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A la recherche de l'équilibre intra et inter-spécifique

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In the search of intra and inter-specific balance¹

A la recherche de l'équilibre intra et inter-spécifique

Cristina Acasuso-Rivero

1 Density and interactions

- 1 All great apes show high diverse adaptations, particularly in their social life being influenced by ecological factors and biological constraints (McGrew, 1996); humans are not the exception. There are two main behavioural differences between humans and other primates, the first is sexual behaviour (Pusey, 2001), which will not be covered in the present script. The second, and the one I want to stress here, is population density: while chimpanzees, bonobos, gorillas, orang-utans and gibbons vary their living strategies from living in solitary to communities of up to 150 individuals (Goodall, 1965; Itani and Suzuki, 1967; Kano, 1982; Schaller, 1963, 1965; Mackinnon, 1971; Liu *et al.*, 1989), humans live in social aggregations of up to 37,000,000 individuals (Demographia, 2012). Group-size is a decisive social variable as it constrains other aspects of social organization; for example, foraging costs are group-size dependent and are potentially setting a limit to the sizes of primate groups (Janson, 1988; Janson and Goldsmith, 1994). All primates descend from an origin which enhanced learning abilities, based on an enlarged neocortex; this gave rise to social complexity in primates (Byrne, 2001). Ecology, environment, behaviour and demography are linked by a structured system of functional equations reflecting the relationships between the variables. These models have permitted to understand individual populations or groups behaviour, proving the importance of these four variables (Dunbar, 2001).
- 2 Like other primates, humans began to live in small groups moving on behalf of foraging and protection. This changed when agriculture was first practised; people began farming which allowed human groups to grow within a certain territory (Morris, 1969). Even since before the establishment of political authority, there was clearly a leader, like in other primate communities. As other primates, the *Homo sapiens* grouped maintaining a defined

and evolvable social pyramid. At this state we already copied things from each other inheriting cultural attributes and behaviours. Culture was not defined as such, but as in other primates, it was present.

2 Before the establishment of a political authority

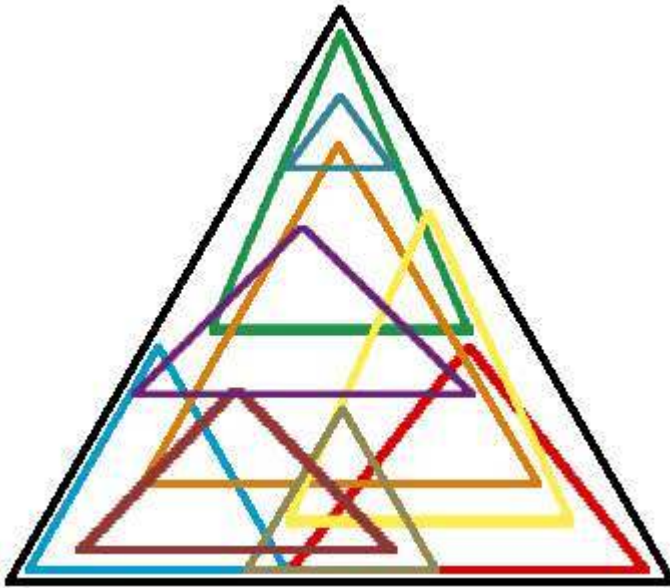
2.1 Interactions are density dependent

- 3 Rousseau (1762) alleged that the *state of nature* was simple with no conflicts or fears, there was no authority or private property. However, social conflicts should have been present since social interactions started, a long time before primates existed. Evolutionary speaking, social conflicts are present since the establishment of social groups, where status is necessarily defined. Social positions imply defending a status and many other complex interactions between each of the individuals in the group which vary in the presence/absence of externals. This already provides a large number of possible interactions in each social group. Let us imagine a group of 30 primates interacting between one another (with unchanging moods and in an unchanging environment) each primate will have a certain interaction with the other 29 which gives 435 one-to-one different relationships. If an external individual approaches the territory of this group then there will be 465 possibilities of individual interactions. Of course this will not be very probable because not all the individuals will interact with the external one, but it provides an idea of the exponential increase in one-to-one interactions by the addition of a single individual to a group. The ones on the top of the pyramid will very probably interact with the external approaching the group, as they will defend the territory and protect the rest of the group. Nevertheless, interactive possibilities will stay in the order of 450. At present the biggest human society comprises 37 million people, thus around 684.5 billion (684.5×10^9) one-to-one interactions in order to preserve personal interactions with every member of the community. Evidently this has become impossible and sub-tribes are necessary to survive in such a human aggregation (Morris, 1969).
- 4 It is very likely that before having a political authority, when *H. sapiens* was still nomadic, that constant private property was not present. As well as our predecessors, we had no strong physical attachments, things were possessed and left, and more importantly places were occupied and vacated. Then after, in the first sedentary communities things changed and a sense of private ownership emerged. As the territory was fixed, ownership of land became a need; the bigger the group the better established limits had to be. The conqueror spirit emerged five or six thousand years ago when land was conventionally agreed to have an owner under a conventionally agreed authority (Morris, 1969).
- 5 The sedentary human grouping allowed many modifications, the process of urbanization greatly influenced group dynamics. Each time the interactive net became more complex, the bigger the group-size the more difficult it became to have personal interactions with all the rest of the group. Sub-groups (or pseudo-groups) were formed and the community found it necessary to appoint in a formalized manner a governor, a formalized political authority. As Desmond Morris recalls (1969), the tribes were not enough and super-tribes embedded them. Communities continued to grow and more layers were needed in the organizational landscape.

