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CULTURE: WHAT CAN ANTHROPOLOGISTS AND CHIMPANZEES TEACH US?

ABSTRACT: This article discusses the notion of culture, applied specifically to research on chimpanzee behaviour. Some primatologists assert that chimpanzees also have culture, based on the criteria of experience, transmission, tradition, and variability. These findings have a significant impact on longstanding assumptions held by scholars in sociocultural anthropology and the biosciences on the roles of nature and culture, not only for humans, but also for other species for whom collective life and intelligence are strategic resources for survival. The central question in this debate is the following: given recent findings on chimpanzee behaviour, is it possible to assert that there are chimpanzee cultures despite a century of sociocultural anthropological research privileging human cultures? This article seeks to answer this question, taking into account the debate about symbols and symbolic production among human and non-human primates.

KEY WORDS: Culture definition – Chimpanzee cultures – Nature – Culture relations – Symbolic skills – Human evolution

IS CULTURE AN EXCLUSIVELY HUMAN ARTEFACT?

The idea of culture in anthropology refers to human plasticity and diversity, both of which are topics of sufficient complexity to stimulate enthusiastic debates and reflection both inside and outside the boundaries of the discipline (Borofsky *et al.* 2001, Brumann 1999, Geertz 1973, Ingold 1995, 1996, Kuper 1999, Peters-Golden 2011, Stolcke 1995). Moreover, the ambiguous way in which anthropologists define culture is seen as both a positive and a negative factor. In addition, the idea of culture has long been considered an exclusively human artefact, an exclusive characteristic that makes us different from other living beings. However, for some decades now, the use of the term "culture" has spread to what might seem like strange territory, that is to studies of animal behaviour, particularly that of chimpanzees.

This migration has occurred because, on the one hand, typical concepts of the social sciences, such as "tradition", "social relations", "culture", "cognition", and "power", have been used to define non-human behaviours. On the other hand, such behaviours have been treated as the outcome of the evolutionary processes of both humans and non-humans.

This perspective expands the boundaries of what sociocultural anthropology conceives as uniquely human and places it – some could say dangerously – under the influence of Darwinian evolutionism. The critical point of this situation revolves around the fact that the social sciences have founded their epistemology on the assumption that social and cultural phenomena supersede biology, thus denying not only cultural evolutionism and social Darwinism, but all Darwinian-based explanations as well.

However, the basic question at issue here does not involve a debate with natural scientists about the singularity

of the social sciences. Rather, it endeavours to analyse the meanings attributed by many natural scientists to the term "culture". Therefore, the ensuing problems are: Can the idea of culture, as used to describe the behaviour of chimpanzees, be considered valid from an anthropological point of view? Are the anthropological notions of culture appropriate for studying the behaviour of chimpanzees?

The choice of focusing exclusively on "chimpanzee cultures" excludes the vast literature on the behaviour of other primates and its contributions, bonobos included (Böesch, Hohmann 2002, Hohmann, Fruth 2006, Stanford 1998). This material undoubtedly contains wealth of information; however chimpanzees were chosen as the non-human animal to base the research on, more specifically because they are absolutely fascinating in terms of their similarities to and differences from humans. They are the contemporaneous expression of the permeable boundaries between humans and non-humans. The opportunity to broaden our knowledge about them may even make us abandon old beliefs about who and what we are, while also clarifying what defines us.

What is culture anyway? A reflection on the borders delimiting the discipline

Since the last century, sociocultural anthropologists have been absolutely convinced that culture is the parameter distinguishing humans from all other beings. Moreover, they developed their research based on the premise that culture has imposed itself on the mechanisms of evolution in such a way that the emergence of modern humans allows studies on human groups to preclude submitting themselves to the logic of Darwinian theories. Even without reaching a definitive and universally, valid consensus of what culture is, sociocultural anthropologists use the notion of culture more as an idea than a concept; thus, viewing culture as an idea because anthropologists always deal with a general and flexible principle, broad enough to cover all existing symbolically referenced manifestations in all human groups.

Kuper (1999), Geertz (1973) and others have cited great discrepancies among anthropologists concerning their definition of what culture is. These supposed influential "idea makers" seem to agree that it is difficult to establish parameters that encompass the broad plurality of cultural manifestations with the idea of unity in humanity. However most scholars accept factors such as the role of socialisation in the construction of culture; the importance of socialisation as an universal mediator in human relationships and in cultural relations; and the centrality of symbols in the reproduction of the latter.

