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Cognitive applicability. The Natural History of the Unicorn from Ctesias to TV News

The zoological sections of the *naturales historiae* of the ancients cannot be regarded, *stricto sensu*, as technical texts. To give just one example, while consulting an *animalium historia*, it is hardly likely that the reader faces the problem of transition from written instructions to their practical application in the context of extra-linguistic reality, as it commonly happens, *e.g.*, with agricultural manuals or cookbooks¹. However, even for the treatises which I am going to focus on in this paper, it is possible to speak of a problem of applicability in terms of cognition: in fact, even though the reader of *naturales historiae* has not the problem of translating in practical action what he reads, there is always a process of negotiation going on in his mind between the written text and external world. To put it simply, when we read of the fabulous animals we find in Pliny or in Solinus, it is easy to formulate questions as the following: «how is it possible to “know” objects like the manticore, the *corocotta*, the unicorn ass, the griffin, or the giant ants of India?». We tend to classify these beasts as fantastic or imaginary animals; yet from an experience-near perspective, we must consider that the accounts of ancient travellers and historians depicted them as realistic or even as *realia*².

Of course, we do not have any direct experience of these “somethings” the ancients considered as actual beings, but we do possess descriptions from a series of texts. The problem is, therefore, to understand how these descriptions may lead us to the recognition of beings whose only plastic or pictorial representations available to us are dependent on verbal accounts fixed in writing rather than on autoptic sightings. In other words, the question is to understand whether the descriptions transmitted by the *historiae* are “applicable” or not. Before answering this question, however, a brief theoretical digression may be necessary.

1. Modules, Cognitive Types and *Camelopardaleis*

From studies conducted by developmental psychologists and anthropologists, there seems to

¹ As for the problem of practical applicability of ancient technical texts, see FORMISANO-VAN DER EIJK (forthcoming), where a modified version of this contribution will be published.

² See LI CAUSI (2003, 23ff.). For the manticore, see, *e.g.*, Ctesias *FGrHist* III C 688, F 45, 15 (= Phot. *Bibl.* 45b 31-46 a 12 Henry); Aristot. *HA* II 1, 501a24-b1.; Philostr. *VA* III 45; Aelian. *NA* IV 21; Paus. IX 21, 4; Sol. 52, 37f.; Euseb. *Hierocl.* 22.; Plin. *Nat.* VIII 75 and 107. For the griffin, see Aesch. *Prom.* 804ff.; Hdt. III 116, 1; Ctesias *FGrHist* III C F 45, 6; Luc. *VH* I 11; Aelian. *NA* IV 27; Philostr. *VA* VI 1; Plin. *Nat.* VII 10; Sol. 15, 22.; MAYOR (2000, 15ff.). For the giant ants of India, see Hdt. III 98-105; Str. XV 1, 44; Plin. *Nat.* XI 111; Prop. III 13, 1-5; Arr. *Ind.* XV 4-9; Philostr. *VA* VI 1; Luc. *Gall.* 16; Harp., *Lex. s.v. χουσοχοεῖν*, pp. 307-9 Dindorf; Dio Chrys. 35, 23-5; Hld. X 26, 2; LI CAUSI-POMELLI (2001-2002, 177ff.). For the unicorn ass, see *infra*; for a complete dossier of texts ranging from ancient times until the nineteenth century, see SHEPARD (1984).

emerge the hypothesis that the human cognitive system includes a series of modular devices that operate as learning instincts calibrated for a number of specific tasks, such as face recognition, language acquisition and the recognition and classification of living species. These devices, allegedly innate depending on what Dan Sperber and Lawrence Hirschfeld say, are domain-specific and operate according to mechanisms of probabilistic inference regulated by adaptive interactions of human subjects with the environment³.

More specifically, Sperber and Hirschfeld argue that each module has a *proper domain* and an *actual domain* (Fig. 1). The proper domain is the set of inputs or stimuli (human faces, snakes, bees) which the module has the specific function of processing. For example, we would say that the proper domain of the cognitive module responsible for the recognition of a snake is nothing more than the set of all viewable snakes. To recognize the inputs issued from the environment as actually belonging to the proper domain of a module, the module uses a set of formal requirements that the inputs must satisfy in order to be processed by it.

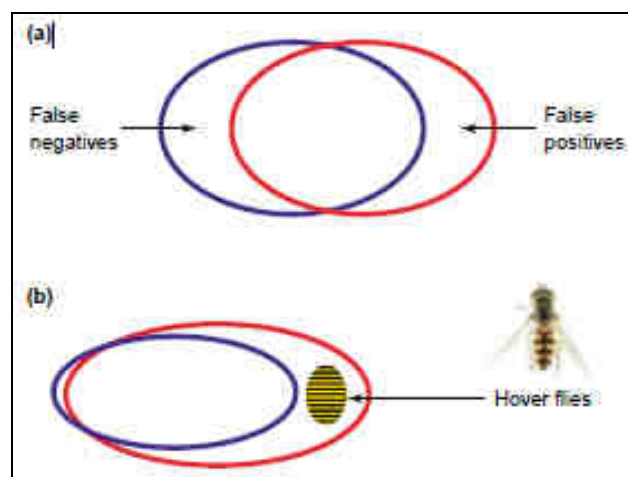


Fig. 1 «(a) The proper domain (blue) and the actual domain (red) of a cognitive module. In assigning items to a domain, it is likely that there will be some false negatives and some false positives. (b) The proper domain (blue) and the actual domain (red) of a wasp-detector module. An area of the actual domain (shown in black and yellow stripes) is occupied by hover flies mimicking wasps (false positives)» (Sperber-Hirschfeld 2004, 41).