3 Social pyramids: super-pyramid and sub-pyramids

- 6 Addition of authority levels was needed in order to somehow, preserve the social statuses and social order. Pyramids emerged inside pyramids, which in turn became embedded by other larger pyramids and so on and so forth. The complexity of the social statuses grew in parallel to group sizes; every individual became part of more than one sub-pyramid responding to the needs of each of his/her social group (s) in every specific situation. Pyramids overlapped with each other creating a complex and dynamic net of sub-pyramids, all together constructing the modern super-pyramid (Fig. 1). The creation of a super-pyramid led to the emergence of new strategies to preserve the order in the community. The concept of authority evolved, it was clearly not any more a direct interaction with the alpha male or one of its subordinates which maintained global order, but interactions with individuals further down in the social scale. Culture mutated too, new learning strategies arose depending on the belonging sub-tribe(s) of each individual. Learning through imitations evolved into formal lessons meant for elites which were supposed to improve outstandingly in a certain activity and inherit their knowledge to their offspring or other close relatives. Communities interacted with other communities with a marked evolution of the communication media (Kock, 2005). Behavioural strategies had to keep up with the evolution of the social groups and caused many diverse methodologies to state the level within the social super-pyramid together with the memberships to sub-pyramids. People identify themselves to their group through different methods such as membership cards, allegories, uniforms, hair-cuts, tattoos, etc. All this membership marks usually include an implicit status range. For example, if someone is part of a company he/she will have a uniform identifying him/her to that specific social group. Probably this uniform will have variations depending on the social status of that person in the company, in order to transmit an adequate signal to the rest of the group. This practise may be accompanied by a membership card, in which the level of the individual within the sub-pyramid will be clarified. If this person goes to another company, his uniform and card will not mean anything within the new social group and he/she will have to state again his/her social range within the new group (a useful and present behavioural display in this cases are certificates). If both, the old and the new companies are somehow related, then the sub-pyramids will overlap and the person changing from one to another will state easier his status within the new group.

Figure 1



Social super-pyramid. Simplified model of a social super-pyramid representing one possibility of pyramid accommodation within a relatively simple human community. Each triangle represents a social pyramid; varying in size and shape depending of the sub-group-size and in space according to their place in the super-pyramid. Each social pyramid is located according to the social group circumstances and interactions. This is a representation at $t(x)$ as everything is continuously evolving. *Super-pyramide sociale. Modèle simplifié d'un super-pyramide sociale en représentant une possibilité d'ordre des pyramides d'une communauté humain relativement simple. Chaque triangle représente une pyramide sociale; variant en taille et en forme en fonction de la taille des sous-groupes et dans l'espace en fonction de leur place dans la super-pyramide. Chaque pyramide sociale est située selon les circonstances de groupe et des interactions sociales. Il s'agit d'une représentation à l'instant $t(x)$ en raison de la constante évolution.*

- 7 Nowadays, with all the technological advantages and powerful communication tools, the super-pyramid is the world. Everybody is somehow related to somebody else and generally to more than one social pyramid. It is not always easy to discriminate where one group starts and the other finishes, but each individual has its rank in each of his/her belonging groups. Interactions mutate so fast that all pyramids are continuously evolving and holes in pyramids are quickly replaced either *in vivo* or virtually.
- 8 Modern technology has improved many aspects of our lives extending the scope of our resources regarding social adaptations. Thus, two main phenomena have surged: The first, are the virtual communities where social groups have created their own stratagem of social interactions, rankings, features, etc. These communities belong to a sub-pyramid which is usually not restricted by physical space, but relies in a virtual space with fake phenotypes and restricted behaviours. The second is the creation of virtual posts in the social groups. Even if a certain individual is not physically present in an environment he/she can be occupying a ranking inside one or more social pyramids. Presence is not anymore a requirement to be part of a group or to maintain the benefits of a certain ranking inside a social pyramid. The presence in two groups at the same time has become possible thanks to (real-time) communication systems. Moreover, the knowledge and understanding of one individual can be unidirectional, not demanding individuals ranking higher in the social scale to know their intra-group subordinates.

