CHAPTER 3

Equine Cognition and Equine-Human Interactions

Expanding Our Knowledge on Equines to Improve Equine Assisted Therapies and Equine Welfare and Well-being

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In this chapter I am, from a cognitive science perspective, looking at already existing knowledge about equines, humans, and equine-human interaction. At the same time I am trying to deepen this knowledge by asking new questions. My aim is to make knowledge about equine cognition and equine-human interaction accessible to practitioners in the field of equine assisted therapies. My belief is that, with more knowledge about equines and equine-human interaction, we can enhance the quality of the therapy we offer, improve the welfare and well-being of the equines that participate and clarify why the skills and competences in equine behavior and equine-human interaction the equine specialist possesses, are a vital part of and a necessary contribution to equine assisted therapies.

I am aware that I at times am quite provocative in this text. It is not meant as an offense to anyone. I am simply trying to challenge existing knowledge by asking, sometimes, provocative questions and making provocative assumptions, for the benefit of the discussion and for raising awareness around preconceived notions and "inherited" knowledge. You could say I am trying to awaken a curiosity for looking at what we think we know from new angles and different perspectives, and also from the horse's perspective. I hope it is clear when I am stating facts and when I am being purposefully provocative and playing with what we today know about equines (and humans). To

make it a bit easier for you as a reader to follow me – I will begin by telling you a little bit about myself and where I come from, pertaining to horses and horse knowledge.

A long and never ending search for knowledge and understanding

As a kid I feared horses, but loved them at the same time. I considered them my friends, even if I only had read about them. I wanted to go to a riding school, and I did try that several times, also when I was more grown up. And I do not know if I was more afraid of the horses, who seemed either angry or sad, or both, or the horse people. The harshness, the whips, the obeying, the hierarchies between people. I could never bring myself to do what they asked me to do with the horses: kick them harder, pull the reins harder, use the whip, move them around like objects.

Later in life, as an adult, I moved to the countryside. My sister-in-law started a livery yard at our farm. It became my job to help out with feeding, letting the horses in and out of the stable morning and nights, changing covers, taking off boots etc.

These horses did not seem happier than the riding schools' horses I had met, they also seemed angry and/or sad. At the same time as I watched the horses, I watched what the horse people were doing and asked them all my questions. When I did not understand, I read books and articles on all topics concerning horses.

All horse people and everything I read led me to think there was one right way of doing things, and since I was still afraid of horses, I could not use those methods. Because everywhere it said, if you are afraid of horses, – don't show it – it will get dangerous. But when I looked around among the horse people at our farm, many of them often seemed scared, and/or angry. They seemed to shift between scolding their horses and smothering them with love and affection. For me it looked like the owners, or trainers, were very unpredictable to the horses, and that they often were calculatingly cruel, not on purpose, but out of a belief that you could never let the horse "win" over you. They not only acted this belief out in different situations, but were cruel beforehand, to prevent the horse from "taking over", becoming the "leader" in the relationship.

Every day I had to lead all the horses back and forth between the stable and their fields. But since I was not able to do this the "dominant" way, as a proper "leader" I started to do it "backwards". I broke all the "rules" of how to handle horses. To calm myself, I breathed and talked to the horse, saying -OK, you are scared, I am scared, let us figure out how to do this in a way so neither of us are scared. (We had a lot of boarding horses at that time that were highly strung, often led by their owners with their lead chain in their mouth or a Dexter ring bit. Other horses were the opposite, very detached, not present, but could out of the blue burst into activity, as if they suddenly woke up). So we explored, the horses and I, how to do this in a way that felt comfortable both to them and me. Step by step we tried different things, often the opposite of how you were supposed to do stuff, according to the books and "stable traditions". The horses got used to me not scaring them, demanding instant obedience, and our relationships grew. And I started to feel more confident. But given choices the horses also started to say no. People again told me I needed to be more assertive, to show the horses who was the leader. But I ignored this advice, since for me, it did not feel like the right solution. I did not use treats either, as I was still afraid the horses would bite me. Instead I gave the horses more choices, not just yes or no. Not to distract them, but to gain there attention, to open up for possibilities and curiosity. We found ways to do things in a way that felt collaborative. This learning and exploratory process was several years long and I had plenty of horses to practice on, several times a day. After a couple of years my sister-in-law left our farm and the boarding horses became solely my responsibility. Horse people around me started to find me useful. They began to approach me with their questions: Can you help me trailer load my horse? Can you come and look at my horse, what do you think? Can you train my horse? Can you hold him for the vet? Can you catch him in the field for me? Can you be with him when he is put down? But they still would not listen to me, they only wanted me to solve their problems. They did not truly want to learn anything new that did not fit into their existing knowledge base.

I kept on informing myself and continued to read everything I found. Like an article where they talked about the possible negative effects of using leg wraps and

protection boots (Bryant, 2010). The researchers had, amongst other things, measured the heat under different wraps and boots. They showed that it can get so hot under there that it can damage the tendons. When I told the horse people about research like that, they often just said, naa, we don't believe you, and just kept on doing what they were doing. Like feeding their horse 6 liters of oat a day, but only 2 kg hay, whilst the horses were standing on shavings in their boxes. I told them about what I had read about ulcers (Nieto, 2012). I ended up sneaking in more hay to some of the horses, at night, when nobody else was around.

People started to contact me. – I hear you are "alternative". I am too. Can I have my horse at your farm? What school or guru do you follow?

But everything I tried to do was relational, had nothing to do with techniques. I didn't follow any particular school or guru, I read everything, compared sources and if I found something I felt like I could do, I tried it out. The way I see it, I initiated and built relationships – which takes time.

Still today, when I meet a horse, I have no clue of what I "can do with him" – and this is seldom my goal these days, achieving a specific goal. I am definitively not a horse trainer. And I am a pretty lousy rider. Still, I have learned, found out and now know things about horses that I think is important to share.

At that point in time, when people started to ask me questions, I felt I had to figure out what it was that I was doing. I had read plenty of stuff on horsemanship, natural and traditional, riding, feeding and managing horses. I had taken university courses on horses, gone to, held and hosted clinics, started my own riding school and education center, worked together with a lot of horse professionals, and bought about 20 horses. With my own horses I had to do the same things as I had done with our livery yard horses. I had to help them trust themselves and humans again, open up, start to explore again – be horses again – but with my own horses I could of course work on expanding our relationships even further than with other people's horses.

During those years, I met hundreds of horse owners and horses, apart from the horses I myself bought. I learned a lot.

With the riding school I started, I got the opportunity to even more closely study the horse-human relationship. All this time I was on the ground, helping everybody, and observing horses and humans, together and apart. What did the horses and the humans do together? How did they understand each other? How did they communicate? What did humans like to do, what did horses like to do? What happened when they interacted and when their different wishes clashed? Or when they seemed joined together, both enjoying themselves? What seemed to be important to horses? What happened when you gave them more and more choices? How did different ways of managing, keeping, feeding, training and interacting with them affect them? What did the horses think and feel about all this? I also listened to people. What did they tell about their experiences with the horses? Eventually I had to choose between my riding customers and my horses, who basically, after a couple of years working in my riding school, told me: "Hey you, we like your humans, but must they always sit on us?" I went along with this question and explored how we could do more other stuff with them, without sitting on them, but most of my customers did not like this new thinking, and they left. This is when I founded Mimer Centre, to do more research on equines – and Horse & Nature, to introduce EAP/L in Sweden.

I still observe equines and humans. I still listen and learn. The more I learn, the more I realize how much we do not know about equines and equine-human interactions. So much knowledge today is founded on old equestrian traditions of different kinds. We simply need more people asking questions and more people doing research. I myself am trying to be as questioning in research and towards research as I am with everything else. If somebody tells me that there is only one way of doing things, and it is their way, or that there is only one answer to a (complex) question, I get suspicious. I can still learn, listening and seeing it from this person's point of view, but it is not so sure I will learn and understand what he intended me to.

All this search for more knowledge and understanding led me to apply for my master's degree education in Cognitive Science, still wanting to know more :-) It really is a full time education, but since I work parallel, it is taking me a while to complete. Hopefully there will be time enough to do that during next year... and I am kind of an odd bird on this education too, since equine cognition and human-equine interactions it not exactly what they specialize in...