In order to store an object within the proper domain of a bee-detector module, for instance, an organism must fly, be small, and have yellow and black stripes. If these conditions are actually met, we can say that the set of salient visual stimuli – that effectively operate as inputs that activate the module at any given time – is its actual domain. To put it simply, the actual domain of the module responsible for the recognition of the bee is formed by all those stimuli that may effectively act as an input to my brain on a spring afternoon when I decide to take a walk in a field in which several tiny beings are buzzing around the flowers I see (Fig. 2).

³ See, e.g., SPERBER-HIRSCHFELD (2004, 40ff.); SPERBER (2005, 17ff.).

From this, it is clear that the proper domain and the actual domain tend to coincide. Nevertheless, as Hirschfeld and Sperber point out, the conditions required by the proper domain and the conditions given by the actual domain «can never be perfectly adequate. Some items belonging to the proper domain of the module might fail to satisfy them – a snake can look like a piece of wood. Some items not belonging to the proper domain of a module might nevertheless satisfy its input conditions – a piece of wood can look like a snake», or a hover fly can look like a bee⁴. In other words, it is always possible that the mismatch between the proper domain and the actual domain creates what we can call “false positives” and “false negatives”.

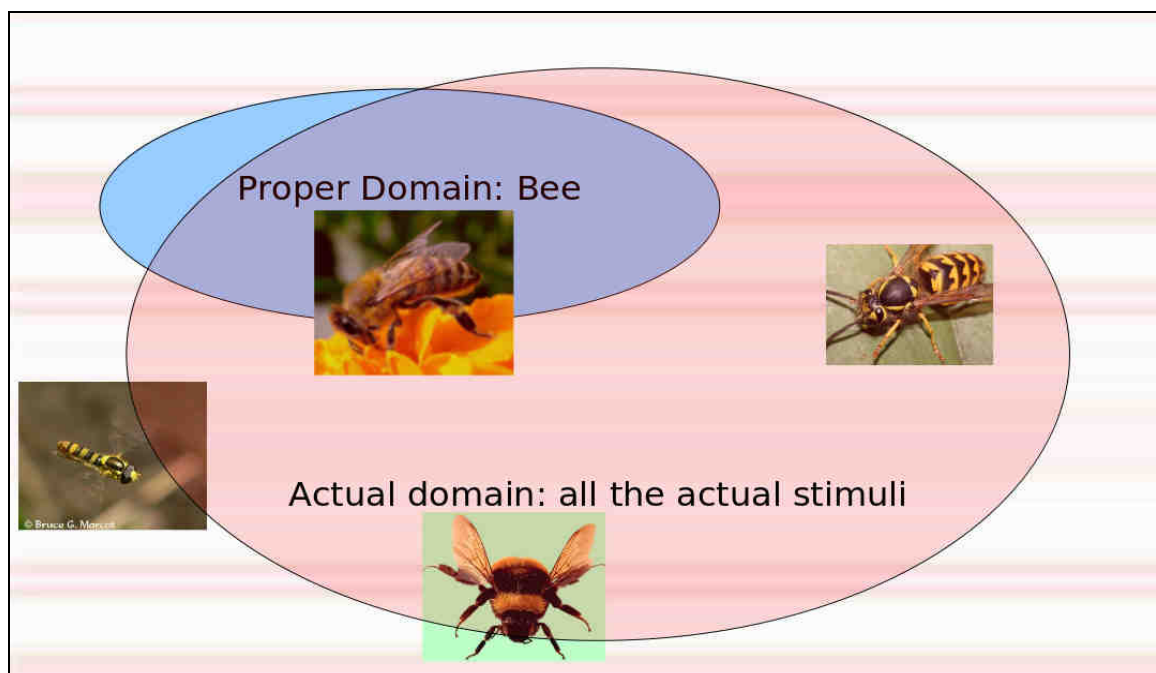


Fig. 2

Needless to say, however, as adaptive mechanisms, the modules are formed from the convergence of innate predispositions of the brain and the activation of empirical (or cultural) experiences. Consequently, the requirement for the formation of a snake-detector module in our brain is the development of what Umberto Eco calls the *Cognitive Type* (hence CT) of the snake, *i.e.*, a mental procedure for constructing the three-dimensional and multimedial image of the animal⁵. But what happens when we run into a being we have never encountered before and for which we have no CT to assimilate it to?

As Eco points out, in such cases «when faced with an unknown phenomenon, we react by approximation: we seek that scrap of content, already present in our encyclopaedia, which, for

⁴ See SPERBER-HIRSCHFELD (2004, 41).

⁵ See ECO (2000, 130ff.).

better or worse, seems to account for the new fact»⁶. In other words, the unknown is reduced to the known. Here is why, for example, the descriptions of many exotic creatures that are indexed by the *naturales historiae* of the ancients make large use of comparisons, similes and analogies.

Such rhetorical artifices operate as *hypotyposesis* aimed at creating an illusion of ostensive evidence that, through a reality effect, can replace the autoptic perception. We can see an example of this in the following passage from Pliny's *Naturalis Historia* (Plin. Nat. VIII 69):

nabun Aethiopes vocant collo similem equo, pedibus et cruribus bovi, camelo capite, albis maculis rutilum colorem distinguunt, unde appellata camelopardalis, dictatoris Caesaris circensibus ludis primum visa Romae.

The Ethiopians give the name of *nabus* to one [*scil.* animal] that has a neck like a horse, feet and legs like an ox, and a head like a camel, and is of a ruddy colour picked out with white spots, owing to which it is called the camelopard⁷.