Culture to contemporary primatologists: experience, transmission, tradition, and variability

On the other hand, most researchers who have studied chimpanzee behaviour have espoused a narrow conception of culture derived from observations and data collected over the past forty years. To these researchers, the

existence of chimpanzee cultures is based on four basic factors: experience, transmission, tradition, and variability (Böesch 2003, Call, Tennie 2009, McGrew 1992, Nishida 2012, Perry 2006, Wrangham *et al.* 2001). In other words, chimpanzee behaviours are acquired and reproduced through living; it can be transmitted from one individual to another; it is adopted by the group and remains for many generations; and due to all of these factors, chimpanzee behaviours vary from one group to another.

Over the last decades, researchers have questioned the validity of ideas based on the singularity of humankind as a "unique species" (Böesch 2003, Böesch, Tomasello 1998, Foley 1987). Some have considered the proximity between human and other primate genomes (Gagneux 2004, Goodman 1999), others have elaborated a contemporary interpretation of the Great Chain of Being model (Pavelka 2002); and still others have attempted the applicability of valid models of primate behaviour to hominid behaviour (Joulian 1996, Matsuzawa 2001, Mithen 1996).

Culture across the species

Another issue on which social scientists also need to reflect is the argument that some of the characteristics considered exclusively human until recently – such as inventiveness, social treatment skills, and cognitive skills – have been identified in other species through studies in biosciences. These phenomena have been treated as a parallel evolution, as in the case of the apes, or else as an evolutionary process from which modern humans have probably evolved. In many cases, what has been observed is that these phenomena are related to the processes of selection and adaptation. Therefore, they are subject to evolutionary processes in a Darwinian sense. This is a deeply uncomfortable conclusion from the point of view of the social sciences. One of the developments arising from this conclusion is the possibility of comparing behaviours among the different primate species, including humans (Pavelka 2002). Concurrently, this kind of comparative procedure brings to the fore an issue that will be not discussed here, but one requiring urgent reflection: would it even be possible to compare the data on the behaviour of various species, considering that this data is collected by different methodologies and elaborated on by distinct disciplines, as paleoanthropology, primatology and sociocultural anthropology?

Researchers such as McGrew (1992, 2001a, b) – who uphold the existence of chimpanzee cultures despite a strict conceptual view – have extended the phenomenon to the method. In other words, he and others refer to studies on chimpanzee behaviour classified as culture, as ethnography. Nonetheless, is this procedure really valid? What are the effective contributions that sociocultural anthropology can make to the debate on the existence of cultures among chimpanzees? What do findings on chimpanzee behaviour add to anthropological thought?

Since the origin of the modern anthropology, ethnographers have faced a lack of positivity in anthropological data. Social and cultural anthropologists have intensely discussed

the matter of alterity, evaluating the intersubjectivity expressed in their methods, and considering Relativism as methodology (Almeida 2003, Kuper 1999, Geertz 1973, Oliveira 1996, Rapchan 2002).

When talking about human beings whose existence is shaped by communication through language and symbols, anthropologists face innumerable obstacles to access the meanings of any human culture. In addition to these limitations, what would it entail to explore the possibility that culture exists among beings who do not communicate through language as humans do, as in the case of chimpanzees?

It is clear that this perspective implies that the existence of culture and access to it is related to the production of meanings, a theory for which there is no consensus regarding chimpanzee cultures (Böesch, Tomasello 1998, Galef 2002, Laland, Galef 2009, Tuttle 2001).

Human-ape relations: a cultural phenomenon?

One can consider the amazing cases of human/chimpanzee communication mediated by the teaching of sign language, such as the project first developed by the Gardners with Washoe (Fouts, Mills 1997). Lestel (2004) analysed this very special kind of relationship and labelled it a "hybrid community". Nevertheless, this kind of interaction does not occur in chimpanzee groups in the wild and it is in these groups that researchers identify chimpanzee cultures, in which the individual and collective behaviour of the chimpanzees has not been influenced by interactions with humans, at least not as deeply as the "cultured" chimpanzees (Carpenter *et al.* 1995).

Furthermore, social scientists should be particularly interested in primatology's emphasis on establishing comparisons between humans and apes, as well as this discipline's acceptance of many kinds of relationships identified between humans and apes. This emphasis stems from multi-focus research studies: individual and collective primate experiences; the importance of the group and the group's contact with similar groups in the life of an individual; the bonds between females and their offspring (Hrды 2000, Goodall 1986); sex-associated behaviour (Hrды 2000); chimpanzee life histories (Fouts, Mills 1997, Goodall 1986, Jahme 2001); use of tools (Böesch, Böesch 1990, Davidson, McGrew 2005, Ingold, Gibson 1995, Lycett *et al.* 2010, Matsuzawa 2001, McGrew 2001b, Tomasello 1994); communication (Dunbar 1997, Ingold, Gibson 1995, King 2004, Parker, Gibson 1994, Tomasello 1994, Rumbaugh *et al.* 2001, Shanker, King 2002) and behaviour transmission (Fragaszy 2003, Fragaszy, Perry 2003, King 2000, Nishida 1987, Tomasello 1994, Van Schaik, Pradhan 2003, Whiten 2001, Whiten *et al.* 2007, Whiten, Schick, Toth 2009).

