Animal Classification in Ancient China

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Establishing the ways in which the ancient Chinese understood the internal relationships between animal species and the biological workings of the animal realm at large is a thorny undertaking as scholars find themselves confronted with textual sources that remain remarkably silent on the issue. To be sure, the ancient Chinese interacted in many ways with their surrounding wild and domesticated fauna. Records of animals, reports of animal activity and descriptions of the use of animals in socio-economic, religious, and ritual practice have been preserved in China’s oldest written records. Oracle bone inscriptions dating to the late Shang period (c. 1200-1045 BC) contain numerous animal data, and references to animals abound throughout the written sources of the subsequent Zhou (1045-221 BC) and early imperial periods (221 BC-9 AD). China’s oldest collection of poetry, the Shijing 詩經, collating poems composed between the tenth and seventh centuries BC, likewise provides a rich thesaurus of animal lore in pre-imperial China. Among the body of technical texts that developed in the milieu of natural experts such as astrologers, physicians, diviners, the makers of almanacs and practitioners of related specialties, writings dealing with animals

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2 The importance of the Shijing as a source of botanical and zoological nomenclature is reflected in titles of later lexicons, encyclopaedic treatises, and dictionaries that focus on classifying and annotating its rich fauna and flora. The earliest among these is Lu Ji’s 陸璣 (c. 222-280 AD) Mao shi caomu niuoshou chongyu shu 毛詩草木鳥獸蟲魚疏 (Explanatory Notes on the Plants, Trees, Birds, Quadrupeds, Insects and Fish in Mao’s Shijing), which sparked the compilation of similar works in later periods. For a full list see Sterckx (2002b), p. 250 (n. 39).
are scarce. Likewise texts and manuals describing the preoccupations of the Warring States farmer or herdsman—such as animal breeding, animal domestication and husbandry, animal physiognomy, and animal medicine—are preserved in small number. This paucity of specialized literature dealing with the animal world is no doubt partly due to the selective survival of texts. Alternatively it may suggest that such literature did not flourish or indicate that the technical discourse on animals may have been deemed unworthy of canonical survival. Liu Xin’s (46 BC-23 AD) catalogue of the imperial library at Chang’an, preserved in the Hanshu, contains few substantial writings on animals other than lexicographic materials and a few titles of technical works dealing with animal physiognomy, tortoise divination, and fishing.

While observations regarding animals and other natural phenomena are widespread in the sources, the contexts in which those data appear do not reveal an intense proto-scientific interest in animals by the observers who recorded and transmitted these data. Early Chinese writings rarely classify the animal world and its members as individuals and classes. None of these sources are concerned with the systematic description of animal life and morphology. To the Shang and Zhou people animals were first and foremost creatures to be hunted, killed and sacrificed. Sacrificial animal victims provided the blood, meat, and smoke that were offered to ancestral and other spirits and consumed in communion by ritual participants. Statements on the morphology of animals in sources dateable to this period therefore mostly focus on identifying sacrificial features associated with specific species. Hence late Shang, Zhou and Warring States writings contain an extensive vocabulary of graphs designating the colour of victim animals and occasionally include comments related to the texture of the hide, the length of the horns, or the suitability of specified meats for certain sacrifices.

To the poets of the Shijing, on the other hand, animal species and animal behaviour provided a thesaurus of images and analogies used to evoke a sphere or...
emotion, impart an impression of the natural world, or get a moral message across. Likewise, the masters of philosophy during the Warring States period rarely engaged in discussions of the animal world other than for the purpose of analogy or to illustrate a particular moral argument pertaining to the human world. Confucius is quoted arguing that “a swift horse is not praised for its physical strength (力) but for its virtue/excellence (德).” On one occasion following the conflagration of horse stables, Confucius inquired about the fate of the humans present during the incident, he “did not ask about the horses.” The same disinterested stance toward the biological analysis of the animal world is reflected in the Han compilation known as the Chunqiu fanlu (Luxuriant Dew of the Spring and Autumn) which states that “it is not the desire of the sage to be able to explain the species of birds and beasts (说鳥獸之類). A sage wants to explain benevolence and righteousness and regulate those ...”

Anthropocentric comments such as these may disturb the historian of science in his or her quest for remnants of a naturalist or zoological interest in animals in ancient China, a sentiment perhaps best exemplified by the absence of a volume on zoology in Joseph Needham’s monumental Science and Civilization in China project. Indeed if a proto-scientific approach towards the natural world implies an observer’s intention to engage in the detached observation, classification, and categorization of the natural world, a discussion of early Chinese animal classification could end here since few text passages in the early corpus de-contextualize animals from their social or literary environment or reflect a desire to taxonomise animals according to biological criteria.

One area which illustrates the low share of zoological theory in China is that of the basic terminology used to refer to animals both as a generic category or a collective of different species groups. The classical Chinese language lacks a linguistic equivalent for the term ‘animal’, which has its origins in the Platonic notion of ‘zoon’ and presupposes animacy and in-animacy as distinctive criteria. As a concept including everything which partakes of life, including humans and animals, as opposed to inanimate mineral and plant life, the term ‘animal’ may not be entirely compatible with classical Chinese equivalents such as wu 物 (‘things, creatures, phenomena’), shou 獸 (‘wild beasts’), qin 禽 (‘wild birds/beasts’), chong 蟲 (‘insects, invertebrates’), or even the modern generic

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7 On the use of animal imagery as poetic “stimuli” (興) or “comparisons” (比) in the Shijing see Ishikawa Misao (1976), (1977), (1983); Wen Yiduo (1948); Inoi Makoto (1975); and Wang (1974), pp. 114-125.
8 Lunyu zhushu, 14.13b (“Xian wen”).
9 Lunyu zhushu, 10.10a (“Xiang dang”). See also Yantie lun jiaozhu, 10.344 (“Xing de”), where the incident is quoted to show that Confucius held human beings in esteem and looked down on animals.
10 Chunqiu fanlu, 5.140 (“Zhong zheng”). See also Da Dai Liji, 5.8a (“Zhong zheng”).
term for animals, *dongwu* 動物 (‘moving being’). Generic definitions of animals (including the human animal) are rare. One (relatively late) passage preserved in the *Liezi* 列子 defines human beings as “anything with a skeleton seven feet high, hands different from its feet, hair on its head and teeth inside the mouth, standing upward as it runs.” Birds and beasts are described as “anything with wings at its side or horns on its head, teeth apart and claws spread out, flying upwards or walking bent down.” Yet it is far more common to find the human-animal difference described in terms of moral characteristics and/or cognitive properties as is illustrated, for example, in Xunzi’s 荀子 (c. 310-219 BC) famous thesis that man is really human not primarily because he is a hairless biped, but because of his ability to draw (moral) boundaries.

