

The crocodile, man's friend: human-animal relations in Bazoulé, Burkina Faso

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ABSTRACT

The thesis starts from a multi-species ethnography of the cohabitation relationship between humans and crocodiles in the village of Bazoulé in Burkina Faso and combines the analysis of the ecosystem, history, mythology and local culture to explain the emergence of this relationship. The main argument of the thesis is that the description of a cultural phenomenon cannot be complete without a multi-dimensional ethnography (particularly multi-species) because any human community is immersed in a network of interactions with non-human actors (plants, animals, geographical elements, ecosystem) that indirectly influence human cultural products even when the traces of these influences are not explicitly visible in the cultural representations accessible to "classical" ethnography. In particular, the thesis proposes a framework for a "trans-material anthropology" that can deconstruct virtual actants such as "spirit" overcoming their truncated representation as "beliefs".

KEYWORDS

Multi-species ethnography, ecosemiotics, anthropology beyond human, human animal relationships, ecology.

Introduction

The shy germs of this research have first appeared in 2011 in the African village of Bazoulé, in Burkina Faso. On the shore of a shallow lake, I was watching two small children playing in the mud, unsupervised. A few steps away, without attacking them, a group of crocodiles were basking in the sun, coming in and out from time to time under the shine of the lake. I knew, from what the locals said, that in Bazoulé crocodiles would not attack people. But what I had believed to be only a legend took on a shocking materiality for me that afternoon, the more so as I myself was to ride a crocodile, and even lift its front paw with my hand, without being attacked. "The spirits of our ancestors live in crocodiles," a local named Raphael Kabore explained to me then. "How is it possible?", I asked myself then. Yet, that was not the right question, but another, as I will explain later: "What is really 'a crocodile' and why do I think that this 'crocodile' should automatically attack people?"

Bazoulé, Burkina Faso



Figure 1: (top) Positioning of Lake Bazoulé and a satellite image showing its maximum extent near the end of the rainy season. Photo Source: Screenshots, Google Maps. (bottom) A panorama of the lake in May 2018, near the end of the dry season.

The village of Bazoulé is located in the center of Burkina Faso, about 40 km southwest of the capital Ouagadougou, in a sub-Saharan climate zone. The houses and crops of the approximately 2000 inhabitants are scattered over a radius of several kilometers, with the highest density around a "center" where the market, a few stalls and one or two "maquis"¹ are found. About 1 km from this "center" there is a seasonal lake called "la mer" or "la mer sacrée" by the locals. Almost dry at the end of the dry season (May), the lake reaches at the end of the rainy season (August) about 350-600 meters. From a hydrological point of view, it is an isolated system, fed exclusively by rainwater: the few thin streams of water that start from the lake are lost, through evaporation or absorption, after 200-300 meters.

The lake of Bazoulé is populated by West African crocodiles (*Crocodylus suchus*) (Ouedraogo et al, 2017), a species officially cataloged only since 2003 (Schmitz et al, 2003), morphologically almost identical to the Nile crocodile (*Crocodylus niloticus*). However, the two species differ be-

¹ open-air bar, usually with simple tin or plastic tables and chairs, and set in a courtyard, sometimes also functioning as a makeshift cinema, with shows, sports broadcasts or films playing on a television



Figure 2: Satellite view of Lake Bazoulé as it appears near its maximum extent, towards the end of the rainy season. It is noted that there are no sources of water supply to the lake, nor emerging water courses. The proximity of the houses to the lake is also noticeable (for reference, the lake in the picture has a maximum width of about 250-300 meters): the houses on the northern side are less than 50 meters from the lake, and those on the western side are more less than 200 meters. In the northwestern part, two parallel roads, pink-orange in color, can be seen. The road closer to the lake is found on a dike about 4 meters high that separates the lake from the main road (the one farthest from the lake between the two parallel roads) and some cultivated land. In 2011, the author encountered a large adult crocodile camouflaged in a pond on one of these cultivated lands. Photo Source: Screenshot, Google Maps.

haviorally, *crocodylus suchus* being somewhat less aggressive towards humans - which in no way excludes case attacks, including fatal ones (Pooley, 2016). Between January 2016 and May 2017, 268 crocodile specimens were counted in Bazoulé, of which 25% were newborns, 17% were cubs, 12% were sub-adults and 10% were adults (Ouedraogo et al, 2017). However, not a single attack has been recorded, although people are practically all the time on the edge of the lake for various activities such as filling water containers, watering animals (goats, donkeys), and 3-4 year old children they play on the shore unsupervised by adults or enter the lake to collect water lily flowers.



Fig. 3: Children from a school in Burkina Faso look at crocodiles during a school visit to Lake Bazoulé. Many such visits, sometimes with hundreds of children, are organized daily during the dry season. Children not only get to spot the crocodiles, but are encouraged - and sometimes forced - to ride the crocodiles and take photos of themselves doing so. Often, their reactions are of extreme fear: I witnessed situations where children were practically picked up and placed against their will on the crocodile. Each time a local from Bazoulé was nearby, armed with a stick, but I never saw any signs of aggression or nervousness from the mounted crocodile. At such close proximity, the mobility and rapidity of this reptile, even on land, would render any intervention useless should the crocodile decide to attack decisively.

