Published in Levain Alix, Artaud Hélène, Mariat-Roy Émilie & Chlous Frédérique (eds)
2023 — Elusive Partners: Contemporary Anthropological Perspectives on Marine Species.
Paris : Muséum national d'Histoire naturelle, 259 p. (Natures en Sociétés ; 7), pp. 123-136

Interspecific Affective work. Insights from Dolphin-Human Interactions in Confined Environments

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Introduction

This article draws on research I conducted for the most part in a European marine mammal park in 2007. For privacy reasons, the people's names were changed, and the names of the places were not disclosed. Dolphinarium X offered me access for two months, six hours each month. I was thus able to observe and film training sessions,ⁱ and make in-depth interviews with five experienced trainers. More recently, I participated in a meeting held at the European Parliament in Brussels where I met several managers of European parks.ⁱⁱ Finally, a portion of the material used in this article comes from the official Web sites and blogs of different dolphinaria or associations for the defense of marine mammals.

The question of affects is at the heart of relations between the trainers and their dolphins, as well as being, although indirectly, a major issue in the heated debates between the defenders and the opponents of dolphin captivity. As we shall see in the first section, public discourses on captive dolphins are built around *a politics of affect* that outlines, even determines, what constitutes a dolphin and what "taking care" of these marine mammals should mean. As for the second section, it is placed at the heart of interactions and communication between trainers and dolphins. We shall see how the trainers fashion themselves to produce dolphins who are eager to do the work, and how the "power to affect" assigned to the dolphin partially determines how he will be perceived by the trainers and, consequently, his "potentialities for being."

Gene management: producing a dolphin

Marine mammal parks are part zoo, part circus: they keep wild animals in captivity; they manage them the same way a zoo would; and they exhibit them in shows in which dolphins perform tricks to entertain and to amaze the audience. The Marineland franchise, for example, is very much akin to the entertainment industry. Most of the parks are owned today by large international companies that also own several, even dozens, of amusement parks. In Europe, around 300 cetaceans are kept in amusement parks or zoos, most of them common bottlenose dolphins (*Tursiops truncatus*), a non-endangered species.

Following a 1996 European directive, the trade with cetaceans (imports and sale) was banned in Europe, leading to an extremely tight control of breeding. Like livestock breeds, the majority of cetacean species kept in captivity have their own "studbook," a register listing all the captive cetaceans, according to species and sub-species, as well as blood line. To avoid inbreeding, many female dolphins are given the pill, and the animals are regularly moved between parks. In addition, given the social criticism that the parks are receiving, some of them seek to reposition themselves as conservation and educational facilities. They aim to become "gene repositories" working for the conservation and reproduction of specific cetaceans endangered in the wild that would be then reintroduced to their native habitats (if possible). The breeding programs technology, efficiency, studbook keeping, transfer of animals, etc.—is a matter of constant preoccupation for the European parks managers that I have met.

This policy is not without consequences for the dolphins. It tends in fact to symbolically and pragmatically produce a dolphin detached from his environment, an isolated and passive creature whose physical health is maintained with often costly veterinary care. These parks' way of "producing" these dolphins can be seen as an example of the effects of the liberal and capitalist ideology on the living.

1.1. Double binds and emotional detachment

Whenever they change tanks, the dolphins must adapt to their new trainers, a new environment, and new companions, everything within a confined space. In the wild, they form tightly knit dyads or trios, sometimes for life. In captivity, they still associate preferentially with particular individuals (Delfour 2010) but the social units can only be temporary. With repeated separations, the dolphins are likely to become lonely in the micro-society of the water tank and to acquire, by deutero-learning (Bateson 1987), a form of emotional detachment that modifies their dolphin identity.ⁱⁱⁱ