To be sure this relative absence of zoological analysis did not imply an absence of a desire to classify the natural world. Despite a hesitance to theorize about biological cognition, the ancient Chinese, like their Greek counterparts, were preoccupied with ordering the animal world, albeit not in Aristotelian or Linnaean terms. In what follows I propose that, in order to understand the ways in which the Chinese taxonomised the fauna that surrounded them, we need to identify culturally specific factors that influenced their construction of biological reality. I will argue that the motives underlying animal classification in China were not primarily zoological but figured within a larger project to explain the structures of the cosmos as a whole. Rather than perceiving the world as a purely physical reality that could be analysed as a biological system, the ancient Chinese classified the living species as part of a textual and ritual order based on correlation rather than differentiation. Animal classification was therefore subsumed within a larger hermeneutic quest, namely that of establishing a progressive socio-political, ritual and intellectual control over the world at large. Ancient Chinese animal taxonomy amounted to what I would call “zoo-graphy,” that is, the belief that through the progressive description of all phe-

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11 For more on these classifying terms see Sterckx (2002b), chap. 1; and Fèvre (1993).


13 Xunzi jijie, 5.79 (“Fei xiang”). See also *Shuoyuan jiaozheng*, 13.317 (“Quan mou”). For a survey of these moral taxonomies in the works of the masters of philosophy see Sterckx (2002b), pp. 88-91.

14 One of the major differences between the Greek and Chinese understanding of the hierarchy among living creatures was that Aristotle saw animals as part of a hierarchy of existence in a scale of perfection with human beings at the top. The Chinese on the contrary integrated animals within correlative schemes guided by extra-biological sets of principles such as time or season, space or biotope, colour, and human activity. As a result they never presented human beings as the embodiment of biological perfection, that is, as a biologically superior species (they did however judge human beings to be superior in moral terms). Furthermore the Chinese, as opposed to the Greeks, did not recognize sharp boundaries between natural species on the one hand and mythical or divine creatures on the other. See Lloyd (1996), pp. 106-112, 124; French (1994), pp. 15-16, 43-49.
nomina in the world one can establish social and political control over these phenomena and influence their inner and outer workings. This impetus to design classificatory systems that aspired to increasing completeness and inclusiveness emerged with greater prominence as China evolved from a feudal state into a unified empire. Animal classification was part of the project of empire-building, its typologies were inspired by imperatives that served the making of empire, namely, the need to represent the world in text, control its workings through ritual, and reinforce its internal cohesion through the development of correlative schemes. The authority to classify the natural world did therefore not issue from the naturalist or philosopher but instead was associated with the sage or ruler-king.

Folk versus Science

Before I proceed to lay-out my argument in greater detail below, it is worthwhile reviewing a few selective comments on natural classification in China made by scholars in recent years. My argument that taxonomisation implies inscribing animals within a textual and ritual order does not answer traditional expectations of either the naturalist or scientist, nor does it comply with the assumptions of the folklorist or ethnozoologist. Central to the intellectual quest of the naturalist, both in ancient (subsistence) and modern (industrial) societies, is a desire to classify animals first and foremost as biological creatures with the purpose of explicating the internal physiological and behavioural workings of the animal world itself. The ethnobiologist on the other hand attempts to clarify animals as creatures that operate in a symbolical realm and seeks to cast extra-biological links between the operation of the animal world and its classification by humans. One way in which the distinction between these two methods of classification has been presented is by identifying the former as science while labelling the latter as ‘folkbiology.’

While ethnobiologists are generally hesitant to present folkbiology as a ‘naive’ or ‘intuitive’ form of scientific biology and recognize the conceptual contingency between both classificatory systems, historians of science, especially scholars publishing in China, still remain linear-minded. Many continue to insist that the relationship between folkbiology and scientific taxonomy should be explained in terms of a hierarchy of values in which folk models represent a historically and conceptually undeveloped or inchoate stage prior to scientific classification. In the case of ancient China such perceptions continue to be reinforced by the absence of original zoological treatises and the desire by historians of science to reconstruct scientific taxa where none were intended. It is an approach that has even crept into scholarly writing on Chinese classification in the

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15 For a recent survey of the state of the field of the emerging discipline known as ‘folkbiology’ see Medin and Atran (1999).
West where it remains virtually unchallenged. Joseph Needham for instance qualified the *Kaogong ji*’s 考工記 grouping of amphibians and reptiles together with invertebrates as “an unfortunate mistake.” More importantly, it is an approach that, only recently, has survived in a volume on the history of Chinese zoology aspiring to fill the gap in the section on the biological sciences in Dr Needham’s project: Guo Fu 郭郛 et al., *Zhongguo gudai dongwuxue shi* 中國古代動物學史 (1999). This volume (which did not appear under the auspices of Cambridge University Press but was published in Beijing by Kexue chubanshe) represents a collaborative effort by Chinese historians of science and zoology supplemented with materials collected by Joseph Needham in preparation of his originally planned volume on zoology. While this volume presents a valuable survey of the state of scholarship in the history of zoology among Chinese scholars, the project as a whole remains unconvincing as a plea for the existence of a biological science of animals in early China, especially with reference to the pre-imperial and early imperial period. Its conception is illustrative of a prevailing trend among Chinese scholars in the history of zoology to infer a (proto-) scientific ideology from early Chinese sources by collating only those data that evince a zoological interest in animals while disregarding the nature of the sources, their share in the overall body of preserved texts, or the social context in which these writings may have circulated. Rather than making a strong case for the existence of a scientific interest in the animal world in early China, the authors focus predominantly on the association of modern zoological nomenclature with ancient Chinese terminology. In doing so they perpetuate a long Chinese tradition in which, as I will explain below, the explanation of the natural world is equated with the textual exegesis of the nomenclature that represent it. The position of the human observer and the question whether or not the early Chinese collected animal data with a view to analysing the workings of the animal world itself are not addressed.