The similes of the passage suggest that those who saw the *camelopardalis* (or *nabus*) for the very first time reacted to a bundle of traits that activated the proper domains of a series of known animals. The CT of the *camelopardalis*, in other words, was built initially on the basis of metaphorical impressions that resulted from the joint experience of agglutinated false positives. The items belonging to the actual domain of the previously unknown animal (the *camelopardalis*) did not fit the proper domain of all the known animals which it resembled: the neck looked like that of a horse, but the animal in question was not a horse. Its head reminded the proper domain of a camel, but it was not a camel. Its coat was like that of a leopard, but it was not a leopard. Thus we can say that the unknown is reduced to the known, but the agglutination of analogical traits creates the instructions for the recognition of a new generic species whose CT can be culturally transmitted by the accounts of the ancients and whose proper domain can be activated in our brain. These cognitive instructions are fairly simple to follow, and once confronted with a *camelopardalis*, we would not hesitate to apply them and recognize the animal. We would not call it a *camelopardalis*, however, but a “giraffe”, or if we wanted to use the Linnaean name, *Giraffa camelopardalis*.

An adventure similar to that of the giraffe for the Romans, after all, is what must have happened when the first horse set foot in the Americas. In this regard, Umberto Eco (2000, 127ff.) imaginatively reconstructed the cognitive process of the discovery of this animal by the Aztecs before the destruction of their civilization. As the sightings of the strange four-legged beast with long hair on its neck increased, the Aztecs began to understand even more of the features of the animal that they had started calling “kawayo”. They were, in fact, building what Eco calls Nuclear

⁶ See ECO (2000, 57).

⁷ Engl. tr. by RACKHAM (1947). Hor. *Ep.* II 1, 195 refers to this beast, when speaking of an object calculated to excite the vulgar gaze, as *diversum confusa genus panthera camelo* («the different race of the panther mingled with the camel»).

Content (hence NC), *i.e.*, the set of *interpretants* and their publicly transmitted representations of the animal in question, thus circumscribing the CT of the strange mammal introduced by the Spaniards. «In other words, the Aztecs gradually interpreted the features of their CT in order to homologate it as much as possible. While their CT (or CTs) might have been private, these interpretations were *public*»⁸.

In a similar way, the first CT of a *camelopardalis* might have been built around a private mental representation constructed by the first Roman (or Greek) who sighted it, but then, little by little, a series of public descriptions and interpretations (including the one in Pliny's *Naturalis Historia*) began to circulate, thus homologating the image of the animal and creating the modules responsible for its recognition.

The point is, however, that often, for many of the paradoxical and unusual creatures described in the natural histories of the ancients, it is not easy to get to the level of approval and homologation that had been reached for the horse or the *giraffa camelopardalis*. What happens is that there are only written descriptions and definitions for many of the beings, and the *percepienda in se* are completely lacking. We know that the giraffe was shown to the Romans for the first time by Caesar during a circus⁹, but no one – maybe with the exception of Ctesias – had ever been able to claim having seen, for instance, a *manticore*¹⁰.

The descriptions of some strange creatures that circulated, give, as we have seen, the ostensive illusion of the vision by means of analogies and similes. The point is, however, that though vivid, such illusions are either always deprived of actual domains or their actual domains are destined to create necessarily false positives. Such descriptions, in other words, cannot become “factual beliefs” – *i.e.*, beliefs based on perception – and remain “representational beliefs” which are culturally transmitted only by means of an epidemiology of ideas.

Umberto Eco would say, in this regard, that the CTs the ancients had of many exotic animals did not arise from perceptual experience but were transmitted through the formation of public NCs (natural histories, travellers' reports) that implicitly refer to perceptual experiences to come. These perceptual experiences, however, almost never materialized, and consequently, the descriptions that circulated could only rarely be applied. Indeed, it is a matter of fact that the ancients, though their brains worked exactly like ours, were equipped with boundaries of reality which were less extensive than ours. For example, at the time of the Greeks and the Romans, journeys to far-off lands were

⁸ See ECO (2000, 136f.).

⁹ Plin. *Nat.* VIII 69: *dictatoris Caesaris circensibus ludis primum visa Romae* («it was first seen in Rome in the Cæsarian games held by Cæsar, the Dictator»).

¹⁰ We are told by Aelian (*NA* IV 21) that Ctesias has professed that he had personally seen a *manticore* in India, at the court of the king of Persia. For Aelian's *manticore*, see LI CAUSI (2003, 83ff. and 251ff.).

much more complicated, so the direct verification of the data transmitted by the written tradition was extremely problematic.

2. The Desire of Cognitive Experience and the Survival of Monsters

Through the centuries, news of the fantastic animals of the *eschatiai* fed an enormous curiosity. Their descriptions created expectations, so that those who visited the distant regions of the known world wanted to see the strange beasts. To give just one example, Philostratus tells us that Apollonius of Tyana, the charismatic philosopher and healer of the first century AD, after going to India, wanted to find out if all the biological and geographical oddities described by Ctesias' *Indikà* really existed. He needed, in other words, to enforce and “apply” the CTs that were part of his cultural encyclopaedia. In particular, he needed to know whether there were indeed sources of liquid gold and whether the manticore, that fabulous beast with the face of a man, the body of a lion and the tail of a dart-throwing scorpion, existed. However, the answer given by his guide and informant Iarcas was disappointing (Philostr. VA III 45):

What have I to tell you about animals or plants or fountains which you have seen yourself on coming here? For by this time you are as competent to describe these to other people as I am; but I have never yet heard in this country of an animal that shoots arrows or of springs of golden water¹¹.

At any rate, perceptual experiences are not always so disappointing; or, at least, not entirely. Pliny the Elder, for example, says that «the horns of an Indian ant, suspended in the temple of Hercules, at Erythræ, have been looked upon as quite miraculous because of their size» (*Nat. XI 111: Indicae formicae cornua Erythris in aede Herculis fixa miraculo fuere*). We could say that we are dealing with a partial application of a CT transmitted by the zoological encyclopaedia of the ancients. News of the giant ants of India was reported for the first time by Herodotus and then by Nearchus and Megasthenes, who told the story of a fight between the animal and gold prospectors living in the northern part of India, near Caspatyrus¹². In this regard, the Plinian account refers to an animal relic, a single organic part which was used semiotically as an argument to demonstrate the existence of the whole strange creature.

