

Natureza, causalidade e formas de corporeidade

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NATUREZA, CAUSALIDADE E FORMAS DE CORPOREIDADE

O conceito de natureza (*physis*) é fundador do modelo de racionalidade inaugurado pelos Gregos. “Natural” designa aquilo que ocorre intrínseca e ordenadamente, fugindo à imposição do destino e ao arbítrio dos deuses. Daí que natural seja frequentemente tomado como sinónimo de inteligível.

A fórmula de Francisco Sanches “Vou seguir a mera natureza com a razão” condensa todo o programa da racionalidade moderna, assente na relevância concedida à natureza como guia do pensamento e da acção.

Ora, se o conceito de natureza é frequentemente assumido como foco de inteligibilidade, a verdade é que ele próprio se revela problemático na sua significação, limites e eficácia causal.

Nos séculos XVII e XVIII, filosofia e medicina têm uma relação mais forte do que aquela que se verifica na actualidade. O interesse dos filósofos pela medicina e o lugar matricial que ela ocupa no pensamento de muitos deles, incluindo figuras maiores como Descartes e Leibniz, dão uma feição característica à sua elaboração filosófica. De igual modo, os médicos deste período enfrentam questões genuinamente filosóficas como parte intrínseca do seu próprio labor intelectual.

Os textos reunidos sob o título *Natureza, causalidade e formas de corporeidade* foram elaborados no âmbito dos trabalhos de seminário, conferências e debates que, de Fevereiro de 2012 a Julho de 2015, deram vida ao projecto “PTDC/FIL-FCI/116843/2010. O conceito de natureza no pensamento médico-filosófico na transição do século XVII ao XVIII”, financiado pela Fundação para a Ciência e a Tecnologia. Neles se procede ao esforço de precisão conceptual e análise crítica do conceito de natureza, à mobilidade das suas margens no que diz respeito nomeadamente às relações com o sobrenatural e com o domínio do prodigioso e preternatural. O corpo, em especial o corpo humano, e sua inscrição na natureza é por si mesmo um tema interdisciplinar, que convocou, sob diversas formas, uma atenção particular.

Um agradecimento é devido a todos os colegas que disponibilizaram os seus textos para integrar este volume, que é verdadeiramente um trabalho colectivo. O sentimento de gratidão por uma longa e generosa colaboração justifica uma menção especial a Jackie Pigeaud, recentemente falecido.

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THE MONSTROUS IN ALDROVANDI AND THE NATURAL ORDER OF MARINE ANIMALS IN THE 16TH AND 17TH CENTURIES

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Abstract. Aldrovandi was an early modern naturalist, founder of a cabinet of curiosities and insider in a European network of contacts for collecting local and exotic natural information and remains. He published several encyclopaedias and is considered the father of Natural History. In his works he classified animals such as rhinos and giraffes alongside with unicorns and two-headed cows. He also described real species of whales as *Cetis* alongside with mermaids. Similarly, he also referred to sea serpents, dragons and various terrestrial and marine monsters in his massive tomes. In fact, Aldrovandi attempted to encompass the entire natural world and every monstrosity or marvel discovered by 1600. Aldrovandi's fish and cetacean books gathered all the available literature and served as an inspiration to many other authors who published shortly after. While some naturalists tended to focus only on singularities, Aldrovandi took a giant step towards normalizing the monstrous by swallowing them up. Thus, in his volumes, the singular competed side-by-side with the normative. Aldrovandi's work is designed as a continuum where nature takes the central role and the monstrous clearly finds its place within the natural order of animals.

Keywords: Ulisses Aldrovandi, Early modern natural history, Cetaceans, Sea monsters, Nature classification.