Further, there are the "cultural" differences between dolphinaria-i.e., the practices and representations of work and animals vary from one park to the other, even if they all use the principles of conditioning as the basis for their training. This means that the dolphins have to adapt not only to new trainers and companions but also to new rules-what is allowed or required of them, etc.—and new relationship patterns. This also means that the dolphins risk to be somehow "punished" if the patterns preferred by one park are not valid in the next. Now, we know that this kind of contradictions can lead to double bind situations responsible, in turn, for significant suffering in both humans and animals. This is why to be denied a reward when one expects to receive one can be as painful as to be denied punishment when one expects to be punished. In both cases, this implies the questioning of relationship patterns in use. Most of the times, double binds, i.e., the fact of being punished for having correctly decoded a message, have damaging effects on the individuals: inhibited actions, paranoia, distrust, etc. Finally, the high turnover rate also impacts the trainers. Throughout his lifespan, a dolphin gets to know dozens of trainers. Therefore, it stands to reason that in terms of affects, the need for gene management weighs heavily on the living conditions of the dolphins and the working conditions of their trainers. As a result, the former have to adapt to changing relationship patterns and to repeated separations, while the latter are forced to be similarly capable to cope with the inevitable, frequent separations. For the dolphins, just like for their trainers, adaptation forces them to learn a form of affective insensitivity.

1.2. A gene pool to conserve

Underlying to the project to keep captive dolphins for gene conservation purposes is a materialist and essentialist view of dolphins. It is as if dolphins could be reduced to their gene programs, *regardless of the environment where they develop*. Or we can take the opposite view (Oyama 1993) that to make a "real" dolphin genes alone are not enough, instead it takes a whole environment (social, family, ecological). In other words, "[the living being] taken out of its environment, studied outside its environment is no longer a living being" (Imanishi 2011: 79). In this constant transferring of animals and obsession for breeding, dolphinaria end up managing genomes rather than individuals. The dolphin-being's relational dimension, which is both social and ecological, is thus wiped out, one obvious reason being that this dimension is invisible and difficult to frame objectively, but also because it is overlooked in practice by the system of captivity, the transfer policies, and the breeding programs.

1.3. What is a dolphin? Legitimacy and illegitimacy of the affected being

After two beluga whales died, the head veterinarian of the Vancouver Aquarium stated that they had mobilized "the greatest world specialists" and "the latest technology" to try to uncover (in vain) the causes of their deaths. The language used was that of loss and sadness, as well as science and state-of-the-art technology. Borrowing Hochschild's terms, the discourse of the aquaria included both "framing rules" and "feeling rules" (1979). The "framing rules" were the meanings attached to the deaths of Qila and Aurora: the cause was an unknown toxin to be fought against with the help of technology. The "feeling rules" prescribed the appropriate emotions for the circumstances: sadness and remembrance, but not revolt or indignation. For the anti-captivity activists, however, indignation and revolt were the appropriate feelings. They also attributed a different meaning to the deaths of the belugas: commenting on this event, the Belgian "dauphin libre" organization stated that the first cause of the deaths of Aurora and Qila was despair.^{iv} In their view, only by acknowledging the mental life of dolphins would we be able to estimate the actual level of their suffering and to give ourselves the means *to perceive* to what extent they are affected by the loss of their social and family relations. What we are dealing here with is then an altogether different kind of dolphin.

We see that being affected differently by the fate of captive dolphins constitutes, via the refusal to perform the expected emotion management, an ideological contestation. In the words of Hochschild: "One can defy an ideological stance by inappropriate affect and by refusing to perform the emotion management necessary to feel what, according to the official frame, it would seem fitting to feel" (1979: 567). The neutrality claimed by the aquaria is not a lack of ideology but a commitment with many pragmatic consequences, among them the definition of what constitutes a dolphin and how long one is expected to live—and to suffer. A minimal definition of life as physiological processes, of biodiversity as gene bank, and of dolphins as passive creatures, removed from family or friendship relations, and transportable from one aquarium to another is very much consistent with the management needs of an entertainment business that uses live animals in limited supply.

The trainers in no way share this view, as they face the everyday challenge of managing animals to whom they cannot remain indifferent. In the second section, I will turn to them to discuss interspecies communication, power, and the methods to produce dolphins who are eager to do the work.

Everyday life with dolphins

I conducted my field research in winter when the park was closed, and the trainers focused on preparing the summer show. The atmosphere was more relaxed than at the height of the season; nonetheless, the trainers were working against the clock, and the tasks came one after the other, filling up their day of work. The dolphinarium kept eleven dolphins at the time—three adult males and four females, two young females and two baby males. And there were eleven trainers—nine women and two men. The job of the trainer requires significant commitment, for rather low pay. But to become a trainer, one needs to love animals. "We see the dolphins more than we see our families," Nolwen told me by way of explaining how important the dolphins are in the lives of their trainers.