Elsewhere and in another context, Scott Atran, based on his reading of Needham’s work, comments on the relative share of scientific versus folk classification of animals and plants in China:

Thus, no Chinese herbal or encyclopedia organizes more than a thousand or so basic kinds of plants—roughly the

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16 Needham et al. (1986), p. 471. Needham underlines in a note that the same confusion occurred outside of China. The present text of the *Kaogong ji*, which substitutes the original Zhouli part that was lost at the beginning of the Han, took its form in the early Han (collected by Liu De 劉德 c. 130 BC). It incorporates material that came down from the Warring States period.
same number found in all known folkbiologies and also in
the works of Ancient and Medieval Europe, the Middle East
and Mesoamerica. The Chinese Empire, it is true, encompassed
many different subcultures whose respective folk
taxonomies collectively sum to thousands of species. Yet,
there is no evidence of any systematic attempt at a taxono-
mic organization of morphological information beyond
that already present in any folk taxonomy.\textsuperscript{17}

In this analysis folkbiology provides an intuitive framework of ‘common sense’
data based on which scientific taxonomy may (or may not in the case of China)
seek to extrapolate or deduce universals across culturally specific categories.
“The epistemological claim of lay taxonomy,” Atran points out, “differs from
that of scientific taxonomy. Both provide a classification that is a key to nature,
but they have different presumptions about what that nature is. For folk, nature
can never be completely ‘hidden’, the presumption being that at least some of
the typical features of a kind are necessary, rather than incidental, to its real
nature.”\textsuperscript{18} As such folkbiology’s influence on a so-called scientific discourse on
animals includes a “basic common-sense disposition to apprehend and order
discontinuity in the living world.”\textsuperscript{19}

Taking stock of Chinese sources, I see no reason to challenge the theoretical
analysis of a bifurcation between folk and scientific taxonomy described above.
Yet I remain unconvinced of its claim to universality across cultures. Inferring a
distinction between a so-called scientific taxonomy as opposed to a folk taxon-
omy appears to me to be a hermeneutic process that is only fruitful depending on
the degree in which a culture developed both systems of classification roughly
contemporaneously. Do Chinese data on animals provide sufficient ground to
infer the coexistence of a folk and proto-scientific discourse? Based on the cur-
rently transmitted sources I suggest they do not. Given the internal structure of
the texts available for the study of animals in early China as well as the social
provenance of its main representative texts it is problematic to uphold a con-
scious distinction between a ‘universalist’—read technical—treatment of ani-
mals as opposed to ‘folk’—read particular, non-technical, instinctive or sym-
monic—classifications. Our understanding of Chinese animal classification ought
not to be guided by the question whether or not Chinese classification is inter-
ally consistent, appeals to biological universals, or has an exclusive or inclusive
(hence scientific?) character. Instead, central to the understanding of animal
classification in early China ought to be the question whether or not it was the
comprehension of biological morphology that provided the primary impetus for
classification.

\textsuperscript{17} Atran (1990), p. 18, pp. 26-27 ff.
\textsuperscript{18} Atran (1990), p. 79.
\textsuperscript{19} Atran (1990), p. 253.
The scientific or symbolic analysis of animals should not be ranked in sequence with the latter representing a so-called more primitive stage conditioning the discovery of the former. Attempts at classifying the living species in early China suggest that, first, symbolic classification and biology do not preclude each other, and second, that neither wholly requires the presence of the other to form a system that lends itself to a meaningful analysis of the natural world. To be sure, biology and symbolism often operate in tandem even in traditions with a more pronounced naturalist tradition than China. Aristotle’s discussions of animals, despite being motivated by a desire to explain animals as biological creatures, remain interwoven with mythology and folk elements. Furthermore symbolic observations of natural phenomena and (proto)-scientific taxonomisation can be organized around similar typological ‘common-sense’ principles since both systems display various levels of abstraction that may overlap (for instance dangerous-wild-carnivorous, tame-domestic-herbivorous). In short, both in the eyes of folk and scientist, a species remains by definition a relational concept.

In early China animal biology was moralized, that is, biological features were first and foremost analysed according to human moral analogy. While spontaneous and instinctive classification of animals was omnipresent, the motivation behind classification differed fundamentally from those traditionally recognized as (proto-) scientific as they were based on a different perception of the world at large. Unlike the Greeks, the Chinese did not develop a sustained systematizing discourse on animals that was concerned with the morphological or physiological examination and verification of the living species. In what follows I will identify and discuss the contexts in which early Chinese animal classification developed and formulate a number of organizing principles that, in my view, lie at the heart of early Chinese notions of classification.

Classification

As I indicated above, animal classification in early China operated within the larger framework of classifying the cosmos as a whole. Since no strict dichotomy was conceived between the human and non-human world, the impulse to carve up the world into an order consisting of animate versus inanimate creatures was relegated in favour of the exercise of correlating all existing phenomena according to criteria that transcended speciesm or biological particularity. At the highest level of abstraction, all living creatures (including humans) were thought

20 In fact the reverse can be true as is shown for instance in the Christian medieval period where illustrated bestiaries interpreted animal lore both as allegories and as actual accounts of the miracles of God’s creation while at the same time drawing substantially on the pagan ‘scientific’ writings from Greek and Roman antiquity. See Hicks (1993), pp. 106-111.

to possess more or less refined “blood and qi” (xueqi 血氣). “Blood and qi” was said to provide, at least by the late fourth century BC, the physiological substrate for life. But, more importantly, “blood and qi” also operated as a moral agent in its function as seat of a living creature’s temperament. Yet instead of differentiating “blood and qi” creatures into subcategories, the object to be classified was the cosmos as a whole with the animal world figuring as only one constituent part. Hence the hermeneutic path followed was one that sought to narrow down every existing reality from a primal unity. Several texts picture a differentiation of all things from a monadic unity into more concrete physical categories ranging from heaven and earth, mountains and rivers, to human beings, birds and beasts. This portrayal of a cosmomorphism in which the natural world diversifies itself through a process of dyadic and correlative opposition is typified in cosmogonies of a proto-Daoist signature. The Huainanzi 淮南子, for instance, speaks of birds, fish, and quadrupeds as subcategories or “differentiated creatures” (fen wu 分物) of a primal unity. However a consistent vocabulary of “division” (fen 分) or “differentiation” (bie 别) of the animal species remains absent.

