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Cattle's concerns about Life and Death. Recognising Mental Aptitudes that Accompany Sentience and its Repercussions for Human Exceptionalism and Moral Obligations

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Simple Summary

Today, in many countries mammals are recognised as sentient. Sentience, that is: "feeling", is a necessary requirement for many mental attributes including learning, memory, acquiring knowledge and beliefs, having experiences, consciousness and self-consciousness, having a social contract, communicating, knowing others intentions (theory of mind), and being a moral agent. Some of these mental attributes have and still are considered unique to humans. Therefore, recognising sentience necessitate a re-examination of humanism and human exceptionalism. On re-examination, the fundamental human exceptional skills are bipedalism (to developing elaborate manipulative skills) and a language where the meaning is context independent. The mixing and merging of these two skills have given rise to the arts, sciences and religions. By understanding the implications of sentience and recognising the resulting mental similarities between humans and cattle, and where each species is unique, our moral obligations to the living world and to cattle when living and dying can be properly assessed.

Abstract

Today, in many countries mammals are recognised as sentient. Sentience that is "feeling" is a necessary requirement for many mental attributes including learning, memory, acquiring knowledge and beliefs, having experiences, consciousness and self-consciousness, having a social contract, communicating, knowing others intentions (theory of mind), and being a moral agent. Some of these mental attributes have and still are considered unique to humans. Therefore, recognising sentience necessitate a re-examination of humanism and human exceptionalism. On re-examination, the fundamental human exceptional skills are (1) bipedalism (to develop elaborate manipulative skills) and (2) a language where the meaning is symbolic and therefore context independent. It is the mixing and merging of these two unique skills that has given rise to the arts, sciences and religions. By understanding where each species ontological similarities (summarised by the need for autonomy and freedoms,) and the species unique differences really are, our moral obligations to cattle in how they live and die including their affects on the living world can be assessed.

Keywords: Sentience, Cattle Welfare, Ontology, Conditional Anthropomorphism, Moral Obligations for Cattle's Life and Death

Mental Attributes that are Attached to Sentience

The attribution of sentience to cattle signifies that they feel and have emotions. Because emotions are entangled with other mental attributes, sentience is not an "add on" to other mental abilities, rather, it enables them, being the glue that sticks them together,[1-3].

Humans and cattle are both mammals who have many common physical and mental attributes which define them, listed here (those with ** have been considered unique to humans) [4-6].

- **All Sentient Mammals Avoid Feeling Negative Emotions Such as Fear, Terror, Panic, Anxiety and Prolonged Frustration if they Can:** There is behavioural and neurophysiological evidence that all mammals suffer fear and terror, and make efforts to avoid these feelings. Humans moral duty to sentient mammals is therefore to avoid them experiencing these emotions during their life and death [7]. To do this it is necessary to know when they may be suffering which has been researched [4,5].
- **All Mammals Have an Innate Tendency to Learn in Similar Ways:** A tacit understanding of this is illustrated by how rats learn has been successfully applied to humans. This includes operant conditioning, latent learning, cognitive processes, spatial learning and cognitive maps which all mammals use, even though different species and individuals may differ in what they learn [8-11].
- **Voluntary Learning Does Not Occur Unless there is a Motivation to Drive a Behaviour Towards a Goal:** Motivation is an emotion:- "motivation is fundamentally a strong want or desire that acts as the driving force, or "energy," to start, guide, and sustain goal-oriented behaviors,".

The feeling "want" is therefore is a key to learning.

- **All Sentient Mammals Because they Learn, Acquire Knowledge and Understanding:** knowledge and Understanding: Is "facts, information, and skills acquired through experience or education; theoretical or practical understanding.... Understanding is the key to knowledge".

Understanding and knowledge is acquire by operant conditioning, trial and error, social learning, observation, imitation and latent learning For example, every sentient cow, domestic or wild, must become a natural ecologist because she learns about where she lives, what to eat, where and when to find food, shelter, water, how to find her way around; even when s/he is kept in intensive husbandry systems, although her knowledge and understanding will differ.

- **Sentient Mammals Must Acquire Beliefs:** This is " an acceptance that something exists or is true, without proof and held with various degrees of certainty" (Google 2026).