Of course, we do not know much about these horns which the Roman encyclopaedist refers to. We can imagine, however, the creation and, consequently, the circulation of a local story which told how Hercules had broken the horns of a monstrous exemplar of the gigantic animal near

¹¹ Eng. tr. by CONYBEARE (1948). For this passage, see LI CAUSI (2003, 290ff.)

¹² See Hdt. 3, 102ff. The works of Nearchus, admiral of the fleet of Alexander, and Megasthenes, ambassador of Seleucus I, have been lost. For their experiences with the giant ants, see Str. XV 1, 44; Arr. *Ind.* XV 4ff. and LI CAUSI-POMELLI (2001-2002, 177ff.).

Erythrae. The tale, associated with the exhibition of the relic, could have created a powerful reality effect, thus feeding hopes and encouraging wishful thinking: sooner or later, the perceptual experience of the animal in its entirety would be realized, and the felicitous recognition would become a reality. The monster could have survived and, consequently, its description was still thought to be applicable.

3. Applying a Description: The Unicorn is a Rhinoceros (or not?)

In the natural histories of the ancients, there are cases even more complex than these. To produce just one example, the vicissitudes of the CT of the unicorn, of whose epidemiological chain I will cover quickly just some links, are emblematic.

After a brief mention in Herodotus (IV 191, 4), the first exhaustive attestation of the existence of the beast is in Ctesias (*FGrHist* F 45q):

I have heard that there are wild asses in India no smaller than horses which have a white body, a head which is almost crimson, and dark blue eyes. They have a horn on their brow one and a half cubits in length. The lower portion of the horn is white, the upper part is crimson, and the middle is very dark. I hear that the Indians drink from these multicolored horns, but not all the Indians, only the most powerful, and they pour gold around them at intervals as if they were adorning the beautiful arm of a statue with bracelets. They say that the one who drinks from this horn will never experience terminal illnesses. No longer would he suffer seizures or the so-called holy sickness nor could he be killed with poison. If he drank the poison first, he would vomit it up and return to health. It is believed that the other asses throughout the world, both tame and wild, and the rest of the other solid-hoofed animals do not have an astragalus in their ankle nor do they have bile in their liver. According to Ctesias, however, the one-horned Indian asses have astragaloï and are not lacking bile. They say their astragaloï are black and if someone should grind them up they would be the same on the inside. These creatures are not only faster than other asses, but horses and deer as well. They begin to run lightly, but gradually they run harder and to pursue one is, to put it poetically, to chase the intangible. When the female gives birth and guides her newborns about, the sires join them in the pasture and watch over their young. These asses are found on the most desolate plains in India. When the Indians set out to hunt them, the asses allow those that are still young and tender to graze behind them while they fight and charge the horsemen at close quarters and strike them with their horn. Such is their strength that nothing can endure their impact. Everything succumbs to them and gets pierced; however, if by chance it is crushed to pieces, it is rendered useless. They have attacked the sides of horses and ripped them open disemboweling them. For that reason, the horsemen are too afraid to go near them because the price for getting too close is a horrible death for both themselves and the horses. The asses also have a deadly kick and their bite reaches such a depth that whatever is caught in its grip is completely torn away. You could not capture a full grown ass alive, but they are killed with javelins and arrows and when it is dead, the Indians remove the much revered horn from the animal. The flesh of the Indian ass is inedible because it is so bitter.

Almost all the modern commentators agree that the beast described by the physician of Cnidus is actually the rhino¹³. In fact, as Karttunen asserts, this animal was actually present in the

¹³ See LENFANT (2004, 315 n. 871); NICHOLS (2008, *ad l.*). In the first chapter of his book, SHEPARD (1984) sees in

region of the Indus at the time in which the *Indikà* was written. It is also worth noting that, according to Karttunen, there are some traits attributed to the Indian ass – its way of running and, of course, the characteristic bulge on its forehead – which seem to coincide with those of the rhinoceros¹⁴. Moreover, it is important to point out that the rhino has always been hunted in India for the healing properties attributed to its various body parts¹⁵. The similarities, however, end here. The rhino's horn – which is not polychrome – is on the animal's nose, not its forehead. Furthermore, an arrow cannot dent its armour and its meat – it seems – is edible.

Details such as these perhaps should not be overlooked, especially if we consider that when the Romans first began to see real rhinos at the circus, they never thought to apply the description kindly furnished by Ctesias. Pliny (*Nat. VIII* 71), for one, speaks of the rhino shown at the circus by Pompey as a unicorn beast, but its features do not coincide with the ones described by Ctesias; whereas Martial (*spect.* 22) notes that the animal in question is *gemino cornu*, *i.e.*, with two bumps on its head.