This material can be useful in two important lines of thought. On the one hand, all discoveries about primate behaviour can revolutionise what the social sciences know about human collective life, including our ancestors (Dunbar 1997) and non-human primates (Baker, Smuts

2001, de Waal 2001, Sapolsky 2004) and can also radically revise a series of ideas and concepts held by the social science community.

On the other hand, it is important to evaluate why apes have been so well studied over the last four decades; occupying new positions in our thought and classification systems in defining what identities and alterities are being discussed; considering the impact of these developments on fields ranging from conservationist activism to cognition studies; and on the scientific media produced by institutions like National Geographic (Jahme 2001, Lutz, Collins 1993).

Conversely, the focus of this paper in attempting to define chimpanzee behaviour, specifically "chimpanzee cultures", points out that the history of animal behaviour studies highlights an intense debate regarding the dichotomy between innate versus acquired behaviour.

"Chimpanzee cultures": transmitted behaviours

According to Skrzypczak (1996: 81) both positions have tended to converge and researchers dedicated to ethnology have sought to bridge the gap. These scholars have sought to overcome the "innate versus acquired" or genetically inherited versus behavioural dichotomy. Nevertheless, there are three main issues that remain difficult to deal with: "the great complexity of any behaviour; the difficulties with experimentation; and the controversies regarding the definition of instinct" (Skrzypczak 1996: 81) (translated from Portuguese, original in French). In this sense, it is more interesting to argue that the diversity expressed by these definitions reflects both their complexity and the difficulty entailed in dealing with them, rather than the inability of researchers to circumscribe the "culture" or "instinct" definitions.

Thus, the definition of culture suggested by chimpanzee behaviour researchers entertains the processes of collective life and experience (Böesch, Tomasello 1998, de Waal 2001, Fragaszy 2003, Heltne 2001). This in turn is understood as differing from what occurs through genetic heritage because it corresponds to the "transfer of information by behavioural means, mainly through the teaching and learning processes" (Bonner 1980: 14) and this can vary from one population to another according to "tradition" (Fragaszy 2003, Nishida 1987).

"Chimpanzee cultures" and human cultures: a comparison

Hence, the expression "chimpanzee cultures" is used (Wrangham *et al.* 2001) rather than "chimpanzee culture" when addressing these behavioural sets, which vary in response to different environments and different dynamics within groups (Wrangham *et al.* 2001, Hrды 2000, Goodall 2000), and which transmit what is acquired by experience from one generation to another (Tomasello 1994, Goodall 2001).

For primatologists, culture is a functional definition applicable to a set of behavioural phenomena produced by chimpanzee experiences and acquired through observation,

facilitated learning, and "trial and error" (Böesch, Tomasello 1998). This notion of culture to explain the behaviour of these apes was proposed some years ago through the initiative of researchers who observed and collected data on chimpanzees for many decades in their original African environments in order to classify and compare their characteristics (Whiten *et al.* 1999, 2001, 2003).

According to these comparisons, it was possible to identify variations, patterns and durations of phenomena such as grooming, cognition, communication, conflicts, care for relatives, foraging, sexual practices, body postures, manufacture and use of tools, mother-offspring-sibling relationships, hierarchy, and status production. Each behaviour was, meticulously recorded and quantified but was isolated from others.

This procedure makes it easier to compare the same types of behaviours in different groups of primate species or even between different primate species. However, it then becomes difficult to establish interrelations between the behaviours and the collective production of both social and meaning systems inside the same group – what we call culture and society in the case of humans. In other words, in this kind of analysis, there is neither a notion of totality nor the principle of the existence of meaning in individual and collective practices. It is important to note that, to social scientists, totality implies that the whole is greater than the sum of its parts. The production and exchange of meanings implies the existence of subjectivities, the existence of relations among these subjectivities, and abstract thought.

King's studies (2000, 2004) are exceptions among the research on chimpanzee behaviour, because she aimed to interpret the meaning of communication in vocalisation and body language. Nonetheless, she has no access to any kind of "chimpanzee subjectivity"; therefore, she could not easily verify the existence of symbolic meanings ascribed to these behaviours.

In other words, it is impossible to recognise the phenomena of chimpanzee behaviour as culture, under any contemporary anthropological definition. There is no consistent evidence confirming the existence of chimpanzee cultures because there is a lack of evidence that chimpanzees produce symbols. This may be associated with the methods of data collection and also with the particular characteristic of human beings.