Introduction

Man always tried to order the different forms in Nature. In the beginning, natural beings were classified as mineral, vegetable or animal, and animals could be either natural or mythical. The first attempts to classify them

resulted from the human need to understand and explain Nature and fit what is known and what is unexplainable into well-defined boundaries. To classify natural beings into understandable categories opened a cluster of ideas, which fed the conceptual worlds of many scientists, philosophers, theologians and men of letters over time (Bynum 1975). It all started with Aristotle's *Scala Naturae* where he classified organisms according to their complexity, in a strict religious hierarchy of matter and life descending from God. This evolved into medieval bestiaries and herbaria where the function and virtue of organisms were the basic criteria of classification, but religious and moral rules also played their part. By the 16th and 17th centuries, following the maritime Discoveries and the new Renaissance *modus operandi* of observation and description of Nature, a new intent to know and classify all known living beings was put into practice. This included both the observation and description of Nature *in loco* and its comprehension. In this period, natural history was a wide-range subject, encompassing all aspects of the natural world from stars and planets, animals and plants, to natural marvels (Crowther-Heyck 2003). Several European naturalists started to compile and classify natural information from Europe and the New World and to print it in the form of compendia and encyclopaedia. Posterior classification systems of the natural world also considered the general implications drawn by naturalists and thinkers since the 16th century. In turn, these were related to one or more of the three components of the "unit ideas" (plenitude, continuity, and gradation), which were fused into the idea of the Great Chain of Being (Lovejoy 1936). And these "unit ideas" can be traced back to either Plato or Aristotle (Lovejoy 1936).

Later, in the 16th and 17th centuries, naturalists, such as Pierre Belon, Guillaume Rondelet, Conrad Gesner, Ippolito Salviani, or practitioners like Adriaen Coenen, started to describe and categorize their local natural world also including references from exotic and distant¹ fauna and flora. The same happened with several authors writing in vernacular languages, and different print formats, from Portugal, France and England to Germany (& Daston 1981; Crowther-Heyck 2003; Brito 2016). But Ulisse Aldrovandi took the expertise in describing and grouping living beings to a new extreme.

1. Exotic refers to animals or elements of nature that are not local, in this case with a provenance exterior to Europe; t is related to concepts of marvellous and evokes fantastic perceptions of the Other and the unknown Nature. See Simões (2014).

In the present work, we aim to examine the monstrous (*versus* the natural) in Aldrovandi's encyclopaedia of natural history, his system of categorization and the importance of establishing a natural order of all known animals at the time. We will discuss examples about marine mammals and sea monsters², which altogether demonstrated nature's curious mechanisms and variety, evoked curiosity and wonder, astonishment and exoticism (Daston2012; Van Duzer 2013; Brito 2016). Moreover, we address the dissemination of Aldrovandi's work by different authors in the following centuries. The diversity and dimension of his work and the number of editions and translations to vernacular tongues show us that all information about natural history spread far beyond universities, courts and scholars' studies (Crowther-Heyck 2003). We will also address aspects of monstrous animals or wonders of nature, as they started to become regular elements of the natural history compendia. Monsters appeared in literature directed at more educated audiences in early modern Europe, as well as in popular broadsides aiming at a larger spectrum of readers. In fact, they were present in almost every forum of discussion in the 16th and 17th centuries (Park & Daston1981).

Aldrovandi's natural history

Information on general natural history and exotic and monstrous animals has always awakened great interest and wonder in Europe, particularly in Portugal (Costa 2009). Since the beginning of the modern period, this information transformed the perceptions and conceptions on the Ocean, as well as on new marine animals from the open seas and different and distant shores. Since the mid-15th century many types of news about exotic and strange marine animals began to emerge. They became part of oral stories, manuscripts and printed books, and earned their own space in the salons of nobles and common peoples' rooms. From the 16th century onwards, news about exotic animals and monsters from nature spread around Europe (Brito 2016). These accounts, containing both written and visual information, were typically included in encyclopaedias and treaties, but also in pamphlets that

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2. Here, we use the monstrous as in previous works (see Brito 2016), i.e., as human constructions either if they are fantastic beings or real animals that highlighted the fragmentary, unnatural and inadequate manifestations of nature and consequently demanded acknowledgment of the failures of the systems of categorization.

easily passed from hand to hand, disseminating information through distinct knowledge networks and to different audiences (Brito 2016). Overtime they became increasingly interesting to all people, not just scholars, naturalists or collectors, but also practitioners and craftsmen (Findlen 2002).