Thus, for the encyclopaedia of the Romans, the descriptions (and the CTs) of the two beings are incompatible and the rhinoceros and the unicorn continue to be considered different species. The same happens with the *kartazonus*, a one-horned being – allegedly a rhino – described for the first time by Megasthenes. Aelian speaks of this animal in his *De natura animalium*. Though some of its traits appear similar to those of the rhino, he does not suspect that the animal described in *NA XVI* 20 may be the same one described afterwards in book *XVII*, which he says of that «there are many Greeks and Romans who know it from having seen it» (*NA XVII* 44):

In certain regions of India (I mean in the very heart of the country) they say that there are impassable mountains full of wild life [...] in these same regions there is said to exist a one-horned beast which they call *Cartazonus*. It is the size of a full-grown horse, reddish hair, and is very swift of foot. Its feet are, like those of the elephant, not articulated and it has the tail of a pig. Between its eyebrows it has a horn growing out; it is not smooth but has spirals of quite natural growth, and is black in colour. This horn is also said to be exceedingly sharp. And I am told that the creature has the most discordant and powerful voice of all animals. When other animals approach, it does not object but is gentle; with its own kind however it is inclined to be quarrelsome. And they say that not only do the males instinctively butt and fight one another, but that they display the same temper towards the females, and carry their contentiousness to such length that it ends only in the death of their defeated rival. The fact is that strength resides in every part of the animal's body, and the power of its horn is invincible. It likes lonely grazing-grounds where it roams in solitude, but at the mating season, when it associates with the female, it becomes gentle and the two even graze side by side. Later when the season has passed and the female is pregnant, the male *Cartazonus* of India reverts to its savage and solitary state. They say that the foals quite young are taken to the King of the Prasi and exhibit their strength one against another in the public shows, but nobody remembers a full-grown animal having

Ctesias' unicorn the result of the agglutination of three different actual animals: the rhino, the Tibetan antelope (*i.e.*, the so called “chiru”), and the onager. LAVERS (2010, 15ff.) proposes the substitution of the onager by the “kiang”.

¹⁴ See KARTTUNEN (1989, 170).

¹⁵ See YLLA (1958, 73); PRATER (1971³, 192).

been captured (Ael. NA XVI 20)¹⁶.

We find ourselves faced with a case of proliferation of CTs. Cores of *pensée sauvage* concerning unicorn animals are put in quotes, stored and accumulated in that hypothetical inventory of the world which was the zoological encyclopaedia of the ancients. The image we have is that of a huge mass of data waiting to be processed, but which – due to the objective difficulty of travelling in the ancient world – can only be transmitted culturally and is difficult to apply to that “something” which is reality¹⁷. Thus the possibility of empirical verification, a necessity for the modern sciences, was a matter of chance in the ancient world, and it was normal, in problematic situations, to rely on the principle of authority. The result was that different traditions resulted in different CTs (and NCs) of animal species that were perhaps the same.

One reason for the proliferation of CTs was not simply the application of the descriptions, but the enumeration and the catalogue itself. As some recent studies have pointed out, the geographical explorations and discoveries of new species which took place after the expansion of the Roman Empire did not arise from the need to check the stock of knowledge accumulated previously, but rather were clearly born from the urge to multiply exponentially the files of the zoological encyclopaedia of the time¹⁸. Therefore, it is no coincidence that this mechanism of proliferation appears to stop in the Middle Ages, when the perception of the world faced a process of restriction and when animals were no longer as important for their physical characteristics as for their moral and theological affordances¹⁹. As we will see, such new affordances will allow the CT of the unicorn to survive throughout the Middle Ages and for part of the modern age, with the complicity of two translations: one from Greek, the other from Latin²⁰.

4. The Unicorn exists, guarantees the Bible

In the King James Bible there are several passages in which the unicorn is mentioned. Here are just two examples:

His glory is like the firstling of his bullock, and his horns are like the horns of unicorns: with them he shall push the people together to the ends of the earth (*Dt. XXXIII 17*).

Save me from the lion's mouth; for thou hast heard me from the horns of unicorns (*Ps. XXI 22*).

¹⁶ Engl. tr. by SCHOLFIELD (1972).

¹⁷ The definition of reality as *something* is in ECO (2000, 12ff.).

¹⁸ See BEAGON (1992, 9ff.) and LI CAUSI (2003, 202ff.) and bibliography.

¹⁹ See, e.g., ZAMBON (1993⁴, 11ff.); MORINI (1996, VIIff.); SHEPARD (1984, 33ff.).

²⁰ An *affordance* is a quality that an object has and that *affords* a limited set of actions. The concept has been developed by the psychologist James J. Gibson (1979) and afterwards applied to the field of cultural studies by BETTINI (1998, 202ff.). In Bettini's view, the affordances correspond substantially to the possibilities of symbolic reuse, which the individual features of an object, or an organism, quite naturally possess.

As noted by Odell Shepard, «one thing is evident in these passages: they refer to some actual animal»²¹. The point is, however, that the term used in the original texts – *Re'em* – does not necessarily refer to an animal with a single horn on its forehead. From the attestations, we understand that the mysterious animal described in the Old Testament was certainly wild and as fierce as the lion, the bull, and the unicorn asses of the classical tradition. Moreover, it was apparently provided with bony bulges. Its final metamorphosis into the unicorn, however, is due to the *Septuagint*, which translates *Re'em* with *μονόκερως*, and to Jerome's *Vulgate*, which sometimes uses *rhinoceros* and sometimes *unicornis*²².

What happens is that the CT transmitted by the tradition of the ancient *naturales historiae* interferes with the process of translation from one language to another. By using a cognitivist metaphor, we could say that the bundle of traits implicitly attributed by the biblical texts to the *Re'em*, functions as an actual domain, which creates a false positive, and refers, in the minds of the translators, either to the proper domain of the rhino or to the one of the unicorn ass, *i.e.*, to an animal of which there are hardly sightings but which has always been thought to exist.

It goes without saying that since the Bible speaks of the unicorn as if it were true, this is proof enough that the unicorn described by Ctesias – or something similar – exists. The translators, while waiting to apply the CT of the Indian animal to a real occurrence, are content to cognitively overlay it with an enigmatic animal – the *Re'em* – whose ethological contours and Gestalt appear blurred and ambiguous. The mental image that the *Septuagint* and Jerome have of the unicorn is applied to make an unknown and mysterious object less opaque and elusive and, in a certain way, to clarify it.