The ethnographic method must be used to obtain data on symbolic aspects of life in anthropological research. To do so, the researcher's subjectivity must make contact, at some level, with the subjectivity of the subject researched. Palaeoanthropological research, for example, analyses the symbolic aspects of human cultures observing the evidence collected from bodies, graves, tools, objects and paintings. All of these objects express subjectivities and symbolic manifestations of modern humans (Boyd, Silk 2006, Henshilwood *et al.* 2002, Klein 1999, 2000). There is no consensus among the scientific community in regard to exceptions to this scenario (Arsuaga 2005). Primatological

research has yet to deliver a novel procedure that overcomes these limits.

Anthropological research on human cultures: symbolic behaviour and ethnography

Lévi-Strauss (2002) asserted that ethnographic research cannot exist without inter-subjectivity between the researcher and the culture studied. However, considering the absence of consistent evidence of symbolic thought or symbolic behaviour in chimpanzees, we could take a more ethnographic approach focusing on the human-animal relationship. By understanding chimpanzee behaviour observed by the primatologists – chimpanzee relations could very well provide other kinds of observations about chimpanzees, different from that based on a more orthodox approach, but one which is complementary and equally valid (Corbey 1995, Lestel 2004).

Probably the one particularly unique characteristic of human beings is their symbolic skills (Mithen 1996). There is a significant and qualitative difference between the evidence found in sites inhabited by modern humans and sites inhabited by hominids. Only in the sites of the former were graves, tools and objects decorated with different forms, paintings and corporeal and personal ornaments. This signals the "creative revolution" in the Upper Palaeolithic Age (Bar-Yosef 2002), which gave rise to our symbolic skills – this is an evolutionary result.

Mithen (1996), looking to developmental psychology, suggests that there are at least four knowledge domains, or modules. To explain how our present mind evolved, he uses the theory of Annette Karmiloff-Smith to suggest that cognitive fluidity of modern human minds replaced the domain-specific intelligence found in our prehistoric ancestors. The same observation can be applied on a comparative level to the chimpanzees, in relation to their behaviour and their material production.

However, does this mean that researchers must discard the data on ape behaviours and, as a consequence, all the amazing knowledge produced to date? I propose that this is not the case and I will explain why below.

MODERN PRIMATOLOGY AND THE "CHIMPANZEE CULTURES": LONG TERM RESEARCHES AND RUPTURES

The first studies of apes in their African habitats, conducted by Eastern primatologists (cf. Asquith 1995, Ohnuki-Tierney 1995), share some similarities with the first efforts by anthropologists to produce ethnographies. Moreover, it is noteworthy that the most radical change in researchers' understanding of apes occurred when the researchers adopted methodologies based on long term, continuous research developed since the 1960s. Occasionally, the research was broadened as a consequence of interactions with the apes themselves. This approach not only contributed to increasing the amount and quality of

information regarding the complexity of primate behaviour, but also modified the interpretations (Jahme 2001) and, perhaps, the boundaries and limits of what anthropologists believed defined humans, thus introducing new ways of understanding identity and alterity (Rapchan 2005).

From the 1800s to the 1930s, various missionaries, scientists, explorers, and hunters in Africa produced reports and shipped apes to be observed in fairs and laboratories in America and Europe (Reynolds, Reynolds 1965: 394–395). R. L. Gardner's experiment in 1896 is acknowledged as the first attempt to conduct a field study on chimpanzees and gorillas (Reynolds, Reynolds 1965: 394). However, the first report on a more prolonged field study dedicated to primates, but one considered short by today's standards (49 days), is attributed to H. Nissen (Reynolds, Reynolds 1965: 395).

Another key contributor to primate field studies, according to Kuper (1994: 56–57, 72), was the physical anthropologist Sherwood Washburn. In the 1960s, he sent Irving De Vore (1965), a young social anthropologist to do field research on the collective life of African baboons because he believed that a social anthropologist would be able to observe what psychologists and biologists would not.

At the same time, Louis Leakey sent three young women with few academic credentials to areas where chimpanzees, gorillas and orangutans lived. Among them was Jane Goodall, who had no higher education but was passionate about nature, primates and Africa (Goodall 1986). The others who journeyed to do research were Biruté Galdikas, who was only an anthropology college graduate, and Diane Fossey, who was an occupational physiotherapist (Jahme 2001).

The innovative methods adopted in their studies together with the personal characteristics of the researchers and their deep commitment to making constant and prolonged observations (Goodall 1986, 2000), played a significant role in transforming primatology into the only area of scientific knowledge where, at the end of the 20th century, 62% of the researchers were women and 90% were in charge of conservation projects (Jahme 2001). The field of Primatology is thus characterised by a strong emphasis on gender and by a political commitment to the conservation of primates in their native habitats and to actions in favour of these creatures' rights (Buning 1995, Cavalieri, Singer 1995), given that there are many animals used in domains such as invasive research and in the marketing and entertainment sectors.