The cow "believes" that if she goes into the milking parlour she will be given food, because she has learnt this. But it is possible that she does not receive food, or has a bad experience, like slipping on the concrete. Next time, she may not enter the parlour readily, because her belief has been modified and its degree of certainty changed.

- **Instrumental or Operant Learning Requires a Memory:** Since all mammals learn, they have memories. Memories change within and between individuals either when acquired, or when replayed, because what individuals pay attention to and how they combine experiences varies, that is " truth" or "reality" varies between individuals.
- **Sentient Mammals Must have Some Imagination:** When memories change are added to or recombined in different ways, it is an "imaginative truth": " Imagination is "the mind's powerful ability to form new ideas, images, or concepts not present to the senses, blending memories and feelings to create novel experiences, solve problems, envision possibilities, and drive innovation..... (AI Google).

Differences in life time experiences, memories and sensory abilities may be "imagination" to one individual, but to another "the way it is", even if cattle do not write science fiction!

- **Normal Alive Mammals, when Awake, are Conscious of the World Around them:** and respond to it. What Consciousness is and whether non humans have it, has long been debated [12], some arguing it does not exist [13]! But, since an awake mammal is awake and aware/conscious of the world about him and can react to it, unless something quite else is meant by "consciousness", these debates range towards the farcical. Since 2012, it has been generally decided that non humans are sentient and therefore conscious [14]. It is not possible to have a feeling, pain for example, without being awake and aware of it, as every veterinarian knows.
- **Mammals are conscious of themselves:**"Self-Conscious": One of the particular altercations around consciousness were backed by some experiments using mirrors. [15]. As a result, it has been believed that only great apes, elephants and some cetaceans are "self-conscious", despite the fact that when in pain, every mammal is aware of his/her pain and where it is in his/her body so must be aware and conscious of him/her self [16-19]. Whether non human mammals are "reflectively conscious", that is cogitate about them selves and their purpose in life, we do not know, but there are many humans who do or cannot do this, yet are still considered to be "reflectively conscious". [20].
- **Learning, Conscious Beings Must Have Experiences:** These are "conscious events, perceptions, and practical knowledge acquired through personal involvement in events or situations".

Individual experiences differ; they are private personal affairs that no other mammal will actually feel or experience exactly in the same way but, we can and do make guesstimates about what another mammal is feeling [21,22].

- **Every Sentient Mammal has a Unique Personality:** Each of our combined body/brain "beings" is the result of (1) the species, (2) the individual's genetic components, (3) their personal knowledge, experiences and beliefs, so each sentient cow is an individual subject with a resulting unique personality.
- **Sentient Learning Mammals are Rational:** When any mammal performs a voluntary act, a rational decision

has to be made: IF this then THAT should follow so that choices can be made which are based on past experience, expectations, beliefs and knowledge. The type, complexity and degree of rational thinking and decision making varies between individuals and species but cannot be unique to humans.

- **Sentient Mammals who have these Mental Attributes "Consider" and Make "Judgements", and can be "Uncertain":** Since cattle make decisions and choices they must consider and make judgements, and have a "what if" uncertainty. The cow who slips on the concrete going into the parlour "considers" before she goes in and is "uncertain" whether to proceed or not. To make the "rational decision", she gathers further information, and "judges" if the concrete is dry, wet or icy before she make a "decision" and "chooses" to enter, or not.
- **Sentient Mammals can Make Plans:** That is they must have some idea of the future as well as what has happened in the passed from their memories. The cow is "planning" something like "the food will come soon, therefore I will get close to the feeder, but, I remember that last time it came, the man hit me when I got close, so I will stay a little further away than I did before"; she is not planning in words, but nevertheless has "ideas" about the passed and the future.
- **Thinking, and Having Ideas:** Is the way in which different emotions, experiences, beliefs and other mental attributes combine. Since every species of sentient mammal is different, it is done in different ways, but cattle who learn must "think", even though we know little about what they think about, but a study of their ontology allows better informed guesstimates [23].

