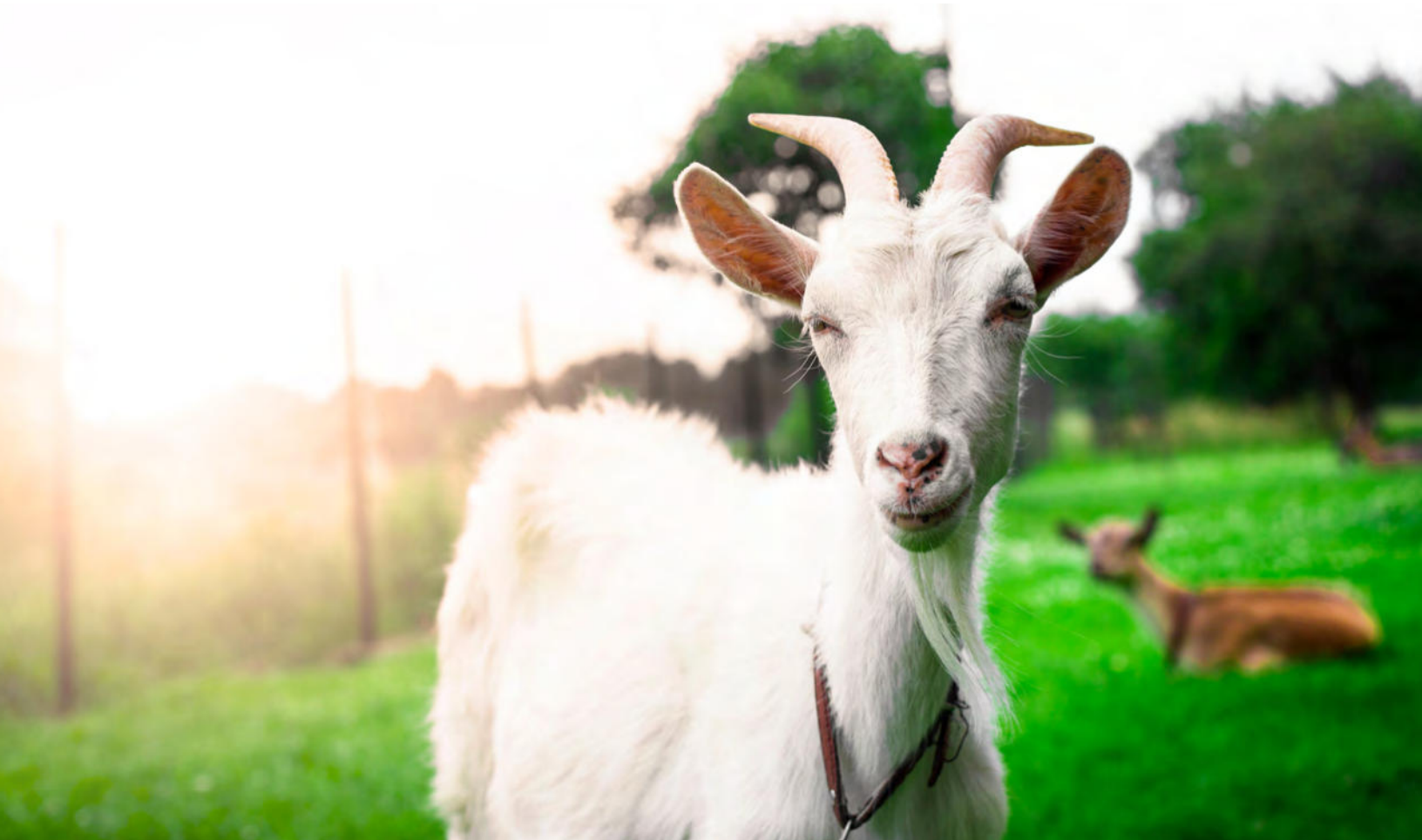
HOW SMART ARE FARM ANIMALS AND WHY SHOULD WE CARE?

BY CHRISTIAN NAWROTH, LUIGI BACIADONNA, JUDITH BENZ-SCHWARZBURG

Farm animal welfare is a major concern for society and food production, and if we want to improve it, we need to understand why farm animals behave the way they do. This does not only require a better understanding of their behavioural repertoires, but also of their inner mental lives. Accordingly, approaches to assess farm animal welfare have developed from concepts such as the five freedoms [1] to more animal-centred approaches that, for example, also include the needs [2] and individual differences of farm animals. [3] All concepts emphasise the importance of having detailed knowledge of farm animals' cognitive capabilities (i.e. their ability to acquire, process, store and use information [4]) to avoid exposing them to poor welfare conditions, such as those induced by stressful management practices. By increasing our understanding about the mental lives of farm animals, we can facilitate efforts to adjust husbandry systems and enrichment items to meet the needs and preferences of farm animals.

What do we know about the mental lives of farm animals?

Over the last decades, our interest in the cognitive capacities of non-human animals has increased dramatically. However, a lot of work has focused on primates, [5] and on



other 'showcase' species, such as corvids, [6] dolphins, [7] and dogs. [8] Compared to the formerly mentioned taxa, surprisingly little is known about those animals that we as humans keep in their billions in often intensive industrial settings, namely farm animals.

We now know, for example, that pigs can outsmart other pigs in a foraging task: dominant pigs quickly start to exploit their knowledge about the food locations of less dominant individuals. [9] To reduce this exploitation, the latter can develop sophisticated strategies to not give away hints on where food can be found until the dominant pig is out of sight. [10]

"...surprisingly little is known about those animals that we as humans keep in their billions in often intensive industrial settings, namely farm animals."