To complete the work then there is the *Physiologus*, which finally consigns the CT of the unicorn to the medieval bestiaries, thus helping to create a new tradition which is destined to survive for centuries²³:

est animal quod grece dicitur monoceros, latine vero unicornis. Physiologus dicit unicornem hanc habere naturam: pusillum animal est, simile hedo, acerrimum nimis, unum cornu habens in medio capite. Et nullus omnino venator eum capere potest; sed hoc argumento eum capiunt: puellam virginem ducunt in illum locum ubi moratur et dimittunt eam in silvam solam; at ille, visa virgine, complectitur eam et dormiens in gremio eius comprehenditur ab exploratoribus eius et exhibetur in palatio regis. Sic et Dominus noster Iesus Christus, spiritualis unicornis, descendens in uterum virginis, per carnem ex ea sum[p]tam, captus a Iudeis, morte crucis dampnatur, qui invisibilis cum patre hactenus habebat (Physiologus latinus, versio bis, 16).

²¹ See SHEPARD (1984, 34). But see even LAVERS (2010, 44ff.), who proposes an original interpretation of *Dt. XXXIII 17*.

²² For the term *rhinoceros*, see *Nm. XXIII 22; Dt. XXXIII 17; Job. XXXIX 9-12*. The term *unicornis* is used in *Ps. XXI 22; XXVIII 6; LXXVII 69; XCI 11; Is. XXXIV 7* instead. It would be interesting to analyze the reason for this variation. However, it should be noted that the Latin version of the *Physiologus* (16) explains that the term *rhinoceros* and the term *monoceros* (translated into Latin with *unicornis*) have the same meaning.

²³ See SHEPARD (1984, 40ff.). Ambrose and Tertullianus, however, cooperate to form and consolidate the tradition inaugurated by the *Physiologus*: see LAVERS (2010, 59ff.) on this regard.

There is an animal, which is called *monoceros* by the Greeks, and *unicornis* in Latin. The *Physiologus* says that the unicorn has this nature: it is a small animal and is similar to a goat, very fierce, having one horn in the middle of its forehead. And no hunter is able to capture it. But by this trick it is captured: a virgin girl is led to the place where it lives, and is left there alone in the woods. And as soon as the unicorn sees her, it leaps into her lap and embraces her, and thus, it is seized by those who are spying on it and is put on display in the palace of the King. And thus our Lord Jesus Christ, spiritual unicorn, descending into the uterus of the virgin, by the means of the flesh assumed from her was captured by the Jews and was sentenced to die on the cross, he who, up until then, had been invisible to us with his father.

From this moment on, Ctesias and Aelian, whose descriptions of the Indian ass and the rhino were applied in the translations of the *Septuagint* and Jerome, are no longer needed. The nature of the unicorn has changed: it no longer has an equine form, but looks like a goat and, above all, becomes a symbol of Christ²⁴. Moreover, a limit is placed on its legendary ferocity with the invention of the expedient of hunting with a virgin. The transformations and adaptations, however, do not end there.

5. Once again, the Unicorn is a Rhinoceros

When Marco Polo travels to India and Java, he sees a strange animal with a single horn on its forehead, and he does not believe his eyes. Once the Roman circuses began to decline in Europe, the rhinos disappeared. The term *rinoceros* still existed, but the etymology given by the *Physiologus* explained that it was a synonym for *monoceros*, the Greek word for *unicornis*:

Rinoceros a Grecis vocatur, latine interpretatur in nare cornu; idem est et monoceros, id est unicornis, eo quod unum cornu in media fronte habeat, pedum quatuor, ita acutum, ut quicquid inde petierit vel ventilaverit perforet. Nam et cum elephantis sepe certamen habet et in ventre vulneratum prosternit (Physiologus latinus, versio bis, 16).

The Greeks call it *rhinoceros*, which in Latin means “horn on the nose”; it is the same as *monoceros*, *i.e.*, the unicorn, because it has, on its forehead, one horn four feet long, so sharp that it can puncture whatever has attacked it or has brandished a weapon in the air. Indeed, it often fights with elephants and kills them by wounding them in the stomach.

As is clear from the reference to the fight with the elephant, some traits of the rhinoceros have been applied to the CT of the unicorn, and ironically, the legendary being has survived, while the rhinoceros no longer exists in the current zoological encyclopedia. For this reason, when Marco Polo sees a specimen of the beast, he has no doubts. It is, for sure, a unicorn:

Elli [gli abitanti di Giava] àno leofanti assai selvatici e unicorni, che no son guari minori d'elefanti: e' son di pelo bufali, i piedi come di lefanti; nel mezzo de la fronte àno un corno grosso e nero. E dicovi che no fanno male co quel corno, ma co la lingua, che l'anno spinosa tutta quanta di spine molto grandi; lo capo àno come di cinghiaro, la testa porta tuttavia inchinata ve<r>so la terra: sta molto volentieri tra li buoi. Ell'è molto laida bestia, né non è,

²⁴ As for the Christianization of the unicorn, see LAVERS (2010, 44ff. and 63ff.).

come si dice di qua, ch'ella si lasci prendere a la pulcella, ma è 'l contradio (Marco Polo, *Il Milione*, 162, 14-17)²⁵.

There are wild elephants in the country, and numerous unicorns, which are very nearly as big. They have hair like that of a buffalo, feet like those of an elephant, and a horn in the middle of the forehead, which is black and very thick. They do no mischief, however, with the horn, but with the tongue alone; for this is covered all over with long and strong prickles [and when savage with any one, they crush him under their knees and then rasp him with their tongue]. The head resembles that of a wild boar, and they carry it ever bent towards the ground. They delight much to abide in mire and mud. 'Tis a passing ugly beast to look upon, and is not in the least like that which our stories tell of as being caught in the lap of a virgin; in fact, 'tis altogether different from what we fancied²⁶.