"Thinking" is usually considered to be in human verbal language, which combines beliefs, knowledge and experiences in areas of the pre-frontal cortex such as the Brocas and Wernickes areas, but, these areas exist in the pre-frontal cortex of every mammal so presumably have some similar function as in the rest of the mammalian brain [24]. The function "thinking" depends on the sensory abilities, mental aptitudes, beliefs, experiences, knowledge, body, habits and subjectivity of individuals [6]. For example, large herbivores are very visual aware and likely to prioritise the interpretation of visual information, whereas humans prioritise verbal language and may be less aware of their surroundings.

Each individual of any mammal, if s/he spends enough time with another of her own or another species, will gain experiences, knowledge and understanding from the other and might also change some of his/her "thinking". For example, cattle can learn to listen and learn the meaning of words and phrases that humans use, not just its emotional content. Humans, if they spend enough time with cattle may begin to "think" a little like them and be more conscious of their similarities as well as their differences. We are a long way from understanding how or what any other species "thinks" and what "ideas" s/he may have, but we can begin to learn, as they can learn about us.

- **Recognition of the Difference Between an Animate and an Inanimate Object:** Normal human adults and cattle, treat a falling rock differently from a living falling being. Both normal adult humans and cattle know the difference between an "animate": a minded alive individual with feelings, and an "inanimate" one, that is non-minded or dead and non-responsive, one without feelings.
- **Every Mammal is a Social Being:** That is: "an individual who has power and resourcesand has a social role".
- Cattle and humans are social from birth since the mother and infant must interact for the infant to suckle and survive [25]. Social, sentient beings have social mental attributes in common which are:-
- **To live in a Group Sentient Mammals Must have a Social Contract:** The social contract is defined by rules [26]. These rules are learnt and vary according to the species, environment. Since each individual has to learn the rules, s/he becomes a good or bad natural psychologist by acquiring information concerning others sex, age, individuals personality and role in the group and can then read and predict others intentions.

Details of the social contract differ between groups in different environments; it is these differences that define the group culture [27,28].

Different cultures exist in all species of mammal societies including cattle [29,30].

To live in a group, know the rules and communicate every mammal must be a moral agent, because each can choose to obey, that is do right by the social contract or do wrong by not obeying the rule and suffer the consequences (which can be to be thrown out of the group). Some fundamental general mammalian social rule are: "do not kill infants of your own species", "court females if you wish to mate", "watch others and learn the appropriate behaviour" so all social mammals learn the role/personality of the different individuals in their society and learn who to learn from.

What constitutes moral agency, other than the ability to use human language can be argued in various ways. Some maintain that unless "empathy and compassion" "shame" or "guilt" are displayed, no sentient being can be a moral agent This is, however, irrelevant because if the individual knows the rules of the society she lives in, she knows the consequences of doing right (obeying the rules) or wrong (disobeying the rules) and is therefore a moral agent. Moral agency can be assessed by autonomy that is freedoms to make choices which all cattle do, even when kept in restricted intensive husbandry [31-33].

- **Social Mammals Must be Aware of others' Intentions:** because they communicate and react to others: they know when they are threatened and what the intention of the other is , therefore they have what has been called a "theory of mind" that is: recognise that others have feelings and intentions and a mind to have them with. For example, Daisy the cow, knows she has approached too near Buttercup, because Buttercup swishes her tail and

turns her head towards Daisy, threatening her not to come closer. Or, another day, she finds that Buttercup is friendly, and extends her head towards her and moos quietly showing intention to be amicable. But, both Daisy and Buttercup also may misinterpret and make mistakes.

- Mistake making is another example of “mindedness”, rather than instinctive “robotidness”. This “mindedness” has been denied non human mammals (with the exception of some apes, elephants and cetaceans [34], [16]. But, if an awareness of others’ minds and intentionality is denied, then social life must also be denied since individuals will not recognise desires and feelings of others or that they have a social contract/organisation.
- Social play is where “mindedness” and having a “theory of mind” is particularly apparent and engaged in by cattle, particularly calves, for enjoyment, sometimes individuals “invite” others to play [35]. The “rules of play” and when it is “not play” are defined, the most important is “do not hurt the playmate”. But when playing aggressively, there has to be an element of “pretend”: that is “pretend to attack” but without causing pain, such as heifers who know each other, play-pushing each other head to head. If either feels pain because a butt or horn has hurt the other, then it is no longer play; it becomes an aggressive encounter, behaviours change [35], [30] and the game ends, but sometimes mistakes are made and pain is inflicted without intention. “Play and pretending” are more examples of the complex moulded and mixed of cows and other mammals mental aptitudes.
- **Individual and Collective Beliefs:** Every mammal has his/her own individual beliefs, memories, conceptions and world awareness which are partly shared by others of their own and different species. But, collective beliefs are more commonly held by humans, the result of being told by another in a verbal context independent language. As far as we know, non human mammals do not discuss their lives, but humans acquire a pandoras box of beliefs told to them by others which become collective beliefs and pre-conceptions.