Farm animals also show sophisticated behaviour directed towards humans. When goats are confronted with a task that they cannot solve themselves, they quickly start alternating their gaze from the problem to an experimenter nearby and back again. [11] This is behaviour that has also been observed in dogs and toddlers, and one that some would define as a plea for help.

But we have also learned that housing and management conditions can impair the cognitive abilities of farm animals. When calves are single housed (a common practice in many Western countries), they have much more trouble to change their learning strategies compared to their group-housed counterparts. This, in turn, might decrease their behavioural flexibility in later life, too, and exposes them to higher levels of stress and frustration when changes in their housing environment take place. The separation of calves from their mothers has not only immediate welfare problem, but it also seems to impair the social and cognitive development of calves later in life. [12]

However, what farm animals, such as cows, pigs, and goats, are capable of when it comes to their cognitive capacities is often yet unknown as this research field is still emerging. Many cognitive aspects have only been preliminarily targeted, including the capacities to discriminate quantities (numerical discrimination), to mentally represent objects that are out of sight (object permanence), and to cooperate and be empathetic with each other.

Over the last decades, additional emphasis has been given to the understanding of the emotional lives of farm animals because of increased public concerns about their welfare and husbandry procedures. [13] Scientists now show an increased interest in how emotions are expressed by farm animals, and how these emotions can be reliably measured. However, this comes with a pitfall: the impossibility to assess emotions directly in species that do not verbally communicate. [14]

Drawing from the literature on human psychology, animal welfare researchers have been eager to develop tests that do not rely on verbal communication and provide indirect evidence of emotions in farm animals. For example, a well-established paradigm, the so-called judgement bias paradigm, has been successfully deployed in a wide range of farm animals to investigate how their cognitive processing is affected by their emotional states. [15] In line with predictions from the human literature, farm animals raised in aversive conditions, poorly managed, and with

experience of negative interactions with humans make more pessimistic choices and act as if they are expecting negative outcomes from ambiguous situations. [16]

Current research now also wants to know whether these emotions can be 'contagious' in a group of animals, which in turn might have welfare implications. [17] But beyond the applied welfare logic, our increasing understanding about the complex mental lives of farm animals gives rise to more general ethical questions.

Why does this matter from an ethical perspective?

As highlighted above, it is widely recognised so far that many animals, including farm animals, can experience pain and are able to suffer. This fact, together with one of the most important normative principles in animal ethics, the principle of non-maleficence, [18] leaves us with a useful basis for animal welfare ethics: we are asked not to cause extensive unnecessary harm to others without their consent which can, in the case of animals, mean that we have to provide for the basic physical and psychological needs of animals when they are under human care. [19] Welfare indeed seems to be highly "[dependent] on the mental, psychological and cognitive needs of the animals concerned". [20] The animals' needs, on the other hand, link with their socio-cognitive capacities. For example, learning and memory capacities are assumed to have an impact on the capacity of an animal to cope with housing conditions, [21] and with changing social conditions, such as the separation and re-grouping of 'stock'. [22]

Furthermore, scholars increasingly focus on the link between complex social interactions, like pro-social behaviour in

animals, and welfare. [23] This research not only contains significant welfare relevance, but it also shows that we are dealing with (animal) subjects who are much more psychologically complex than we have assumed so far. This ultimately forces us to ask whether good welfare is good enough for them. In humans at least, such complex psychologies are usually protected by strong inalienable rights, like a right to life, to freedom, and bodily integrity.

The discovery of such capacities in other species than farm animals has not only lead to constant amendments of animal welfare legislation, but also to profound animal rights claims supported by prominent biologists and philosophers [24] The US-based Nonhuman Rights Project, for example, works through the common law on behalf of animal clients, such as great apes and elephants, to secure legally recognised fundamental rights for them. What if pigs and cows are not so different from these species? Are we allowed to use them the way we do as long as their welfare is considerably good? Or shouldn't we use them at all in the ways that we do?

We conclude that general knowledge on how farm animals perceive and interact with their environment is of huge importance for a range of stakeholders, from animal welfare scientists, to citizens, to philosophers. We have already realised that links between cognition and welfare are important from an economic perspective in terms of their relation to production success. [25] In the future, our growing understanding about the abilities and needs of animals will increasingly challenge us beyond welfare and cause us to question the very systems we have established in order to use them for our purposes.

Christian is a Postdoctoral Researcher at the Leibniz-Institute for Farm Animal Biology in Dummerstorf, Germany. He is interested in how farm animals perceive and interact with their physical and social environment, and how this knowledge can ultimately be used to improve management conditions and human-animal interactions.

Luigi is a Postdoctoral Researcher at Queen Mary University of London. His research interests include the study of the emotion-cognition interface, how consciousness evolved and whether non-human animals are self-aware.

Judith is a Senior Researcher at the Messerli Research Institute, Vienna. She works and publishes at the intersection of animal cognition and animal ethics. She is currently leading a research group on animal morality.

Click here to view this article's references.

ANIMAL JUSTICE UK

SPECIAL EDITION: FARMED ANIMALS

KILLING ANIMALS

Hannah Battersby considers whether animal death is an animal welfare issue

VEGANISM

Sharan Chohan analyses the case which recognised 'ethical veganism' in law

AJUK INVESTIGATES

Emma Wells explores the growing live animal export trade

INTERVIEW: ADVOCATES FOR ANIMALS TEAM

A-LAW
UK Centre for Animal Law
Student Group