Every morning, the trainers arrive at 8.30 AM. As they walk along the side of the pool, the dolphins greet them with tumbles and follow them swimming. The trainers will bring back the fish prepared ahead the previous day and quickly share out the first "free meal": fish enriched with vitamins. This is when any drug treatments are given to the dolphins. After that the tasks follow one after the other very fast. They prepare the fish for the day (weighing, sorting, distributing, checking medical prescriptions); they test the PH of the pool water; and at 10 AM the first training session starts to finish at 10.30. Then comes a break: the trainers gather in the meeting room for a snack. The conversations however remain focused on the dolphins: what they get right, what they get wrong, their future, etc. They pass on and discuss the news from other parks. Many of the trainers have worked at several dolphinaria before arriving at this one, so the network of interknowledge covers most European dolphinaria.

Two more training sessions follow at 11 AM and 12 noon. Around 1 PM, everybody breaks for lunch, not before they leave a few games for the dolphins to pass the time while they are on their own. A fourth training session starts at 2 PM. This is followed by a quiet moment, often used by the trainees or trainers to observe the dolphins through the windows or to swim with them. This is leisure time for everybody. At 15.30 PM the last training session of the day starts. After it is finished, the trainers and the trainees defrost and prepare the fish for the next day and do the

paperwork. They exit the dolphinarium at around 5.30 PM, leaving more games in the pool. Most of the times everything is quiet at that hour. If a dolphin is sick or a female is about to give birth, the trainers take turns to monitor them around the clock.

2.1. Normativity of the dispositions to be affected

During my time spent in the field, a large part of conversations was dedicated to the imminent transfer of three dolphins to another dolphinarium. On September 20, I wrote in my field notes: "The trainers talk about who gets to stay and who leaves. If Percy doesn't go to Z, he will go to the zoo in Y. Basically they're giving them no choice. The trainers are crying and having a hard time refraining." In preparation for the move, Nolwen started to distance herself emotionally. Sarah was worried for the dolphins. Would they be accepted? Would they find a place for themselves in the new tank? "I swear, Réa, she will manage. Percy will have the hardest time. He won't manage. Unless he enjoys being beaten." When Nolwen passed on the staff's concerns to the management, they told her that she put "too much passion" into her work. "But if we want to have a good show, we have to," she told me. "We have to put sentimentality into our work". The trainers shared with me that Nolwen's attitude was criticized by other dolphinaria; the people there didn't hesitate to mock her "sentimentality." They criticized her because she cared too much about the well-being of her dolphins, as well as for her training method that relied on trust rather than domination. The management and the other parks seemed to consider all that inappropriate, "deviant" even.

In the dolphin environment, like in other animal environments (Arluke 1988; Lynch 1988), the amount of "sentimentality" that the trainers invest in their discourses, as well as the way in which control is exercised over the animals, makes up the object of normative judgments. Arluke (1988) observed a phenomenon of normalization of affects at the lab workers working with animals. He noted that those who showed "too much sentimentality" about lab dogs, by allowing themselves to be moved by the dogs' eyes or to become emotional about their fate, were subject to constant mocking. If they wanted that to stop, they had no other choice than to adjust and internalize the emotional dispositions tacitly agreed on. Changing one's emotions toward the dogs, i.e., the way you are affected by them, was achieved not by acting directly on one's emotions but via a *complete reconfiguration of the relationship* with the lab animals. The lab worker would have to change *her way of being around the dogs* and engaging with them; she would have to distribute her attention differently; and she would have to change the way she spoke to them, touched them,

interpreted their behaviors, experienced their barking, read their facial expressions, etc. It is via these pragmatic changes in the modes of interactivity that the lab worker's perception of the dogs was modified and the dogs acquired a different status in her eyes (Servais 2018). There is therefore nothing natural about how we perceive animals; it is indeed social. At the same time, the lab workers saw their situational identity shift. The same happens to the dolphins' trainers. The trainers' and the dolphins' identities mutually specify each other through the intermediary of relationship patterns.

To account for this process, I opted for a relational approach to affects. First formulated by Gregory Bateson in 1963 and then formalized and expanded on most notably by Burkitt (1997, 2002), this approach sees emotions as integral components of interaction, "emergent orderings of the relational field made up in the encounter between manifold finite beings" (Brown & Stenner 2001 qtd in Burkitt 2002: 157). More sternly, Bateson spoke about emotions as the "intrasubjective aspect" of an interaction. From this perspective, affects or emotions, in their intrapersonal dimension, are proof of a relational configuration that they help bring out. The emotions are therefore both corporal and social; they are intimately linked to the relations outside of which they cannot not exist. The advantage of this approach is that it makes it possible to overcome the "recurring problem" of a dichotomic view of emotions or affects: psychological/cultural, cause/meaning (Leavitt 1996).

