

Animals and The Threefold Form

Within the animal kingdom it could be suggested that most animals can be categorised into three sections based on their characteristics. Their features are specialised to aid their different needs in order to thrive and survive. By comparing animals to see how they have evolved to their best possible physicality it becomes clear which animals show strength in particular areas of their bodies. The Threefold Form came from an observation Rudolf Steiner made of the human body. Although we see the body as the trunk, head and limbs, Steiner saw humans according to their functions: the nerve-sense, the rhythmic and the metabolic-limb systems.

The head, for example, has little mobility but many sense organs (hearing, taste, sight, balance etc). Further down, the abdominal organs and limbs show strength in both movement and metabolism. Contrasting to the strong shell-like skull, the abdomen is protected by the least bones. The bones of the limbs remain on the inside with fleshy muscle on the outside and are equipped with specialised joints to make independent movement around the environment possible.

Between the nerve-sense and metabolic-limb system stands the rhythmic organs around the top half of the chest. The lungs open in the head region through the trachea, they are operated by the diaphragm and do not move themselves. The heart, which is lower down in the chest and moves on its own with the ratio of lung movement to heart pulse rate being 1:4.¹ The harmony of breathing and heart beat, results in blood circulation which relies on both the heart and lungs, this section connects to metabolism. The lungs bring oxygen to the blood while food gives glucose which supports metabolism, the synthesis of food into energy.

By applying the concept of the threefold human to animals, it becomes a useful way of categorising mammals. A mouse; for example, is a highly sensitive and nervous animal with a fairly large head in relation to body size. Its characteristics immediately give reason to call it a nerve-sense animal, as it has a pointed snout, large upright ears and is consistently alert. The Cow, with its hooved limbs and developed digestive system with four stomachs is a perfect example of an ungulate that emphasises metabolism, a metabolic-limb animal. Lastly, demonstrating respiration and blood circulation are carnivores, a lion or dog for example. These powerful animals show emphasis of the more rhythmic functions of the body in it's running movements.

Hooved animals like the cow have evolved to have limbs with strongly formed bones, these support their large bodies ready to gallop and stamp and full of power. Cows require little sleep, while ruminating they almost devote themselves entirely to food. Although they experience taste and smell more fully, aiding metabolism, their eyesight is weaker as they lack the macula lutea, a part of the retina responsible for detailed, sharp, central vision.²

A Cows digestive system on the other hand is highly developed, particularly in ruminants that have a large stomach separated into four parts with a long intestine. Specific microorganisms in the stomach help these ungulates digest their cellulose filled food. Miraculously they transform this food into fuel for their powerful bodies, providing a surplus of nourishment for others through their milk and meat. Cow dung is also a valuable fertiliser.

To contrast, rodents have maintained the original five-fingered form, they have claws which help them to grasp and feel around in a sensory way. Covering a mouses body are long sensory hairs, some rodents even have hair in their mouths. They live in constant agitation, sniffing around while moving with speed and agility. Because of their highly active lifestyles, rodents have to sleep often

¹<http://oregonbd.org/threefold-form/>

²<https://medlineplus.gov/ency/article/002252.htm>

or they quickly become exhausted. For nourishment, rodents require easily digestible and highly caloric food. The concentrated fats of seeds and nuts are ideal as well as other carbohydrate sources. Digestion is fast compared to the cow and the mice intestines hastily extract small droppings.

Carnivores survive off the meat protein from their prey, requiring powerful digestion. The almost solely protein diet supports their fast twitch muscles which allow them to pounce and sprint when hunting. The difference between body size and food quality between these three animals is interesting. Mice have almost no fat reserves and are small, but they eat the most nutritious seeds. Ungulates unconsciously gather difficult food to digest but develop fatty storage deposit. It is almost as though the metabolic body, the Cow, rebuilds energy and substance, whereas the nervous body, the mouse, breaks it down. Carnivores lie in the middle, they digest proteins and maintain the same energy level.