But even if I'm not finished yet, my master's thesis has taken me to Mongolia, twice, to study the wild horses – the Przewalski horse, and the native Mongolian horse, nomadic life and nomad's views on animals in general and horses in particular.

I still have more questions than answers. But expanding on my knowledge and understanding has become a passion. I will never stop thinking of how we can learn to understand horses better, and better provide them with the lives where they will be the most happy and healthy. I will never stop exploring what goes on between equines and humans, especially in equine assisted psychotherapy; for me, this is deeply fascinating.

Now lets take a dive into the intriguing world of equine cognition and equine-human interaction.

1. What is Cognition and Cognitive Science?

Cognition is the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses. Cognition includes processes such as knowledge, attention, memory and working memory, judgment and evaluation, reasoning and computation, problem solving and decision making, comprehension and production of language. Human cognition is conscious and unconscious, concrete or abstract, as well as intuitive and conceptual. Cognitive processes use existing knowledge and generate new knowledge. It is a holistic phenomenon, with a complex system of distributed parallel processes (Gärdefors, 2008).

This is true for humans and non-human animals in different degrees.

In cognitive science cognitive processes are analyzed from different perspectives within different contexts, in the fields of linguistics, anesthesia, neuroscience, psychiatry, psychology, education, philosophy, anthropology, biology, ethology, systemics, logic, and computer science, and all of their sub-fields. These and other approaches to the analysis of cognition are put together in the growing field of cognitive science, which is a fast-developing academic discipline and, as such, is starting to contribute, with its cross disciplinary approach, to many different, both theoretical and practical, fields of work. It is my conviction that it also can contribute greatly to the field of equine assisted therapies.

So, cognition is about the brain and what happens in the brain and different kinds of interactions between brains. But there are also people in cognitive science looking at the interaction and the connection between body and brain, so-called embodied cognition, or situated cognition. In the study of equine-human interaction you need to know about both equine brains and bodies – as well as human brains and bodies. The approach I use is multifaceted with many different points of entrances. In this chapter you will get an introduction and an idea of how cognitive science can contribute to the field of equine assisted therapies.

In this chapter, I am doing some comparative psychology, by comparing different species' cognitive abilities and behaviors with each other, the horse's and the human's. Most researchers and authors I have read in comparative psychology still have the aim to prove that Darwin was wrong. They want to prove that there is a difference in kind and not of degree between humans and other animals. For me it is obvious that we all exist on a spectrum, but with differences in degree, sometimes with similar traits, abilities and behaviors, sometimes with different ones. *"[...] and if we were to assume anything, it might be that minds, too, exist on a sliding scale."* (Safina, 2015) Many comparative researchers want to establish an intelligence scale, to order animals in an intelligence hierarchy, in an anthropocentric way, always using the human as a template and always proclaiming the human as a winner. This is, for me, totally uninteresting.

My comparisons are about finding differences and similarities, so we know them and can work with them and respect them. For me, this is the most ethical stance. When we understand something – like the communication that goes on between equines and humans, the intersubjectivity, the shared experiences we co-create – when there is understanding of this, when we find meaning in our understanding – it leads us to develop our ethics on how to relate to and work with equines. Without understanding, no ethics. Meaning leads to ethics. (Garcia, 2013)

2. Human Views

Whether you are a cognitive scientist or not, we are all humans and have human views. When we observe other living beings, we do it through our filters: as humans, as westerners, as Europeans, Americans, Canadians, Swedes, Mongolians, Germans etc. Each and every one of us looks through these filters when we look at the world around us. Your filters contain everything that defines you: your cultural background, your values and ethics, your experiences and relationships through your whole life, what you have read and studied, your religion etc. We all carry glasses with layers of lenses we have acquired throughout our lives. Nobody can look upon anything objectively, that is in my view a total illusion. So instead of working with this illusionary objectivity as a goal, I think it is better that we embrace our subjectivity, work with it, but always, always stay aware of it. Whatever I meet, whom ever I meet, I need to think; where do I come from? What is my background? How do I perceive the world? Otherwise I will not know what I see, whom I see. This is what von Uxekull meant by Umwelt. All species live in their own world, their umwelt, defined by each species' perceptions of their world; we humans do, and all other animals too. We have our umwelt, our human way of perceiving the world – and when we look upon another species' umwelt, we need awareness of our own, and enough imagination to in our minds be able to paint picture of theirs. This is just on a species level, then add culture and individuality... Umwelts are multi-layered. To understand another species, we need to work with the tools we have, we need to anthropomorphisize them and de-anthropomorphisize our selves (Gray, 2013).

We humans, apart from coming from and living our umwelt, also have our human ways of thinking. What we typically look for is patterns. For us understanding is intimately connected to seeing and experiencing patterns, through all our sensory modalities and abstract thinking (Gärdefors & Lindström, 2008). In this process we need to be aware of our cognitive biases. Our thinking is not as logical or rational as we might wish it to be, or think it is. Many things affect how we think, apart from our human and personal umwelt (e.g. motivation, mental noise, wishful thinking, information heuristics, cheerleader effect, information bias, empathy gap, framing effect, and so on) (Benson, 2016).

Animal science and philosophy talk about different human views which defines how you look upon animals. The following are examples that show different stances that humans take, can take and have taken throughout the history and science of human-animal interaction. (Aaltola, 2013, Abrabantes, 2017, De Gorgio & Schoorl, 2013, Goodrich, 2007, Kiley-Worthington, 2005, Waytz et al., 2010). They are typical examples of cognitive biases in regard to how we view animals:

- Anthropomorphism
- Mechanomorphism
- Anthropocentrism
- Anthropodimorphism
- Critical (or Conditional) anthropomorphism

So, what is *anthropomorphism*? Anthropomorphism is when you see humans in animals. You humanize them. You use yourself as a template to understand animals. You ascribe to the animal the same kind of mental and emotional faculties that you yourself possess. And you assume they have the same kind of needs you have; without knowledge or regard to species specific differences (Kiley-Worthington, 2005, Waytz et al., 2010).

Mechanomorphism is the opposite. You view animals as devoid of any faculties that humans possess, or at least most of them. You view them as a kind of living machine.

This has been a rather common view within science until not long ago. To various degrees, it lies close to objectification or instrumentalization. It is enabling the use of non-human animals for different human purposes, without regard to their well-being (Aaltola, 2013).

Anthropocentrism is when you always put the human in the center. What other species do, or should do, is always related to you. You, the human, are the important one, and this is how you view the world. Therefore, solutions for other animals always put you and your needs first, in the center. It does not necessarily imply that non-human animals are not important or that it is okay to harm them, but they come second to you. You, as a human and your human needs, come first (De Gorgio & Schoorl, 2013).

Anthropodimorphism represents the stance that if I find a mental faculty that I possess as a human, it means by default that it is human, and, therefore, no animal can possess it, at least not in the same way or even close (Abrabantes, 2017); like thinking. Thinking has, for a long time, been described as a trait that only humans possess, so it took a long time to start asking research questions about other animals' capacity to think. Another example is personality. Humans have been thought of as having different personalities, a trait that distinguishes humans from other animals. Now cognitive science research is looking into personalities in other animals and finding that the animals they investigate all have distinct personalities, including horses of course (Lansade et al., 2017). Researchers have also found that animals have different coping strategies, depending on their personality types (Korte, 2017)

Critical (conditional) anthropomorphism is the one that I use. I use my empathy, the experience of being me, in trying to understand "the other" that I meet, while, at the same time, being aware of my filters and glasses and trying to learn as many facts about the other as possible; in this case species specific facts about horses. I use our common mammalian background when, for example, trying to understand emotions in horses or their complex social life. I cannot fully understand what it is to be a horse, but by using my empathy, my knowledge about horses, some imagination (what would it be like to have a tail?), and our common mammalian background, I will come a long way.

Many researchers have now also turned around the burden of proof. Instead of taking as our starting point that we and other animals are radically different, let us assume that we are alike until we can prove the opposite. We must then assume that they think, feel, sense, remember, learn, etc. – in similar ways to humans – until we can prove the opposite or have solid evidence for what and how they think, feel, sense, remember and learn (Bekoff, 2007, 2017, Goodrich, 2007, Kiley-Worthington, 2005).