"Cultures" in wild chimpanzees: comparative studies on behaviour

Studies on chimpanzee behaviour can be organised into five broad groups: tool use, social life, communication, ecology and cognition. The latter is more common in research carried out with creatures who live in humanised environments such as sanctuaries, study centres, and in a few zoos.

Goodall's early observation (1986) that chimpanzees in the forest used tools surprised the world, which, until

that time, believed that only humans used tools. Her key finding is now part of a larger body of documentation of tool manufacture, including some tools made to produce other tools (Böesch, Böesch 1990, Matsuzawa 2001). Observations also broadened from tools to the use and production of other items in other contexts, such as the building of nests, defined today as "material culture" (McGrew 1992). There are amazing descriptions of different objects used by some groups to fish ants, while other groups do not engage in this particular behaviour, and of the use of leaves as shoes, gloves or sponges. Leaves also can be used to sit on the ground, and the incidence of these behaviours varies from one group to another. There are records of intergroup diversity in the use of medicinal plants (Wrangham, Huffman 1994) and in the consumption of foods (Nishida *et al.* 2000).

Studies about social relations (Baker, Smuts 2001, McGrew 2001a) observe reciprocity in social actions (Brosnan, de Waal 2003); the dynamics of the rise and fall of alpha males and power groups (de Waal 2000); the hierarchies and status in mother-progeny relations (Goodall 2000, Hrdy 2000); and the mechanisms of expression of rage, whose climax is expressed in intergroup conflicts (Wrangham, Peterson 2004).

Studies on social conflicts (Arnold, Whiten 2001, Baker *et al.* 2000, Boehm 2001, Mason, Mendoza 1993) reveal the existence of a hierarchy within groups of chimpanzees, and illustrate the mechanisms and strategies adopted by the weaker members within these hierarchically-organised groups. Examples of these mechanisms and strategies include dissimulation and behavioural patterns that demonstrate pacification and conflict related to gestures and grooming practices.

In addition, grooming has been recognised as an extremely important behaviour to social life (Dunbar 1997, Mithen 1996). Chimpanzees spend about 30% of their time engaging in this activity and it seems to be of a fundamental importance to communication; creating closer bonds between individuals; renewing position status according to group hierarchy; and, of course, keeping their fur clean. Vocal and gestural communication (King 2000, 2004) was also analysed.

The "acculturated" laboratory chimpanzee

Studies evaluating cognitive skills (Tomasello, Call 1997, Matsuzawa 2001, McGrew 2001a, b, 1992, Nishida 1987) focus predominantly on records of spatial perception (Cheney, Seyfarth 1990), cognition and comprehension (Hoof 2001, Joulain 1996, Tomasello, Call 1997), adaptation potential (de Waal 2001), language, communication and intelligence (Fouts, Mills 1997, Parker, Gibson 1994, Rumbaugh *et al.* 2001, Wolker 1995), communication through gestures (Tomasello 2001: 306–309), and the development of classificatory and numerical abilities (Parker, Gibson 1994).

According to the researchers, such abilities are related to a set of complex behaviours. Furthermore, in contrast

to other aspects, the field of cognition is where researchers have identified the highest number of relationships among distinct phenomena. Van Hoof (2001: 270–275), for instance, evaluated how well chimpanzees can recognise and identify individual characteristics that distinguish them from others of their own species. To the author, this would enable the reproduction of attitudes based on calculating, planning, cooperation, and reciprocity in favour of social manipulation which can be observed and handled.

Tomasello and Call (1997), in turn, have studied elements of chimpanzee knowledge of the social and physical world. In the physical domain, the researchers identified skills relating to the search for hidden objects, handling of objects, tool use, the understanding of causal relationships, the discernment of characteristics and categories, and the perception of quantities. In the social domain, learning requires an understanding of the dynamics of conflicts and alliances and of reciprocity and exchange, in addition to the ability to cooperate in problem solving. There are also records of adoption of social and communication strategies that include gestures, vocalisation and communication with human beings.

Cheney and Seyfarth (1990) have observed interactions between expression and production of meaning in apes overall and not only in chimpanzees. They focus both on the vocal communication itself and on the purpose of vocalisations. Additionally, they offer a summary of the mental representations associated with certain vocalisations in the context of specific social relations (Cheney, Seyfarth 1990: 175–183). They further apply this data to the evaluation of the intelligence of the great apes associated with these specific social relations, as well as that of the apes who are not associated with certain social relations. In a sense, they are attempting to reflect upon "how monkeys see the world".