Culturally, this relationship is elaborated as a belief that "human ancestors are manifested in crocodiles and as such are sacred".

Before turning to the ethnography proper, I will mention that this human-animal relationship is not unique to West Africa. Thus, Pooley (2016) lists several areas where crocodiles are considered sacred and live in peace with humans: Amani (Mali), Kachikally (Gambia), Paga (Ghana), Yamoussoukro (Ivory Coast), Lake Baringo (Kenya), Lake Rukwa (Tanzania). Such a relation-

ship is documented in several villages in the Charotar province of Gujarat state, India.² An ethnical Bara told me about a similar relationship in Isalo, Madagascar, and I had the opportunity to personally observe the same in the village of Darla in northern Burkina Faso in 2012, when a local even demonstratively swam in the local lake inhabited by crocodiles. In Darla, crocodiles are not considered sacred and have no associated cult, and residents admit to the existence of aggressive incidents, even if very rare. When a child was attacked by a crocodile, the residents gathered on the shore of the lake and beat with sticks and clubs all the crocodiles they could find in the lake area. Explaining the gesture, my interlocutors attributed to the gesture a strong symbolic substratum: "the crocodiles broke the covenant with humans and this sin had to be redeemed in order to save this covenant".

This type of beliefs and relationships also occurs with other species potentially dangerous to humans. Thus, Amadou Omarou Sarganekoye, a local from Nyamei province in Niger, told me in 2012 that in his village there is a similar relationship with a species of black, venomous snakes that are considered sacred and welcomed into people's homes:

"Snakes sometimes live in houses and we do not harm them, nor do they harm us. Once a year we also have a snake festival. I asked my father why they should not we are doing harm, and he told me 'try another way, and you will see that something bad will happen to you, that it will not be good for you'."

The crocodile as a living exhibit

Since 1996, in Bazoulé there has even been a tourist association made up of about 10 locals, paid to be guides for tourists who come to see "la mer sacrée aux crocodiles". During the years 2012-2014, before the deterioration of the security situation in the area, several thousand tourists came here a year, mostly from Burkina Faso, but also many foreigners, Africans, Europeans or Americans. In exchange for about 1,500 Central African francs (a little over 2 euros), tourists receive a guided tour of the lake - and a chicken. They are explained the crocodile's life cycle and source of food ("fish from the lake") as well as non-aggressive behavior ("man's ancestors are

² <https://www.bbc.com/news/world-asia-india-46983559>



Fig. 4: A crocodile rises from the ground to grab the live chicken that a local man is dangling, tied to a stick. Generally, the guide does not let the crocodile grab the baby on the first try, but quickly raises the stick, thereby pulling the baby back to a height inaccessible to the crocodile: this is the case in the scene photographed here. Photo credit: Raphael Kabore via Facebook.



Fig. 5: "Fidele" Kabore, a resident of Bazoulé and a guide in the local tourist association, poses arched on the back of a crocodile on the shore of the lake in Bazoulé. Photo credit: Raphael Kabore via Facebook.

manifested in crocodiles"). The guide then throws the chicken onto the bank or into the shallow water next to the bank. In about half of the cases, the chicken manages to escape: the guide immobilizes it by pressing it on the neck with the stick he carries with him, then throws it again. In other cases, the chicken is tied with a string to a stick and swung 1-2 meters above the crocodile which rears up on its hind legs to grab it. The large, dominant specimens swallow the chicken on the spot, but the smaller ones quickly retreat into the water while other crocodiles try to steal their prey. After consuming the chicken, the large crocodile usually remains motionless on the shore and visitors are invited to touch it. The approach is always from the side: the locals say that the frontal approach is interpreted by the crocodile as aggressive. Encouraged by the guide, tourists touch the crocodile on the back. They are then prompted to mount the crocodile and actually lift one of its front legs. Sometimes people support their weight on their own legs, but other times they lie down and effectively put their weight on the crocodile's unresponsive body. The chicken is not a prerequisite: I have witnessed numerous cases where visitors have interacted with the crocodile resting on the shore without it having received the offering.

As a counterpoint to this scene where the crocodile appears placid, it is useful to note here that its mobility and speed are extremely high even on land. By repeatedly shooting at 4 frames per second, we measured that an average-aged adult crocodile needs only 250-300 ms³ to arch up to its hind legs or bite about 1.70 meters off the ground.

The rituals of the crocodile

The most famous crocodile-related event is *Koom Lakre* ("crocodile feast"). Despite the name, *Koom Lakre* seems more like a syncretism between three distinct elements: (i) a political-military parade of the majority *Mossi*⁴ ethnicity; (ii) the *Tinse* animistic custom (Yamba, 1963), a very important and ancient one (11th century) consisting of animal sacrifices for water and fertility; (iii) a crocodile cult which is rather marginal in the celebration. *Koom Lakre* is attended by hundreds of locals and visitors from early morning until after dark. Most of the day is devoted to pro-

³ This time interval is comparable to the average reaction time of humans to visual stimuli, which is approx. 200-250 ms

⁴ Mossi is the majority ethnic group that conquered, between the century X and XVIII, the territory of present-day Burkina Faso and imposed political-military domination on the conquered ethnic groups, assimilating their customs, including religious ones, against the background of a mythology of his own in which the creator withdrew from his own creation, leaving behind a narrative void .