Critical anthropomorphism holds the stance that we cannot escape out of our humanness and become, for example, a horse. It means that we must use ourselves as tools and work with what we have to understand another species; but, at the same time, be critically aware of species specific differences .

When we work with horses in EAP I also think we need to ask ourselves how much our prior horse engagements affect how we work with horses in therapy. All the horse skills and knowledge are important – but so also is reflecting upon them. When are you seeing the human reflection of you in the horse and when are you seeing the horse? When are you stuck in old knowledge and when are you ready to take in new?

I also want to point out that it is anthropomorphism that we use in EAP when we encourage clients to see themselves or other people in the horses. It is an ability that we all have. As humans we are predisposed to look for mindedness. We look for minds like our own everywhere, we humanize the world (Waytz et al., 2010). We can use anthropomorphism as a way to promote empathy. Or we can deem anthropomorphism to be wrong. Either way we can keep the distance, the division between us humans and the other animals, in order to keep our superiority, to promote objectifying, instrumentalizing, and saying that humans will always prevail over other animals. Or, if we stay uncritically anthropomorphic, we mix up the horse's needs with our own, giving them things that they do not need or are harmful to them, thinking of them as more similar to us than they are. We are different, but this difference is one of kind, not degree. This is not easy, but it is important to be critical of what is seen and ask yourself questions.

3. Behavior

Before we dive into talking about behavior. I just want to point out that:

Several distinct behaviors in horses share the same function and can realize the same outcome. One distinct behavior can be interpreted in many different ways, mean many different things, but that behavior does not always reveal its cause (Hickok, 2014).

This is important to remember. All behavior is dependent on context and does not necessarily mean the same thing every time it shows up. It can mean many things – depending upon the context. There are many ways to show what you want, with your behavior, for humans as for horses. So pairing one behavior with one meaning is not helpful when we try to understand horses. There is no lexicon where you can find the one and only translation of a horse's behavior into human meaning and words.

I also want to point out another distinction between *species specific innate traits*, *individual personalities*, and *behavior*. For example, a horse can show dominance – this is contextual. He is not dominant and does not have a dominant personality. Fear in horses is not a species specific innate trait. It is a learned behavior, but it can also be a genetic trait/part of the personality – a horse can be more or less prone to react with fear or dominance, as can humans (Lansade et al., 2017).

Innateness is also a problematic concept. What do we mean by innate? Born with? Genetically coded for? Not learned? Hereditary? Not impacted by environment? Same for all in a species? People use it in different ways, with different meanings, thus creating ambiguity in discussions. It is easy to explain away things we do not understand by saying it is genetics. But what do we really mean by saying that? (Bateson & Mameli, 2011).

As I said, there is often confusion about dominant and submissive behaviors. Neither of them are personality traits. They are behaviors that are shown in certain contexts. A dominant behavior is not connected to leadership. On the contrary, a horse that shows

a lot of dominant behaviors is often an insecure horse; for example, a younger stallion that has recently gained his own band (Lundgren, 2015).

In this chapter I focus on discussing and showing examples of behaviors shown in the social dynamics in horse groups, how they communicate, play and learn from each other, how they defend themselves, how they interact and experience and show emotions. This is because these are some of the features and dynamics we use in EAP. There are, of course, many more to address in equine cognition. I will give you examples of these things in wild horse groups, in captive/domesticated horse groups, in horse-human interactions, and in EAP.

4. Equine Social Cognition

Horses lives in groups, families, bands – in the wild. With us, they live in stables, outdoor or indoor stables, fields and paddocks – seldom with family, seldom in stable groups, and most often without a stallion. They live in a space with fences, that seldom reaches the smallest home range size for wild horses (which equals 75 hectares or 150 acres) (Boyd et al., 2016). So, no horse can leave to find another band with which to live or to live a solitary life. They cannot avoid any kind of disturbances in their lives by keeping away, which would be their choice in the wild.

How do these living conditions change horse behavior; the adaptation to living in captivity with close interaction with humans and other disturbances? We know that most behaviors a horse engages in are to promote group cohesion: a stable group because stable groups promote survival and reproduction.

Most of our horses do not need to consider survival and most of them do not get to produce any offspring. Instead they live to fulfill human needs and desires in different ways. You can, of course, say that this is not ethical at all – and then choose to have nothing to do with horses. (Which would not help the horses that already are around). Or we can accept that this is now how we co-exist and make sure that we do our best so both species can get good things out of this relationship. We can strive to make it

as good as we can, with the existing conditions and circumstances that we live with, that puts limits and restrictions to what we can do for horses (Bekoff & Pierce, 2017).

5. Social Dynamics

I will make a claim: in horse groups in the wild there are no leaders and no hierarchies, at least not in the way we traditionally think about it. What is there, is intersubjectivity and interrelationships, among all those who live in the group. I am not alone in making this claim, other researchers on equines says the same. Equine social life is very complex, and groups very diverse (Boyd et al., 2016, Hartmann et al., 2017, De Giorgio & Schoorl, 2013, Goldbeck & Grayling, 2011, Kiley-Worthington, 2012).

"[...] a growing body of scientific evidence suggests that, within the herd, the prevailing social structure is egalitarian, in which the stallion isn't dominant and no mare is boss". (Foster, 2017)

"[...] that linearity of dominance hierarchies within a group is more of a human construct than of importance to equids "[...], and that relative rank between any tow individuals is more biologically meaningful than where they reside on a continuum." (King et al., 2016)

In wild living groups *there is a stallion (or several), yes, but he is not the "leader".* His role is to protect his group, his family, against other stallions, to protect the mares from harassment from more immature stallions and unknown stallions, and also to protect his own interests. It is not that the mares cannot defend themselves. They can, and mating does not seem to occur against a mare's will, without her consent. She will walk away, kick and/or bite if she is not ready to mate, and the stallion in question will not pursue (Briard et al., 2017, Boyd et al., 2016, King et al., 2016). A stallion's role is also to protect his family, together with the mares, from predators.

Sometimes there is more than one stallion in the group; then they cooperate. When they sense danger, one can herd the group away and the other face the danger. That usually means, scaring off the bachelor stallion(s) that are approaching the group of

mares, to try to snatch one or several of them; but two stallions can also be cooperating on an equal level (Goldbeck & Grayling, 2011).

The one aggressive behavior seen in a stallion, that researchers interpret as an aggressive/dominant behavior is when he herds his band. Then he lowers his head and pins back his ears and "drives" the band in front of him, looking a bit like a snake. But remember, one behavior can have different functions in different contexts. Pinned-back ears might be an aggressive behavior in a fight, but might serve as another signal in herding to the mares. Maybe a stallion is not showing aggression in this context. It does not make sense for him to do so, not to the mares and their offspring. He wants them to listen to him, to move away from what he perceives as a danger (often another stallion or a bachelor group) Maybe pinned-back ears in this context means; "please move away from here, I sense danger". Maybe he is showing concern, care, protection. If cohesion and good relations are what the group strives for, that is good relations between the stallion and the mares, showing aggression does not seem to fit the picture and will not promote a stable group. Mares can, at any time, leave the group and find a new one, and sometimes they do. A mature stallion that is confident, not too young, and not showing much aggression is often a stallion that many mares seek. These are also the kinds of stallions that can hold their tenure in the group longer – which also helps keep stability. The more stable a group is, the more social bonding occurs, which in its turns leads to more stable groups. More stable groups leads to higher reproductivity and less agonistic behaviour. It becomes a positive spiral (Boyd et al., 2016, Goldbeck & Grayling, 2011, King et al., 2016).

By asking questions such as how do I interpret what I see from what I am looking for? Based on what others have said or written about it? Out of my own observations? I am not saying herding cannot be an aggressive/dominant behavior shown by the stallion. I am simply pointing out that there can be other possible explanations for this behavior. When I have seen this behavior in the wild, the mares usually do as the stallion suggests, but they do not look submissive when doing it. But when I have seen it in captivity, with fences surrounding the horses, I have seen horses not able to get away when

being herded, and these horses can show a lot of submissiveness. As in many other behaviors in horses, I think the limited space we keep them in enlarges their behaviors. This is important to bear in mind when we look at equine behaviors; what behaviors are innate to the species and what behaviors are a result of how they are kept, etc. and which behaviors change with captivity, get enlarged or diminished?