4 Scopes of private ownership

- 9 All kinds of interactions, protocols, learning, conceptualizations, expectations and symbolisms continued evolving into more and more complex variations as societies grow in size and density. Humans developed behavioural strategies in order to have impersonal intra-specific interactions and strategies to modify their inter-specific interactions. These lasts, were modified for human comfort into human-harmless (or better said, reducing human risks at maximum), non-human species were brought into the human artificial environments and were stated as property. The first domestication occurred towards the end of the last Ice Age when humans still depended on gathering, hunting and foraging (Clutton-Brock, 1995). It became normal to own another form of life, and at some point of the history owning another human race was accepted too. However, at present owning another's life can be a very light or strong statement, depending in the species in question. Thinking on possessing a dog or a cow is considered as an accepted and normal situation. Owning a gibbon will already be more striking; while owning a human is currently unaccepted. Why can we pretend to own other's life? Why should we think that is normal to own a dog? Why do we have the need to posses them and thus, absolutely dominate them in order to allow ourselves to live together with other species?
- 10 The human sprawl grew beyond the conceivable limits for any primate leading to loss of intra and inter-specific balance. The more the group grows the less need there is to stay in contact with the natural environment. If there is a human artificial environment there is less "risk" when relating with other species. Cities, parks, roads, etc, became part of our extended phenotype (term coined by: Dawkins, 1982), and the necessity of getting out of the comfort zone continues decreasing with time and population increase. We have the control of our environment and interact with other species mostly within it. By extending the phenotype without limits, it is now possible to stay within it through a whole life period, avoiding all risks implicit in an animal life.
- 11 Nevertheless, it is not possible to avoid all inter-specific interactions; to solve this we brought other species into our extended phenotype and set them inside our artificial environment. As a result the human has become the "center of the world", since a long time ago. Anthropocentrism captured our ideas and the less contact with nature the more "civilized" we consider ourselves.
- 12 At present, anthropocentrism is an outstanding human feature, especially in westernized countries. A key point in this problem is the neglect of the evolution of social complexity resulting from inter-specific human / non-human-animal communities (Hermann, 1998). Lestel *et al.* (2006), stress the need for an understanding on the cooperation and exchange (socially, of course, but also cognitively and physiologically) between humans and non-human animal species. They propose that even artifacts – autonomous artifacts, intelligent artifacts, minds, etc. – should be taken into account into the studies of hybrid communities.

5 Cultural conceptualization and need of uniqueness

5.1 Humans should be unique

- 13 As humans get used to living in bigger and bigger groups, inherited behavioural traits have been evolving in parallel. No wonder, social pressure drove human improvement to be a driving force, and detachment from nature became implicit in improvement. Finding a trait that explains the main difference between humans and animals has been a challenge. The concept of culture has been used in this regard, however in order to satisfy the human need of uniqueness the concept has been obliged to change with time. In the eighteenth century the concept of culture entails inwardness, uniqueness and individuality (Velkley, 2002). At the end of the eighteenth century the concept of *Weltanschauung* or “worldview” was coined by Kant and became popular in the German spheres of thought (Underhill, 2009). The speech was placed centrally in the model in order to transcend our thoughts and experiences. By adding the language in the ideology it permitted the creation of an implicit difference between human and animals (even if I would better say between human and non-human animals, this terminology serves better here). The human was still not considered an animal, and the concept of culture helped the notion, our need of uniqueness was satisfied. Considering language as an essential feature of culture maintained us far away from the risk of being considered an animal for quite a while. In the eighteenth century Rousseau contrasted the concept of the *state of nature* to culture. The concept of culture continued to evolve by being redefined with varying concepts, but always implying a “higher” status, a more “civilized state” and a large distance from other species.
- 14 In 1871, E.B. Tylor uses the notion of culture as a synonym of civilization, saying that it refers to all aptitudes and habitudes that a man acquires as a member of a society (Rocher, 1992). In the twentieth century, the use of language was placed as the principal element of culture (Rocher, 1992), and linguists argued it was unique from humans (Chomsky, 1957; Macphail, 1982). In 1982 the UNESCO defined culture as “the whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group. It includes not only the arts and letters, but also modes of life, the fundamental rights of the human being, value systems, traditions and beliefs” (UNESCO, 1982). At the end of the 1900’s the discovery of dialects in other animal species, again destabilized the concept of culture. The fact that birds and cetaceans, can also communicate through different dialects independently from genetic variations took away *H. sapiens* uniqueness again. It is true that humans have a more complex vocabulary and grammar; but each species have developed its unique communication system (Snowdon, 2001). Culture in the twentieth century was redefined to a concept involving symbolic encoding and the understanding of other individuals as intentional agents like the self (Tomasello, 1999). Humans do not understand other species dialects, and it is not easy to prove that other species give meanings or characters to objects, ideas or situations. As the concept purports an abstract definition such as symbolization when communication is not possible, we became safe – we became unique again! Nevertheless, there is a hot discussion to accept or not the fact that other primates have culture too (McGrew, 1998; Goodall, 1963). Our desire for uniqueness falls apart each time

understanding increases, we should just accept we are one more animal and many of our features are shared mainly with other primates.