Ulisse Aldrovandi was a wealthy naturalist³ who collected specimens from all over the world, as well as drawings, relics or remains, when it was impossible to get complete or real specimens or maintain the specimens preserved. For instance, in Aldrovandi's work, as with other European naturalists, images could work as a substitute or proxy for a specimen (Kusukawa 2011). He also engaged in networks of exchange of *Naturalia*, establishing important networks of contacts and asking his friends and correspondents for news. It was his intention to compile information about all existing living beings, either from a natural or monstrous (exotic or fabulous) origin. For that purpose, he created one of the first and greatest cabinets of curiosities of early modern times (Olmi 1985). Furthermore, Aldrovandi drew on a variety of classical, medieval and coeval sources ranging from Aristotle to Pliny, Albertus Magnus and other medieval authorities, to Renaissance writers and travellers such as Olaus Magnus, Rondelet, Antonio Pigafetta and Gonzalo Fernández de Oviedo Valdés⁴ among others (Olmi 1972; Davies 2012). As a result, he published several encyclopaedias, in numerous volumes, and his work was printed and disseminated all across Europe. Around a century after his death, John Jonston published his own treatises mostly based on Aldrovandi's work (Gudger 1934).

As above mentioned, many other natural history treatises were printed at or around this time, with names such as Gesner, Belon, Rondelet, Salviani and even Jonston, just to mention zoologists. However, most of these European limited their incursions to the Old World fauna (apart from a few references to American and African animals in the works of the most modern authors among them, such as Conrad Gesner or Jean de Léry⁵). The use of the works of Aristotle and Pliny is common in most authors' productions,

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3. Ulisses Aldrovandi (1522 or 1527-1605 or 1607) was a doctor of medicine and philosophy in Bologna, but much of his knowledge and experience has also resulted from the numerous trips he made across Europe (Montalenti, G. 1960. in *Dizionario biografico degli Italiani*, vol.2, pp.118-24).
 4. See Gonzalo Fernández Oviedo, *Sumario de la Natural Historia de las Indias*. Edición de Nicolás del Castillo Mathieu (Santafé de Bogotá, 1995).
 5. See the work by Papavero & Teixeira (2014), where the authors refer numerous *Tupi* names of animals that were registered by European authors in the 16th century.

although uneven, depending on their either encyclopaedic or naturalistic tendency. Standing in the transition between medieval bestiaries and early modern zoological literature, it is not surprising that some described, and even illustrated, fabulous, mythical and monstrous animals, sometimes indicating where they were observed and detailing aspects of their fantastic anatomy. The language used by Belon and Aldrovandi, with its invocation of “wonders” and “singularities”, shows the continuous importance of the discourse on the marvellous, now revived by the exploration of previously unimagined lands (Davies 2012). But the language of wonder also served another purpose: to attract the attention of wealthy patrons and lay readers who might find little to engage in volumes of a more matter-of-fact prose. The rise of the printing press created a large and growing audience for this sort of literature. The interest in exotic and domestic natural history was increasing and was not confined to scholars like Aldrovandi; texts on this topic quickly became a feature in the broader market for large and lavishly printed books (Olmi 1976). The expanded audience accounts for the growing importance of woodcut illustrations and increasing number of vernacular editions and translations of such works (Davies 2012). The publication of the earlier works took place in parallel with the first moments of settling in Brazil, Africa and other overseas regions and the gathering of knowledge on them. It is not likely that the initial exotic news were already familiar to the first European authors, such as Rondelet. On the contrary, later authors, such as Aldrovandi, needed a significant network of connections to obtain all new information arriving to Europe from the overseas (Olmi 1992). Given all the above, Aldrovandi is considered the founder of modern Natural History (Gudger 1934).