The great rupture: primatologists propose that there are "chimpanzee cultures"

This amazing data about chimpanzee behaviour encouraged researchers to go even further. Over the course of three events titled "Understanding Chimpanzees" (Wrangham 2001), scientists renowned for their research on chimpanzees compared their data and announced the existence of "chimpanzee cultures" (Wrangham *et al.* 2001). The first comparison of the data led them to classify 39 behaviours considered cultural (Whiten *et al.* 1999). There are records of distinct behaviours even among populations living in the same ecosystem (Böesch, Tomasello 1998, Goodall 2001, 2000), hence the claim that there are "chimpanzee cultures" – plural – and not "a chimpanzee culture".

Tomasello (2001: 301) conceives "chimpanzee cultures" as ontogenetically acquired behavioural traditions, the result of the skills acquired by individuals, their natural and social positions, their experiences, and their interactions with these skills and positions, causing the reproduction of these behaviours in subsequent generations. However, it is impossible to assert that there is one concept of

"chimpanzee cultures". There are many concepts, which have some consensus. This consensus has been developed by researchers who have collected, analysed, and exchanged data since circa 1960, promoting systematic observations in African habitats.

According to the researchers, the adoption of the term "culture" to define aspects of chimpanzee behaviour is the result of both the analysis of the available research data and the search for a framework to compare these data in order to formulate generalised explanations. In general, the most important feature of chimpanzees is their acquisition through experience, their transmission from one generation to another, and their variation from group to group. These factors confirm that their behaviours are not innate.

The arguments for the existence of "chimpanzee cultures" presented by McGrew (1992: 79–82) are supported by the existence of data on "innovation", "dissemination", "patterns", "duration", "diffusion", "tradition" (as the persistence of a practice from one generation to another), "non-subsistence" (practices not exclusive to surviving) and "nature" (practices produced by the chimpanzees themselves and not taught or inducted by humans). McGrew does not state that humans and chimpanzees are identical through common attribution of cultural elements, but notes that most attributes once considered exclusively human have been registered among chimpanzees. They are acquired through experience and passed on through generations (Böesch 1991).

Each of these aspects of chimpanzee behaviour is undoubtedly impressive. Any social scientist must in the very least feel confused when reading research reports, in regard to concepts stating that it is society that makes us human; it is from society that we acquire what is necessary for sustaining life, in its material, social and symbolic meanings. It is in society that we transmit what we discover and learn, by following its rules.

According to primatologists, the fact that chimpanzees are able to transmit experiences within their own group constitutes what Nishida (1987) called "tradition", an expression assimilated by the general vocabulary of chimpanzee behavioural studies (Fragaszy 2003); however, the transmission of experience does not seem to be restricted to the great apes (Boinski *et al.* 2001, Fragaszy 2003).

Nonetheless, there is no absolute consensus on as to what is sufficient data to confirm the existence of "chimpanzee cultures", even in the biosciences. According to Laland and Hoppitt (2003), there is more evidence to date that whales, dolphins, some fish, and birds have "culture" than do chimpanzees. They argue that it is not their intention to disqualify the possible existence, albeit unconfirmed, of chimpanzee cultures, and premise their reasoning on the following argument. First, in order to distinguish "animal culture" from an instinctive reaction to the environment, it would be necessary to conduct experiments that would change chimpanzee habitats, as a way of observing what would be reproduced by tradition.

However, for ethical and management reasons, these procedures have never been adopted. Therefore, scientists

have not arrived at a final conclusion as to whether the use of various tools to fish for ants is related to ecological or cultural variations (Laland, Hoppitt 2003). Second, researchers have a tendency to "humanise" their animal subjects and will favour a more subjective approach to corroborate the existence of a culture (Laland, Hoppitt 2003).

It is curious that the first postulate stated by Laland and Hoppitt (2003) proposes something very similar to what is found in the debates about the limits of human nature in relation to the "wolf-boys" (feral children). In other words, we do not know whether the wolf-boys were unable to respond to human social interactions, or whether those who took them in and observed them were not trained to collect and analyse this kind of data. By the same token, it may very well be that chimpanzees have no culture, in the anthropological sense, but it may also be that the framework in which researchers are collecting data seemingly does not provide the conditions to record the "culture", should it in fact exist.

Lévi-Strauss (2002), when referring to a similar issue, points out that considering a social being in isolation – a human, in his case – is futile. We are simultaneously comprised of elements of nature and nurture, and the boundary between them is mobile and fluid. To eliminate one or the other is untenable because this would change the characteristics that define the being. The same can be said about chimpanzees. Even if upholding that chimpanzees have no culture, there is strong evidence that they have a complex social life that is indispensable to entirely developing their ontology (Tomasello 1999).