6 Civilization and phylogenetic distances

- 15 The “normal” (most common) western *H. sapiens* perceives civilization as part of the unrelatedness to nature. Therefore, the further from our instincts and from interactions with other species (except the ones we artificially selected and the ones that publicity tells are fancy) the more “civilized” a human is considered. The humans are the centre of the world and we can do whatever is “necessary” to live better, to fit better or to appear to be better. However, we do not do it in a sustainable way, we do not search for the balance regarding to resources and/or other species. We could be applying strategies in order to benefit short, medium and long term. These strategies should allow other species to share time and space with us. Even on trying to do so, we have the choice between an anthropocentric method where we do not need to care for the others (humans or not), or a manner of coexistence and respect for all. The western societies, up to date, have chosen the anthropocentric method.
- 16 There are many hassles that have prevented the achievement of balance; here I will emphasize on the phylogenetic distances. The larger the phylogenetic distance the less we care about the members of the species and *vice versa*. Meaning that the fewer genes shared with another species, the less “alive” or important we consider an individual; and the less we will do to protect the individual of the species. This can be easily exemplified intra-specifically: family goes first! Individuals prioritize their protection accordingly to the number of shared genes (Maynard Smith, 1964). In the Kin selection theory, Darwin (1859) states that it is an instinctive evolutionary strategy that has been selected at least since insects in order to indirectly increase gene success. Bees will take care of their sisters due to the large amount of shared genes.
- 17 Extrapolated to inter-specific interactions the case is the same; we can increase gene success indirectly through the protection of phylogenetically-close species. As an example let us imagine an animal suffering and our reaction towards the situation. In one situation the animal in question is a fly, in another situation is a frog, and in the last one it is a chimpanzee. Almost anybody will show higher levels of anxiety when observing suffering a chimpanzee than a frog, or a frog than a fly. We will feel keener to save or protect the phylogenetically-closest species. If you see a fly suffering in your kitchen, the most probable is that you will not try to help it; in fact very probably you will feel happy for its death. And you would not kill a chimpanzee in one second because it is not letting you have lunch in peace— as we do with a fly. There are thousands of intermediary examples about the fly, the frog and the chimpanzee, but I let them to your imagination now. This can get much more complex due to psychological, historical and social variables that can make shifts in preferences, making phylogenetic distances negligible. In general, the smallest the phylogenetic distance is between species, the easiest it is to shift the selectivity criteria. This is why I illustrated it with an extreme example such as chimpanzees, frogs and flies. In principle Kin selection works also inter-specifically, so depending on the number of shared genes and the number of similarities with another species, we will be more or less keen to protect an individual. This strategy allows humans to care for the shared genes; by being more or less empathic towards the closest species and providing eventually a better survival of close related species. The strategy

would work on a normal group-size population allowing fluctuations of the human population and of the populations sharing the environment promoting close related species. However, it is obviously not working in our present conditions mainly because of the overpopulation. Due to human's density (and all the consequences of it) in current communities it is no longer an option to remain indifferent towards the problematic; the result would be devastating to the ecosystem. We have to learn to coexist with *all* species and stop thinking that by interacting we should immediately possess them.

7 Empathy and closeness with nature

- 18 There is one key thing that allow us to not care for other species, the lack (or large decrease) of empathy. Empathy is an instinctive characteristic and has been proven to be present from fishes and amphibians to primates, functioning thanks to a brain region called amygdala (Heberlein and Adolphs, 2004). The amygdala is one key component of the emotional circuit; it regulates fear and anxiety and plays a primary role in the formation and storage of emotional memories. The ability to recognize, share and comprehend affective states is crucial for social behaviour, interactions, and bonding, it enhances survival by different means and is dependent of social and contextual factors (Decety and Svetlova, 2011). Empathic behaviour is directly proportional to phylogenetic distance and will depend on emotion understanding, which in turn will depend on the time spent with other individuals or species; one thing will not be exclusive to the other. First, phylogenetically distant species will be easier to be misinterpreted in their behaviour and/or misunderstood in their physiology. The best example for this is the general thought of smiling dolphins. For us the shape of their face represents a smile and we interpret this as an output of happiness. However, dolphins have no muscles that allow them to move their mouths and change their shapes; they are always "smiling" and it is not related to their emotional state. Macaques do have a face musculature that allows them to show their teeth in a smile-like behaviour. This can easily be misinterpreted as a smiling for happiness by a non-expert, but showing the teeth it is commonly used as a precursor of aggression. The dolphin example exemplifies a misunderstood in the physiology, while the macaque one illustrates a behavioural misinterpretation.
- 19 The further in the phylogenetic tree from another individual, greater divergence is going to exist regarding all traits, especially behavioural traits. As behaviour is a very plastic trait (West-Eberhard, 1989), it is going to show a large variation from one species to another (or even from one sub-population to another) in respect to other types of traits, such as phenotypic ones. Thus, behavioural differences between species will be greater than differences in other traits. This can be a reason of confusion when trying to interpret another species' behaviour even if it is close-related. Hence, the further in the tree, the more potential confusion there is in the behavioural interpretation and the physiological understanding. Even if we are empathic towards another species this does not mean we are correctly interpreting the situation but that we are probably assuming a human-like physiology and/or behaviour. The closer from another species, the more identification there is, the most probable it is to assert in the interpretations, and the more facilitated empathy will be.
- 20 Second, our artificial-human-environments allow us to grow and live far away from nature which imprints in us an apparent no-need from the others thanks to anthropocentrism and brain washes about other absurd needs (without regard to

artificially selected and “to-fashion” animals). This remoteness from our natural environment (and as Dr. D. Lestel would say, from our animality) has caused a large environmental problem and is one of the main causes of the loss of ecological balance. The more time somebody spends far away from other species the more normal he/she will find sacrifices for “human welfare”, whichever is the understanding of this concept is for each individual. Inter-specific appropriation is allowed, enhanced and culturally inherited; remoteness from nature enhances permissiveness in this regard.