So, is there a lead mare? No. There are mares that more often initiate movement than other mares, which a stallion seldom does, but they tend to be older and more experienced, which tells us that they know more about grazing areas, where the best places to be during the day are, etc. What counts when it comes to being almost a matriarch, borrowing a concept from the elephant world, is size, age, how long they have been in the band, experience, etc. But any individual in a group can initiate movement and get everyone to follow (Kreuger, 2014, Lundgren, 2015) Researchers have seen that daughters to mares that have more of a say in a group often also grow up to impact the movements of the group more (Lundgren, 2015). You can, of course, choose to say that they inherited lead mare traits. Or you can say that the inherited size, personality, and stamina, but also that they have learned from their mothers. Is this then an important distinction? Yes, I think it is. Not to the horses, but to us humans. Words as lead mares, leaders, leadership, hierarchies, dominance, submissiveness, etc. imply a social order we as humans have constructed around which our societies revolve. If we use them when we look at horses (or other animals) we make ourselves more biased than necessary. We will focus on the wrong things. On conflict and aggression instead of cohesion and affiliation. We can, of course, consider them to be metaphors, but then I think it is better to choose other words.

Hierarchies? Are there no hierarchies? No. There are no linear hierarchies. What is important is the relationships between any two individuals. Horses often have best friends; sometimes related by kin, but not always. They often seek out a companion similar to themselves. But mares spend a lot of time with their offspring, siblings with each other, younger ones with horses their age, as in a human family or group, until the young ones disperse, and move to another group to have their adult lives. When a

mare or a stallion meet a daughter or a son, they often greet them (Lundgren, 2015). They recognize their offspring and do not mate with them. Hierarchies imply competition. Horses are a highly cooperative species, as are so many other species. Hierarchal structures are mostly a man made concept (de Waal, 2016, International Society for Equitation Science, n.d, King et al., 2016).

6. Play and Fight

When a young stallion leaves his native group, he often joins a bachelor group. Then they play a lot, biding their time. A bachelor stallion tries to get a mare he can surprise off guard or is accidentally or momentarily separated from her group, or tries to separate her from her group. Sometimes stallions in a bachelor group help each other in trying to take over a group or part of a group. Play itself has not proven to be an indicator for better fighting skills but can be a way of practicing creativity and skills needed in social situations, and particularly how to meet and deal with novel situations (King et al., 2016, Bateson & Martin, 2015). Mature stallion do not fight as often as we are made to think by watching nature films or seeing pictures of horses in the wild. Fighting always comes with a cost. When two mature stallions meet they often greet each other; if they are antagonists, they show their antagonism, display it, but seldom fight each other (Lundgren, 2015). Humans seem to be obsessed with conflict and competition and hierarchies, and we like action and drama , at least humans in the West.

We also tend to see what we look for, to confirm our beliefs. This became very clear to me when I interviewed Mongolian nomads. Their view on horses differed greatly on many accounts from the ones we carry in the West (Lundgren, 2015).

What happens when a new stallion takes over a band? The old stallion leaves, to live alone or he joins a bachelor group. It can happen that the new stallion kills the foals in the group, especially if he is young and inexperienced. In Hustai National Park in Mongolia, they have trouble with this. Since there are an equal number of male and female foals born and the wolves also take an equal number of both foal sexes, there will

be a surplus of stallions. They form their bachelor groups, but most of them will try to gain a group of their own, and since they are not allowed outside the park, they cannot leave to find other mares elsewhere. They have also a higher number of stallions killed in fights, compared to groups of feral or semi-feral horses. Today the researchers in Hustai are studying infanticide and wondering if there is a solution, other than selling off stallions to other parks, zoos and nature reserves (Lundgren, 2015).

Around Hustai there is a buffer zone, no fences, but a zone the nomadic herders and the park share. Every Mongolian horse that enters Hustai will be herded out and every Przewalski horse that leaves the park will be herded back. This is a necessity since wild and domesticated horses often get fertile offspring. Nomads explained to me that they are really not attracted to each other, but sometimes mate. The risk with the Przewalskis being so few, maybe 600 in the whole of Mongolia (and not many more in the whole world), compared to the approximately 4 millions Mongolian horses – living the nature reserve, they will just disappear as a species, only leaving little genetic traces in the domesticated horses. If we want to preserve the only living wild horse, he needs help to be kept apart from other horses, for a long time forward. This means the Przewalski horses need to stay in Hustai's reserve and then it means there will be a surplus of stallions, all of whom are going to try to gain their own herd of mares. This, in turn, means more social instability among the groups, more fighting between stallions, more stallion injuries and casualties, more young stallions gaining a band, and more infanticide due to more insecure stallions with little experience in having a band of their own. There are no simple solutions to this – as there never are when humans manage wild life. Still the re-introduction of Przewalski horses counts as one of the most successful re-introductions of a species that had gone extinct in the wild (Wit & Bouman, 2006, Lundgren, 2015).

7. Social Structure

As we know, the intensity of social behavior increases in relation to how many horses are kept together in a certain space. The more horses, and the smaller the space, the

more social interactions of all kinds, affiliative as well as agonistic. Every behavior in captivity gets enlarged and multiplied. If you think about it, it is not unreasonable. Now I am inviting you to try out some critical anthropomorphism here. If you needed to live in a very small area, which you could not leave, with people you did not choose to live with, unable to provide for yourself and every resource being limited and handed to you, how would you react? How would others around you react? Differently than you? Would some just accept things as they were, making the best of the situation? Not fight for food or shelter? Try to withdraw? Would others fight with all they have, constantly being on the front line, saying, "I must have access first!" Would there be the ones that cannot stand each other, and others that would not leave each other's side? How would the group ease tension and the individuals create space for themselves?

When we humans watch horses, I am sure that we miss out on many of the horses' signals. We miss them for several reasons. We are not used to relying on reading body language alone. Our vision is not that developed and our other senses, like smell and hearing, are not so good either. We have poor imagination and cannot figure out what we are looking for. We are satisfied with finding what we expect. We interpret what we see according to existing templates and patterns etc. So, we see the big and obvious things. Agonistic behavior is bigger than affiliative behavior, more visible, and fits into our way of seeing the world, into hierarchies, with competition, admiring the ones that fend for themselves and show strength. We are simply not looking for affiliative behavior. But for animals that prioritize group stability and cohesion, it would be strange if agonistic behaviors were more common. But then again, we also tend to focus on all the bad that happens to us humans also, in the human world, not seeing the good, and particularly not the small good. I think we humans are a rather negative and conflict orientated species.

Considering these things, it makes sense that we see a pattern of leadership and hierarchies in horse groups. But here is another discrepancy. What we call a good leader in the horse field, the one that puts his needs first and takes what he wants with aggressive methods – is this a leader we nowadays would value in the human world? To me this is

not a leader, this is a bully. I think it is to the horses too, but behind fences, they cannot leave him. They have to live with him. They can hope he will grow up and mature.

Yes, there are more agonistic, as well as smaller/less visible affiliative behaviors, among our horses who live in captivity, than among wild or feral horses. Captive horses are making space for themselves and are easing tension with, for example, allogrooming (mutual grooming, standing head to tail), kicking out toward each other, chasing each other off, snapping or biting each other. So, we see more agonistic behaviors both because they are actually there (in captive horses), and we have forgotten to be aware of our glasses. We need to remember that the behaviors we see in captive horses are not always "innate" – not part of the biological design. They are learned and dependent upon the context in which they live.

So, to conclude, we see behaviors in captive horses that do not exist in wild horse groups. Because:

- captivity changes behavior
- we are better at noticing agonistic behavior than affiliative behavior
- we apply human social structures to other animal groups
- we forget that behavior can have many meanings and meaning can be expressed in many different ways.