This is Umberto Eco's comment on the cognitive experience of the Venetian merchant: «Marco Polo seems to have made a decision: rather than rearrange the content by adding a new animal to the universe of the living, he has corrected the contemporary description of unicorns, so that, if they existed, they would be as he saw them and not as the legend described them. He has modified the intension and left the extension unchanged. Or at least that is what it seems he wanted to do, or in fact did, without bothering his head overmuch regarding taxonomy»²⁷. In other words, by a simple mechanism of cognitive economy, Marco Polo decides to "apply" a known CT to something that otherwise would have run the risk of sounding too new and unusual to be true. To do this, it is, therefore, necessary to change a few specific traits of the animal. It is important, however, to understand which ones.

In this regard, Umberto Eco, in *Kant and the Platypus*, distinguishes between the “cancellable properties” and the “indelible properties” that every object has. More specifically, «cancellable properties are *sufficient* conditions for recognition (such as striking a match to produce combustion), while indelible properties are seen as *necessary* conditions (there can be no combustion in the absence of oxygen)»²⁸. Eco then specifies that «the recognition of a property as indelible depends on the history of our perceptual experiences. The zebra's stripes strike us as indelible properties, but it would be sufficient if evolution had produced breeds of horse or ass with striped coats; the stripes would become all too cancellable because we would have shifted our attention to some other characterizing feature»²⁹. It follows that the contexts and the frontiers of knowledge in which we are immersed are the variables which determine the erasability or non-erasability of certain properties. Thus for Marco Polo – who probably inherited the CT of the unicorn from the medieval bestiary (rather than from Ctesias) – the uniqueness of the horn on the forehead suddenly becomes the only indelible property which can lead to recognition and to the full

²⁵ See G. R. Cardona's commentary on this passage in BERTOLUCCI PIZZORUSSO (1975², *ad. l.*).

²⁶ Engl. tr. by YULE (1993³).

²⁷ ECO (2000, 58).

²⁸ ECO (2000, 239).

²⁹ ECO (2000, 240).

applicability of a description, while all other traits can be easily modified.

The change of these traits, however, determines the change of the entire NC of the unicorn and eventually the modification of part of the whole categorial system of the tradition³⁰: the unicorn cannot be captured with virgins, it does not have a slender, agile body, but is similar in size to an elephant, and rather than hoofs it has elephant feet as well. The description of the beast – and its CT – can finally be applied to what we clearly recognize as a rhinoceros. In other words, the known can be now applied to the unknown. Unfortunately (or fortunately, it depends on the points of view), this does not mean that truth has won out over fantastic theories, or that facts have won out over words.

6. The Unicorn survives Marco Polo

It might seem that the history of the CT of the unicorn ends here, and that the sightings by Marco Polo finally make a clean sweep of a misunderstanding that lasted for centuries. However, the stories of cultural representations are often more complex than what we might imagine. In fact, after Polo's journey to Java, the rhinos still continue to be invisible in the West for at least another two centuries; this until 1498, when an African exemplar of the animal doubles Cape Horn and is brought to Lisbon to the palace of the king of Portugal, and is later portrayed in a famous engraving by Albrecht Dürer (Fig. 3)³¹.

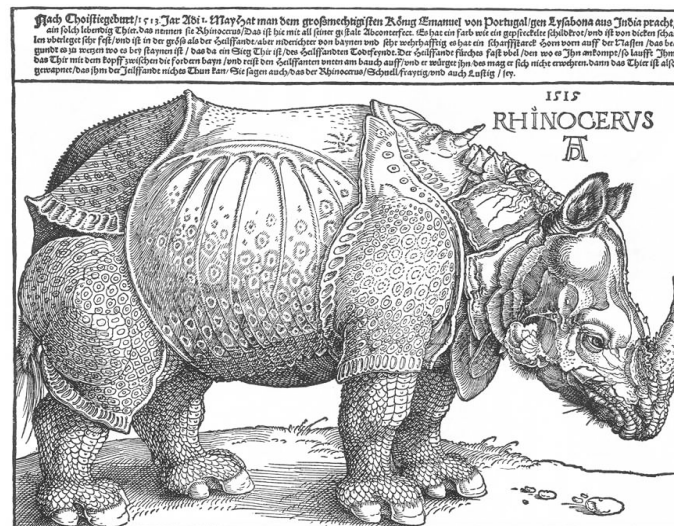


Fig. 3

The long desuetude of the Western world regarding the class of the *rhinocerotidae* leads back to a doubling of the CTs (that of the unicorn and that of the rhinoceros) that Marco Polo had

³⁰ See ECO (2000, 248f.).

³¹ See SHEPARD (1984, 261).

implicitly proposed to unify. In addition, from the fourteenth century on, in all the courts of Europe, strange objects called “alicorns” (allegedly the horns of the unicorn) begin to circulate, and kings, dukes, popes and physicians begin to attribute miraculous curative properties to these objects, they ascribe healing properties to these objects, which, when crushed, dissolved in a liquid, and drunk can immunize anyone from poisoning³². In many cases they are the teeth of a narwhal, or sometimes, pieces of worked ivory³³. However, for the notables and noblemen who buy them, or obtain them in mysterious ways, there is no doubt that these are, indeed, the horns of unicorns. As with the horns of the Indian ant, these precious objects become semeiotic arguments ready to prove the existence of the whole fantastic creature. The belief in the animal described for the first time by Ctesias and – albeit with some changes – by the bestiaries, is further reinforced by biblical testimonies, and thus becomes an article of faith.