Cattle have collective beliefs acquired by individual experiences and social learning which are less common and usually discovered individually. For example

- A group of cows hold the “collective belief” that they must not cross the stream in a particular place because a calf was attacked by dogs there, so they all go to another place.
- As far as we know, cattle do not collectively believe that they must fight another group because they do not hold the same collective beliefs such as a religion. By contrast, humans have a collective belief that homo sapiens conception of the world is the most advance although they know little about any other’s.

Humans are best at being humans; rats or cows best at being rats or cows. They have mental similarities, and species unique differences. To date, humans have usually only compared cattle’s mental aptitudes to their own (called “human bias”), rather than investigating cattle’s unique mental skills, that is their ontology.

Knowing where the similarities and differences are between different mammals species attitudes to the world has begun and as shown above, sentient cattle have some mental aptitudes that have previously been considered unique to humans [16,30,36]. Therefore, a re-examination of humanism and human exceptionalism is obligatory before outlining our moral obligations in how to keep and kill cows.

Humanism and Human Exceptionalism

Humanism; the belief that the life of humans (even infants or the mentally defective), is more important than that of any other species, results in trivial human interests trumping life threatening interests of cattle. These are human economic, political, social, manufacturing, advertising and selling interests. Apart from causing many unsolved and often unaddressed environmental problems the result is that billions of cattle are abused and suffer throughout their lives and during their death [37]. A growing number of city dwellers in many parts of the world are aware of the suffering of animals in intensive environments and choose to become vegetarians or vegans, and both dairy and meat consumption is dropping annually.

But, avoiding having to do with, using or killing cattle is inappropriate. Every species must remain extant because of their role in the fabric of the functioning biosphere. To endure, they must breed, but, their populations must be in balance with the environment. For the population to remain environmentally balanced, some individuals will have to be killed, and where other predators have been eliminated, humans take the role of predator, but it must not be the role of an exploiter. A logical solution to this dilemma is to be a Conditional Vegetarian who consume cattle who have had a good life and death.

The Conditions here are:-

- That the cow/calf/bull/steer or heifer has had a life of quality measured by having the freedom to fulfil their species ontology, and they are killed without suffering.
- Cattle are only killed and consumed when the population becomes too large to maintain species diversity and the survival of that environment [38].

If these criteria were observed, there would be fewer cattle and less meat, but human health would probably improve [39]!

The animal welfare industry employs an increasing number of scientists and veterinarians to research reducing suffering in different intensive husbandry environments, but rarely do these scientists recognise that the husbandry system they research or where they treat millions of cattle, is often by definition unacceptable to the cattle because the cattle do not have the freedom to follow their own ontology and/or are not treated with "dignity" and respect [40].

Hypocritical beliefs are held by many professionals involved, for example, Australia, a country which recognises sentience in non-human mammals in law, legally allows thousands of cattle and sheep to be shipped live from Australia to the Arab Gulf. During transportation by road and then by ship, up to 30% die and those that arrive alive, are slaughtered without pre-stunning although pre-stunning is compulsory in Australia [41]. The industry is legal because it benefits religious believers, brings meat and financial benefits to tourists and residents in the Arab countries, and benefits Australian farmers and their dependent industries economically. This, even though the over grazing of cattle and sheep in Australia has caused massive biodiversity loss over millions of hectares which contribute substantially to the de-stabilising of the living world and will eventually threaten human survival [42].

Understanding the consequences of recognising cattle sentience requires more knowledge, less hypocrisy and greater public transparency to reduce unethical practises by all including veterinarians.

