Llama Sentience and Awareness

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When given the task of carrying out a dissertation project for my degree in Animal Science, I knew from the start I wanted to do my research with llamas. Having helped at Bluecaps Farm since I was 14, I was hooked on these inquisitive animals and thought that studying them would produce a fun, interesting and definitely novel project. Deciding what to study about them was a slightly harder proposition; I have always had an interest in behaviour, intelligence, welfare and similar topics but after looking through the literature and papers previously written I found that any research carried out on these areas in llamas was either very well hidden or non-existent. With the decision that I should start somewhere at the beginning, I found a paper written by Donald Broom from the University of Cambridge, which detailed an experiment that had used a mirror to look at sentience[1] and awareness in pigs. I thought that proving that llamas are sentient beings, and finding the level of awareness they have would be a good place to start in the quest to obtain a greater understanding of this species.

Fortunately, since I was asking the same question as Broom, I was able to use his method for my own testing. The basic aim of the experiment was to discover whether llamas could learn to understand what a mirror image is and use it to find a food source. For my test, I used twelve trekking boys from Bluecaps Farm. In the first stage of my experiment they were all exposed to the test area for four hours; one group of six had a mirror present in the test area, whereas the other group of six did not have a mirror. In the second stage, a bucket, which they know normally contains food (although in this case it was empty so they could not smell any food), was placed on the left side of the barrier. Each of the llamas was then led separately into the test area, in front of the mirror on the right side of the barrier. It was proposed that if the llamas understood the reflection they would move round to the left side of the barrier and would find the bucket. If they did not understand, they would walk to behind the mirror.

In the first stage of the experiment, the response of the six llamas to their reflection was quite interesting and, in some cases, quite comical. All of the llamas seemed to believe that their reflection was another llama and they all went behind the mirror to find this apparently new pen-mate. One llama, Julius, even seemed to take a disliking to his reflection and at the first sighting of himself, spat at the mirror! The interest in their reflection quickly lessened and they soon all settled down. However, one llama, Patrick, spent almost the whole four hours going up to his reflection every few minutes and then going behind the mirror. When it came to the second stage of the experiment the llamas generally performed as predicted. The six llamas that had not seen the mirror before all went behind the mirror to try and find the bucket. Out of the group that had seen the mirror before most did successfully find the bucket. Patrick, however, despite all his previous looking in the mirror, still did not seem to understand it and again went behind the mirror to try and find the bucket. Overall, after performing a statistical test, it was concluded that there was a significant difference between the mirror-experienced and mirror-naive groups and so it appears that llamas can learn to understand the reflection of a mirror (although some might take longer than others - maybe Patrick would have understood after five hours!)

So what exactly does this all mean? In decisions about how animals should be treated and the legislation then created, a species' sentience and level of awareness is often considered. The

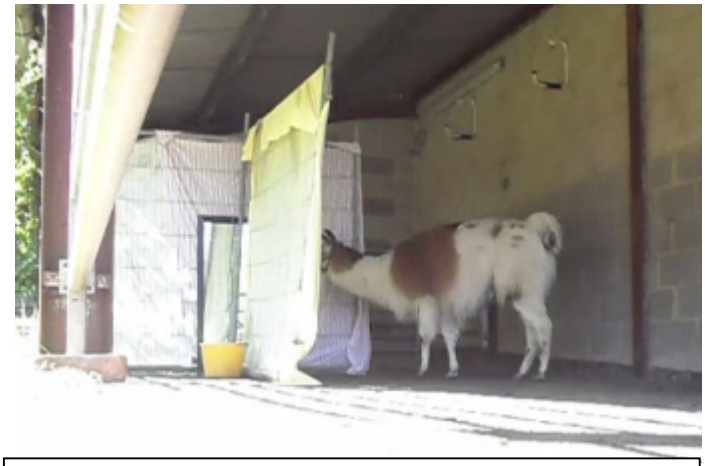
Treaty of Amsterdam, when talking about animal welfare for example, discusses 'sentient beings'. The evidence that this experiment provided- that llamas are sentient beings and that they have a level of awareness of 'assessment awareness'- may therefore assist in future legislative developments. Knowing how aware they are could also lead us to gaining a better understanding of their behaviour, perhaps leading to improved husbandry practices and thus improved welfare.

Going into my dissertation project, I had no idea what results I would get and what I would learn about llamas. What I hope is that I have shed at least a little light on the cognitive abilities of llamas and that this may help in the long term to improve our understanding of these creatures further.

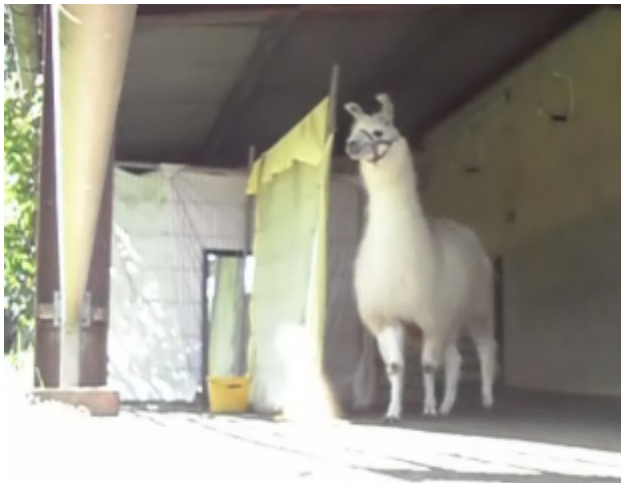
Many thanks go to Bluecaps Farm for the use of their llamas and to Ruth Hills for helping me to set up the equipment.

[1] Broom defines a sentient being as 'one that has some ability: to evaluate the actions of others in relation to itself and third parties, to remember some of its own actions and their consequences, to assess risk, to have some feelings and to have some degree of awareness'.

The mirror image of the bucket that the llamas would see.



Patrick looking at the mirror image of the bucket.



Augustus successfully walks to the left side of the barrier to find the bucket.