In 1556, in his *Discorso contra la falsa opinione dell’Alicorno (Speech against the False Opinion of the Alicorn)*, the physician Andrea Marini tries to show the falsity of the belief in the beast, and especially in the curative properties of its horn; but ironically his work does not have expected success. Not only does the natural histories of Gesner, Aldovrandi, and Topsell continue to file the unicorn among the things worth talking about, but most importantly, in the wake of what was written by Johann Homilius in his dissertation *De monocerote*, discussed in Leipzig in 1667, scholars who doubt the existence of an animal spoken about in the Scriptures begin to be accused of blasphemy³⁴.

The CT of the beast described for the first time by Ctesias is constantly being renegotiated, and still survives. Or at least some indelible traits continue to have more chance of survival than others. In this regard, on the basis of what Odell Shepard points out in his *The Lore of the Unicorn*, it is understandable how, in a Europe whose dukes and kings are nothing short of obsessed with the risk of poisoning, the property of an animal that becomes indelible is linked with the horn's hyperbolic capacity to operate as an antidote³⁵.

7. Updates and Conclusions: Unicorns, Roe-deer, and TV news

In conclusion, from the stories I have traced here one could say that the CT of the unicorn works as a sort of “chewing gum notion”, *i.e.*, as an always negotiable mental image, which assumes «configurations that vary according to circumstances and cultures»³⁶. We are, therefore, faced with

³² See SHEPARD (1984, 113ff.) and LAVERS (2010, 94ff.).

³³ See SHEPARD (1984, 309ff.).

³⁴ For the Modern Age's debate on the existence of the unicorn, see SHEPARD (1984, 183ff.).

³⁵ See SHEPARD (1984, 113ff., spec. 138ff.).

³⁶ See ECO (2000, 271).

a very complex mechanism, which concerns the cultural encyclopaedia of the Western world itself, whose zoological knowledge tends, economically, to safeguard over the centuries some of its files – *i.e.*, its own CTs and NCs – always believing in their cognitive applicability³⁷.

This belief, however, does not result in mechanisms of mimetic repetition, since in each occurrence of the description of the unicorn – whether it is generated by a perceptual experience or simply by a textual transmission – the enabled concepts and categories modify their indelible traits by means of what we could call a *cognitive contract*. It is through this contract that the words of the descriptions are each time adapted to the facts or their contexts.

In this way, I think it is possible to confirm Dan Sperber's perspective on the epidemiology of beliefs, according to which at each public transmission of a cultural representation, a mechanism of change is activated rather than a copy of the same³⁸. That happens because, although the culturally provided descriptions act as ostensive instructions for the recognition of instances, the cognitive actions directed by them cannot be completely guided (or at least not always).

In his novel *A Caverna (The Cavern)*, Jose Saramago, taking a cue from the unhappy experiences of the potter Cipriano Algor, says that there is a small brain in each of the phalanges of the hand, which autonomously and automatically interprets the instructions it receives from the mind and, above all, from technical manuals. As the writer suggests, the brain is made of "models", of "Platonic ideas" of what the hand is required to do, but the fingers, in practice, shape the clay on their own³⁹. Similarly, one could paraphrase Saramago's text and say that the eyes have an autonomous brain. In the end, what we see – what Marco Polo saw – even in the face of the objective evidence of the rhinoceros is somehow an approximation and a negotiation of the CTs communicated to us by the public representations and descriptions with which our encyclopaedia is equipped.

There is, however, another lesson that can be learnt from the history of the intertwining of the CT of the unicorn and the CT of the rhinoceros. We understand that, in the absence of a *percipiendum*, it is the desire for possible perceptual experience that allows beliefs to survive. It is what happens in the case of the horns of the Indian ants, or in the case of the alicorns. In other words, the survival of fanciful beliefs is sometimes linked to the dynamics of potential applicability. The more things are described as mysterious – because of their being distant or difficult to

³⁷ It is worth noting that whereas the CT of the unicorn tends to be preserved and applied to actual animals, the CT of the rhino often is often removed and forgotten in Medieval and Modern zoological encyclopedias.

³⁸ In Dawkins' view (DAWKINS 1976), a *meme* is composed of a recognizable amount of information about the human culture. Every *meme* is replicable by a mind or a symbolic support of memory (such as a book, or another mind). In more specific terms, a meme is a "self-propagating unit" of cultural evolution, analogous to what the gene is for genetics. On several occasions, Dan Sperber has taken a position against memetic theories: *e.g.*, SPERBER (1996); SPERBER (2005); SPERBER (2009). For an explanation of memetic theories, however, see ACERBI (2009).

³⁹ I am quoting from the Italian edition: SARAMAGO (2000, 73).

experience – the more one has the desire to test the information that has been received by means of textual transmission and that show us the unknown through analogical mechanisms. In such situations, all the world is potentially an actual domain of inputs and stimuli which activate proper domains constructed on the basis of the principle of authority rather than on actual experiences.

But we must say that the whole story is not just about Marco Polo or the ancients. The Venetian merchant is, in this sense, in good company. If we type “unicorn” on the *YouTube* search engine, the first video that appears shows us a roe-deer with a single horn peacefully walking in the Tuscan countryside (Fig. 4). It is a freak of nature, of course, but the voiceover of the local news commentator agrees only to a certain point, since the commentator himself claims that the specimen sighted clearly shows that «le iconografie e le leggende antiche non rappresentavano solo fantasie ma un animale realmente esistito» («the iconographies and ancient legends were not just fantasies, but represented an animal that actually existed»)⁴⁰.



Fig. 4

Once again, it's the same old story. The cancellable properties of the beast are modified, and the CT the interpretant (in this case the TV commentator) desires to be true is applied to the “something” he is facing. Under these conditions, the unicorn can never die, and it is always possible to know and apply – albeit with some modifications – its descriptions.

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⁴⁰ See http://www.youtube.com/watch?v=N02jYgls_8U

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