Humans Exceptional Characteristics and their Consequences

Humans have two fundamentally exceptional characteristics [43]:-

- **They are Bipedal and with Hands Freed from Carrying their Bodies, They Evolved an Ability to Manipulate:** some 2 million years ago Homo erectus developed opposable thumbs, muscles and nerve links to the brain which allowed them to better manipulate objects. Over time, these abilities became more complex. Humans are not the only animal that manipulates or who makes or use tools [44][45], but they do it more and with greater sophistication which is achieved in conjunction with their other exceptional aptitude: a verbal, symbolic language.
- **Humans Developed a Verbal Language:** which is unique because the meanings of words and phrases are context independent that is symbolic and devoid of environmental influence: Cow means Cow in any context, whether or not there is a Cow there. Over millions of years the development of the use of symbols and the building of symbols onto symbols resulted in mathematics, making of machines, modern technology and Artificial Intelligence, all of which are devoid of emotional content, that is sentience [46][47] but illustrate the entangled body/brain marriage of these two unique human characteristics.

By contrast, cattle do not often behave without any feeling (although there are cases of desire independent reason) because cattle remain as far as we know, subjects in the world because sentience is a mental aptitude cattle find hard to escape or do without [30,48]. This is ironic because for centuries cattle have been "down-graded" to the status of non-sentient machines which is one thing that they find more difficult than humans. By contrast, humans are constantly trying to be machine-like and "objective" (e.g. scientists) drawing themselves away from the world with their symbolism.

The power of human language in controlling our world view, leads to the belief in humans having a host of other unique mental characteristics (above**). In fact it has been widely believed that human language is required for thinking, consciousness and other mental skills This belief remains a severe handicap for the study of other species ontology and mental aptitudes because it restricts the search to the human world view, making constant comparisons with humans rather than trying to consider views outside human experiences [49-52]. It also assumes that that combining mental events, making decisions, choices and having opinions cannot occur without human language.

Cattle Communication

Non human mammals have different types of communication using their visual, olfactory, tactile, taste and auditory sense organs. The meaning of most (but not all) of cattle and other large mammals auditory messages is context dependent, that is the meaning changes although the signal has the same structure and strength. For example an identical neigh, moo , grunt, dog bark or a trumpet can mean

- "welcome",
- "I am frightened,"
- "I am hungry",
- "I am angry" or
- "I miss my friend who has been taken away"

As the feeling becomes stronger, the calls change by becoming longer, louder, with more "noisy" (less evidence of pitch) and more often repeated. The signal thereby reflects the degree of emotionality/arousal or excitement of the communicant but to understand why and what particular emotion that the communicant may be feeling, the recipient has to become very aware of the communicants environment [53].

This leads to a consideration of how aware humans are of environmental change. We ran an experiment to test the awareness of humans, equines and bovines to a slight visual change by watching a solo individual (6 of each species in sequence) following a familiar route that had been changed by altering the angle that a log lay beside the path by 15°. The cattle and equines showed strong reactions indicating they had observed the change as they passed by exhibiting

behaviours such as: turning the head towards the log, staring at it, ears pricked towards it, snorting, sniffing, jumping away, touching or approaching it carefully. But, the humans showed no reaction. When asked afterwards if they had noticed any change, the humans had not they were less environmentally aware than the others [30].

Competitive and Cooperative Societies

Like all primates humans live in competitive societies which pre-disposes them to manipulate others to gain resources and power, The combination of manipulative abilities, human language and primate competitiveness facilitates social manipulation that is the manipulation of others of ones own and other species [16].

Many non-primate mammal societies particularly herbivores, are not primarily competitive because they do not need to be; their food and other resources are widely distributed, particularly for large herbivores [48,54,55], therefore manipulating others is not a priority. Their conception of the world is acquired by individual experiences and social learning about the role of others in the society, and accepting individuals as they are... a type of "sahacara" rather than manipulating them to change their behaviours [56].

