nonhumans the sensorimotor and conceptual-intentional systems.

The extent to which variation in acoustic communication across individuals, groups, populations, or regions is cultural or not remains to be seen, but it is worth remembering that vocalizing is not the only mode of sound production. Manual communication, for example, drumming on tree buttresses, varies across populations of wild chimpanzees (Arcadi et al. 2004). Is it too much to hope that these more accessible means of signaling will be explored in experimental studies of captive apes?

Culture Is by Definition

Definitions of culture continue to proliferate, with no sign yet of consensus. Consequently, some arguments about whether a particular phenomenon is cultural may hinge on a single element; for example, Laland and Janik's (2006) definition of culture founders on its final word. According to them, culture (or tradition) should be group-typical behavioral patterns shared by community members that rely upon socially learned and transmitted information. Almost all of these facets are admirably empirically testable, but how is one to measure "information"?

A similar problem exists with my attempt to boil down culture to a single seven-word sentence: "Culture is the way we do things" (McGrew 2003, p. 433). This epigram contains four (arguably) necessary elements

that are listed in order of difficulty of access for study: overt action, norms and standards, collectivity, and identity. However fine this might sound in principle, until it is operationalized in practice, it will be rightly criticized (e.g., Perry 2006).

Definitional challenges also rear their heads in another way, in categorizing phenomena. New variants on old themes show that there are more ways to skin a cat or fish a termite. Goualougo chimpanzees bore holes in the ground before fishing for underground termites (Sanz et al. 2004). Kibale chimpanzees show a dabbling social scratch that is unlike the stroking motion of their Mahale counterparts (Nishida et al. 2004).

Culture Is Collective

The persistent problem of capturing collectivity is reflected in another recent definition of culture. What is one to do with "Here I define culture as behavioral variation that owes its existence at least in part to social learning processes" (Perry 2006, p. 172)? Again, culture is said to be no more than social learning. The author goes on to define social learning as "changes in behavior that result from attending to the behavior or behavioral products of another." In these terms, any two persons, even strangers, can establish a culture as soon as one learns anything from the other. This minimalist view may be logically sound, but in real-life terms it is barely a shadow of the richness of group-typical customs.

Of all the 10 points raised in the original dispatches, this one has yielded the least progress, but the problem of collectivity is crucial because it must underlie societal norms and is likely to be expressed in group self-regard. If nonhumans have institutions, conventions, roles, and the like, then they must be based on some form of mutual self-awareness. Whether this amounts to shared group consciousness ("we" versus "they") remains to be seen, but many primatologists seem to have strong intuitions about this topic that could be made explicit and operational. Anyone who has been in the thick of a party of chimpanzees on patrol, or in a social hunt, can tell you of the feeling of collective enterprise that is generated. This needs study with ingenious and imaginative methods and measures. I expect that empirical studies of collectivity will show it to be pervasive and encompassing in a variety of social vertebrates and in a variety of guises, at multiple levels, from lineages (clans) to adjacent groups (neighbors).

Culture Has Escaped from Anthropology

Despite repeated bridge-building attempts (e.g., Perry 2006), cultural anthropologists seem little interested in cultural primatology. Introductory textbooks reveal only cursory treatment, with trite dismissals based on purported basic aspects of human culture that are said to be lacking in nonhuman species, for example, dependent, symbolic, cumulative, or linguistic. In this sense it seems that sociocultural anthropologists continue not to care that the culture concept is "out there" causing a stir in other arenas.

In the original dispatch psychology was said to ask *how* questions, and zoology *why* questions, about culture, and such investigations have continued. Working with groups of captive chimpanzees, Whiten et al. (2005) tackled a basic prerequisite of cultural acquisition, conformity, and showed that it was operating in transmission of problem solution. Horner et al. (2006) showed that transfer of foraging techniques from one individual to another ("transmission chains") is faithfully and similarly replicated in apes and children. It is a bit strange that such long-overdue revelations about the mechanisms of transmission are being done by psychologists rather than anthropologists.

On another front, the entry of archeology into the fray, so that *when* questions can be posed, is under way. After some others' speculative and qualitative false starts, Mercader et al.'s (2002) excavation of a chimpanzee nut-cracking site shows that a scientific archeology of apes is possible. How exciting it will be to see if we can disentangle the archeological records of extinct apes and humans (e.g., Backwell and d'Errico 2001; Goren-Inbar et al. 2002).

Culture Is Rich and Complex (But So What?)

In the original dispatch I speculated that the destructive extractive technology of pestle pounding of oil palms by the chimpanzees of Bossou (Yamakoshi and Sugiyama 1995) might be a case of killing the goose that lays the golden eggs. Having since visited Bossou and having been shown surviving oil palms, I must temper that surmise until long-term data on survivorship of pounded versus unpounded individuals is assessed.

However, on other fronts, the problem of cultural maladaptation cannot be ignored. As more and more apes are displaced from their natural food sources by human deforestation for agriculture, we should not be

surprised if they respond by eating the cultigens that are planted in their stead. Raiding crops may be convenient and tempting for apes in the short run, but it is likely to be disastrous in the long run. Similarly, wild apes that adapt to the presence of human observers at close range by becoming "habituated" may pay a price in terms of vulnerability to deadly pathogens or to being hunted. In all such cases brave and persevering paternalistic protection by field primatologists is no longer optional but is necessary. Field research now carries conservationist obligations.

In the original chapter I called for a rethinking of the boundaries of multiculturalism. By that I meant that we must find new and better ways to enhance and appreciate the overlapping lives of ourselves and other species. Not only must we allow them to survive, or even make sure that they thrive, but also we must try our best to allow them to live out their varied cultural potentials. This is a tall order, but surely it is a good one.

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