Instead of unravelling nature as a biological texture, basic assumptions regarding the kinds of order that applied to the natural world included: 1) the belief that the whole world could be explained by means of graphs and categorized through lexicographic clarification and textual exegesis (lexicographic classification); 2) the idea that a ritual order pervaded all natural phenomena and that such order safeguarded the cosmic balance of the universe at large (ritual classification); 3) the idea that explaining the workings of the animal world implied detecting the interrelation between all species and identifying the way in which animals relate to the cosmos at large (correlative classification) rather than identifying their biological morphology. I will discuss each of these models of classification based on a selection of systematizing sources composed during the early imperial period but incorporating materials from the late Zhou period: the Erya 尔雅 and Shuowen jiezi 説文解字, Han ritual codices (mainly the Zhouli 周禮 and Liji 禮記), and fragments in the Huainanzi.

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22 See Sterckx (2002b), pp. 73-78.

23 The archetypal statement on the diversification of the cosmos into smaller entities is an aphorism in the Daodejing stating that “the Dao begets one; one begets two; two begets three; and three begets the myriad creatures.” See Daodejing jiangyi, 2.42. Similar cosmogonies occur in the “Yuan dao” 原道 chapter of the Huainanzi, the Mawangdui “Dao yuan” 道原, and the “Dao yuan” chapter in the Wenzi 文子.

24 Huainanzi, 14.463 (“Quan yan”). To my knowledge the earliest numerical reference to the whole of the animal species occurs in the ninth-century Youyang zazu (16.151), which states that there are 4500 kinds of birds and 2400 kinds of other animals.
Classification through Graphs

As China’s oldest preserved comprehensive character dictionary, Xu Shen’s 許慎 (30-124 AD) Shuowen jiezi 說文解字 is a source frequently quoted as evidence for the existence of a proto-zoological tradition in ancient China. The Shuowen is an important source for the study of animals but the ideology behind its composition was not inspired by zoological concerns. First of all, the Shuowen is concerned with lexicography and its scope is by no means limited to terminology pertaining to the natural world. Yet its animal entries exemplify a central feature associated with the act of classifying itself in early China, namely, the presumption that natural phenomena can be classified by taxonomising the written graphs that represent them. In other words, animal classification is situated at the intersection of natural observation and graphic representation: unravelling the ‘texture’ of the natural world implied elucidating the origins and composition of the graphs used to represent it. Underlying this organic view of etymology is Xu Shen’s assumption that graphs cannot be reduced to pre-semantic levels since they literally ‘embody’ realities: when the graph disappears or remains unexplained, its referent ceases to exist. Xu Shen further reinforces the ‘animate’ nature of the written graph by tracing its origins to Cang Jie’s 倉頡 observation of animal footprints, that is, animate rather than inanimate patterns. Beyond the level of the individual graph, intellectual control over the natural world is enacted through the textual exegesis of sources used to describe it. The latter, namely rendering the Classics free from doubt, was the real motivation of Xu Shen’s lexicographic exercise.

As an etymological lexicon the Shuowen is primarily concerned with the explanation and classification of animal names rather than animals. This is not to say that biological classification is entirely absent from the text. In a large number of animal entries Xu Shen includes additional data beyond the etymological analysis of a graph. For a number of animal graphs he details the appearance and behaviour of the animal in question. Often this information stems from a concern to explain its name. Animal names regularly reflect the natural behaviour of the creature they denote. Explaining a name therefore frequently consists in identifying characteristic features of the creature such as colour, size, alimentary habits, its morphology or physiognomy and the nature of its locomotion. For instance the entry glossing the graph shi 獭 as a ‘five skills squirrel’ (wujishu 五技鼠) reads:

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[This squirrel] can fly but cannot fly over house roofs. It can climb but cannot reach the top of a tree. It can swim but cannot cross a gorge, it can dwell in a hole but cannot conceal its [entire] body, it can walk but not in front of [i.e. faster than] humans. These are called its five skills.26

The origins of Xu Shen’s information are difficult to trace. His information appears to be primarily based on texts although we must assume that a number of glosses were inspired by (personal) observation or hearsay. For instance the ‘five skills squirrel’ is mentioned in the Xunzi, not in terms of its biological behaviour, but to symbolize the idea of having many talents and not being able to bring them to perfection.27 Occasionally the Shuowen includes generic biological statements such as the observation that animals that do not suckle are oviparous.28

At the heart of Xu Shen’s classifying principles are the 540 graphic classifiers (‘radicals’). A number of these radicals are representations or pictograms of animals, some of which date back to the Shang oracle bone inscriptions. Xu Shen’s etymological analysis could be seen as a zoo-taxonomic statement in the sense that it organizes animal graphs into subgroups based on the animal classifiers. Yet any analysis involving zoological explanations ultimately remains subsumed within the framework of lexicography.

Thus the composition of the Shuowen as a project and its inclusion of large numbers of animal graphs were driven not by an intrinsic interest in the analysis of animals but by a desire to render an existing corpus of texts free of doubt. Xu Shen is concerned first and foremost with the analysis of graphs representing the names of animals. This is clear from those entries that define the basic animal graph classifiers. Few of these animal classifiers are followed by a statement on morphology. Yu 魚 (fish), is defined as an “aquatic animal”; niao 鳥 (bird), as a “collective noun for birds with a long tail”; hu 虎 (tiger), as the “superior among the mountain animals”; and shu 鼠 (rat), as a “common noun for crevice animals.”29 In many cases the Shuowen does not define the animal represented by the graph, but explains the pictographic semblance of the graph that represents the animal. Rather than stating that a yang 羊 (goat/sheep/ovi-caprid) is an animal with certain physical and behavioural characteristics, Xu Shen states that the graph represents the horn of a sheep. Similarly when the entry for “tiger” (hu) states that its feet resemble human feet, Xu refers to the graphic semblance be-

26 Shuowen jiezi, 10A.37b-38a.
27 Xunzi jijie, 1.9-10 (“Quan xue”).
28 Shuowen jiezi, 13B.12b.
29 Shuowen jiezi, 11B.16b, 4A.38a, 5A.43b, 10A.37a.
tween the character ren 人 and the bottom part of the hu graph rather than to a biological similarity between the two species.\textsuperscript{30} In other cases animal graphs are defined by moral or cultural characteristics associated with the animal in question. Some examples:

- Ma 马 “horse” is glossed as nu 怒 “fury” and wu 武 “martiality,” a definition inspired by the horse’s role in military affairs.
- Niu 牛 is explained as shi 事 “to serve” and li 理 “to order,” reflecting its servant role as a means of transportation and its use in agriculture (plowing).
- Hu 狐 “fox” is qualified as a prodigious animal on which demons take a ride.
- Gui 龟 “tortoise” is glossed as jiu 舊 “old,” reflecting the use of tortoise carapaces in divination and the belief that tortoises grew old and were able to predict the future.\textsuperscript{31}

Another lexicon often cited as evidence for the existence of an early Chinese zoological tradition is the Erya. Scholarly consensus situates its compilation between the fourth and second centuries BC. It contains five chapters on animals dealing with insects and invertebrates, fish, birds, wild and domestic animals, and it may be the first source to dissociate domestic animals (chu 畜) from others as a separate category.\textsuperscript{32} Although clearly distinguishing between five groups of animals in its chapter titles, the Erya gives no definitions of the principal classifying terms chong, yu, niao, shou, and chu. Like the Shuowen, it provides first and foremost a list of names and focuses on the explanation of graphs/names. Its main preoccupation lies, as Wang Guowei (1877-1927) has pointed out, with the explanation of ming 名 “names.”\textsuperscript{33} Most entries are definiendum-definiens pairs and much of the Erya is in fact a synonymicon.

The Erya animal chapters do not provide a zoological differentiation of the animal world. Its general categories are based on a mixture of biological and lexicographic criteria. Recurring biological criteria include differentiae such as

\textsuperscript{30} Shuowen jiezi, 4A.31b, 5A.43b.
\textsuperscript{31} Shuowen jiezi, 10A.1a, 2A.5a, 10A.36a, 13B.9a.
\textsuperscript{32} It has been suggested that the Erya chapters on wild and domestic animals originally formed one chapter. See Zou Shuwen (1982), p.512. Following the research of Naitô Torajirô, Joseph Needham submits that its chapters on natural history were composed between 300 and 160 BC, with the chapter on domestic animals slightly later between 180 and 140 BC. He further notes the close association of its animal nomenclature with the Odes, the Mao Heng 毛 亨 commentary of which reached its definite form around the same time (c. 220-150 BC). See Needham et al. (1986), pp. 186-194.
\textsuperscript{33} See the preface to his Erya caomu chong yu niao shou shili 紫雅 風木 蟲 魚 鳥獸 釋例 in Wang Guowei (1923), 5.1a-2a.
male-female, great-small, and the use of \textit{zi} 子 to indicate the young or fledglings of a species. The \textit{chong} chapter includes reptiles, amphibians, crustaceans, piscines, turtles as well as insects.\textsuperscript{34} The \textit{yu} chapter includes tortoises, snakes, geckos and several graphs with a \textit{chong}-radical and the chapter on \textit{shou} includes a reference to humans.\textsuperscript{35} Occasionally, the \textit{Erya} includes a biological generalization or description of an animal’s behaviour. Although this is usually limited to a record of colour, size, shape, or habitat, in some entries more detailed information is given. For instance the chapter on birds contains a tip on how to differentiate the sex of birds:

\begin{quote}
\textit{If you cannot distinguish between female and male birds, do it by means of the wings; if the right wing covers over the left wing then it is a male bird, if the left wing covers over the right then it is a female bird.}\textsuperscript{36}
\end{quote}

The majority of the \textit{Erya} animal entries however focus on the recognition of animals and the association of the right name/graph with the appropriate creature, rather than on the cognition of the biological properties of the animals themselves. Biological information is subjected to the explanation of nomenclature.

In discussing the role of nomenclature for the establishment of what he accepted to be a Chinese natural science, Joseph Needham argued that the Chinese preoccupation with nomenclature, seen in works such as the \textit{Shuowen} and the \textit{Erya}, required “a scientific, or at least proto-scientific, tradition in which men were interested in debating exactly what it was that someone else was talking about.” This self-consciousness concerning appellations, Needham points out, was related to the Confucian doctrine of the rectification of names.\textsuperscript{37} Needham’s link between a fascination with nomenclature and political philosophy is probably justified, yet his assumption that this preoccupation with names required a widespread proto-scientific debate is, at least with reference to animal nomenclature, unsubstantiated. It is questionable whether the aforementioned \textit{Shuowen} glosses for the fox, horse, ox, or tortoise resulted from widely shared proto-scientific deliberation. These animal nomenclature are primarily the object of lexicographic deliberation.\textsuperscript{38} The \textit{Erya} and the \textit{Shuowen} were completed during an age that witnessed the emergence of empire, an age during which the world

\begin{footnotes}
\textsuperscript{34} See for example \textit{Erya zhushu}, 9.13b, 9.14b.
\textsuperscript{35} \textit{Erya zhushu}, 9.19b, 9.20a-b, 9.22a-b, 10.19a-b.
\textsuperscript{36} \textit{Erya zhushu}, 10.10b. See also \textit{Bowuzhi}, 2.3b.
\textsuperscript{37} Needham et al. (1986), pp. 143-144.
\textsuperscript{38} A recent and detailed study of Chinese animal nomenclature by Li Haixia (2002) corroborates this point. Li takes due account of the linguistic and historical complexities underlying the lexicology of animal names and, to my knowledge, is among the first Chinese scholars to openly argue against identifying early graphs by means of later or contemporary nomenclature.
\end{footnotes}
was viewed as a reality in which all phenomena were interrelated within an encompassing hierarchy. Human activity and the cycle of the natural world were thought to interact in consonance and this search for harmony among all things was reflected in the Han view of language and the very project of lexicography itself. The lexicographer, through quasi-etymological associations such as paronomasy and other linguistic puns, sought to relate different aspects of reality to each other by glossing them together as the explanation of a graph. Thus while the naturalist would have considered it his task to relate the appearance and behaviour of a specific animal to a larger group or species by identifying formal and behavioural similarities or differences, the lexicographer considers it his task to explain animal names by relating these semantically or phonetically to a common graph. The naturalist seeks to explicate shared behaviour among creatures in the natural world while the lexicographer operates as an exegete of heterogeneous graphs within a textual realm. The naturalist is concerned with real creatures, while the lexicographer imposes a nominalist order on the world. Linguistic authority and textual precedent therefore supersede natural observation in determining the contours of the animal taxa.