Human Religious Beliefs and Cattle Killing

One of the Collective beliefs held by humans is a fear of death, because they are told about it. One way of escaping non-existence is to believe in life everlasting which requires the separation of the body from the mind: "dualism". because, after death, the body is there for all to see, but the soul/ spirit/mind is not. Religious beliefs include that the mind/soul/ spirit joins God after death forever in paradise, provide the individual has obeyed the social contract of that religion. If s/he does not, then it is eternal life in hell, a convenient way of encouraging humans to obey social contracts. The development of dualism in the 17th century applied only to humans because non-humans did not have a mind or soul [57].

Today, it is still believed that non-human mammals can be kept, bred and live in concentration camp-type environments for humans convenience where this causes them to suffer throughout their lives, because they are not "minded" and do not have a soul. The belief in humans unique body and mind dualism is still so deeply entrenched in human societies that it continues to allow animals to be kept in such conditions legally even when it has been shown that they suffer (e.g. dairy cows having their calves taken away from them, they may be living in herds of thousands, and in overcrowded barns where they are unable to have any freedoms or autonomy).

Religious sacrifices: an act of slaughtering an animal as an offering to a deity, is done to acquire "God credit". Muslim and Jewish kosher law forbids pre-stunning because the cow must be conscious before she is cut up to be eaten. The sentient mammal is therefore legally tortured while dying, torturing is "an action or practice of inflicting severe pain or suffering on someone".

Because sentience indicates that non-human mammals have many mental concerns and recognise death, human's moral duty when keeping and killing sentient cattle must take these into account. Consequently all abattoirs and methods of killing should understand cattle's awareness of death and not allow suffering when being killing. This can be done by

- Reducing fear by re-designing runways,
- Avoid them seeing others killed,
- Making them comfortable in the lairage
- And pre-stunned [58].

Methods of killing: Pre-stunning is when the animal is rendered unconscious by a bolt to the head. It has been widely adopted in slaughter houses as the method which causes least suffering. Provided this is done correctly by an approved pre-stunner with appropriate equipment, unconsciousness is immediate. But, without pre-stunning by cutting through blood vessels, the time between having behavioural and brain responses indicating insensibility or death, is 20 seconds in sheep, 25 seconds in pigs, 2 minutes in cattle, 2.5 or more minutes in poultry, and sometimes 15 minutes or more in fish [59]. Muslim and Jewish kosher practises permitted in law involve cutting the trachea and oesophagus but not the spinal cord, so the animal remains conscious as it is cut up. Some Muslims, accept pre-stunning as long as it can be shown that the animal could be returned to "normal living consciousness"; it is difficult to imagine how this could occur after the trachea, oesophagus and blood vessels have been cut!

Because of costs and human ineptitudes, another permitted slaughtering technique is drowning in Carbon Dioxide where the animals remain conscious for at least 2 minutes.

What ever religious belief is held by humans, our moral duty to sentient cattle is that they must be immediately rendered unconscious before being dismembered and the law must be policed without exceptions.

Conceptions of Death that Sentient Humans and Cattle have in Common

Since all sentient mammals have the mental aptitudes above, their common concerns about death can be summarised.

This is not novel, but recognises the consequences of declaring that cattle are sentient.

- Normal Adult mammals recognise when conspecifics or members of another species are dead because they learnt the differences between an "inanimate" (a stone) and an "animate" reacting alive object.
- Human and cattle fear pain and dislike prolonged frustration making efforts to avoid these and other negative emotions.
- We both fear the unknown which is recognised from passed experiences.
- Cattle and humans can recognise what emotions others are experiencing and predict events. They should not see others dying to avoid predicting their own death.
- We all fear separation from another familiar or liked being, grieve their absence and may be depressed, lonely and miserable after the death or absence of another.

Non human sentient mammals as far as we know,

- Do not have verbal collective beliefs,
- Do not kill for religious reasons,
- Do not intentionally provide environments where others suffer for their own convenience. Therefore, we cannot in any sense justify sentient animals having to suffer for prolonged periods or being sacrificed or tortured during their lives and deaths.