Fig. 6: The local Mossi chief rides through the center of the village during the first part of the Koom Lakre (“crocodile feast”) procession.



Fig. 7 During the sacrifices, the center of attention moves to the area of the sacrificers (on the right of the image), eclipsing the semicircle in which the Mossi chief sits (on the left of the image).



Fig. 8: The sacrificer discards the chicken after severing its throat and draining its blood.

cessions led by *Mossi* elites and warriors, riding demonstrations⁵ and especially animal sacrifices through which the inhabitants individually request the benevolence of the spirits. In the reverse order of the social status, down from the *Naba*⁶, participants advance the slaughterers an animal to slaughter - mostly chickens, and occasionally goats or donkeys. There is even a waiting list, managed by a member of the elite, while the public stirs, shouts, crowds, fights, tries to make room. Sacrifices take place on a small mound of earth near which two spears are stuck, along with some bowls of grain, *dolo*⁷ and grain cakes. Chickens have their carotid cut and their blood drained, then thrown into the dirt: the position in which they die indicates the spirits' response (on their backs, positive, on their bellies, negative). The place left free by the spirit of the animal could be taken by a possibly malevolent spirit: for this reason, a few flakes are plucked and soaked in blood to "blind" such a spirit and also a leg and a wing are broken to hinder him. As for

⁵ I occasionally noticed contemporary alterations originating from the influence of western films and explicitly assumed by the locals, such as clothing (jeans, leather boots, belt with metal buckle, jeans vest and leather hat), attitudes and self-identification as "Burkinabe cowboy".

⁶ "Chief" - the title held by hierarchically organized *Mossi* leaders, from *Mogho Naba* ("chief of the world"), the supreme leader in Ouagadougou, down to the local level

⁷ fermented beer

goats or donkeys, they are immobilized by a few people, tied and given to the slaughterer who cuts their carotid and then leaves them to agonize to death. An ear is then cut off - the equivalent of plucking the flakes in the case of chickens - and the string with which they were tied is thrown on the floor. All animals are then skinned, butchered and roasted on site, but will not be eaten before the end of the sacrifices. At that time the sacrificer pours some *dolo* sprinkled liberally with blood and feathers on the mound of earth covered with the blood of the sacrificed animals, then throws in the same place a piece of a millet cake sprinkled on the crust with blood and previously soaked in a sauce. The sacrificer in turn drinks from the *dolo* and eats a piece of the cake, after which he is served with the first piece of roast meat. After him *Naba* eats, then the rest of the world.

Only around 15:00 the procession reaches the south-western shore of the lake. At the 2018 edition of the *Koom Lakre*, *Naba*, aged and suffering from arthritis, did not even dismount, but placed himself with the horse in the shade of a tree and watched from a distance. There was no longer a clear center of the ceremony, as in the case of the sacrifices: the crowd divided into groups, the guides from the lake threw here and there cubs among the competing crocodiles trying to catch them. Occasionally, people scattered and tripped over each other, more amused than frightened, when the crocodiles chased the cubs in their direction. I myself was "alerted" by a female that pounced and bit point blank 20-30 cm from my leg when I ran about a meter in front of her - the only incident I've ever had with a crocodile. This entire lakeside scene lasted less than 40 minutes, after which the procession returned to *Naba's* abode. The three sacrificers, sitting on a mat in a circle, ate *dolo* and millet cakes. The feast ended, with songs and dances, a few hours after sunset.

As I said, *Koom Lakre* seems to encapsulate the Tinse custom that dates back to the c. XI and is linked to an original crisis in people's relationship with water. Animal sacrifices have the role of obtaining the benevolence of the spirits and ensuring rains and fertility (Yamba, 1963). Tinse is not related to crocodiles: it has been recorded throughout Mossi territory, not just in areas inhabited by them. The same myth of saving the community in the face of drought is also found in two of the three legends that I collected in Bazoulé about the origin of the relationship with crocodiles. In one of them, the crocodiles fell from the sky with the rain. This legend seems to "dis-



Fig. 9-11: (top) Koom Lakre procession on its way to the crocodile lake. (centre) Offering the cubs to the crocodiles during the Koom Lakre ceremonies. (Bottom) Horsemanship demonstrations by Mossi warriors during Koom Lakre ceremonies. Video captures from the author's footage.

guise" the apparent paradox that a rainwater lake located in the middle of an arid area, many kilometers from any water sources, contains such an abundance of crocodiles.⁸ In another legend, people followed crocodiles which instinct led them to a source of water: finding the water, people dammed an area, building a reservoir for rainwater.⁹ The crocodile thus appears as an indexical sign of water - but the unexpected appearance of water at an apparently hopeless time appears as an anomaly (Douglas, 1984, 38-39) and is explained by divine benevolence. The crocodile is thus reinterpreted as an indexical sign of this benevolence. The ritualization of sacrifices to crocodiles is a recognition of this sign, a response from humans transmitted through this mediator between two ontological planes - the material and the spirits.