That the lexicographic classification of animal nomenclature reached its height just prior to or during the early Han is not coincidental. Political unification, and consequently, the expansion of the real and imaginary fauna of an extended empire, prompted the creation of order among these new data. The gradual expansion from feudality to empire with its influx of exotic spoils from distant regions to the Chinese heartland and their collection in (hunting) parks must have sparked a growing realization of the immense variety of fauna and flora ‘under heaven.’ The classification of this new world in dictionaries or its acclamation in rhapsodic prose poetry therefore may have been partly inspired by a need to understand and visualize this newly extended imperial bestiary by means of texts and hence establish symbolical and intellectual authority over all species once they were subsumed in catalogue.39

39 For a discussion of the fu 賦 (rhapsody) genre as a textual celebration of empire see Lewis (1999), pp. 317-25. The Shanhaijing 山海經 could be seen as an ideological precedent of cosmographic collection through the representation and ordering of the world in graphs or text. This text, which dates, at least partly, to the Warring States or Qin period, is presented in one source as a written record of the unknown creatures Yu 禹 confronted on his demiurgic tour of the empire. See Wu Yue Chunqiu, 6.105; reiterated in Lunheng jiaoshi, 38.597 (“Bie tong”). The preface accompanying Liu Xin’s edition confirms the link between Yu’s ordering of the universe and its classification into a written record. Topography is here presented as a mental act of pacing through unknown lands, and identifying and controlling its creatures by incorporating them by name in a text. Vera Dorofeeva-Lichtmann (1995, 2003) has argued that the Shanhaijing not only provides an imaginary or idealised perception of geographical space as a magical landscape, but also, in its textual structure itself, replicates the cosmographic route it depicts thereby creating a ‘textual space.’ The Shanhaijing thus embodies the idea that the world can be ordered through naming on two levels: first, in the act of naming unknown creatures in
Ritual Classification

While the lexicographer classified, explicated, and debated animal names as textual doubles of real creatures in systematizing lexica and glossaries, the ritualist classified animals according to social criteria and compartmentalised the animal world within the overall structure of the ritualised state. Here the interest in the classification of animals fundamentally merged with their use in the socio-political and ritual sphere. Animals were part of social and ritual categories that shaped human society. Hence the formal description and classification of animals in early China was often modelled on their social and ritual function rather than on biological properties.

One of the richest sources to provide information about animals in early China is the *Zhouli*. This text presents a cosmological model in which every aspect of human activity is subsumed within an order of “offices” (*guan* 官). Many functionaries in the *Zhouli* are commissioned with duties involving animals such as the following: collecting sacrificial meats, gathering exotic species, breeding, herding and training domestic animals, taming wild species, the management of animal tributes and parks, the veterinary treatment of animals, the care of stables, the preparation of animals for ritual occasions, the tax collection of animal horns and bird feathers, the expulsion of venomous species, the settlement of legal disputes involving animals, the organization of the hunt and the fishing season, and the expulsion of demonic and prodigious animals. However none of the *Zhouli* officers are charged with the observation, gathering, and classification of empirical data. Animals here do not form the object of a naturalist inquiry, instead they are the object of administrative and ritual management.

The ritualist taxonomised animals according to socio-religious criteria. Since sacrifice was the single most important ritual context in which animals were used, animal classification often amounted to the establishment of victimal hierarchies. These hierarchies could be dictated by the status of the persons who were allowed to sacrifice or the spirits that were addressed. Sacrificial criteria functioned as a kind of taxonomic different in their own right. For instance when, according to the *Liji*, officers of different ranks were permitted to sacrifice oxen, distinctions were made according to the physical appearance of the animal: the Son of Heaven had to use oxen of one colour with a pure and unmixed hide; a feudal prince sacrificed a fattened ox and a grandee was permitted to

the text itself and, second, in the textual representation of the world as a whole. As an enterprise of textualisation, the entire work presents itself as a continuation of the cosmic act of naming and recording, a project that had been initiated by sages such as Yu the Great.

40 *Zhouli zhushu*, 16.15b (plume gatherer); 16.15a (horn collector); 7.5b-11a (manager of furs); 7.11a-b (keeper of hides); 14.10b-11a (arbitrator, official who mediates in cases of injury or death caused by wild animals); 32.17b-18a (hunting charioteer); 4.17a-19a (hunter); 4.19a-b (fisherman); 4.20b-21a (keeper of dried meats); 26.5a-6a (invocator at the hunt); 16.14a (tracker), etc.
According to one account, bull victims for the sacrifice to Heaven were fed over a five year period until they reached a weight of 3000 jin (ca. 700 kg in Han times). An alternative classification differentiated oxen according to the length of their horns:

Bulls used in sacrificing to Heaven and Earth have horns [no longer than] a cocoon or a chestnut. Those used in the ancestral temple have horns that can be grasped with the hand, and oxen used for feasting guests have horns one [Chinese] foot long.

Animal victims could also be classified according to the hierarchy of deities or natural forces they were intended to address:

If there was anything unpropitious about the ox intended for a sacrifice to the Thearch (di niu), it was used to be sacrificed to the spirit of the grain (ji niu). The Thearch’s ox was to be kept in a cleansed stable for fattening during three months. The Spirit of the Grain’s ox only needed to be perfect in parts. This is how a distinction was made between the spirits of heaven and the ghosts of man.

Sacrificial hierarchies were also perpetuated beyond the point of slaughter: raw meats were offered to distant ancestors and spiritual forces of high status while tasty, cooked and seasoned meats were meant for consumption by the spirits near at hand and the ritual participants involved. It is clear that these classifications of animals operated not in the world of the proto-zoologist but within the frame of the ritualist in charge of culinary and sacrificial provisions. Like the physiognomist, a good cook or sacrificial officer was able to judge an animal’s taste from its outer appearance and conduct:

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41 Liji zhushu, 5.19a (“Qu li xia”).
42 Han jiu yi, 2.2a; Hanshu, 25A.1231 note 5.
44 Liji zhushu, 26.6b (“Jiao te sheng”). See also Kongzi jiayu, 7.2b (“Jiao wen”).
45 See Boileau (1998-1999), pp. 89-123; and Sterckx (2002a)
46 I discuss the role of ritual cooking and the figure of the cook-minister in Sterckx (2005b) and Sterckx (forthcoming).
When an ox bellows at night, its meat tastes like rotten wood. When a sheep has long and felted fur, its hair has a frowzy odour. If a dog has red thighs and a hasty walk, [its meat] has a putrid smell. When a bird loses its colour and sings with an exhausted voice, [its meat] is fetid. When a pig looks blind and squint-eyed its flesh is measly. When a horse is black over its spine and striped on the legs, it tastes rotten. 47

To be sure sacrificial taxonomies and proto-biological classification were to some extent complementary since the social validation of a particular species usually depended on its physical qualities, albeit that the actual classification itself was rarely formulated in biological or ‘speciest’ terms. Hence the Zhouli distinguishes horses into various categories including horses suited for breeding, warfare, ceremonial display, travel, hunting, and physical labour. 48 While horses here are differentiated into appropriate categories for equine usage, the criteria used to differentiate the animals must have been partly based on morphological qualities (colour, height, sex). Yet the fact that the animals are not described in biological terms suggests that determining their use to humans was considered more important than describing their morphology, regional origins, or biological properties.