Humans' Additional Moral Obligations to Cattle

For what ever purpose cattle are kept used or killed, in the light of their mental attributes related to sentience, the ethical obligations for keeping and killing are listed here:-

- They must be allowed to use their mental attributes by giving them freedom to be autonomous and make their own choices [6].
- Not allowing cattle to suffer or be distressed for during their life or death.
- The way they are kept and killed must contribute to the biodiversity and flourishing of the environment, rather than to its demise.
- Recognising that humans economic, political or social interests do not trump the suffering of other sentient beings is mandatory,

These obligations can be met if we re-define "humanism", disband some current beliefs and re-define human exceptional abilities which are mental attributes the are joined to sentience. This means some restructuring of human societies to serve other sentient beings interests and ensure they do not suffer or damage the environment by their numbers or the way they are kept.

But, re-defining humanism and human exceptionalism does not mean giving up religious beliefs. All religious rules can be altered to recognise that God is The Living World. Here is an extract of St Benedict's rules for good behaviour that has The Living World added to God (my italics):-

"It is easy to recognise the bitter spirit of wickedness which creates a barrier to God and the living world's grace and opens the way to the evil of hell. But equally there is a good spirit which frees us from evil ways and brings us close to God, the living world and eternal life. It is this later spirit that all who follow the way of God and the living world works should stir to cultivate, spurred on by fervent love of it all...[60]."

Nor do we need to give up a belief in dualism and everlasting life for all living beings, because the energetic substances of which we are made continuously circulates through others :-

"the mass in an isolated system can neither be created nor be destroyed but can be transformed from one form to another" [61].

Since Cattle are Moral Agents, They also Have Moral Obligations

As sentient moral agents, cattle are morally obligated to treat humans as they would other large mammals by recognising their strengths and weaknesses and by obeying general social rules towards others (e.g. not causing pain, distress or suffering without provocation). However, if either are treated without respecting the others ontology and moral agency, both human and cattle may learn to ignore this obligation (e.g. bulls that have been isolated and made aggressive).

Non-human mammals including cattle, can change humans behaviour just by showing us how they live..... if humans bother to look (e.g. wild or domestic animal TV programmes/ videos on social media), [62].

Any individuals ontology is the result of their species and their own personal experiences. Contact with humans changes behaviours but not genes, for example some "domestic" cattle have little contact with humans (e.g. wild horses and cattle in the US, or Australian cattle in the "outback") so they behave to humans like their wild cousins, Cape buffalo. Equally, some traditionally "wild" animals who have much contact with humans (e.g. some circus and zoo animals) behave differently to humans than their wild cousins. Thus, some moral obligations change with familiarity, kinship and affection.

The moral obligations of cattle who know, are familiar and may be fond of humans, is the same as it is for humans, that is

- To be aware and conscious of the individuals moods and suffering,
- To have some idea about their individuality ,
- To make allowances for age, sex and abilities.

Cattle usually do fulfil their moral obligations to humans, as do humans who have had appropriate respectful contact with them. A bull, cow, stallion, elephant, lion or man is not “born aggressive to humans” because all his behaviour is not controlled by genes and “instinct”; he has been made that way as a result of the experiences he has had which in the case of humans is heavily influenced by false collective beliefs, pre-conceptions and resulting fears.

Environmental Ethics

Keeping cattle in large numbers in an intensive husbandry systems is very environmentally and economically costly. Chemicals which reduce species diversity (fertilisers, pesticides, herbicides and drugs) are universally used, water must be provided and waste recycled without polluting air, land or rivers. The equipment made and used for the construction of the buildings to house the animals also contributes to CO₂ production from the use of fossil fuels and results in huge numbers of suffering housed cattle. The food produced at best results in 1 calorie being produced for every 15-20 calories used.

However, If cattle are able to live in smaller numbers with more freedoms and autonomy in something resembling their natural habitat and their populations controlled, they are indispensable to the functioning of many ecosystems because they increase species diversity by suppling food, shelter and other resources to other species , without increasing CO₂ production; but there will be fewer cattle to eat [63].

It is mandatory that ethically and ecologically acceptable breeding, raising, keeping and killing practises for cattle take into account their mental aptitudes as a result of being sentient. Human’s false beliefs about their lack of mindedness must be dropped and our collective beliefs changed . If we begin to escape the human ontological bias, and look and learn, this can be done... but will it be?

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Foot note: to avoid semantic arguments concerning the meaning of words and concepts, Google AI definitions are used as they reflect popular opinions.