8. Prey Versus Predator and the Reading of Body Language

How do horses defend themselves? Do prey and flight animals read body language better than predators? Is any mammal species better at reading body language than another mammal species? Are horses better at reading body language than humans?

This we do not know. But think about it and look back in evolution. For a tiny, tiny bit of history, we humans have been able to equip ourselves with weapons that actually are very good at killing other mammals, so yes, nowadays we are quite skillfully predatory. But our biology and the horse's biology have not changed much for a long, long time.

If one has changed more than the other, the horse wins, the horse is the mammal that shows the most genetic changes of all; except rodents (Geigl et al., 2016). This is partly because we have been breeding him (selection) and partly because we have domesticated him. A human from today is pretty much like a human from 20,000 years ago – minus some brain volume (due to domestication – all domesticated animals' brains have shrunk, as has the human brain) (Hood, 2014). This is probably also true for the horse. According to our biology we are not predators, we only have predatory minds. Both the horse and the human are prey animals. Both species prefer flight above fight; as do real predators actually, because flight is the choice that preserves the body the best. It is not wise for any animal to risk injury.

Before we had effective weapons, we humans were preyed upon, and are still if we expose ourselves to the situation (do not forget how we prey upon each other, within our species). Many humans want to put themselves on the top of the predatory pyramid, along with tigers and lions. Evolutionarily we have been eating a lot of vegetables, fruits, seeds and nuts, and occasionally meat, and, then, often from already dead animals. We developed into hunters and gatherers – then into sedentary farmers and livestock keepers (most of us). We do not have the biology of a predator – when we hunt, we do it with our wits, not with speed, teeth, or strength. And the horse? No, he is not a predator (but historically there have been horses feeding on meat and blood, on human initiative). Besides this, the relationship between predator and prey is not a simple one. The predator does not always win. Horses have so much more to put up against a predatory attack than speed and fast reflexes.

Most of us have seen nature films with, for example, zebras; large gatherings of zebras grazing in a steppe-like environment. There can be a group of lionesses lying or waiting around, not far at all from the zebras, but the zebras just continue to graze. If the notion that horses (and other equines) run first and think later, this scene would not have existed. But they do not run first and think later. Why? Because they need, like all wild animals, to save energy. So, the zebras estimate the situation. They think. They use their cognitive abilities and gained experiences to evaluate the situation. They do not

solely go on "instinct". They, of course, make good use of their senses, but their perceptions of what is going on in the situation are not only based on their sensory input – it travels up to the cortex and they decide to stay, for now. If the situation would drastically and quickly change, they could react and flee on the spot, but so can we, as humans. We also have a slow and a quick pathway in our brains. When we are exposed to something that we perceive as very dangerous we also act first and think later. In certain situations, it can be life-saving to be able to react very quickly, for humans, for zebras as well as for horses.

Another example would be the Przewalski horses. What do they do when they are attacked by wolves? They form a circle around their foals and young ones, and if the wolves dare to come close, they use their teeth, heads, and hoofs to attack them. Therefore, wolves single out the really young ones or the old and sick ones – standing in the outskirts of the flock, or lonely stallions (Lundgren, 2015). For a wild horse, saving energy is vital. He cannot run around getting spooked by everything. He would waste precious energy and perhaps not survive. Sometimes they do, of course, run, and as with the zebras, it can be a result of perceptions taking the fast route in the brain. But they stop running as quickly as possible, especially in the harsh and cold winter season, and that is when the wolves also are most hungry. In the breeding season, when forage is in more abundance, they run more and have more social interactions when they can afford it.

When Przewalski horses first were released into the wild, they did not defend themselves or their offspring when wolves attacked, because where they had lived prior to getting released (Germany, France, The Netherlands etc.), there were no wolves. They simply did not recognize wolves as a threat. They, of course, quickly learned to defend themselves and their foals. Their offspring saw and learned by watching and experiencing what their mothers and father were doing, so they did defend themselves from the beginning (Lundgren, 2015). If you had not known this, that the first released horses did not defend themselves against wolves, you might think this way of defending themselves was an innate reflex; but it is social learning. If it had been an innate

reflex – reaction, instinct for them to run – as a defense, as many of us suppose is the underlying explanation for why horses are so flight prone, then why did they not defend themselves at all, either by flight or fight, when they actually met a wolf? Why did they have to learn that? Fear is not solely an innate trait in horses. Horses do not run on instinct from presumed predators. The flightiness we see in our horses is not purely the biological trait we want to make it. We must look at behaviors also as a possible personality traits, and/or learned behaviors, not only as innate. The explanation that horses flee because they are flight animals is too simplistic.

Konstance Kreuger did a study where she proved that horses learn from each other (Kreuger, 2013). In the study a horse was taught how to open a box with treats. Another horse watched the first horse open the box and then he was allowed a go at the box himself. Yes, he could open the box, he had learned by watching. This might not seem like an important study but she proved that horses learn from watching each other, not just by trial and error. Before this study, researchers had traditionally said that horses are not capable of social learning. The study is from 2013 and says a lot both about how little we actually know about horses and how little we trust their cognitive capabilities.

When I asked the nomads in Mongolia if they thought horses learn by watching each other, they laughed and said, how else are they going to survive?

But why do we then think of horses as flight animals? First, I would like to say that looking at horses as flight animals is quite a new thing. When horses were used as transportation and as a working resource in farming, no one called them flight animals. There were, of course, accidents – as we still have with and without horses, but nobody put the accidents down to the fact that horses are flight animals. So why do we call them that now? There are many reasons. When we look upon ourselves as predators, then the horse becomes the prey. And most of us like to view ourselves as at top of the food chain. We all have images of fleeing deer, gnus, zebras we have seen in films and on TV so we conclude that this is what prey animals do most to get away from predators. We also conclude logically that they would not have those long legs if they did not need them for running (for an interesting parallel I can recommend the book *Born*

to Run, about humans and our evolution as runners) (McDougall, 2009). But most of all, it has to do with the fact that we do encounter many horses that flee as their sole reaction and solution to everything that happens to them. Why are horses in captivity so much more prone to flee and to spook than wild horses? Well, the simple answer to that is, interactions with and horse management by humans.

We actually create the horse as a flight animal. Ever since they are small babies, we prepare them for this "job" as flight animals. We separate them from their mothers at a very young age. We then start to put them in stables, give them hard feed that their digestive systems cannot handle, restrict their movements so their skeletons, muscles, and tendons are affected. If they are outside, they are often put in groups with horses the same age. So, there is no horse with experience to teach them or to help them socialize into "horse society" (like a kindergarten with no grown-ups at all – in worst case it becomes a bit like in the *Lord of the Flies*). If they grow up separated, spending a lot of time alone in a box, their language skills will be impaired, together with other social and cognitive skills.

On top of that we humans sometimes train horses in ways that do not always make sense to horses. We sometimes use pain and punishment, isolation and tying up as a couple of examples. Many humans are also a bit afraid of their horses, and therefore treat them alternately very kindly and quite harshly. We often teach them not to use and trust their senses; for example, by hitting them in the face to teach them not to bite (what you teach them is not to use their smell, taste, and teeth to explore things). We put them in situations not natural to them, and then we do not give them enough time to adjust. We frequently move them and often sell them, so neither their herd mates nor their humans stay as a constant, and so on. We simply create flighty and spooky horses because most of us do not educate ourselves on horses as horses; only as riding animals. To make it worse, we breed on horses "fear genes" as well. We want horses with a lot of "explosiveness", that is we breed fear-prone horses.

I am not saying that every horse who reacts to something with a spook is a damaged horse. Horses get surprised, or afraid, as we humans do. These are sometimes natural

reactions to new situations or something new they meet in their environment. Time and patience usually help here. But if a horse's most common reaction to whatever he encounters is to become afraid and spook, then he probably has poor or no access to his cognition. Then he cannot assess and think. There is a difference between reacting and responding. A horse can, if given time and if his cognition is not "trained away" or his background has taught him not to, assess and think about the situation and then respond. Humans also do this when they use their slower neural pathway when taking in perceptions (Kahneman, 2011).