Another ritual takes place the day before, about 1 km north of the lake, in a grove where it is believed that the relationship with the crocodiles once began. The ritual is not public, only a few



Fig. 12: The sacrificial ceremony at the place where humans' relationship with crocodiles is believed to have begun. The sacrificer (in the center, in gray, in the farthest plane) has just thrown a chicken that falls to the ground (video capture).

⁸ This presence can be explained if we consider the occasional, short-lived floods in the rainy season. Rain showers can be so intense that they can produce instantaneous accumulations of water over half a meter deep and torrents tens of meters wide and 1-2 meters deep. All of these end as suddenly as they appeared, sometimes lasting less than an hour, but they can be responsible for crocodiles migrating over significantly greater distances than would be possible for them to travel exclusively on land.

⁹ This legend is consistent with the fact that the lake of Bazoulé is dammed on the east side.

members of the *Mossi* elite participate. The atmosphere is solemn. Participants take off their shoes: their communicative attitude gives way to silent introspection. They sit themselves face to face on two sides of a triangle with the apex facing the grove. On this apex, turned three-quarters to face the grove and almost with his back to the others, sat the sacrificer (the same one who would also occupy the central place at the Koom Lakre ceremony the following day). For a while they were all silent or conversing in low voices. Then the sacrificer drank the dolo, marking the beginning of the sacrifices. One of those further from the top then passed a chicken from hand to hand to the slaughterer, who proceeded as I have described at length above in the case of the Koom Lakre feast. As there, at the end of the ceremony the sacrificer drank dolo, and the participants ate the roasted meat of the sacrificed animals.

This ritual also had a certain ambiguity. On the one hand, it took place in a place where the relationship with the crocodiles is believed to have started. On the other hand, the same place is far from water and their current range. Both water and crocodiles are both present and absent. It is a ritual related to the crocodile but no meat is offered to the crocodile: instead blood is offered to the spirits¹⁰. The question here is: is it the same crocodile? In other words, when the locals say that this ritual is related to the "crocodile", are they not actually referring to anything other than the "crocodile" in its material sense - which is not present? The ritual is not about the crocodile, but about the relationship with the crocodile, and more specifically about direct communication with these spirits. The crocodile is only a sign and a medium for the manifestation of these spirits - one of the many ways in which spirits can autonomously "inhabit" different bodies (Descola, 2014). But we can ask ourselves two questions: (i) among all the possible mediums for the manifestation of spirits, why the crocodile? (ii) how could we translate these "spirits" into our naturalistic paradigm? (ibid).

¹⁰ "Blood is life, chicken without blood is just meat," Raphael Kabore explained to me. "Blood is offered to the spirits, flesh is eaten."



Fig. 13-15: (left) Burial of a large crocodile (photo: Raphael Kabore). (right) crocodile drawings made by children in the author's notebook. (bottom) two children next to a crocodile (photo: Raphael Kabore via Facebook).

Towards a multi-species ethnography

I presented this ethnographic summary precisely because it does not clarify anything about the rationales of this human-crocodile relationship. The reason is conceptual: a relationship between two actants capable of agency is not reducible to the representation that one of them has of this relationship. In the proximity of a crocodile, it's not only what I "think" about it that matters, but also what it "thinks" about me. Rich as they are, people's representations do not necessarily reflect the entire web of interactions with the ecosystem, interactions that transform them—and through which they in turn transform it. Perhaps considering "spirit" as a personalization of a set of external elements, we implicitly attribute to "nature" an existence independent of people's representation of it and omit the impact that people's inner world can have - in material, but unconscious, unintentional ways, nonverbal - with the outside world. We also omit how the outside world in turn influences people's behaviors in potentially un verbalized and culturally unreflected ways. Hence the limitations of classical ethnography and the epistemological problem of the "vicious circle in which we try to distinguish what is specific to the human through methods specific to the human" (Kohn, 2013, 6) and which were extensively discussed by Bateson (1972, 1979); Ingold (1988, 2013); Latour (1993, 91 and 1999); Viveiros de Castro (1998); Kohn (2007; 2013); Bennett (2010); or Strathern & Stewart (2011).