- 21 Even if we are more empathic to closer species, we are also more threatened by them because of their resemblance. This has caused a behavioural duality, on the one hand we take care of them because they are phylogenetically close; on the other hand the closer they are the more threat they represent to our uniqueness and therefore we should highlight the differences. There have been millions of texts written in order to explain the difference between humans and animals; without understanding that as humans we are animals. We are just one more species and **the importance for us about us is only that it is us**. The difference between *H. sapiens* and an orang-utan should be highlighted as much as the difference between an orang-utan and a bonobo. However, we are determined on finding *THE* difference that would make humans special, different and unique. We can start by group-sizes; we are the only species living in aggregations of 37 million individuals which is causing intra and inter-specific chaos. The evolutionary strategy in the search for uniqueness, would not lead to devastation if our communities were not as big as there are. However, we do live in large cities and it would be impossible to change the situation; thus, we have to switch our strategy of inter-specific interactions before collapse.
- 22 At the present time there are a large amount of people already fighting to accept primate culture regarding all primates and not only regarding *H. sapiens* (Whiten, 2000; Goodall, 1963). But at the same time, there is lot of people continuing to point out the presence of culture as the key differentiating feature between humans and other primates (Tomasello, 1999). Is this because, evolutionary speaking, it is an instinctive strategy to avoid more possible threats to the social pyramids? Or is it because of our need to strive for individualism and elite creation? Why do we need an explanation stating humans as different or special? This is a tussle we also have inside each of our social groups and between them; extending it to the super-pyramid towards other species. Dominique Lestel (1998) proposes that ethno-ethology and etho-ethnology are trying to extend the understanding of the super-pyramid (even though this is not the terminology he uses) by studying these disciplines in a complementary fashion. He states that these two disciplines attempt to gain a better understanding of the logic at work in hybrid human/animal communities sharing meaning, interests and affects. Ingold (2000) states that when studying another species we should do it in a truly mutual context respect the human-animal relationships; he calls it “anthropology of engagement”. And we need to optimize the strategy into a “living of engagement” where we can consider context respect towards each of the species that share the environment with us.

8 Evolution of the need of uniqueness

- 23 In order to establish a clear social ranking and to discard the larger amount of threats, humans decided to make clear inter and intra-specific distinctions. Blacks are not humans, women are not thinking individuals. And more easily and convenient for us all:

humans are not animals! We started by accepting that black people are humans, and slavery was abolished, after which women were accepted to be equal to men, becoming as humans as them. If any of these situations came back to present it would sound absurd to most of us as westernized thinkers. It is undeniable that each of these steps of acceptance brought more balance to the community. So, why cannot humans be considered animals? Next step in the acceptance process of humanity is that humans are primates, and primates are animals; and all species need all other species reciprocally (directly or indirectly). These ideas should go further from text books. Each species is the centre of *their* world and all species depend on ecological balance. Such an understanding will facilitate challenging anthropocentrism and will state an interactive non-centralized net. The problem is well known and there is many people looking forward to the change of mentality and life style. However, it is not the main practice of the western *H. sapiens*. The day people connect again with other species, and accept them as coexisting in a shared environment, the next step on intra and inter-specific balance will be achieved— this step is urgent to us all.

9 A current example

- 24 There are many cultures in the world that live in a permanent search of balance with their environment and with other species. It is in the western civilization where balance has not been achieved (or even searched), and where it has not been deeply accepted that humans are not superior to animals, but that humans are animals. The anthropocentric world from the typical western society is representing a threat for the whole planet, and a change in mentality is urgent. The problematic is so immense because of the large scope of the western civilization and because of its conqueror spirit that has lead to the spread of its thoughts and culture almost all over the globe. The remaining human groups that are in the infinite search of balance can teach westerns about inter-specific coexistence. The main objective of this paper is to give an example of a different living strategy where people live in intra and inter-specific balance, highlighting the relationships with other species providing an alternative to the westernized thinking in order to search for balance despite the problematic described above. I also want to enhance western thinkers to approach to other cultures and philosophies of life and to adopt whatever they consider useful. Challenging cultural anthropocentrism and non-human animal property by understanding the inter-specific balance can be achieved by a better understanding of such human communities.

9.1 The Mayan-Lacandons

- 25 “*All my ideas are consistent, but I cannot expound them all at once*” (Rousseau, 1762).
- 26 For any western reader it will be hard to understand that a man who dies naturally at the age of 22 can be considered old, particularly if the person telling this is above his 40’s. When Paz asked how that could be possible if he was only 22 when he died, the response was “he died because he was old, not because he had many years”. This is an actual situation that happened by living in the south of Mexico in contact with a Mayan group. Many of the members of the group were family related and did not speak Spanish, only Mayan. This anecdote stresses the fact that sometimes it is very hard for us to understand other cultures and ways of thinking/living. The story also notes that we have to work

hard in order to deeply understand other cultures and their ideologies. The Mayan culture is very hard to understand by westerns (conquerors and conquered), it is not of the scope of a single paper to transmit their whole ideology. Nevertheless, there are some messages and experiences that should be transmitted from the Mayans to the current westernized world that can help to better achieve balance, here I will only tell a short narration that can help in this purpose.