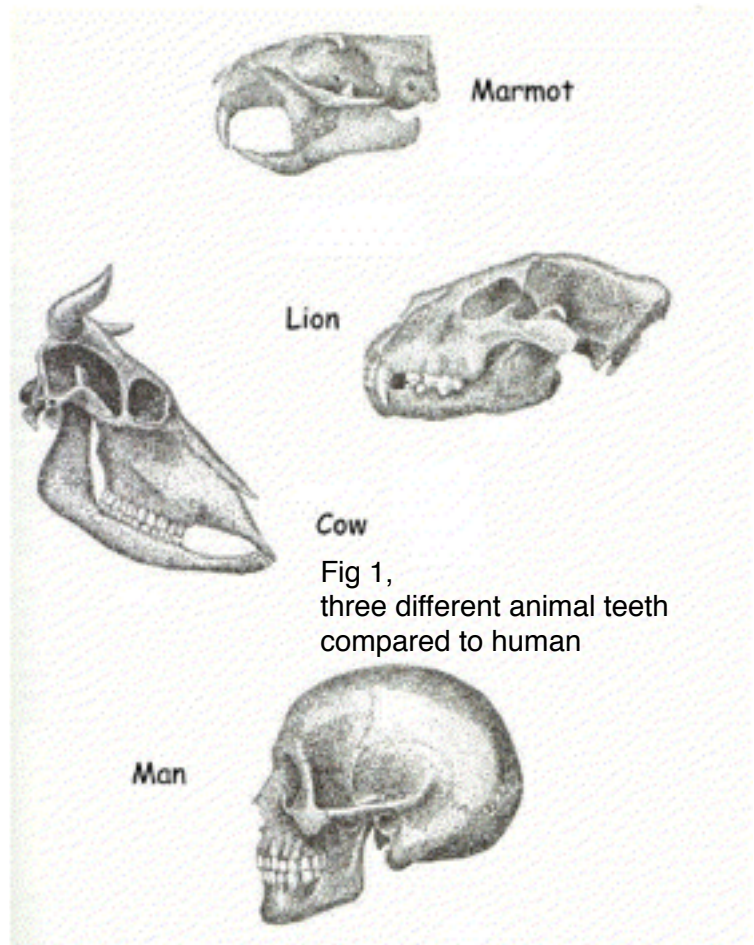
Within the human mouth, the tip of the tongue and the lips are the most sensitive. The digestive system begins as soon as we anticipate food, and glands inside our mouth begin pumping out saliva. Our incisors bite off a morsel and as the food is chewed it becomes less subject to what before was voluntary control. The now ensalivated food is then swallowed and passed through the 'unconscious digestive process'. These steps correspond to the threefold form, the smelling and tasting to nerve-sense, the rhythmic chewing, and lastly our unconscious metabolic system.

The development of our teeth, thin and slender incisors, broad grinding molars and canines taking their place in-between the other two has enabled humans to eat and live off a varied diet of vegetables, meat, fruit, etc. Unlike animals, our bodies are more generalised rather than specialised. For these animals to thrive they must operate with a delicate balance in life, this is because they are specialised and one-sided compared to humans.

"Only in an undisturbed ecological equilibrium do they have a balanced relationship together."³

In rodents like mice, the teeth show a specialisation of the anterior incisors, they lack canines and have only a few molars. In ungulates, take a cow for example, the molars are very well developed, large in size and numerous in quantity, but it has no incisors or canines at all. (See fig 1) Both rodents and ungulates have a gap in their mouths where canines would normally be. Carnivores have very long canines, small canine shaped incisors, and molars with pointed crowns which help tearing meat.

So far, only the very primary factors of these three main animal types have been discussed and compared in relation to the threefold form. The concept of categorising animals is of course open to interpretation and becomes less clear and more complex as we begin to look at other important mammals in the animal