Not by chance, I have also presented some data about the species *crocodylus suchus*, but these are also more puzzling than helpful. The reason is also conceptual. Man is not reducible to the formula "specimen of homo sapiens": why would the crocodile be reducible to the formula "specimen of *crocodylus suchus*"? Both "specimens" are immersed in a network of external interactions that shape their experiences - and with them, representations and behavior - beyond the "hardware" provided by biology. Crocodiles are capable of learning, in the sense that individual specimens change their behavior according to their experiences and situational changes: the same crocodile may be impossible to catch a second time by the same method; proactive adaptation to prey habits, including seasonal ones; the use of objects as tools; cooperation and coordination between multiple exemplars (see for example Dinets et al, 2012; Dinets, 2014; Dinets, 2015). All these characteristics were observed somewhere, not everywhere: they cannot be a priori attributed to the "crocodile" and are closely related to a socio-geographical context. If we relied only on what we know statistically about the crocodile, we would conclude that the relationship in

Bazoulé doesn't exist, is just a fairy tale.¹¹ But then, what exactly is that 'crocodile' and why do I think it should automatically attack people? In search of an answer, we must go beyond the barrier of our own species, to "that basic level where inferences are made about the types of beings that exist and how they relate to each other" (Descola, 2014).

The semiotics of the crocodile-man relationship

Starting from the concept of "Umwelt" of Von Uexküll, Kohn (2007; 2013) argues that everything that is alive consists of recursive semiotic chains on multiple levels: from the incorporation of "interpretations" of the environment in the anatomy and physiology of an organism¹² to semiotically constructed representations of the environment¹³. It is a point of view derived from multi-naturalism (Viveiros de Castro, 1998): every being is a 'self' and represents its world from a self-centered perspective and constructed starting from interactions with it. These representations are in fact networks of interpretants: when we say that blood is to a jaguar what beer is to us (Viveiros de Castro, 1998) we actually find Peirce's (1990) definition of a sign: "something that takes the place of something else for someone in terms of certain attributes". These signs are generally iconic and indexical: symbolic production, "on this planet [...] is only of humans" (Kohn, 2003, 31). The sign is not necessarily "issued intentionally and artificially produced", as the interpreter is not necessarily anthropomorphic. (Eco, 2008, 33). Ethnography of "organisms whose lives [...] are linked to people's social worlds" (Kirksey & Helmreich, 2010) therefore involves a look at the signs through which they interact with the world.

In Bazoulé, the crocodile "cries" when it makes certain sounds; "has fun" when he spins in the water for no reason; "visits" when it appears during the night in a household and disappears at nightfall. He can be calm or nervous, confused, or "asking for the rain". His attitudes or behaviors are interpreted as signs, sometimes recursively: a "visit" is in turn a sign that "something" will

¹¹ I received exactly this feedback from a herpetologist with whom I corresponded during my first year of research in Bazoulé.

¹² An example given by Von Uexküll himself is the boric acid receptors of ticks. For ticks, boric acid is an indexical sign of a mammal they can parasitize.

¹³ Residents of Ávila, Ecuador, cut down one small tree at a time with a machete to force the monkeys out of their otherwise impregnable shelter in other, larger trees. The monkeys interpret the sound of the tree falling as an indexical sign of the cutting of the tree in which they were hiding. Other sounds, even loud ones, do not bring them out of hiding (Kohn (2013, 31)

happen - an announcement or a human visit - and the death of a crocodile foretells the death of a human, and vice versa. If it is somehow aggressive, then it "must" be a "foreign" crocodile. Conversely, crocodiles are also credited with the ability to interpret signs. Approaching a crocodile is always done from the side and not from the front because crocodiles "interpret" a frontal approach as an aggressive sign. People wave a stick in the water or hiss and slap their mouths to call the crocodiles to the shore; they gently hit the ground or over the crocodile's nostrils with a



Fig. 16: Raphael Kabore talks on the phone on the lakeside in Bazoulé. Around the crocodiles, he does not part with the stick he uses to mediate nonverbal communication with them. The stick is a tool he brings with him every time he comes to the lake, and is kept in the small tourist information center near the lake.

stick to warn them not to "poke their nose". And these signs are recursive: around the crocodile,

the guides always have a stick resting on the ground whose sight "holds the place for" the signs transmitted to the crocodiles through it.

The analysis of this semiotic conveys several things. First, the crocodile is the subject of analytical curiosity from the community, more so than other local animals. A behavior that escapes immediate explanation, an anomaly that "does not fit into a given set or series" (Douglas, 1984, 38) constitutes an ontological ambiguity, a "threat to order" that is required to be "reduced through an interpretation" (ibid.) The "fun" or "crying" of the crocodile are combinations of sounds and movements that do not seem to have a visible motivation: they are not obviously related to either sexual, territorial or feeding behavior. Crocodiles are capable of behaviors identified in the specialized literature as "motor games, games with objects and social games" (Dinets, 2015). In the absence of other explanations, the hypothesis of play in the case of "fun" or suffering in the case of "crying" are perfectly plausible. Even the terms used to describe these behaviors appear quite adequate, not just an arbitrary "humanization". Occasionally, a crocodile may show aggression. Accepting that a local crocodile is aggressive would mean that any local crocodile could be aggressive: a threat to the entire status quo. It is therefore postulated that he "must" be a foreign crocodile. How it got there is not analyzed: it is enough that there is a theoretical possibility that it was brought there by the last floods. I also mentioned the "visit" of a crocodile to a household located a long way from the lake. Not every appearance is a "visit", but only those that do not have an immediate explanation, such as the need for water in very dry periods, when the lake is almost dry. When the crocodile stays for days in a household, that is not a "visit", but just a crocodile suffering from lack of water (and the locals sprinkle it to cool it down). When the crocodile leaves after a few hours, however, one cannot speak of lethargy: its presence is an anomaly that must be (re)interpreted, and hence the explanation of the "visit".