- 27 The Mayan-Lacandon communities of Nahá and Metzabok are two small communities established in the Mexican forest of Chiapas. The group size of these communities should be at maximum 60 families, each family with a maximum of 5 members, so there are around 300 persons in the biggest scenario. They control their group-size consciously: one version says they do it since the governmental clinics arrived, the other says that they have controlled the number of births since before with a tea they make from a plant of the area (personal communications). The fact is that their inter-group interactions reduce to 44850 intra-group possibilities. Their communities are surrounded by a protected forest which in turn is surrounded by groves. They live in direct contact with nature in their everyday lives and they have not been critically westernized, but keep ancient teachings.
- 28 Chan Kin Viejo was the last *to'ohil* (spiritual leader) of the Lacandons of Nahá, he taught the community to live in harmony with nature and to preserve their forest. When external people attempted to loot the *puuna'* (mahogany) of their forest; he said that god was angry and that the cold was entering to people's hearts. He said that these trees were the life of the communities, that they were alive, and the day trees were over, the community would end too.
- 29 Mayan Lacandons have a cultural transmission by word of mouth in which they will transmit their knowledge to others if and only if the listener is worthy of the teaching. Of course, there are many things that everybody knows and everybody communicates to the others. But they also have something called "secrets": the secrets are carried by the leader and are potentially transmitted to next generation when ready. The concept of being ready depends absolutely on the person holding the secrets; sometimes it is more worthy to die with the secrets than pass them on if the next holder if he/she is not ready to receive the teachings. So happens with the transmission of knowledge to externals. They do not share their ancient wisdom with externals to the community if they consider that the external is not ready to listen to the instruction, most of their secrets will never arrive to any external. Most of their teachings are associated with nature and their interaction with their environment as they live in a small community surrounded by rainforest. They are in constant interaction with plants and animals; they understand their forest and protect their environment. Their understanding of coexistence with other species has been preserved through generations; one should not deserve to be taught if he/she can represent any potential damage. Their jungle provides them with all they need to survive in it. A poisonous tree (*Chaká* in Mayan = *Bursera simaruba*) grows next to the tree that cures its poisoning (*Chechén* in Mayan = *Metopium browne*). They know a plant that cures the poisoning of the lethal *Bothrops asper* viper; while biotechnological laboratories are still working in the antivenom. They live in their rainforest with knowledge of the coexisting species inhabiting there.
- 30 Sharing their territory are 10 endangered mammal species that find a refugee in this rainforest: the baird's tapir (*Tapirus bairdii*), pygmy anteater (*Cyclopes didactylus*), northern tamandua (*Tamandua mexicana*), tayra (*Eira barbara*), coyote (*Canis latrans*),

margay (*Leopardus weidii*), ocelot (*Leopardus pardalis*), jaguar (*Panthera onca*), spider monkey (*Ateles geoffroyi*) and howler monkey (*Allouata pigra*). In their coexistence with all these creatures, they have their own way of inheriting ecological balance to next generations. Here is a story:

31 *The spider monkeys' hunter*

A man hunted lots of spider monkeys, with his bow and arrows, was walking in the forest and as soon as he saw a monkey he shot an arrow, and although it was not dead, he just left him, he sought another, in this way he killed many.

Not even eating them, but he liked to kill monkeys. It fell to the ground, tap! And he kept on searching. When he wanted to go back home, after killing many, he didn't find his way, he was lost.

Then the monkeys took him. They took him to their town, to their Lord; the man was already a prisoner of the spider monkeys.

The Lord of the monkeys then said:

- Why did you kill so many of my sons? You made them suffer a lot, why didn't you even kill them? You only shot them and let them die alone.

The monkeys surrounded him; when he had a splinter in his foot they tore it with their teeth and he shouted:

- Ah, it hurts a lot!

But the Lord of the monkey's didn't pay attention to him, because that man had killed many of his sons.

Then they told him he should marry one of the female monkeys of the town, to have children with her, many children, as many as he had killed.

After many years, he had many children. He had learnt to climb the sapodilla trees as monkeys do, he collected a lot of fruit for his wife and her mother, he did not stop working.

Then the Lord of monkeys took pity on him and let him go home.

One day, suddenly found his way to his field and in the evening he was back with his wife.

He told his story to his companions. He told them not to kill many monkeys, only enough to secure food for their children and their wives, if not the owner of the monkeys would punish them.

Shortly after he died. They say his soul returned to the owner of the monkeys, because so ordained

Our True Lord. (Marie-Odile, 1991)

- 32 We can learn a lot from this story; first Lacandons accept the culture of other primates as natural. Second, other primates have their own social pyramid with an alpha male they respect and they do not try to undermine anybody unless inter-specific balance is broken. Third, they do not possess other species, and other species do not possess them; species coexist and there is no sense of species superiority. Fourth, there is a lesson in paying attention to what is happening to other species, humans are not the center of the world and they live aware of their coexistent partners. The notion of a non-centralized interactive net is present; one species is not more important than the other we are just two species interacting and we must respect each other. Fifth, they show a great empathy when speaking on this way about monkeys: if we switched names in the story and all the words mentioning monkeys were converted into people from another culture, it would make as much sense as it makes now. This shows there is a clear identification with the species behaviour and needs: inter-specific empathy is present. Sixth, Christianity had not embedded the society when the story was created as they speak of Lords of monkeys and One True Lord. Hence, they haven't been westernized and are representing their own culture.