To summarize, instead of ordering the animal world into a proto-zoological project based on an analysis of their natural qualities, ritualists integrated the animal world into a social model in which the animal’s natural behaviour was classified within the province of human office. These taxonomies do not focus on animals or innate animal behaviour in se but reflect on those aspects of animal behaviour that are relevant to the human order. Several Chinese historians of science however continue to rely on such passages to make a conceptual leap toward zoological classification. To sift out parts of these ritual codices which contain what appear to be zoological data at first sight, and present these as evidence for an inclination towards a scientific investigation of animals in early China seems therefore hardly justifiable given the context in which these data appear. 49

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47 Zhouli zhushu, 4.11b. A similar passage occurs in Liji zhushu, 28.1b ("Nei ze"), adding that pullets whose tails could not be grasped by the hand were not eaten. A passage in the Lüshi chunqiu divides animals in three groups according to their taste: aquatic animals which have a fetid smell, carnivores with a putrid scent, and herbivores with a frowzy odour. See Lüshi chunqiu, 14.740 ("Ben wei").

48 Zhouli zhushu, 33.1a. For a list of all (92) animal names in the Zhouli with brief comments see Liu Xingjun (2001), pp. 74-77.

Correlative Classification

A third model of classification was the subsumption of the animal world within the correlative models of yinyang 陰 陽 and the five phases (wuxing 五 行). Through its attempts to find homologies between natural and human phenomena, and through its assumption that the natural world was deeply implicated in human affairs, correlative thinking classified the animal species into a (numerological) model that served to regulate human society by adjusting its workings to patterns in nature. The classification of the relations among the living species within correlative schemes can be seen as another way in which Warring States and Han thinkers projected the organization of the animal world within the bounds of human control. In its aspirations to encompass both natural and cultural phenomena within a comprehensive classificatory scheme based on criteria of interrelatedness and interdependence, yinyang and correlative thinking supplied much of the rationale behind the early Chinese hesitance to view the animal world as a separate sphere of knowledge.

Correlative categorization had gradually fermented into the works of Chinese philosophers by the mid-third century BC. By then the most frequently recurring scheme approximating a zoological classification was a differentiation of all living species into five categories. This standard model identified the living species according to their external shape, more specifically the covering of the skin. It divided animals into scaly, feathered, naked, hairy and armoured species:

<table>
<thead>
<tr>
<th>Animal category</th>
<th>Phase</th>
<th>Season</th>
<th>Direction</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>scaly</td>
<td>wood</td>
<td>spring</td>
<td>east</td>
<td>green/blue</td>
</tr>
<tr>
<td>feathered</td>
<td>fire</td>
<td>summer</td>
<td>south</td>
<td>red</td>
</tr>
<tr>
<td>naked</td>
<td>earth</td>
<td>late summer</td>
<td>centre</td>
<td>yellow</td>
</tr>
<tr>
<td>hairy</td>
<td>metal</td>
<td>autumn</td>
<td>west</td>
<td>white</td>
</tr>
<tr>
<td>armoured</td>
<td>water</td>
<td>winter</td>
<td>north</td>
<td>black 51</td>
</tr>
</tbody>
</table>

Although subject to debate, most versions of this scheme identified human beings as the central class of ‘naked’ animals. It has been argued that the inclusion of humans as naked or ‘scantily haired’ species was prompted by the increasing influence of wuxing thought during the Western Han period, but this is by no means certain. Evidence suggests that a generic category of hairless animals

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51 This simplified table is based on the yue ling 月 令 model in Huainanzi 5 (“Shi ze”). For a similar table of the Lüshi chunqiu calendar see Graham (1986), p. 48.
was known in pre-Han times, and colour correspondences applied to animals already existed before Han’s systematization of five phase theory. The inclusion of human beings within the framework of five phase theory was an attempt to group humans along with other animal species within one and the same classificatory framework.

Just as lexicographic and ritual classification is increasingly evident in sources dateable to the early imperial period of political unification and cultural expansion, so the most comprehensive descriptions of animals and animal activity according to *wuxing* and *yinyang* models developed in works of a Han signature. Among these texts the syncretistic *Huainanzi* (compiled c. 140 BC) is most notable for its inclusion of animal data. Discussions on animals in the *Huainanzi* are scattered across different chapters. Yet their division across different thematic chapters suggests that animal classification is part of a larger cosmogonic and cosmological portrait; it did not emerge out of a conscious attempt to develop a comprehensive zoological theory. One passage in a chapter dealing with astronomy correlates animals and their locomotion within a *yinyang* paradigm:

> As for the hairy and feathered animals, they belong to the species which fly and run. Therefore, they belong to the *yang*. As for the armoured and scaly animals, they belong to the species which hibernate and hide. Therefore they belong to the *yin*. The sun is the ruler of the *yang*, hence in spring and summer the herd animals shed hair, and at the solstice elaphures and deer shed their antlers. The moon is the ancestor of the *yin*. Therefore, when the moon wanes, the brains of fish deplete, and when the moon dies, the swollen oyster shrinks. Fire goes up and trails, water goes down and flows; therefore birds flying up go high, the fish when stirred go down. Things which are of a kind stir each other.

Elsewhere, in a chapter on topography, living creatures are classified according to their diet and the produce they take in from the soil: creatures that feed on water, earth, wood, grass, (mulberry) leaves, flesh, *qi*, and grain, and spirits (*shen*) who are said to be immortal and need not feed themselves. Another passage combines observable data with *yinyang* classification, asserts that all

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53 For instance the “Xuan gong” calendar in the *Guanzi* mentions (in its section on the centre) that fire produced by hairless animals is used for cooking. See *Guanzi jiaoshi*, 9 (“Xuan gong tu”), 3.91.