When a horse spooks at a moving tractor for the first time, it is the same as when a human reacts by backing away quickly if he sees, in the corner of his eyes, a tree branch fall – it happens quickly. This fast reaction is a result of our brains using the faster neural pathway (bypassing the cortex) we use when dealing with something that we perceive as (potentially) dangerous. This is a survival skill all mammals have. To learn that there is no danger, you need to be able to switch to your slower thinking, let the cortex in, and make a second estimation of the situation. If you have run away, you have lost this moment of learning.

Then, are horses better at reading body language than humans? No, not from birth. As newborns we are equally good at reading our closest caretakers; all mammals are and depend on it for survival in the wild. If the horse has grown up and not been well-trained, he definitively is not good at reading body language. Then, he has often stopped using one or more of his senses. This he can be taught by aversive methods, but it is also a common result from stress (and of course affects his spookability when he cannot trust the sensory input that he uses in reading his environment). When humans grow up they learn how to speak. This makes most of us more unaware of our body language and how big a part of our communication with others it actually plays. This does not mean we do not use it. It perhaps makes us think that we cannot read body language; but we do, and we can. Healthy horses are also very good at it. What distinguishes humans from horses is that we use different senses and use them in different ways. They are also, in some part, constructed in different ways, because we have

evolved to look for different kinds of food for example. I would say that a healthy horse is better at reading body language than a healthy human because he uses it more consciously. But research has shown that horses use body language as a way to understand humans (Smith et al., 2016, Smith et al., 2017, Ringhofer, 2017).

9. Mirroring – or in Dialog? Communication and Learning

Let me begin by painting you a picture.

There are groups of people and a group of horses out in a field. They are interacting and engaged in doing something. There are five horses together in a group – and there are five humans together in another group. Two horses are standing together with two humans, one horse, and one human are standing alone, a bit away from all the others. The two horses standing together with the two humans have their mouths open, directed against each other. They are making little sounds and sometimes touching each other with their mouths. The two humans are facing each other – opening and closing their mouths, moving their arms and hands, sometimes touching each other. Are the horses mirroring the humans? Do they pick up on what is going on between the humans? Do they pick up what kind of relations there are between the humans? Issues? What kind of issues? Do they pick up on the humans' personalities? Inner states? Why are the two humans standing beside these two horses, and not other horses? Are they for some reason drawn to each other?

In settings where personal growth or therapy is going on – together with horses – do the horses show us a mere reflection of what is going on within the humans or between the humans? Then sessions such as this would be like a detective's work for the facilitators; finding patterns, clues to who the people are, what their issues are. The work for the group would be to reflect upon these findings and find ways to move forward in improving themselves as individuals and as a group.

This would be sufficient if this is what is happening; horses helping humans understand who they are and what options they have, just by reflecting on what goes on within individuals and between individuals. It is quite something.

But horses are not simple mirrors. It is not a one-way communication. They humans are also mirroring the horses – as a group and on an individual level. Why is this important? Because it opens up transforming the session from mirroring to dialog between equal subjects. In opening up for dialog you can achieve so much more. An important question here is, why is the horse mirroring the human?

Mirroring is a universal way for mammals to establish contact. In its purest form it is called the chameleon effect (Chartrand & Bargh, 1999, Lakin, et al., 2003). The chameleon effect, mimicking, imitation, or emulation and other forms of social imitative behavior, including social learning – are all of them related to mirroring and doing what the individual you are relating to for the moment is doing, in different ways (Wynne & Udell, 2001). Mammals mirror unintentionally to establish contact (that is the chameleon effect), to learn, to understand intention, to play, to show interest, etc. So, mirroring is not only about the individual being mirrored – it is very much about the individual doing the mirroring. What does this mean between a horse and a human? The horse is mirroring you, for different reasons and none of them are because he is extremely good at reading body language and just does it, or because the horse thinks you are a predator. The most common reason for mirroring from a horse is because he is interested in you. He is trying to establish contact – to create a common ground – a space where you can interact, a bond, an arena for communication (Holler & Wilkin, 2009). According to my experiences, horses really like it when you mirror them, also when you imitate them on purpose.

Unintentionally or intentionally, when you mirror or imitate a horse, you are showing an interest in him. This is what we as mammals do when we want to establish contact.

The horse can also mirror/imitate a human to try to understand him, to try to understand what the human is doing, or to try to learn from the human (then imitating

or emulating), or to invite the human to play with him. As a parallel, think of small children, who sit side by side in a sand box, learning the rules of play. They imitate each other, to learn social codes and to invite each other into their space and to interact (Carpenter et al., 2013).

So, to make it a bit clearer: everybody mirrors or shows some other form of imitation towards everybody all the time. The chameleon effect is when individuals are mimicking one another unintentionally. Mimicking is when it is done intentionally, imitation (or true imitation which is a term in animal cognition) means to imitate in order to learn (usually this means you need to understand sequence), emulation is when an individual understands the intention in what someone is doing – thereby skipping the true imitation and going for the result. He imitates approximately to reach the result, not imitating every step exactly the way it was done (Wynne & Udell, 2001).

I think the horse does all this. As many animal cognition experiments have shown, all these different kinds of mirroring/imitation are so much easier between individuals from the same species. But they work cross species, too, especially between mammals, and maybe even better between species that has co-evolved for a long time, like horses and humans and dogs and humans.

I invite you all to do a little experiment the next time you socialize with a horse. Try to imitate (mirror) him, see what result you get. Did you catch his attention? Was the horse curious about you? Did you understand the intention behind what the horse was doing? If you did – was that easier when you imitated him versus if you just observe him? Watch yourself when you interact with people you do not know so well versus people with whom you are very familiar – do you spot any imitative behavior, in them? In yourself? If we just assume that horses are mirroring us – like mirrors – only giving us back a reflection of ourselves – we will miss all of the other ways of interaction between individuals. We will just see ourselves as an individual, not the horse. We will not (truly) see his otherness, and we will have a harder time understanding his world, his umwelt, his perspective.

When you mirror yourself in a horse, you will see you, but you can also see him – as he will also see both you and himself in you. Mirroring is a social dance. You see yourself in the other, and him. And the other must be allowed to be the other, as he is. When it works, you together create a "we".

10. Emotions

All mammals have the same register of primary emotions (and thereby a conscious mind) (Damasio, 2012, Ledoux, 1996) . I would guess that at least some of the secondary emotions also are the same. This has been explored with dogs. There is a study on dogs and their "shame face", the way dogs looks if you scold them, drooping head, averting eye contact or even turning their heads away, low body posture. In this study the owner left the room, leaving the dog and a treat. Sometimes the dog ate the treat, sometimes it was taken away by an experimenter. The owner came back and scolded the dog for eating the treat. The dog showed the shame face regardless of whether he had eaten the treat or not. The conclusion was, dogs do not show or feel shame, they "just" show submissiveness, reacting to the owner's upset voice (Horowitz, 2009). But what does a human show when scolded? What does the human react to? The inner feeling of shamefulness or the voice from the scolder? How do humans learn to feel shame and show it? What is the difference between submissiveness and shame? In behavior? In feeling? Is there not a connection? Of course a human can react by getting angry, wrongfully accused of having stolen a treat, and so can a dog. Not in this test, but there are, of course, dogs that react to scolding by showing aggression. What about a child? How do children react when being scolded? Do they show submissiveness or shame?

I do not have the answers here. I am simply pointing out the problem with drawing such firm and fast conclusions. I think we need more studies, and observations. Observations can take you a long way and are, in my opinion, highly underestimated as a research tool. My conclusion is that we cannot exactly know what kind of feelings a horse (or a dog) have. But I always think it is better to leave the door open and say, we do not know this for the moment. It is possible that horses (and dogs) can feel shame, it

is also possible that they do not feel shame, or are not able to feel shame. Luckily I am not alone in wanting to leave the door open here, for all kinds of possibilities regarding what dogs feel or not, Marc Bekoff concludes: *"We also don't know if dogs experience guilt, pride, and shame. However, because it's been claimed that other mammals with whom dogs share the same neural bases for emotions do experience guilt, pride, and shame and other complex emotions[...], there's no reason why dogs cannot. And, there's solid biological/ evolutionary reasons to assume dogs can and do"* (Bekoff, 2014). I think the same can be assumed about horses.