With an urge to include all types of life in his treatises, he classified animals such as the rhino and giraffe as quadrupeds, alongside with the unicorn and two-headed cows. He described several species of whales and dolphins as *Cetis*, and provided simultaneously detailed descriptions of mermaids and mermen. He also found space to include in his works sea serpents, dragons and all kinds of terrestrial and marine monsters. In his *Monstrorum Historia* (Aldrovandi 1642), we presented a whole range of such beings. Aldrovandi’s massive tomes attempted to encompass the entire natural world, including every animal and natural history monstrosity or marvel discovered by 1600. By doing so, in his work, the singular had to compete for page space with the normative (Ashworth 1991).

This process of (re)inventing and organising Nature fascinated all early modern naturalists with Aldrovandi being the most active amongst them. While some other coeval naturalists tended to focus just on singularities (such as Belon), Aldrovandi took a giant step towards normalizing the monstrous and the marvellous by swallowing them up (Ashworth 1991). From the imaginary to the exotic, and from the exotic to the ordinary, Aldrovandi designed his work to represent nature as a continuum (Findlen 1966).

Marine mammals and monsters in Aldrovandi

Marine mammals and sea monsters have been reported in coastal, inshore and offshore regions of Europe since the Antiquity. Descriptions and interpretations of such observations and encounters have enriched regional legends and literature, as well as a body of knowledge about nature, which was added and reused from time to time. Information would spread naturally or was researched by interested people, scholars, philosophers and naturalists.

Aldrovandi met Rondelet and Salviani, in a visit to Rome in 1550, and may also have come into contact with Belon and Gesner, and be inspired by these authors to dedicate part of his study to fish and marine animals (Gudger 1934). This great encyclopaedic author, who possessed great economic resources, dedicated his life to the production of extensive and detailed folios of natural history (Gudger 1934). One of his most relevant volumes on this topic, "*De piscibus Libri V et de Cetis Lib. Unus*" or the books of fish and cetaceans, was only published in 1613 after his death and later reedited (Aldrovandi 1613; Aldrovandi 1640). In particular, the part related to fish comprises of 668 illustrated pages with hundreds of woodcuts most of which repeated from Belon and copied from other authors. Some images of specimen and their descriptions, such as details for each species on body shape, geographic location, nature, moods, and many other aspects including symbolic and moral ones, are new to his time. He describes Mediterranean fish, but most of the book is clearly a huge compilation of information with only a few own comments and considerations. Aldrovandi follows most of Gesner's method of classifying and ordering entries in his encyclopaedia, and his classification is also comparable to the one of Aristotle (Brito 2010). However, Aldrovandi often tended to correct it based on his own experience (Findlen 1996).

Yet, we find in Aldrovandi a certain degree of scientific progress or an early modern approach to natural history, which is visible in his inclusion

of fish in a separate book and marine mammals in other volumes. Strictly speaking, Aldrovandi's book of fish is the first existing book of ichthyology, given that cetaceans (*De Cetis*) were considered in a separate book, numbered consecutively. These were ordered after the fish and were given a higher hierarchical importance. It is also in this later book that he describes the manatee (Figure 1), *Manati Indorum* according to what Carolus Clusius⁶ had previously published, using the same image.

He also added entries for *Balaena Bellonij*, *Balaena vera Rondel* (Figure 2), *Orca* (Figure 3), *Delphinus prior*, *Scolopendra cetacea* (Figure 4), *Vitulus marinus* (Figure 5), among many other cetacean-like animals. Today, they are comprised in the non-taxonomic group that encompasses all marine mammals (dolphins and whales, seals and sea lions, manatees and dugongs). If some of the species are easily identifiable nowadays, such as the so-called "True Whale" (misticete or baleen whale, possibly the right whale - *Eubaleana sp.*) or the "Orca" (killer whale, the largest of all odontocetes or toothed whales - *Orcinus orca*), others are not. For instance, the *Scolopendra cetacea* must be the result of a misinterpretation of a stranded and decomposing whale or even the mixture of anatomical characteristics of distinct marine animals.