54 One of the Qin daybooks excavated at Shuihudi associates the north with the use of red animal victims, the south with black, east with white, and the west with green victims. See *Shuihudi Qin mu zhujian*, p. 195. The *Mozi* groups together east-chicken-green, south-dog-red, west-sheep-white, north-pig-black. See *Mozi jiaozhu*, 68.894-95 (“Ying di ci”). The ox is occasionally linked with the centre. See e.g. *Xinshu*, 10.4a-b (“Tai jiao”).


56 *Huainanzi*, 4.142-43 (“Di xing”).
creatures upon birth are differentiated into different categories, and specifies species differentiae based on diet and anatomy. Finally the *Huainanzi* contains a passage describing the evolution of animals and plants which includes an evolutionary scheme in which mythical ancestors beget (“give birth to,” *sheng* 生) five classes of animals via the intermediary of a dragon specimen (in the case of humans, an aquatic “Oceanman,” *hai ren* 海人). The text suggests that all animals ultimately emerge from one. Each of the aforementioned five animal classes are said to originate from an undifferentiated state and pass through a dragon phase.

Downy hair gave birth to Oceanman. Oceanman gave birth to Ruojun. Ruojun gave birth to the sages; the sages gave birth to ordinary people. Thus creatures with scanty hair are born from ordinary people. Winged Excellence gave birth to Flying Dragon. Flying Dragon gave birth to the phoenix. The phoenix gave birth to the simurgh (luan niao 鸯鳬), and the simurgh gave birth to ordinary birds. In general feathered creatures are born from ordinary birds. Hairy Heifer gave birth to Responsive Dragon. Responsive Dragon gave birth to Establish-Horse. Establish-Horse gave birth to the qilin 麒麟. The qilin gave birth to ordinary beasts. In general hairy animals are born from ordinary beasts. Scaly One gave birth to Scaly Dragon. Scaly Dragon gave birth to Leviathan. Leviathan gave birth to Establish-Apotrope. Establish-Apotrope gave birth to ordinary fishes. In general scaly creatures are born from ordinary fishes. Armored Abyss gave birth to First Dragon. First Dragon gave birth to Dark Sea-Turtle. Dark Sea-Turtle gave birth to Divine Tortoise. Divine Tortoise gave birth to ordinary turtles. In general armoured creatures are born from ordinary turtles.

This passage discloses a view of the cosmos as a structured pattern of energy in which each creature is endowed with a higher or lesser degree of refinement. Yet, despite its internal sophistication, this text, like all other correlative schemes in Warring States, Qin, or Han texts, does not specify its classification beyond five classes.

In assessing the value of animal classification according to correlative systems based on *yinyang* and the five phases, one could point out that the data included in these schemes are not always uniform and contain inconsistencies and variations. For example while the horse is commonly associated with *yang*...
it is also found associated with yin, the earth and the female (connoting fertility). Amphibians are usually classified with scaly or fishy creatures, yet a text dating to the former Han excavated at Yinqueshan 銀 喬 山 (Shandong) treats them as “naked” animals.

The degree to which these classifications are consistent should, however, not be the main criterion in judging whether we are dealing with a relevant taxonomy. Several correlations and five phase placements were indeed subject to debate among Han scholars themselves. The central question here is whether or not correlative classifications were applied to the animal world out of zoontonomic consideration, or whether the animal world was subsumed into a theoretical framework of classification in order to illustrate the all-encompassing applicability of yinyang and five phase categorization to every aspect of the physical world. The information preserved in Warring States and Han writings supports the latter hypothesis. These texts are primarily concerned with model thinking: rather than deriving a taxonomy by means of data gathering, animals are fitted into the model to enhance the functionality and authority of the model itself. Correlative classification provides a classificatory system of functional relations rather than of ontological quintessences. Explaining or inferring in such a correlative system is filling a place within an overall pattern rather than assigning its constituent elements to essentialist categories. Animals can therefore be defined as belonging to yin or yang depending on the relational context in which they figure. The Chinese taxonomist is preoccupied with formulating the contours of the category and assigning each element a due place within these wider situational frameworks rather than providing an internal analysis of its constituent elements. Just as the lexicographer related animals to the world of written graphs and the ritualist described animals according to socio-religious criteria, so the cosmologist’s impulse to study animals as biological creatures was dominated by a tendency to categorise them within the wider context of reality as a whole.

The agent ultimately capable of comprehending and relating all phenomena within such a scheme was the proverbial sage or ruler-king rather than the naturalist. And the sage was first and foremost an agent who engaged in the mental process of interrelating and bringing forth unifying categories (tong lei 統 類) to analyze the phenomena of the world. In the eyes of the sage, the comprehension of the bigger picture of reality was to prevail over the call to scrutinize individual elements in the natural world. In the jargon of the contemporary life sciences one could paraphrase this by stating that fenleixue 分類學 (the study of how to differentiate categories) traditionally prevailed over dongwuxue 動物學 (zool-ogy, that is, the internal analysis of the categories themselves).

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Concluding Remarks

Every culture classifies and differentiates its surrounding reality. Even the absence of classification should be considered a classificatory statement. It is clear that a number of basic principles regarding classification and categorization apply to the early Chinese classification of animal data. First, a prime concern for any tradition seeking to classify living kinds either culturally or scientifically consists of the collection of morphological data into basic-level categories or taxa (units). Second, an important assumption underlying this deductive process is the search for patterns of similarity and homogeneity, that is, the observer seeks to rank individual morphological data according to their greatest probability of likeness and/or difference. Finally, classification involves varying degrees of abstraction of biological reality and, as a consequence, generic typicality is made to prevail over individual specificity. What do attitudes towards animals tell us about the ways in which the early Chinese conceived of classification and categorization? First, they indicate that classification through integration and correlation prevailed over classification through differentiation: rather than classifying the whole as a collection of parts, taxonomisation is seen as the establishment of a comprehensive whole encompassing all parts. In principle this orientation would lean itself well to biological abstraction. However, secondly, sources suggest only a faint interest in biological observation. The interest in the biological explanation of the animal world is conditioned by the degree in which biology can be made subject to the explanation of the world as a reality that needs to be represented in a textual, ritual and hence moral order. Finally, throughout the various modes of classifying the animal realm natural empiricism remains secondary to the desire for comprehensiveness and totality in classification.

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