How are behaviours transmitted? One of the greatest problems of "chimpanzee cultures"

The problem is that the variation of behavioural patterns – the core of the "chimpanzee cultures" theory – is strongly related to the transmission of behaviours. However, there are few data about transmission of behaviours among wild chimpanzees (Böesch 1991). Most of the data comes from laboratories. However, from the point of view of primatologists, chimpanzees who live in laboratories have no culture. They are acculturated by human contact (Carpenter *et al.* 1995).

On the one hand, the transmission of behaviour in chimpanzee populations presents many unclear elements. The results do not indicate a consensus on the chimpanzee's ability to imitate, observe, learn, and teach, whether in the laboratory or in the forest (Böesch, Tomasello 1998, Fragaszy 2003, Fragaszy, Perry 2003, Galef 1992, 2002, Henrich, McElreath 2003, King 2000, Mithen 1996, Nishida 1987, Perry 2006, Van Schaik, Pradhan, 2003, Whiten *et al.* 2007, Whiten *et al.* 2009).

There is scepticism, for example, as to whether the transmission of knowledge is a collective phenomenon, or the product of the ability of some individuals, as a way of directly benefiting only those chimpanzees related to them (Galef 2002, Mithen 1996). On the other hand, no teaching

behaviour has ever been recorded among chimpanzees, not even in the particularly strong mother/child relationship. In this regard, what is known is only that adult females make it easy for children to observe their movements; some researchers have already put forth the hypothesis that each chimpanzee does something like "reinventing the wheel" when learning a practice, taking the opportunity to skip some phases by observing other chimpanzees (Böesch, Tomasello 1998).

A good starting point is to consider whether the identification of variability, transmission and permanence in characteristic behaviours for each chimpanzee group is enough to attribute culture to them. It can be argued that the decision to adopt the sense of anthropological restriction regarding these behaviours requires admitting that there are only human cultures. However, broadening the context to recognise the existence of culture in all living beings may possibly dilute the meaning of behaviour (Laland, Hoppitt 2003). It is critical to maintain a productive debate on this topic among the various disciplines in order to continue exploring the rich insights to be found in the study of chimpanzee culture.

WHAT CONCLUSIONS CAN WE REACH? THE CENTRAL IMPORTANCE OF SUBJECTIVITY IN HARD SCIENCES – PRIMATOLOGY'S CASE

I suppose that the extended periods of field research on primate populations, together with the incorporation of empathetic and relativistic points of view of the animals under study – implying personalised identification of animals, adoption of names and elaboration of records of life stories for the chimpanzees (Fouts, Mills 1997, Goodall 1986) is one of the most important milestones in the favourable arguments for the existence of "chimpanzee cultures". Gender must be considered a factor that can also influence the theories proposed for primates (Jahme 2001). It is possible that this fieldwork promoted the development of a specific point of view that added to the wealth of data collected for almost five decades that has driven the conclusions of primatologists.

Of course, this is an anthropological point of view and most primatologists will not agree with it. From a primatological perspective, the vindication of "chimpanzee cultures" is based on strong evidence recorded by a circumstantial procedure and precise techniques. According to primatologists, only hard science procedures should prevail. Yet, I contend that years of observation and familiarity with chimpanzees, marked by strong empathy in analysing the elements influencing ideas, proposals and perceptions in fieldwork cannot be discarded. The same goes for scientific texts. Just like anthropologists, primatologists conduct field research, but publish their findings in academic venues (Geertz 1988).

The data on the similarities and analogies between human and chimpanzee behaviours are highly consistent. However,

the wish to prove this – also a subjective parameter – cannot be ignored when we consider the production of knowledge. Primatologists connect all these complex elements through culture, perhaps the strongest symbolic aspect defining humans. Metaphorically speaking, culture is an element that catalyses values and ideas. It narrows the chimpanzee-human relationship in a way that involves the confluence of artistic, ethical, political, intellectual, and scientific forces. In brief the idea of "chimpanzee cultures" has the force and equivalence of a symbolic element of human culture. And the primatologists know this.

At the same time, the impact of the knowledge produced about ape behaviour will expand not only the available knowledge about non-human primates but also the definitions of human behaviour, transposing the boundaries of the qualities we assign exclusively to ourselves and changing our notions of identity and alterity, as well as our contemporary representations of nature. In everyday representation, we see this change especially in media presentations about animal behaviour. Contemporary media shows about animal behaviour include narratives of life histories, the dramatic treatment of animal interactions, and other techniques to emotionally involve the viewer.