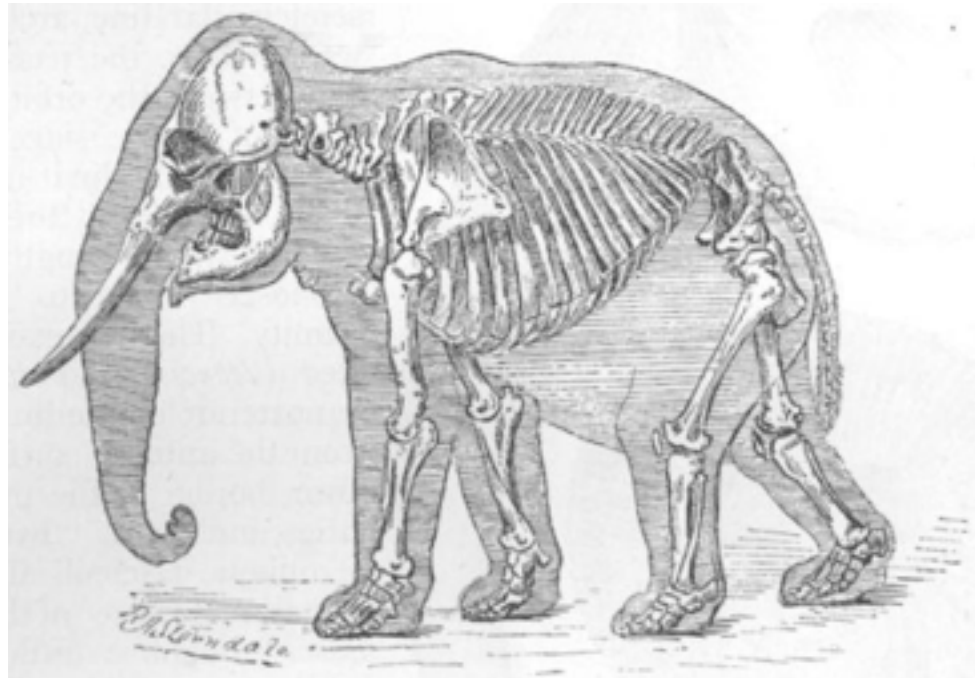


³<http://oregonbd.org/threefold-form/>

kingdom.

Elephants are the largest mammals in the family of *Elephantidae* and the order *Proboscidea*, of which they are the only surviving family. Other extinct members are: *Deinotheres*, *Gomphotheres*, Mammoths and Mastodons.

Kingdom: *Animalia*
Phylum: *Chordata*
Subphylum: *Vertebrata*
Class: *Mammalia*
Superorder: *Afrotheria*



Elephants are a Key Stone species, meaning their extinction would significantly alter diversity in the animal kingdom. There are three species of Elephant, the African bush elephant (*Loxodonta africana*) the African forest elephant (*L. cyclotis*) and the Asian elephant (*Elephas maximus*). Their homes are in the forests, deserts and marshes of Sub-Saharan Africa, South Asia, and Southeast Asia. Although similar, African elephants tend to have larger ears which they use to fan themselves, pick up sound and concave backs, while Asian elephants have smaller ears and convex or level backs.

Elephants are special because they differ greatly from other animals and have notable physical characteristics which are explained below, They are the worlds largest land animals, and communicate to each other through sight, touch, smell and sound. Using infrasound frequencies and seismic vibrations ⁴ to keep in contact over long distances, their keen sense of hearing allows them to keep in contact with their tight herd of deep family bonds. Recent research has shown that communication over long distances results from the use of a sub sonic rumbles that can travel faster over the ground then sound through the air. Because of the sensitive skin on the soles of their feet and trunks elephants are able to receive these messages. A trumpet sound made from their trunks can also be heard from up to 6 miles away. Their trunks which are thought to be made up of 100,000 muscles alone are able to recognise shape, size and temperature of an object.

Herds consist of 8-100 individuals and are led by the oldest and most commonly largest female. ⁵ Baby elephants (calves) rely on their mothers for up to 3 years, while males leave the family unit at around 12-15 years to proceed a solitary life.⁶

⁴https://en.wikipedia.org/wiki/Seismic_communication

⁵<https://defenders.org/elephant/basic-facts>

⁶<https://defenders.org/elephant/basic-facts>

Elephants are thought to be highly intelligent animals and emotional animals. Their memory, that spans many years, serves the leading female as she walks the herd for sometimes tens of miles to find watering holes she remembers from the past. Weighing 6,000-15,000 lbs, they can move forwards and backwards but cannot trot, gallop or jump as they are so heavy it is too difficult to get all four legs off the ground at the same time. Males measure 5-14ft to shoulders, and up to 30ft from trunk to tail in length. Although considered a large mammal, compared to whales they are relatively small. A blue whales tongue alone can weigh as much as one adult elephant.⁷