The (re)interpretation of these "anomalies" has a red thread: a certain "humanization" of the crocodile - not any crocodile, but specifically the crocodile of Bazoulé. Ontologically, he is no longer an "ordinary crocodile" (in the sense of our a priori knowledge of the species), but becomes a creature somewhere between animal and human, exhibiting characteristics of both. But how can one accept the elevation of an animal to a higher ontological plane, close to humans, without this threatening the ontological hierarchy of the world and the singular status of man? The solution came in the form of a superhuman component. The "human part" manifested by the "crocodile of Bazoulé" does not belong to him natively, in fact it does not belong to him at all. It is the result of

a manifestation in crocodiles of the "spirits" of human ancestors. In addition to the pair of human-animal opposites, the crocodile also appears as a mediator between two other pairs: the material world and the immaterial world (of spirits), respectively the world of the living and the world of the dead. These three pairs of opposites are very important: I will return to them in the last part of this article.

The origins and mechanisms of the man-crocodile relationship

Every time I told someone about my research, I got the same question: "well, why don't crocodiles bite them?". As excited as I was about the intangible side of this relationship, the question came like a cold shower.

The question actually has two halves. It is on the one hand "how?" - in the sense of the process that brought humans and crocodiles to a peaceful coexistence. I thought, for most of the years of research, that I would discover a "silver bullet", an ethological peculiarity of the crocodile speculated by humans, or a non-verbal behavior of humans that would somehow convey to crocodiles the message that humans are not prey. What I discovered were actually many small, cumulative elements that constituted a mutual feedback loop between humans and crocodiles - I would say, in the spirit of Latour, a loop that constantly (re)defined them on the actors of this relationship. All these elements were "hidden" in plain sight, in the multi-dimensional ethnographic description that I have summarized so far. First of all, a selection of non-aggressive crocodile specimens: those receive more food offerings, interact more with humans, get their protection and thus have better chances of survival and procreation, transmitting these genetic characteristics to the offspring and on the other hand exposing the young crocodile population to a certain type of behavior that it can copy. More aggressive specimens can only watch from the sidelines, without access to abundant food, with less chance of becoming dominant specimens. The selection can also go the other way: the very aggressive specimens are declared as "intruders", "foreign crocodiles", not populated by the spirit of the ancestors and consequently non-sacred: in this case, it can go as far as eliminating them. Then there is the fact that humans display neither typical predatory nor competitive behavior: they do not avoid the crocodile, but neither do they provoke it in any way by their behavior. Then there is the food part: even if the offerings are not large, they are constant

and usually addressed to larger and potentially more dangerous specimens. They can suppress their appetite and reduce the likelihood of attacks caused by hunger. And to complete this "carrot and stick" picture, we must also mention the stick - literally - through which signals are sent to the crocodiles, the stick which, however useless it may seem in front of an unleashed crocodile, can actually be an element of deterrence very effective in the hands of someone who knows the sensitivity of the area adjacent to a crocodile's nostrils and also knows how to recognize the animal's calm or agitated states.

The second half of the question is "why?". If the feedback loop described above is the mechanism that made the relationship possible, we also need to understand the force that impelled - and very likely also organized - this mechanism. Why might humans have wanted to create such a relationship, rather than avoid or exterminate crocodiles? As with the feedback loop, there is no single reason, but rather a constellation of geographic and economic peculiarities that made the solution of peaceful coexistence most attractive to humans—and to crocodiles. Bazoulé is found in a sub-Saharan area, quite arid. The seasonal lake is the only source of water: for many kilometers around, there are no other streams or bodies of water.¹⁴ In the dry season, this natural reservoir is vital for agriculture and livestock - both domestic and crocodiles. And it does not have a very large extent: only a few hundred meters. Thus, humans and crocodiles are spatially constrained around the lake as the only source of water. This is a feature that differentiates Bazoulé from other places where communities of people live on the banks of rivers or large lakes. There water is more accessible, human and crocodile territories are larger and/or overlap only to a much lesser extent, mutual interactions are rarer. Not the case in Bazoulé. Here the spatial proximity leads to a kind of "car on car". Humans, domestic animals, and crocodiles intersect daily and have diverging needs, setting the stage for a potential life-and-death struggle for survival. To feed, crocodiles could cause great damage to herds of domestic animals - goats, cows - that cannot get water from anywhere else. In this way, they could endanger the very survival of humans (since we are generally talking about subsistence agriculture rather abundance). Then the crocodiles could threaten the very lives of people who basically live in the territory of the reptiles. And each other... Since it is not possible to avoid each other, we might expect this tension to result in an explicit war, in which people will try (have tried) to exterminate the crocodiles, to completely remove them from