On the other hand, the history of animal behaviour studies that developed the proposition of "chimpanzee cultures" is strongly related to a long-term dedication to field research, at least in primatology studies, which produced the current configurations (Jahme 2001), and which has adopted heterodox practices, if compared to the primatology that was practised in most universities up until the 1960s and that facilitated the rupture with traditional conceptions about apes. Much of this "earlier" primatology is associated with subjectivity and the efforts of researchers to comprehend inaccessible situations through speech. In other words, considering all the problems that can be presented by sociocultural anthropology in these cases, the attitude of those who revolutionised primatology since 1960 is somehow ethnographic, even considering that since the 1990s, the parameters of sociobiology and ecology have dominated data collecting (Rodman 1999: 314, Strier 2003: 16).

CHIMPANZEE BEHAVIOUR RESEARCH AND REDEFINING WHAT MAKE US HUMAN

The disagreements over the paradigms of social and natural sciences continue today. However, there are people on both sides who suggest that dialogue is important in order to advance, particularly in view of what the research on primate behaviour has revealed. It is important for anthropologists to realise and to reflect on the possibility that these results can lead them to review their conceptions about humankind and about their positions on nature/nurture relations. It is also important for primatologists to know the anthropological contributions to the debate, both in relation to method and to ideas and ethnographic production. Aided

by this information, they may subsequently evaluate their records and, particularly, the validity and influence of the conceptions adopted thus far.

This is valid, especially, in order to apply the idea of culture to chimpanzees, because it implies presupposing that both humans and chimpanzees have the same cognitive and behavioural abilities. The difference is only a question of degree, and the question here is: Considering the more contemporary and acceptable anthropological definition of culture, in which symbolic skills are represented by consensus, do chimpanzees have culture? Does what we know about chimpanzees allow us to assert that their potential to symbolise is equivalent to that of humans, and also assert that understanding the meanings they produce is simply an effort similar to what anthropologists do when they study a culture other than their own?

I maintain that knowing what we know until now, no, we cannot affirm these assertions. I defend this position based on the analysis mentioned earlier by Mithen (1996), who offers different interpretations of the evidence that has supposedly identified "chimpanzee cultures", which is also valid for all hominids distinct from what we call modern human beings. According to the author, confirming the reproduction of patterned behaviours in different chimpanzee groups does not mean confirming the existence of culture. This is true even if the differences have been produced by experimentation and not by rigorous genetic or ecological causes.

Mithen's hypothesis argues that humans, and only humans, have a completely developed symbolic ability derived from an evolutionary process that integrated all intelligence modules of the human mind. Therefore, while the different mind areas – social, linguistic, technical, and naturalistic – are fully integrated in human beings thus making the elements of mobility, knowledge, and meanings distinct from one another possible, the same does not occur among chimpanzees nor or among previous hominids. For example, while humans can combine the naturalistic knowledge that they have about animals and plants with their symbolic and linguistic (mythology), social (kinship, totemic, ethnocentricity) (Axelrod, Hammond 2003), and technical (production of material culture from animal raw material, for example) universes, the same does not occur among other primates, in their minds, each one of these areas operates individually (Mithen 1996).

It is possible that there is a difference between the human ability to produce culture and the primate ability to reproduce social behaviours. This would mean that non-human primates could learn how to behave in social groups and how to live and survive observing the elders of their species. Primates have intelligence, predisposition, neotenus traits (Bjorklund 1997, Gould 1977, Maynard-Smith 1966, Moore 2008) and social relations that offer all the possibilities to achieve this. Just like chimpanzees, many other species transmit behaviours.

However, humans not only learn how to behave themselves (Ingold 1988), but also actively teach such

behaviours to others. According to Ingold (1988), only humans have explicit intentions to teach. They also have the ability to record and recover everything their society (or others) has done, and to make sense of this in a symbolic cultural way. Humans are biologically prone to culture because they have appropriate abilities and cognitive skills for this (Tomasello 1999: 509–510). They have what Tomasello (1999: 515) called "cultural learning". This means that only humans can internalise other human perspectives (and also non-human perspectives), which are inherent in the symbol that is culturally transmitted.

The way primatologists define culture does not correspond to what sociocultural anthropologists understand as human culture. In fact, the first proposal of the idea of "chimpanzee cultures" (McGrew, Tutin 1978) was inspired by Kroeber and Kluckhohn's (1952) synthesis of culture (Perry 2006). The problem is that this conception does not take into account the ability to produce and reproduce symbols; sociocultural anthropologists eventually abandoned Kroeber and Kluckhohn's definition because it did not correspond to the culture phenomenon and did not meet their expectations.

There is a qualitative and not quantitative difference between the phenomena that primatologists call "culture" and the phenomena recognised by sociocultural anthropologists as such. The complex behaviours observed among chimpanzees and other great apes are certainly expressions of great social complexity and cognitive skills. However, so far, primatologists have been unable to describe the production and manipulation of symbols by bonobos, chimpanzees, gorillas and orangutans, our closest relatives in the animal realm.

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