It is indeed useful to see emotions as a mix of cause and meaning, but this can prove a real drawback when attempting to account for human-animal relations. In fact, unless we can prove that animal emotions themselves are a mix of cause and meaning, we are faced with deeming them relevant only in the cause register, as "drives" in the ethological sense of the term, i.e., programmed responses.^v But what about the relationship or the interaction then? If we see animal emotions as drives, we are left only with manipulation, by humans, of an animal completely subservient to biological determinations. Now, the trainers' accounts speak of the exact opposite, and the purpose of this article is to research the mutual adjusting, the emotional engagements of trainers and how these adjustments shape, or at least constrain, the dolphins' *potentialities for being*. Beyond this system of constraints, the affects also appear as necessary components of both interspecific communication and the trainers' self-fashioning to produce a dolphin eager to do the required work.

2.2. Being with a dolphin: the intensity of the self in the relationship

When I interviewed them, all of the trainers acknowledged that "being with a dolphin" is a very special experience: "The first time you work with them, you get close to them, and then you go and take your shower and you're crying and like you don't want to leave them, you have this smile on your face for the rest of day (...) At night I couldn't stop thinking about it" (Roberta). The contact with dolphins "is wonderful... it's my personal drug..." (Nolwen). "When I'm with them, it makes everything instantly better" (Sofie). "The moment you're with them it feels... natural to be... erm... you're with them 100%" (Sofie). It appears then that "being with" a dolphin has something special about it, which we could attempt to describe as a peculiar "power to affect," i.e., the dolphins' capacity to *act on* the humans that they live alongside with.

According to the relational approach to the affects that I use here, this "power to affect" that dolphins have can be explored via the concept of "interpersonal self" as developed by Neisser (1988), a cognitive psychologist who was a friend of and worked with J.J. Gibson. This concept will also help us understand how dolphins and trainers cooperate during training. Neisser's "interpersonal self" is the self *as engaged in immediate interaction* with another person. In other words, it is the *experience* of the self in interaction. The basis for this experience is the perception of the other's behavior in response to my own behavior—i.e., how I affect the other and how the other affects me. For Neisser, if the individuals engaging in social interaction respond to each other immediately and coherently, in both action and feeling, they form a "shared structure of action" (1988: 392), which consists of *structures in time* that the partners build together.

Something happens when you are with a dolphin in the water, something between you and the dolphin. There is something so cool about being with a dolphin in the water. You feel like he feels what you feel, he feels if you are well or if you are upset... I don't know... maybe I'm just imagining things but.... (...) something quite amazing happens. (Brian)

Being in the water with a dolphin brings about an interpersonal self which is unusual for the trainer, as well as a form of intersubjectivity defined by the immediacy of the sensory and emotional sharing—there occurs an immediate sharing of inner feelings. Following Neisser (1988: 392), I suggest that the nature, direction, timing and intensity of the dolphin's actions match the nature, direction, timing and intensity of the trainer's actions. Consequently, using kinesic information (the structures in time), dolphins and trainers produce together *shared structures of action*.

The outstanding responsiveness of dolphins to nonverbal cues mentioned by the trainers certainly plays a key role here. This high responsiveness enables the trainers to perceive the effect

they have on the dolphins, and therefore their interpersonal self. The flow of information is continuous and finely attuned, as the dolphin and trainer constantly adjust to each other. Couldn't it be that, under these particular circumstances, the interpersonal self is experienced at an extraordinary *intensity*, taking up the whole field of consciousness? Body communication obviously plays a key role here too. Moreover, the shared kinesic structures enable a "direct knowledge" *of the partner* that goes both ways:

- (a) The trainers can say a lot about the mood a dolphin is in just by observing him or experiencing the variations in their way of "being together." "It's important to feel the rhythm of how they swim or how they approach you to understand what mood they're in" (Brian); "I see it in the way they move, (...) in their behavior" (Robert)
- (b) The opposite is probably also true: according to the trainers, the dolphins are able to understand many things about them, by observing them and based on how being together "feels." "If you go with the dolphins but you're not there with them in your head, they'll feel it, you can be there pretending to try to make them do something [but] they will be absent-minded" (Sofie).