- 33 These communities have been gradually influenced by the western culture and it is been proposed (as it has happened to many other cultures) that they will end up with a western-like mentality. They have already been “visited” by missionaries trying to convince them about THE God which has created confusion in the community. One of them said to me that he was confused because he has been taught about the gods, and then after, he was taught about the God, so he could not understand which the truth was. The culture of the Mayan-Lacandons is merging with the western culture and it had been changing on the last years (Necasová, 2010).
- 34 The cultural traits we must have to acquire from the Mayan Lacandon culture are about coexistence. They are able to live in inter and intra-specific balance as their societies stayed small. I have presented a small example of Mayans who live with another ideology, despite of their size of our societies we can learn the lesson of coexisting with other species. I am sure there are more communities that can provide the same teachings. Instead of letting their ideologies disappear, with further western colonization, this is the moment to adopt the useful principles into our societies in order to achieve inter and intra-specific balance.

BIBLIOGRAPHIE

- Byrne R (2001). Social Technical Forms of Primate Intelligence. In *Tree of Origin: what primate behavior can tell us about human social evolution*. (de Waal FBM, editor). Cambridge, Massachusetts and London.: Harvard University Press. pp. 146-172.
- Chomsky N (1957). *Semantic Structures*. The Hague: Mouton.
- Clutton-Brock J (1995). Origins of the dog: domestication and early history. In *The domestic dog: its evolution, behaviour, and interactions with people* (Serpell J). Cambridge: Cambridge University Press. pp. 7-19.
- Darwin D (1859). *On the origin of species*. John Murray.
- Dawkins R (1982). *The extended phenotype*. Oxford: Oxford University Press.
- Decety J, Svetlova M (2011). Putting together phylogenetic and ontogenic perspectives on empathy. *Developmental Cognitive Neuroscience* doi:10.1016/j.dcn.2011.05.003
- Demographia (2012). World Urban Areas (World Agglomerations), *8th Annual Edition*. (www.demographia.com/). Revised the 22th of June 2012.
- Dunbar R (2001). Brains on Two Legs. In *Tree of Origin: what primate behavior can tell us about human social evolution*. (de Waal FBM, editor). Cambridge, Massachusetts and London: Harvard University Press. pp. 174-191.
- Goodall J (1963). My life Among Wild chimpanzees. *National Geographic*. (<http://ngm.nationalgeographic.com/1963/08/jane-goodall/goodall-text/2>) Revised the 22th of June 2012.

- Goodall J (1965). Chimpanzees of the Gombe Stream Reserve. In *Primate behavior: field studies of monkeys and apes* (DeVore I, editor). New York: Holt, Rinehart and Winston. pp 425-473.
- Heberlein A, Adolphs R (2004). Impaired spontaneous anthropomorphizing despite intact perception and social knowledge. *PNAS* 101, 7487-7491.
- Hermann H (1998). *From biology to sociopolitics. conceptual continuity in complex systems*. New Haven, CT: Yale University Press.
- Ingold T (2000). *The perception of the environment: essays on livelihood, dwelling and skill*. London and New York: Routledge.
- Itani J, Suzuki A (1967). The social unit of Chimpanzees. *Primates* 8, 355-381.
- Janson CH (1988). Food competition in brown capuchin monkeys (*Cebus apella*): Quantitative effects of group size and tree productivity. *Behaviour* 105, 53-76.
- Janson CH, Goldsmith M (1994). Predicting group size in primates: foraging costs and predation risks. *Behavioral Ecology* 6, 326-336.
- Kano T (1982). The social group of pygmy chimpanzees (*Pan paniscus*) of Wamba. *Primates* 23, 171-188.
- Kock N (2005). Media richness or media naturalness? The evolution of our biological communication apparatus and its influence on our behavior toward E-communication tools. *IEE Transactions on Professional Communication*, 48, 117-130.
- Lestel D (1998). How chimpanzees have domesticated humans: towards an anthropology of human/animal communication. *Anthropology Today* 14, 12-15.
- Lestel D, Brunois F, Gaunet F (2006). Etho-ethnology and ethno-ethology. *Social Science Information* 45, 155-177.
- Liu Z, Zhang Y, Jiang H, Southwick C (1989). Population structure of *Hylobates concolor* in Bawanglin Nature Reserve, Hainan, China. *American Journal of Primatology* 19, 247-54.
- Mackinnon J (1971). The orang-utan in Sabah today. *Oryx* 11, 141-191.
- Macphail E (1982). *Brain and intelligence in vertebrates*. Oxford: Clarendon.
- Marie-Odile M (1991). Relato de Nuc, habitante de Lacanjá Chansayab en 1987, Cited in: Los hombres de la Selva. Mexico: *Instituto Nacional de Antropología e Historia*. 149.
- Maynard Smith J (1964). Group selection and kin selection. *Nature* 201, 1145-1147.
- McGrew WC (1996). *Great Ape Societies*. Cambridge: Cambridge University Press.
- McGrew WC (1998). Culture in Nonhuman Primates? *Annual Review of Anthropology* 27, 301-328.
- Morris D (1969). *The Human Zoo*. London: Jonathan Cape.
- Necasová L (2010). Las Mujeres Lacandonas cambios recientes. *Liminar: estudios sociales y humanísticos* 8, 80-103.
- Pusey A (2001). Of genes and apes. In *Tree of Origin: what primate behavior can tell us about human social evolution*. (de Waal FBM, editor). Cambridge, Massachusetts and London.: Harvard University Press. pp. 9-37.
- Rocher G (1992). Culture, civilisation et idéologie. In *Introduction à la Sociologie Générale*. Montreal: Éditions Hurtubise HMH Itée. pp. 101-127.
- Rousseau JJ (1762). *The social contract or principles of political right*. New York: EP Dutton and Co.