In his editions on the quadrupeds (Aldrovandi 1621; 1623), he dedicates some space to African land mammals, some of which were rediscovered following the maritime journeys of expansion through the Atlantic, such as the elephant, rhinoceros, giraffe and zebra, among many others⁷. In these same volumes Aldrovandi includes the sea cow (a common name given to manatees and dugongs since the early modern descriptions of natural history). The visual representation of a sea cow is the head of a cow placed in the marine environment in a style of iconographic repetition typical since Olaus Magnus (Brito 2010). In the case of the sea cow, being equivalent to its terrestrial counterpart, it was included among the terrestrial quadrupeds and not alongside marine animals or sea monsters. And no connection was established between the manatee (the herbivorous marine mammal) and sea cow. They are represented and described like two different animals, distinct entities produced by nature.

6. See Clusius, Carolus. *Exoticorum libri decem. quibus animalium, plantarum, aromatum...*: Item Petri Belloni Observationes (1605).

7. Several of these African animals were already known in Europe since long through contacts via the Mediterranean Sea (check Hallett, J. 2009. A girafa, o elefante e a zebra, In *Cortejo triunfal com girafas: animais exóticos ao serviço do poder*, 23-31. Fundação Ricardo do Espírito Santo Silva, Lisboa).

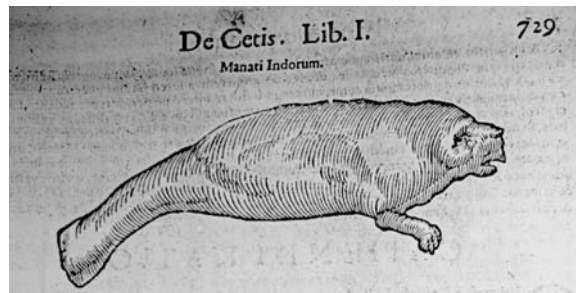


Figure 1 – “*Manati Indorum*”, the manatee. From the Aldrovandi’s volume “De Cetis. Lib. I”.

Figure 2 – “*Balaena vera*”, the true or real whale (a specie from the Mysticeti or baleen whales). From the Tavole di animali, Tavole vol. 004 Animali – Fondo Ulisse Aldrovandi – Università di Bologna (<http://www.filosofia.unibo.it/aldrovandi/pinakesweb/main.asp>)

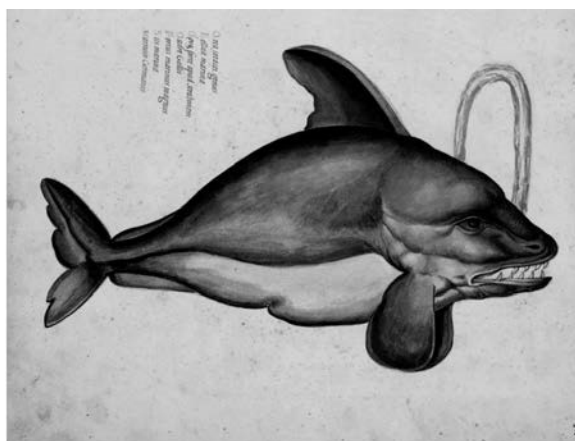
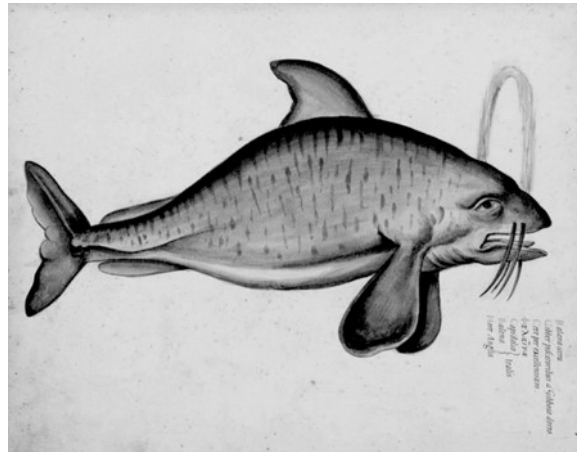