As herbivores, their developed molars help them feed on different kinds vegetation, they can eat for up to 16 hours a day, consuming nearly 600 lbs of food. Typically, elephants have 26 teeth: incisors, also known as tusks, 12 deciduous premolars and 12 molars. Unlike many mammals, elephants don't grow baby teeth to then replace with a single permanent adult set, instead they have continuous cycles of tooth rotation throughout their lives, this makes them *Polyphyodonts*.⁸ (Fig 3)

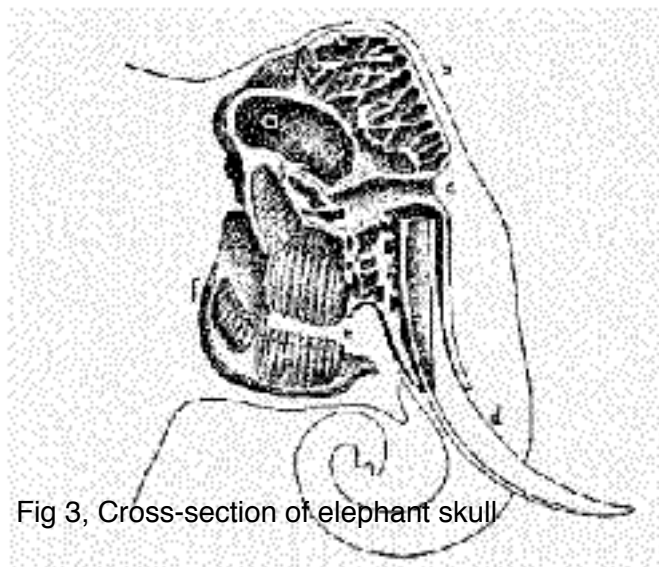


Fig 3, Cross-section of elephant skull

About 180 million years ago, mammals arose from a reptile like lineage at about the same time as dinosaurs. 80 million years ago, it is thought that the genetic lineage of elephants split from the primates. The order of elephants, *Proboscidae*, meaning animals with trunks, evolved from the *Moeritherimus* 50-60 million years ago. Since then there has been 352 species of elephants; inhabiting every continent except Australia and Antarctica. All but two of these species has survived, Manatees, Dugongs and Hyraxes are the closest living species of our elephants today. This is incredible given the vast difference in size and external appearance and that they occupy very different habitats. It is hypothesised that Proboscideans were able to exist in many environments as they were capable of specialising to particular habitats.

While looking at these magnificent animals, we can see that in relation to the threefold form which is easy to apply to the three previous animals discussed, elephants are in fact hard to distinguish.

⁷<https://seaworld.org/animal-info/animal-infobooks/elephants/physical-characteristics/>

⁸<https://en.wikipedia.org/wiki/Elephant>

While the elephants trunk shows development in the senses of smell and hearing with their large ears, which previously showed us in the mouse that it was a nerve-sense animal, the elephant has other features which show equal strength. An elephants stomach and digestive system have developed to be able to store food. Its diet and physical stance is similar to that of a cow, meaning it could also be a metabolic-limb animal. Finally, they cannot run like lions but this in no way undermines an elephants robust strength, while their large tusks really do make them look like carnivores.

Does this mean elephants do not belong to the threefold form? What it suggests is that each characteristic which with other animals defined which group they belonged to, in the elephants case is exaggerated and therefore makes them a more balanced animal, rather than specialised. Nearly all their features show profound development. Their brains have complex folds which are greater in number than most other animals, a factor that suggests they are some of the most intelligent animals on the earth. Their hippocampus, a brain region which is responsible for spatial awareness and emotion is also far more developed. Through research scientists have found that elephants commonly show humour, grief, compassion, self-awareness, cooperation, tool use and playfulness.⁹

These observations lead us closer to understanding why elephants are special, but brings forth a new question, how comparable are humans and elephants? After some research I have found that they are in fact very comparable. While we strive to be balanced and adaptive to our environment, to live and stay in contact with our families, elephants do the same. An elephant herd is thought to be one of the most closely knit ¹⁰ of any animal, a female will only leave if she is captured by humans or dies.¹¹

Usually, humans have a long pregnancy compared to other animals, giving us reason to think this is necessary because we require that time to develop our intellectual brains and abled bodies. An elephant foetus will spend 22 months in the womb. What does that say about how complex their development may be? Some herds have also been known to try and induce labour with specific plants. Similarly to humans, mothers will elect several babysitters/nurses to care for their calf while she produces enough milk for it. Like our babies sucking their thumbs or dummies, calves will often such on their trunks too for comfort.¹² Most four legged heavy animals seem to have hooved feet, while we walk on the soft sensitive palms of our feet, with only toe nails for protection. Elephants are the same, the squidgy padding on their feet and the sensitive skin which they use for communication and orientation doesn't appear to match their tough look.