I have heard many times from many trainers that horses read or mirror your emotions, and that you are not supposed to feel fear when you are with horses. They will pick up on your fear and themselves become fearful, and the bottom line here is that fearful horses are dangerous horses. I have found this not to be an absolute truth either. To feel fear is natural for a horse. I have been very fearful, many times, with horses and nothing dangerous happened. But in my observations I have seen that they often react strongly to one thing, and that is when you are fearful but pretend you are not and then act in some way, while you repress your fear. Then you will appear incongruent and that is confusing to horses (as to dogs and children). To add to the problem, fearful humans often act in an angry way and may even become violent. So, there is a difference between having a feeling and acting upon it, or repressing it – the horse will react in different ways to these different scenarios. Saying this, I am not saying that horses do not pick up on your fear. They most probably do, as they pick up on all other emotions, as dogs do, as we humans also do – often unconsciously (D'Aniello, 2017). But fear does not need to trigger fearful actions (or dangerous actions). As long as the horse has access to his cognitive abilities, he will himself assess the situation. He will know that you are fearful, and he can feel that, but he does not need to act fearful himself, or even become fearful.

Happiness does not look the same in a dog and in a human, but if you know about dogs, you have no problem recognizing when he is happy. What about horses? We are not so used to spending time with horses the way we do with dogs, but if you do,

you will learn to understand when a horse is happy, too. One can learn to distinguish between a stressed-out horse and happy horse. I have met quite a few horses who have been stressed out after a trail ride for example, where the owner has interpreted the stress as excitement and happiness.

To know what another is feeling requires that you get to know him. If it is another species, you must also know about species specific behaviors. My guess is that emotions are not so species specific, but the way in which they are displayed often are. And here we do not have to go to another species. There are plenty of cultural differences in how humans display emotions. In western cultures, for example, we kiss to show affection, but this is not the case in other cultures. In the West we assume that eye contact is the most important way a mother and an infant bond, because this is what we do. In other cultures, eye contact is not so important, it is instead bodily contact and touch (Bard, 2016). Emotions and their display are such an interesting and diverse area to explore; but keep in mind that all mammals have the same neural network and essentially the same kind of brains so emotions are likely to be the same for all mammals. But keep also in mind that displays of emotions can differ.

11. What is it Like for a Horse to Meet a Client?

Is it important that the client in EAP meets a horse that is emotionally "mature", an emotionally healthy horse?

Any horse can meet a client – but a horse that is on his own emotional journey towards healing will both be more sensitive to overload (flooding), burnout and will be more likely to react out of his background (without access to his cognitive abilities to assess the situation). This is not necessarily a bad thing. But there are considerations to be made. A horse can work with clients during their healing, of course, but then he really needs a human that is watching out for him, to listen to him. This is one of the equine specialist's tasks, to know when a horse has had enough. Working with horses and humans, both on their way to healing, can be a supportive two-way dialog. As in any support group, there need to be qualified people looking out for everyone, so no

one heals at the other's expense; for the client's sake, and for the horse's sake. There is no doubt you can learn from any horse, but if no one is looking out for the horse, taking care of his interests, it is not fair. So, horses that have had a rough life can become excellent team members in therapeutic work; they just need time and space to heal themselves. This can be done, if properly monitored, also in work with clients, and can even be very beneficial for the horse. There just needs to be awareness. For it is the same with horses as with humans, being needed can be healing in itself. And to be able to meet someone who sees you where you are, perhaps can connect to the same pain and fear as you carry, can be confirming. Whether it is beneficial for the horse is up to the equine specialist to judge and to decide. Equine assisted psychotherapy builds on intersubjective exchange. What goes on between two subjects, regardless of species, is intersubjectivity. It is the dance, game, interplay, social exchange between two social partners. How well we do in this social dance depends on how well we were taught to take part in it, by our parents or other caretakers: what our parents taught us when interacting with us, and how they role modeled it by interacting with others. This is the same for foals. Our earliest time in life defines how we later will act, react, interact – we will re-enact what we were taught. But neither for human nor horses is this teaching written in stone. If a human or a horse did not have the chance to learn this at all, or in part, it can be learned later. Everybody can re-learn, at least to some extent. And for this, EAP works splendidly. There are studies that say that if you did not get any contact all as an infant(presumably the same goes for foal) you will be so emotionally and socially damaged that it will impact you for the rest of your life and you would not survive in a non captive environment, and barely then (Harlow, 1965). But we all have an inbuilt drive for connection and attachment; we will get it, seek it out where we need to and where it can be found. Anything and anyone will do. Then there will be a foundation to build on, to repair what was broken or missing. Intersubjectivity and EAP are about a (deliberate) sharing of experience (about objects and events). This sharing is the repairing. Humans as well as horses, are all intersubjective beings and function in similar ways – introducing horses into therapy makes the differences easier to spot, but still invites us to investigate the similarities.

About the Author

Katarina Felicia Lundgren, BA, lives in the south of Sweden, where she is establishing Equine Assisted Psychotherapy as a treatment option and offers EAP/L and mindfulness to corporations through her business, Horse & Nature. She is EAGALA certified and also a Human-Animal Consultant trained through the Learning Animals program in equine cognition and interspecies relationships, and a certified mindfulness instructor. She is currently in the process of writing her master's thesis in Cognitive Science, on equine cognition and equine-human interaction, which includes a study on Przewalski horses in Mongolia and interviews with Mongolian horse herders on their views on horses. In 2013, she and her team opened up MiMer, a research and education center that funds and supports research on horses and horse-human interactions. Her facility includes a hostel, 12 horses, a mule, and a small herd of sheep on 30 acres, situated in a nature reserve. Much of her time is spent on researching and educating on horses' abilities and horse-human interactions

References

Aaltola, E. (2013). *Empathy, Intersubjectivity and Animal Philosophy*. Department of Social Sciences, University of Eastern Finland

Abrabantes, R. (2017). *Do Animals Have Feelings?* Retrieved 102817 from: https://ethology.eu/do-animals-have-feelings/

Bard, K. (2017) Dyadic interactions, attachment and the presence of triadic interactions in chimpanzees and humans. Infant Behavior & Development 48 1319.

Bateson, P. and Mameli, M. (2011). An evaluation of the concept of innateness, *Phil. Trans. R. Soc. B*, 366 313-324; DOI: 10.1098/rstb.2010.0267

Bateson, P. and Martin, P. (2013). *Play, Playfulness, Creativity and Innovation*, Cambridge University Press

Bekoff, M. (2007). *The Emotional Lifes of Animals*, New World Library

Bekoff, M. (2014). Do Dogs Really Feel Guilt or Shame? We Really Don't Know. While Humans aren't good at reading guilt it doesn't mean dogs don't feel it. Psychology Today. Retrieved 171105 from: https://www.psychologytoday.com/blog/animal-emotions/201403/do-dogs-really-feel-guilt-or-shame-we-really-dont-know

Bekoff, M. and Pierce, J. (2017). *The Animals Agenda, Freedom, Compassion, and Coexistence in the Human Age*, Beacon Press

Benson, B. (2016). Cognitive bias cheat sheet. Because thinking is hard. Retrieved 171105 from: https://betterhumans.coach.me/cognitive-bias-cheat-sheet-55a472476b18

Boyd, L., Scorolli, A., Nowzari, H. & Bouskila, A. (2016). Social Organization of Wild Equids. In *Wild equids, Ecology, Management and Conservation*. Ed by Ransom, J.I. & Kaczenksy, P. John Hopkins University Press

Briard, L., Deneubourg, J. L. & Petit, O. (2017). How stallions influence the dynamic of collective movements in two groups of domestic horses, from departure to arrival. *Behavioural Processes*,142:56-63. doi: 10.1016/j.beproc.2017.05.014.