Figure 3 – “*Orca*”, the orca or killer whale (the larger of all Odontoceti or toothed whales). From the Tavole di animali, Tavole vol. 004 Animali – Fondo Ulisse Aldrovandi – Università di Bologna (<http://www.filosofia.unibo.it/aldrovandi/pinakesweb/main.asp>)

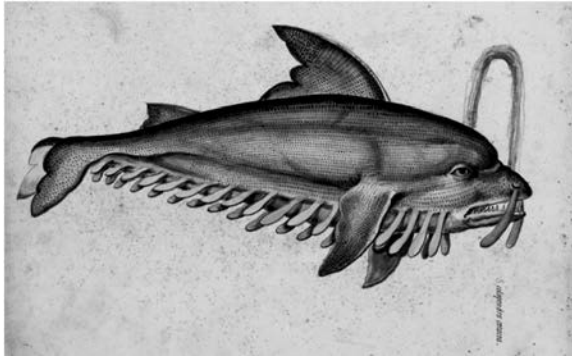


Figure 4 – “*Scolopendra cetacea*”, a non identified cetacean. From the Tavole di animali, Tavole vol. 004 Animali – Fondo Ulisse Aldrovandi – Università di Bologna (<http://www.filosofia.unibo.it/aldrovandi/pinakesweb/main.asp>)

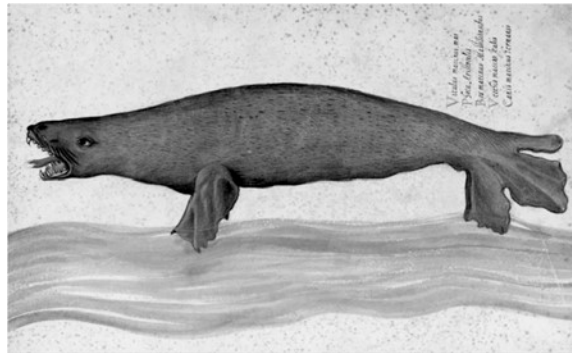


Figure 5 – “*Vitulus marinus*”, a seal. From the Tavole di animali, Tavole vol. 005-1 Animali – Fondo Ulisse Aldrovandi – Università di Bologna (<http://www.filosofia.unibo.it/aldrovandi/pinakesweb/main.asp>)

Subsequent editions of Aldrovandi’s work compiled into separate volumes beings considered more “monstrous” or “fabulous”. His history of monsters is a major scientific work of his time. There, he reviews all the knowledge and folklore previously written on monsters, from the reasoning of the ancient world and medieval biblical perceptions to his time, similarly to the encyclopaedic treatises on serpents⁸ and dragons (Sent *et al.* 2013). Concerning sea monsters, like the sea serpent, he clearly distinguishes between fantastic monsters and other real, well-known and identified marine creatures. In his edition of the history of monsters, Aldrovandi (1642) accumulates and classifies written and visual information on marine monsters: *Monstrum*

8. At least two other works of Aldrovandi have entrances that might be reference to large marine animals or cetaceans, or some kind of related marine monsters, respectively sea serpents and a marine rhinoceros eating crustaceans.

marinum humana facie, *Monstrum marinum Daemoniforme* (Figure 6), *Monstrum marinum effigie monachi* (Figure 7), *Monstra niliaca parei* *Monstrum marinum rudimenta habitus episcopi referens*, among several others. Most of them are beings with combined animal and human characteristics and mixed attributes, meanings and connotations. They are marine creatures that may easily be associated with antique or biblical legends of sea monsters, mermaids and other marine anthropomorphic beings (half-human half-marine beings) that proliferated in encyclopaedias and popular pamphlets as well as in the memory of people for a long time.