¹⁴ This isolation is also reflected in one of the legends of the appearance of crocodiles: they appeared from the sky, with the rain - because there wasn't anywhere else from where they could have come.

the common territory. But the local culture preserves no trace of any such attempt. In the absence of any indication that an eventual crocodile extermination campaign might have taken place, I wonder if it would really be practically achievable. On the one hand, the camouflage skills of crocodiles would guarantee that many specimens would survive even a systematic extermination campaign by humans. On the other hand, the diet of crocodiles is extremely varied: they can survive including snails, fish, mollusks, have the ability to digest including bones, horns or scales and can survive many months without food (Wallace & Leslie, 2008). Finally, the locals say that the vast floods and torrents of water 0.5-1 m deep that form regularly during the rainy season can bring with them from long distances new crocodiles that would sooner or later repopulate the lake. It is therefore not impossible that a fight for the extermination of crocodiles is an endeavor doomed to failure.

Under these conditions, a simple economic idea can be the core of a solution. A chicken is cheap - much cheaper than a goat, a cow - and much less precious, in the eyes of the community, than a human life. Voluntary sacrifice of a chicken can appease a crocodile's appetite enough to prevent hunger pangs. Of course, there remains the issue of territorial attacks - these are attacks on humans, which crocodiles may perceive as competitors. But it is precisely the repeated daily routine of offering chicken to crocodiles that may make the latter associate humans with an abundant and easy food source, instead of perceiving them as competitors or as prey. It is not even necessary for all crocodiles to receive this "treatment". It is enough that it is offered only to larger, dominant specimens. They will be attracted to the banks, establishing their territory there and protecting it from smaller specimens. By doing this, even the larger crocodiles (and "pacified" by the exposed methods) will prevent the attacks of the smaller crocodiles on the animals or people on the shores of the lake, which will also constitute their territory. Again, spatial proximity plays an important role. If these practices took place in a larger area, for example on the bank of a river, it probably wouldn't work: new crocodiles would always perish that wouldn't have time to "learn" that they receive food from people. There would always be one hungry specimen that did not receive the chicken offering and would attack the animals. Encounters between humans and crocodiles would be rarer, too rare for a critical mass of crocodiles to firmly associate humans with their food source. Once more, the peculiarity of the geography of Bazoulé facilitates permanent inter-

actions between humans and crocodiles and this, correlated with the offering of chickens, instead of leading to fierce conflicts, created precisely the conditions for a peaceful coexistence.

Crocodiles can influence mythology, but can mythology influence crocodiles?

The socio-geographical peculiarities of Bazoulé compose an equation with two possible solutions. The first of these solutions is that of peaceful cohabitation, achieved through food offerings and conditional selection. The second solution would be constant hostility towards crocodiles, an initial campaign of extermination followed by the periodic killing of any specimens that would be spotted while trying to repopulate the lake. Could it be a simple coincidence that the local population preferred the first solution? Surprisingly, the answer lies in mythology.

At the core of Mossi mythology is an absolute divinity, a Creator who has left his created world (Niang, 2014) and is no longer directly accessible or directly involved in the functioning of the created world. Divinity's distance from its own creation leaves a void that must be filled by mediators: on the one hand, spirits that mediate between the material and the immaterial world, and on the other hand, a certain social ideology that underlies the organization and hierarchy of the Mossi state. Social action, human agency populate the void left behind by the creator withdrawn from the created world, but they cannot fill it, because they belong only to the material realm, not the immaterial. In the absence of the creator, the latter appears populated by potential unseen, immaterial forces, spirits that can threaten creation and are beyond the control of humans. On the one hand, human agency populates a space that was a priori reserved for divinity. On the other hand, awareness of the limits of this agency gives rise to anguish and vulnerability. In the absence of own beliefs about the rites associated with the fertility and divinities of the earth, the legitimacy of the Mossi conquest is shaky, because it is only a "worldly order" which, for stability, would also need the "divine order" - but this remains the monopoly of the conquered populations. Solving this gap requires a syncretism, a "transcendent new order" (Niang, 2014) that "provides a cognitive solution to a fundamental social issue: the functional coexistence of groups with divergent structures, lifestyles and beliefs" (Niang, 2014).

The same pattern of thinking was most likely at work when the Mossi were confronted with the behavioral anomalies of the Bazoulé crocodile. In order to decide the physical elimination of crocodiles, it would have been necessary first and foremost to eliminate them in the immaterial plane, that is, to replace with a human agency the beliefs in the unseen forces that induce the behavioral anomalies of the crocodiles. As I have shown, this would have been contrary to the very mythology of the Mossi who never filled that space of unseen forces with their own beliefs, much less human agency - preferring even to adopt the beliefs of conquered populations.