- Schaller GB (1963). *The Mountain Gorilla*. Chicago and London.: Univ. of Chicago Press.
- Schaller GB (1965). The behavior of the mountain gorilla. In: *Primate Behavior: Field Studies of Monkeys and Apes* (DeVore I, editor). New York: Holt, Rinehart and Winston. pp. 324-367.
- Snowdon C (2001). From primate communication to human language. In *Tree of Origin: what primate behavior can tell us about human social evolution*. (de Waal FBM, editor). Cambridge, Massachusetts and London: Harvard University Press. pp. 193-227.
- Tomasello M (1999). The human adaptation of culture. *Annual Review of anthropology* 28, 509-529.
- Underhill J (2009). *Humboldt, Worldview and Language*. Edingburgh: Edinburgh University Press.
- UNESCO (1982). *Mexico City Declaration on Cultural Policies*. Mexico City: World Conference on Cultural Policies.
- Velkley RL (2002). The Tension in the Beautiful: On Culture and Civilization in Rousseau and German Philosophy. In *Being after Rousseau* (Velkey RL, editor). Chicago: The University of Chicago Press.
- West-Eberhard M (1989). Phenotypic plasticity and the origins of diversity. *Annual Review of Ecology* 20, 249-278.
- Whiten A (2000). Primate culture and social learning. *Cognitive Science*. 24, 477-508.

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RÉSUMÉS

Avant la création des sociétés politiques il n'y avait point de propriété privée constante et les groupes sociaux n'étaient pas régis par une autorité. L'agrégation humaine a conduit à la nécessité d'une conceptualisation de l'autorité et de la culture. Les interactions inter et intra-spécifiques ont évolué en parallèle aux redéfinitions de ces concepts qui ont toujours été dépendants de la densité humaine. La société occidentale (ou occidentalisée) humaine d'aujourd'hui vit dans de grandes agrégations intra-spécifiques où la propriété privée couvre même d'autres espèces, et où l'anthropocentrisme est en général bien accepté et non contesté. Alors que la population de ces communautés continue d'augmenter, les pressions sociales ainsi que

d'autres facteurs ont éloigné les primates humains de l'empathie, qui décline proportionnellement à l'augmentation de la densité. Le manque d'empathie mène immédiatement à la recherche de l'unicité et de la différenciation de l'autre laquelle est plus facile envers d'autres espèces, en particulier envers les primates non-humains puisqu'ils pourraient représenter une menace de par leur ressemblance avec notre espèce. Tous les animaux non-humains ont été mis de côté, les différences mises en évidence et la culture a été redéfinie afin d'ôter aux espèces non humaines la possibilité d'avoir une culture. Cependant, il reste encore des communautés humaines qui préservent leur empathie envers les autres espèces, en acceptant les cultures non-humaines, et qui sont en recherche de leur équilibre intra et inter-spécifique. La contestation de l'anthropocentrisme culturel et de la propriété privée de l'animal non-humain par la compréhension de l'équilibre inter-spécifique peut être faite par une meilleure compréhension de ces communautés humaines.

Before the establishment of political societies there was no constant property and social groups were not governed by an authority. Human aggregation leads into the need for authority and culture conceptualization. Inter and intra-specific interactions have evolved in parallel to the redefinition of these concepts which have always been density dependent. Present human western (or westernized) society lives in big intra-specific aggregations where constant property covers even other species, and where anthropocentrism is in general well accepted and not challenged. As communities keep growing, social pressures and other factors have made human primates away from empathy, which declines proportionally to density increase. The lack of empathy immediately drives to the search of differentiation and uniqueness which is easier to proclaim towards other species, especially to non-human primates as they could represent a threat for its resemblance to our species. All non-human animals have been cast aside, their differences highlighted and the concept of culture redefined in order to take away non-human species the possibility to have a culture. However, there are still human communities which preserve empathy towards other species, accepting non-human cultures; and who are in their search of intra and inter-specific balance. Challenging cultural anthropocentrism and non-human animal property by understanding the inter-specific balance can be achieved by a better understanding of such human communities.

INDEX

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