All these accounts illustrate well how the trainers do not use cognitive inferences based on nonverbal cues to understand the dolphins' inner states. On the contrary, the trainers *experience* the dolphins' moods, using clues often difficult to pinpoint. There is a high sensitivity active on both sides—to the partner's body, rhythm of movements, attention and presence, as well as to the structures of shared action produced in the interaction. The latter play an important role in identifying the dolphins' emotional states; to some extent, knowledge of the other goes through awareness of this interpersonal self.^{vi}

2.3. An interpersonal self that is eager to learn

"Being together" is a prerequisite for a successful training session. According to Robert, the gaze is essential: "being with a dolphin is four eyes gazing at each other." To ensure the success of a training session, the trainers themselves must be fully present and attentive. When the dolphins are not in the mood for training, the trainers' work is mostly aimed at reestablishing a good level of mutuality, and they achieve this by fashioning their own affects and the kinesic structures of the interaction. "You make them eager to work by being dynamic, happy and present" (Robert). The trainers must work on their own bodies, the rhythm of their own behavior and their affective dispositions to "create," via the shared kinesic structures, the dolphin interpersonal self^{vii} that would be excited and eager to engage in a training session.

Eagerness (to learn, engage in the training sessions, relate with the trainer, etc.) is key to transactions between trainers and dolphins. As Nolwen put it: "They are eager to learn. It is essential not to take that away from them." Now, the main threat to this eagerness is bad management of their own emotions by the trainers. If the trainer is worried about family problems, her perception will be distorted and she risks to "take it personally" when the dolphin makes a mistake, is inattentive or not cooperating. "There are days when (...) you have problems at home (...), you're not going to be 100% there with the animals and... you're going to be upset so your judgments and behaviors will be distorted, you're going to think 'he's mocking me' (...) you're not going to be objective about his behavior." And if the trainer is unfair repeatedly, the dolphin will eventually distance himself from her. He will lose all eagerness to learn (at least with that specific trainer). Working on her emotions, the trainer must fashion herself first in order to both fashion a dolphin eager to engage in training and to maintain that eagerness.

2.4. "Here we let the dolphins be themselves"

According to the trainers, park X is unique by its commitment to rely exclusively on positive reinforcement, while nurturing the informal relationships that might be built with the dolphins around the training itself.

You're not supposed to be macho (...) and you shouldn't be like "I'm the boss, he has to see it the way I see it" either. You have to be willing to accept a different view yourself. (...) It does take a little longer, no doubt about, it takes you longer to achieve it using positivity as opposed to force (...) which makes it much faster to achieve the goal you're after but you only force them. (...) We're much more focused on letting the dolphin develop doing the things that he likes. (Nolwen)

In her practice, Nolwen gambles with the impact of her emotions on the animal; she works with her own emotions persuaded that this will give her a better hold on the animal, and she relies on him to do his part of the interaction. "Mere" domination exempts the trainer from knowing the animal and from developing a sensitivity to the world that affects the animal. At park X, they try to replace this type of domination with a form of *conversation* in which the animal feels safe to "speak back." It often takes a while before dolphins coming from another dolphinarium internalize these new rules, but gradually their personalities change. "If you ask me, when Berry arrived here, he was... a bit autistic. (...) Because back where he came from, they coerced them, this is how they trained them (...) we on the other hand we just try to show them that training is fun. It's not super square, we don't try to control them all the time (...) He's an altogether different dolphin now" (Sofie). Unfortunately, he was one of the dolphins who were considered for transfer. He would go back to where he came from. "We did all this for nothing," Sofie told me with sadness. "And the worst is that he will be so confused. They're going to ruin him."^{viii}

To be ready to hear a dolphin "speak back," a specific perceptual framework must be established, a framework in which the trainers are ready to perceive what the dolphins do as a *comment* on their own actions. Similarly, when a dolphin doesn't behave as expected, the trainers are prompted to search for the explanation in the training procedure (there was a mistake) or in the dolphin's life (another male is bullying him, he is sick, etc.) but never to attribute intentions or "flaws" to the dolphins ("he is mocking me"; "he is mean"; "he is stupid"; etc.). In the end, it all comes down to taking the dolphin's "comment" seriously. "A dolphin doesn't do stupid things just to be stupid" (Nolwen).