Figure 6 – “*Monstrum marinum Daemoniforme*”. From Aldrovandi’s book of the History of Monsters.



Figure 7 – “*Monstrum marinum effigie monachi*”. From Aldrovandi’s book of the History of Monsters.

In Aldrovandi, marine mammals (or other large marine animals) are mixed with marine monsters, in terms and categories. For this author⁹, monsters (either animals or people) are not an example of a negative category but rather an exotic natural category or simply a variation to the norm (e.g. Biancastella Antonino 2004).

9. Other coeval authors show the same perceptions towards monsters of nature, they simply reflect its curious ways and are not portents or signs of misfortune. This is the case of Ambroise Paré (see Paré, A. 1982 [1585]. *On Monsters and Marvels*. Translated with an Introduction and Notes by Janis L. Pallister. The University of Chicago Press, London).

The natural order of animals

The natural history written by various early modern authors in their huge and numerous volumes, published during the 16th and 17th centuries, corresponds to what is typically known as an encyclopaedic naturalism. These former European naturalists, mostly contemporary, produced works that were very similar in terms of the zoological classifications (Gudger 1934). Their books systematically compiled all available information on most recorded animals throughout history (Margócsy 2010). In their work, the hierarchical *Scala Naturae* must have been an inherent sympathetic appeal as they were used to think about their own social and economical relationships in hierarchical terms (Bynum 1975) and were consequently trying to rationally reflect the “natural” hierarchies.

The work of these authors gradually evolved since Belon’s first publications, both in written and visual terms. Belon first published a small book of great scientific quality but almost entirely devoted to the description of the dolphin, while his second book was an ichthyology work including many other marine animals. On the contrary, in Rondelet, the word “fish” included several quite different marine species. Gesner’s book, in turn, was encyclopaedic, detailed and scientific, although it still classified diverse and different aquatic species as fish. Coenen produced three books, two on fish and one on whales, which comprised watercolour images with embedded texts on many aspects of both natural history of species and their fisheries (Bennema & Rijnsdorp 2015). Aldrovandi’s fish and cetacean books gathered all available literature and served as an inspiration to several other authors who published since then. Jonston’s work, for instance, is almost entirely based on Aldrovandi’s publications, if not a mere translation of his volumes (originally written in Latin). The chronological development of these naturalists’ works is certainly not a coincidence but rather a result of Renaissance’s innovative spirit, based on scientific developments and leaps in the perception of the natural world (Gudger 1934). All these authors tried to categorize species and elements of the natural world according both to their own significance in nature and their importance to men. Further, nearly all merged real monstrous animals with fantastic, exotic and monstrous beings. In fact, some were really a lively mixture of early scientific knowledge, medieval fantasies and their own or others’ observations (e.g. Bennema & Rijnsdorp 2015). Moreover, they all drew on one another and relied on previous authors’ written descriptions and illustrations (Figure 8) (Brito 2010; Brito 2016). Natural knowledge was produced and incorporated in educated classes and spread to various audiences through copies and imitations.