Along with many social characteristics elephants display, they seem to have a strong fascination with death and have shown grief. A BBC wildlife video showed a herd who came across an unexpected carcass of an elephant that may have been a distant family member. While their sensitive trunks try and find clues as to who it may have been, a general silent mood falls over the herd. This suggests they are deeply moved by what is in front of them and therefore must have some recognition of their own existence.

Is it so strange that the two mammals on the earth with the highest longevity, humans and elephants, have a such interesting similarities? Even when saying hello, as humans we generally shake hands or embrace, elephants tend to intertwine their trunks. Research has also shown that elephants flirt in a similar way to humans after alluring side-glances were captured. As previously mentioned communication is a big thing for these socially advanced animals, like us they express

⁹https://www.buzzfeed.com/danieldalton/elephant-facts?utm_term=.ywmB8JBxd#.qbBBygBr2

¹⁰<https://www.youtube.com/watch?v=C5RiHTSXK2A>

¹¹<https://www.seeker.com/10-ways-elephants-are-like-us-1768937502.html>

¹²https://www.buzzfeed.com/danieldalton/elephant-facts?utm_term=.seLBVxBN5#.ihGR4vR6k

themselves through vocal sounds, except at a much louder volume.¹³ Just by looking at them both, their visual characteristics couldn't be more different, but after digging a bit deeper, it seems they follow similar strengths, the elephant just an exaggerated version of a human. The elephant therefore breaks down the threefold form, making it a balanced, adaptable animal.

Through extensive research we have discovered that humans and elephants share a fair amount in common with each other. Whether this information changes how we perceive these animals and treat them is another question. If something is not similar to us does that mean we don't need their permission to exploit them for our desires? Therefore making it easier for us to mistreat them? While it's tempting and easy to just think of elephants as giant soft animals lumbering around, if we examine how categorisation of other animals works, with help from the threefold form, it becomes clear what these animals are actually like, which strengthens the reality of our connection with them.

References

<https://www.weleda.co.uk/your-wellbeing/holistic-health/therapy-methods>, Therapy methods | Weleda UK, Therapy methods, Accessed February 02, 2018

[URLhttp://oregonbd.org/threefold-form/](http://oregonbd.org/threefold-form/), Oregon BioDynamics Group, Threefold Form, Accessed February 02, 2018

<https://www.woodall-addo.co.za/interesting-similarities-humans-elephants/>, Woodall Addo, Interesting Similarities Between Humans and Elephants - Woodall Country House, September 27, 2016, Accessed February 02, 2018

<https://www.seeker.com/10-ways-elephants-are-like-us-1768937502.html>, Seeker, World Elephant Day: 10 Ways Elephants Are Like Us, August 12, 2016, Accessed February 02, 2018

<https://en.wikipedia.org/wiki/Elephant>, Wikipedia, Elephant, January 28, 2018, Accessed February 02, 2018

<https://seaworld.org/animal-info/animal-infobooks/elephants/physical-characteristics/>, Animals: Explore. Discover. Connect. Physical Characteristics, Accessed February 02, 2018

<https://defenders.org/elephant/basic-facts>, Defenders of Wildlife, Basic Facts About Elephants, September 19, 2016, Accessed February 02, 2018

https://www.buzzfeed.com/danieldalton/elephant-facts?utm_term=.jmbJYGJOb#.wplBg4Bq9, BuzzFeed, 72 Incredible Elephant Facts That Will Make You Want To Save Them, Accessed February 02, 2018

<https://www.youtube.com/watch?v=C5RiHTSXK2A>, YouTube, Elephants grieving - BBC wildlife, April 07, 2008, Accessed February 02, 2018

¹³<https://www.woodall-addo.co.za/interesting-similarities-humans-elephants/>