This politics of "conversation" gives the dolphins a chance to "speak back" and enables the dolphins and trainers to weave meaningful relationships during and around training. For this reason, I was told by the trainers, they can swim safely with their dolphins outside the training setting—which is often impossible, even dangerous, in other places. In those parks that only do the training and overlook the relational dimension, dolphins and trainers do not know where they stand in terms of the contingencies of their relationship. Hence, there is no room for mutual trust, which presupposes giving up control.

Conclusions

In the first section, I showed that, in the name of objectivity and science, the parks prescribe a socially "fair" way of becoming attached to animals and taking care of them. At the same time, the management of dolphins and their genes produces, in practice as well as symbolically, a

dolphin that is a specimen defined by his genes. These elements come together to form an ecology of ideas that suits both liberalism and the functioning of parks as an entertainment business using animals. On the other side of the barricade, the opponents propose an ecosystem of alternative notions centered on the "dolphin-in-relation" and claim the legitimacy of other ways of being affected by animals—and with that question the legitimacy of the commercial use of living, sentient animals.

The second section describes the awkward (and painful) position of the trainers faced with this purely managerial conception of dolphins. For them, interacting with a dolphin generates a specific and particularly intense interpersonal self, which they use to get to know the dolphin's inner states, and with which they work to maintain a hold on them. Via the shared structures of action, the affect is revealed as a means "to act on an acting other," i.e., to have power. Let us note here that this is about having a *hold* on and not *control* over the dolphins, since, in the framework of the politics of *conversation* that they practice, the trainers leave room for the dolphin's replies, and this enables them in turn to develop relationships based on trust with the animals. This politics of affect is designed as an alternative to "mere" domination. At the same time, it is deemed deviant by the management of this park and by other marine mammal parks, which goes to show once more to what extent the modalities of affect are political by nature.

Finally, we have seen that, in a dolphinarium just like in a laboratory, "affective rules" define the extent and nature of the power to affect assigned to dolphins, and implicitly to what extent and how the trainers make themselves available to be affected and accept to be touched by their animals. These rules structure perception, regulate attention and define perceptual saliances, and therefore constrain the ways in which the dolphin can make himself stand out, or become present, in the eyes of the trainer. The ensuing interactions and relationships constitute the birthplace of corresponding affects. To conclude, there are strong constraints that act on the interactive units that dolphins and trainers can form together, on the identity of the dolphin who is perceived and imagined in the framework of these relationships, and on how much leeway the dolphin is given in his potentialities for being—and, consequently, to us in our possibility of knowing him.

ⁱ My interlocutors used the English word *training* instead of the French *dressage*. Moreover, they called themselves *soigneurs* (trainers), which I have borrowed and used consistently throughout the article.

ⁱⁱ The purpose of the meeting was to put together a network of European partners to address the issue of the beaching of marine mammals. This gave me the chance to meet face to face several managers or owners of European marine mammal parks and to understand their preoccupation for breeding.

^{vi} This type of sensitivity develops in time. To work with dolphins means to learn how to become affected by them via a continuous education of attention (Ingold 2001). See also Despret (2013) on Konrad Lorenz and how he makes himself sensitive to the body signals of the graylag goose.

^{vii} The works of Delfour and Carlier (2005) and Delfour (2006) make convincing arguments in favor of dolphin selfawareness. Hence, my claim that interaction is likely to determine the emergence of an interpersonal self in the dolphins as well.

^{viii} Berry did return to the place where he came from. But he didn't stay there for long because of the problems that appeared. He came back to X but he was never the same dolphin again. This echoes the suggestions in the first section about the suffering and incomprehension that failure to meet relational expectations causes in dolphins.

ⁱⁱⁱ Bateson defined *deutero-learning* as learning in context. Applied to social relations, this type of learning leads to the acquiring of "personality traits," as the individual expects to encounter specific contexts recurrently. For instance, he can become passive, superstitious, etc. See Berry's case in this article.

^{iv} http://www.dauphinlibre.be/qila-ou-lechec-de-lelevage-en-bassin/. Accessed May 20, 2017.

^v Traditionally, in animal ethology, they speak about "drive" to designate animal emotions, emphasizing their physiological nature. But it is becoming increasingly obvious that this definition is insufficient and that the meaning attributed by the animals themselves to their life events must be taken into account (see Bertin et al 2018).

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