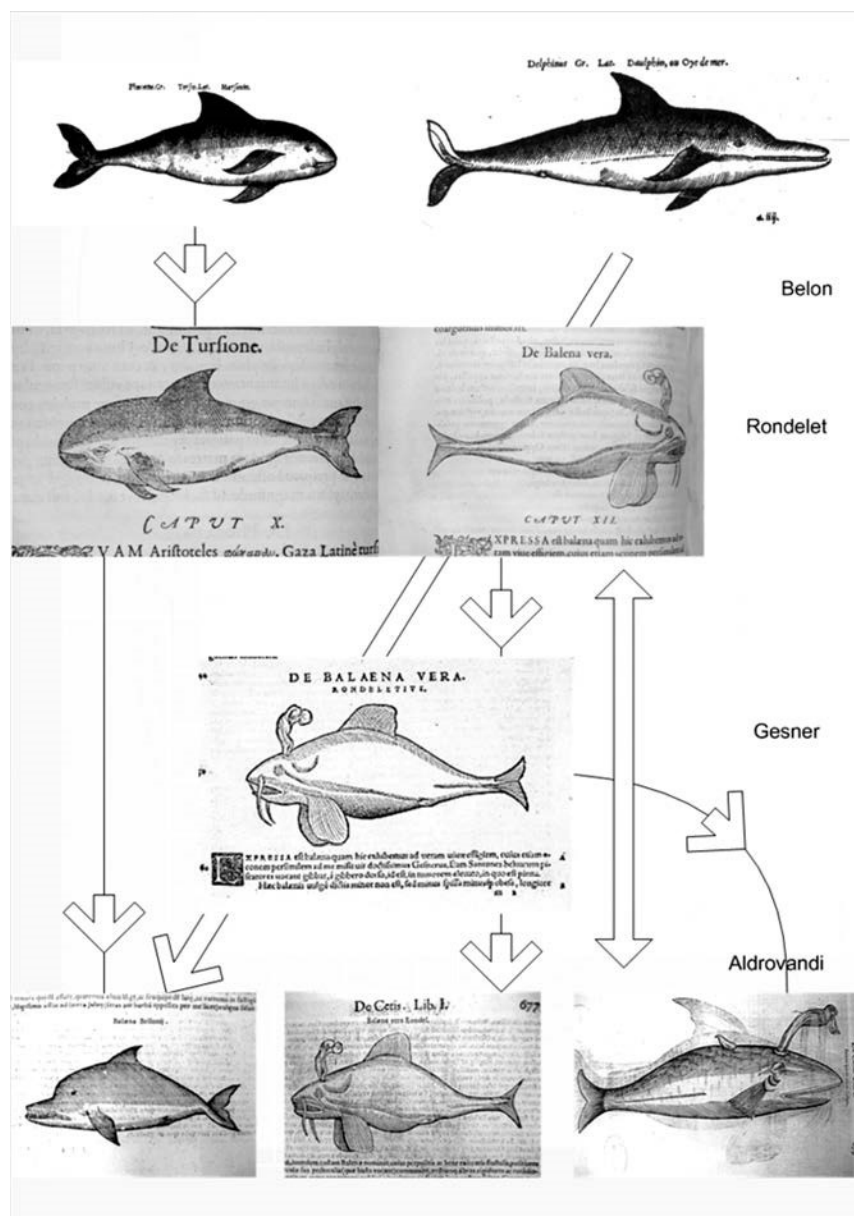


Figure 8 – Schematic representation showing the evolution of the illustration of cetaceans from Belon to Rondelet, from Gesner and to Aldrovandi, where the repetition or copy prevailed.

This all took place in a pre-Linnaean epoch, before the existence of a “science of living bodies”, within the traditional spirit and practice of natural history with its own emphasis on the three kingdoms of nature – animal, vegetable, and mineral. Anyhow, until then and still during this period, the Chain of Being had been part of that natural history tradition, with a strong presence of the concept of continuity and smooth contours between groups of organisms fading into one another (Bynum 1975), both upwards and downwards. In the pre-modern European naturalists, and particularly in Aldrovandi, prevails the degree of continuity within each animal group. For well-known animals, he assessed all available evidence and offered long and detailed descriptions. Regarding the chapters on exotic animals, he had to rely on travellers, printed broadsheets, and personal acquaintances to provide most of the information; in these cases he typically discussed the appearance of the animals but, whenever possible, tried to approach other topics. Nevertheless, an order prevailed.

We can clearly find in Aldrovandi’s works a system of specie’s classification according to their anatomical or behavioural characteristics, but also to their virtues, uses, moral and symbolical significance, or even to coeval local history and occurrence patterns. Moreover, in his works, Nature takes place as the only single factor of creation and the monstrous clearly finds its place into the natural order of animals.

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