Bryant, J. O. (2010) Researching Horse Boots, *The Horse. Your Guide to Equine Health Care*, retrieved 171030 from http://www.thehorse.com/articles/25231/researching-horse-boots

Carpenter, M., Uebel, J. & Tomasello, M. (2013). Being Mimicked Increase Prosocial Behavior in 18-Month Old Infants. *Child Development* 84, 1511-1518

Chartrand, T.L. & Bargh, J.A. (1999). The Chameleon Effect: The Perception-Behaviour Link and Social Interaction. *Journal of Personality and Social Psychology* 76, 893-910

D'Aniello, B., Refik Semin, G., Alterisio, A., Aria, M. and Scandurra; A. (2017). Interspecies transmission of emotional information via chemosignals: from humans to dogs (Canis lupus familiaris), *Animal Cognition*, pp 1–12,

Damasio, A. (2012). *Self Comes to Mind. Constructing the Conscious Brain*, Vintage Books

De Giorgio, F. and Schoorl, J. (2013). *The Cognitive Horse*, Learning Animals

Foster, R. (2017). When the Herd Moves, Who Leads and Who Follows? *The Horse*. Retrieved 171105 from: http://www.thehorse.com/articles/39440/when-the-herd-moves-who-leads-and-who-follows

Garcia, D. M. (2013). *Intelligent Horses: A Cybersemiotic Perspective*. Californa Institute of Integral Studies

Geigl, E-M., Bar-David, S., Beja-Pereira, A., Cothran, E.G., Giulotto, E., Hrabar, H., Oyunsuren, T. and Pruvost, M. (2016). Genetics and Paleogentics of Equids. In *Wild equids, Ecology, Management and Conservation*. Ed by Ransom, J.I. & Kaczenksy, P. John Hopkins University Press

Goldbeck, M. & Greyling, T. (2011). *Wild Horses in the Namib Desert. An Equine Biography*, Friends of the Wild Horses

Goodrich, G., Allen, C. (2007). Conditioned Anti-anthropomorphism. *Comparative Cognition & Behavior Reviews*, 2, 147-150, doi:10.3819/ccbr.2008.20012

Gray, J. (2014). *The Silence of Animals. On Progress and Other Myths*. Penguin Books

Gärdenfors, P. (2008). Cognitive Science: From Computers to Ant Hills as Models of Human Thought. *In A Smorgasbord of Cognitive Science*. Ed. by Gärdenfors, P. & Wallin, A. Nya Doxa

Gärdenfors, P. & Lindström, P. (2008). Understanding by Experiencing Patterns. In *A Smorgasbord of Cognitive Science*. Ed. by Gärdenfors, P. & Wallin, A. Nya Doxa

Hickok, G. (2014). *The Myth of Mirror Neurons. The real Neuroscience of Communication and Cognition*. W.W. Norton & Company

Harlow, H. F., Dodsworth, R. O. & Harlow, M. K. (1965). *Total Social Isolation in Monkeys*. Department of Psychology Primate Laboratory and Regional Primate Research Center, University of Wisconsin

Holler, J. & Wilkin, K. (2009). Communicating Common Ground: How Mutually Shared Knowledge Influence Speech and Gesture in a Narrative Task. *Language and Cognitive Processes*, 24, 267-289

Horowitz, A. (2009). Disambiguating the "guilty look": Salient prompts to a familiar dog behavior. *Behavioural Processes*, 81, 447-452.

International Society for Equitation Science. Position Statement on the use/misuse of leadership and dominance concepts in horse training. Retrieved 171105 from: http://equitationscience.com/equitation/position-statement-on-the-use-misuse-of-leadership-and-dominance-concepts-in-horse-training

Kahneman, D. (2011). *Thinking Fast and Slow*. Brockman Inc.

Kiley-Worthington, M. (2005). *Horse Watch. What it is to be Equine*. J.A. Allan

Kiley-Worthington, M. (2012). Cooperation and Competition. A Detailed Study of Communication hand Social Organization in a Small Group of Horses at Pasture (Equus Caballus). Department of Psychology, University of Exeter, Devon, UK.

King, S.R.B., Asa, C., Pluháček, Houpt, K. & Ransom, I.J. (2016). Behavior of Horses, Zebras and Asses. In *Wild equids, Ecology, Management and Conservation*. Ed by Ransom, J.I. & Kaczenksy, P. J, John Hopkins University Press

Korte, M. (2017). Why Allostasis is a Game Changer for Animal Welfare. Talk at the Animal Welfare Symposium 2017, at the Swedish University of Agricultural Science

Krueger, K., Flaugera, B., Farmer, K. & Hemelrijk, C. (2014). Movement initiation in groups of feral horses. *Behavioural Processes* 103, p. 91-101

Krueger, K., Farmer K. & Heinze, J. (2013). The effects of age, rank and neophobia on social learning in horses. *Animal Cognition* 111. doi: 10.1007/s10071-013-0696-x

Lakin, V., Jefferis, V.E., Cheng, C.M. & Chartrand, T.L. (2003). The Chameleon Effect as Social Glue: Evidence for the Evolutionary Significance of Nonconscious Mimicry. *Journal of Nonverbal Behavior* 23,

Lansade, L., Marchand, A. R., Coutureau, E., Ballé, C., Polli, F. & Calandreau, L. (2017). Personality and predisposition to form habit behaviours during instrumental conditioning in horses (Equus caballus), *PlosOne*, https://doi.org/10.1371/journal.pone.0171010

Leblanc, M-A. (2013) *The mind of the horse. An Introduction to Equine Cognition*, Harvard University Press

LeDoux, J. (1996). *The Emotional Brain. The Mysterious Underpinnings of Emotional Life*, Touchstone

Lundgren, K.F. (2015). Interviews with researchers on Przewalski horses, Hustai National Park, Mongolia, unpublished data.

Lundgren, K.F. (2015). Interviews with Mongolian Horse Nomads, Mongolia, unpublished data.

McDougall, C. (2009). *Born to Run. A Hidden Tribe, Superathletes , and the Greatest Race the World has Never Seen*, Alfred. A Knopf

Moore, A.J. (1993). Towards an evolutionary view on social dominance, *Animal Behaviour* 46, p. 594-596

Ransom, J.I. & Cade, B.S. (2009). *Quantifying Equid Behavior: A Research Ethogram for Free-Roaming Feral Horses*, U.S Geological Survey

Ransom, J.I. & Kaczenksy, P. (2016) An Ancient Genus Surviving the Modern World. In *Wild equids, Ecology, Management and Conservatio*n. Ed by Ransom, J.I. & Kaczenksy, P. John Hopkins University Press

Ransom, J.I., Lagos, L., Hrabar, H., Nowzari, H., Usukhjargal, D. & Spasskaya, N. (2016), Wild and feral Equid Population Dynamics. In *Wild equids, Ecology, Management and Conservation*. Ed by Ransom, J.I. & Kaczenksy, P. John Hopkins University Press

Ringhofer, M. & Yamamoto, S. (2017). Domestic horses send signals to humans when they face with an unsolvable task. *Animal Cognition* 20: 397. doi:10.1007/s10071-016-1056-4

Safina, C. (2015). *Beyond Words, What Animals Think and Feel*, Henry Holt and Company

Schoenecker, K., King, S.R.B., Nordquist, M.K., Nandintetseg, D. & Cao, Q. (2016). Habitat and Diet of Equids. In *Wild equids,Ecology, Management and Conservation*. Ed by Ransom, J.I. & Kaczenksy, P. John Hopkins University Press

Smith, A.V., Wilson, C.,McComb, K. & Proops, L. (2017). Domestic horses (Equus caballus) prefer to approach humans displaying a submissive body posture rather than a dominant body posture, *Animal Cognition* (2017). DOI: 10.1007/s10071-017-1140-4

Smith, A.V., Proops, L., Grounds, K., Wathan, J. & and McComb, K. (2016). Functionally relevant responses to human facial expressions of emotion in the domestic horse (Equus caballus. *Biology Letters*. dx.doi.org/10.1098/rsbl.2015.0907

de Waal, F. (2016). *Are we smart enough to know how smart animals are?* W.W. Norton & Company

Waytz, A., Epley, N. & Cacioppo, J.T. (2010). Social Cognition Unbound: Insight Into Anthropomorphism and Dehumanization. *Current Director of Psychological Science*

Wynne, C.DL. & Udell, M.A.R. (2001). *Animal Cognition. Evolution, Behavior & Cognition*. Palgrave, Macmillan