The crocodile as a mediator between opposites

I now come back to the question from the introduction of this article: in fact, what is that 'crocodile'? Specimens of *Crocodylus suchus* from Bazoulé display many behaviors not found in specimens of *Crocodylus suchus* from other areas. Not only were some of these behaviors facilitated by the relationship with man, but the behavior and beliefs of the people were in turn influenced by this relationship. To paraphrase Bateson (1987, 231), where does man begin and crocodile end within this relationship? In fact there is not and never has been a single 'crocodile': there have been and are instead many kinds of 'crocodile', each of which is the product of a specific place, time and environment (including anthropogenic). But if we cannot separate 'crocodile' from 'man', then we cannot separate 'man' from 'crocodile' either. We cannot speak of a 'man' that we could clearly delimit from the ecosystem and from the non-human actors with whom he interacts and who constantly (re)define him. But on the other hand, how can we operate with entities that we define in such a fluid and dynamic way? Two opposites collide here: on the one hand, the need to classify in order to simplify the cognitive model, and on the other, the arbitrariness (or impossibility) of distinctly and completely dividing a whole. That is why there are always certain objects, events, phenomena, beings - anomalies - that do not fit into the grid by which we partition the world: vertically into ontological levels and horizontally into ontological categories. From the need to reconcile this epistemological tension, a mediator always appears. He is the vehicle by which what is divided becomes a whole again, the *pleroma* is reconciled with the creature (Bateson, 1987, 322), and anomalies are (re)placed in the order of the world. Just as Hermes, as the messenger of the gods, oscillates between realms, so do mediators of all kinds—in the Amazon, in Africa, and probably all over the globe—oscillate between seeming opposites, reseat-

ing bits left outside our classifications and cognitive mechanisms and passing messages between the different layers of the world.

In Bazoulé, the crocodile is one such mediator. It is alive, but it has characteristics that we usually associate with death: it can remain motionless for days, and its body does not generate heat. It is material, but it is populated by immaterial spirits. The latter belong to the dead but are capable of agency, so they are also alive. The crocodile is an animal, but it has behaviors that "humanize" it - first of all, the lack of aggression towards people, then the "visits", "laughing", "crying", "playing". Although these are either products of human agency (lack of aggression), or interpretations of humans, they are attributed to the crocodile itself, and thus seen as a 'humanomaly' that needs to be explained. For this purpose, the presence of spirits of human ancestors is postulated. Their influence explains why the crocodile appears endowed with human characteristics and elevated above its condition. Its existence is placed on the same level as that of humans: when a crocodile dies, a human also dies, and vice versa. There is a contradiction here that is due to the human unconscious: on the one hand, people attributed or induced "human" behaviors to the crocodile, and on the other hand they refused them, for the easy to intuit reason that such an animal would threaten the distinction ontological between man and animal. To reconcile this contradiction, the "spirits of the ancestors" were needed. The community is not fully aware of the mechanisms that led to the emergence of the relationship between humans and crocodiles. Humans "created" this "humanized" crocodile to protect themselves and domestic animals, but they did it unconsciously. Then, people also feared this "humanized" crocodile and needed an immaterial element - the "spirit of the ancestors" - to clive the "human" part of the crocodile from its animal part. The connection (and tension) between humans and crocodiles is actually the connection (and tension) between man's animal origin and his human condition, above and distinct from the animal kingdom. "The spirit of human ancestors" is a "container" meant to encapsulate the - unconscious - ambivalence of the human condition, which is both above the animal kingdom and part of it, and to restore the ontological delimitation between human and animal. The concept of "human ancestors" actually admits two interpretations. We can interpret it, as we have done so far, as human ancestors: members of the community who lived once, not long ago. But we can interpret it just as well as the ancestors of humanity, with direct reference to the animal origin of man. The relationship between man and crocodile thus appears as a construct that reflects the unconscious ten-

sion between man's animal origin and his condition above nature. Or, we could say, it is the Mossi version of the nature-culture opposition...

Conclusions

We saw that in Bazoulé humans and crocodiles are in a permanent feedback loop that led to the emergence of the cohabitation relationship. This loop is so important that crocodiles - and presumably humans - can no longer be clearly demarcated from the very relationship that constantly (re)defines them. On the other hand, this relationship did not arise and could not have arisen anywhere: it essentially depends on the geographic, social, economic and historical specificity of the area. Thus, we can no longer speak generically of 'crocodile', of 'human-crocodile relations' or 'human-animal relations': there are as many kinds of 'crocodile' or 'relationships' as there are micro-ecosystems, each with its specific its geographical and anthropic. The exploration of communities in relation to other species or the exploration of the relationships of humans to other species cannot be restricted to human cultural productions because they do not necessarily reflect all the ways in which humans influence the ecosystem (many of these ways may be unconscious and un verbalized) and nor all the ways in which people are in turn influenced by it (there is no guarantee that all of these are automatically culturally reflected). Understanding these relationships requires an anthropology extended beyond the human, a multi-dimensional ethnography that combines eco-semiotics (Kohn, 2013), multi-species ethnography (Kirksey & Helmreich, 2010), and last but not least a "transmaterial ethnography" that to deconstruct the interactions of virtual actants (eg "spirit") and go beyond their (truncated) representation as 'beliefs'.

Last but not least, I believe that such multi-dimensional "grassroots" ethnographies are also indispensable for the real success of those policies that concern the interactions of humans with certain non-human species or with the ecosystem.

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