HOW NONHUMAN ANIMALS WERE TRAPPED IN A NONEXISTENT UNIVERSE

BY
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The first in a series of articles by the author whose overall purpose is to explain why legal rights need not be restricted to human beings and why a handful of rights that protect fundamental interests of human beings should also protect the fundamental interests of such nonhuman animals as chimpanzees and bonobos. The second article in this series traces the development of the common law as it concerns the relationships between human and nonhuman animals from its beginnings in the Mesopotamian "law code" of the third and second millennia, B.C. until today.

I. INTRODUCTION

In a famous lecture, Oliver Wendell Holmes, Jr. emphasized the importance of the knowledge of history to an ability rationally to analyze the present value of legal principles. In Holmes' view, an understanding of history "is the first step toward an enlightened scepticism, that is, toward a *deliberate reconsideration* of the worth of those rules"; the alternative is mere "blind imitation of the past."[1] As "[l]aw is a scavenger . . . [that] grows by feeding on ideas from outside, not by inventing new ones of its own,"[2] its history and evolution intimately

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1 The rational study of law is still to a large extent the study of history. History must be a part of the study, because without it we cannot know the precise scope of rules which it is our business to know. It is a part of the rational study, because it is the first step toward an enlightened scepticism, that is, toward a deliberate reconsideration of the worth of those rules . . . . It is revolting to have no better reason for a rule of law than that so it was laid down in the time of Henry IV. It is still more revolting if the grounds upon which it was laid down have vanished long since, and the rule simply persists from blind imitation of the past.

Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARV. L. REV. 457, 469 (1897). The evolutionary biologist, Ernst Mayr, makes the same point about science. "An analysis of almost any scientific problem leads automatically to a study of its history . . . . To understand the history of a scientific problem, however, one must appreciate not only the state of factual knowledge, but also the *Zeitgeist* of the time." ERNST MAYR, ONE LONG ARGUMENT: CHARLES DARWIN AND THE GENESIS OF MODERN EVOLUTIONARY THOUGHT vii (1991).

2 E. Donald Elliott, *The Evolutionary Tradition in Jurisprudence*, 85 COLUM. L. REV. 38, 38 (1985).

weave among the histories and evolutions of other disciplines. The understandings and misunderstandings of science, philosophy, and theology therefore frequently underpin important legal principles.[3]

In 1854, the California Supreme Court barred Chinese witnesses from testifying in proceedings in which a white person was a party, as Chinese were believed to constitute a race of people "whom nature has marked as inferior, and who are incapable of progress or intellectual development beyond a certain point."[4] In 1857, the United States Supreme Court held that a "[Negro] of the African race" was not a citizen of the United States because of the status of his race at the time of the ratification of the United States Constitution. Blacks were then seen as "beings of an inferior order" and so "far below [whites] in the scale of created beings" that they "had no rights which the white man was

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[3] For example, in the seventeenth century the legal positivists opened the attack upon the value of the common law in light of its changing and probabilistic nature. In arguing for the need for certainty in law, Thomas Hobbes, the founder of legal positivism, invoked the "mathematical method" of Galileo, Bacon, and Descartes, who shared the ancient Aristotelian belief that certain truth existed. On the other hand, Matthew Hale, the English Chief Justice, argued that the common law could aspire to nothing more certain than highly probable truths or moral certainty. Here, Hale echoed the physicist and chemist, Robert Boyle, a proponent of the "empirical method," which held that scientific truths could never be known with certainty. Harold J. Berman, *The Origins of Historical Jurisprudence: Coke, Selden, Hale*, 103 YALE L. J. 1651, 1724-30 (1994). *See also* BARBARA J. SHAPIRO, PROBABILITY AND CERTAINTY IN SEVENTEENTH-CENTURY ENGLAND: A STUDY OF THE RELATIONSHIPS BETWEEN NATURAL SCIENCE, RELIGION, HISTORY, LAW, AND LITERATURE 3-14, 167-93 (1983) (In Shapiro's opinion, "[w]e do not wish to argue that the developments in science, or history, or theology caused developments in law. But parallel developments in so many areas of thought make it equally foolish to assert the autonomy of law"). From the sixteenth to the nineteenth centuries, law and political science often assumed that "all phenomena - stars, billiard balls, forms of government, whatever - follow[ed] the same basic principles." Berman, *supra*, at 1670. This assumption influenced the founders of the United States. *See* David Favre and Matthew McKinnon, *The New Prometheus: Will Scientific Inquiry Be Bound by the Chains of Government Regulation?*, 19 Duq. L. R. 651, 712-719 (1981); GARRY WILLS, INVENTING AMERICA 93-110 (1978).

[4] The same rule which would admit them to testify, would admit them to all the equal rights of citizenship, and we might soon see them at the polls, in the jury box, upon the bench, and in our legislative halls.

This is not a speculation which exists in the excited and over-heated imagination of the patriot and statesman, but it is an actual and present danger.

The anomalous spectacle of a distinct people, living in our community . . . bringing with them their prejudices and national feuds, in which they indulge in open violation of law, whose mendacity is proverbial; a race of people whom nature has marked as inferior, and who are incapable of progress or intellectual development beyond a certain point, as their history has shown; differing in language, opinions, color, and physical conformation; between whom and ourselves nature has placed an impassable difference, is now presented, and for them is claimed, not only the right to swear away the life of a citizen, but the further privilege of participating with us in administering the affairs of our Government.

People v. Hall, 4 Cal. 399, 404-405 (1854).

bound to respect."[5] In 1875, the Supreme Court of Wisconsin unanimously denied a woman's motion to practice before it, as the female practice of law was a "[departure] from the order of nature," indeed "treason against it."[6] Catalyzed by the recognition that these ideas were the rotted fruits of dead ages, the epigoni of superseded philosophies, science, and theologies, later "deliberate reconsiderations" led to the discard of legal principles grounded upon the alleged natural inferiorities of the female, Chinese, and black.

Today the common law denies justice to all nonhuman animals. This article will begin the "deliberate reconsideration" of this wholesale denial of justice by examining the philosophies, science, and theologies from which the common law sprang, journeying well past Medieval law, past imperial Roman law, into Greek and Roman philosophies, Greek science, and early Hebrew and Christian theologies. Part II discusses how the ancients, especially Aristotle, the Stoics, and

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[5] [T]hey were at that time considered as a subordinate and inferior class of beings, who had been subjugated by the dominant race, and, whether emancipated or not, yet remained subject to their authority . . . .

They had for more than a century before been regarded as beings of an inferior order, and altogether unfit to associate with the white race, either in social or political relations; and so far inferior, that they had no rights which the white man was bound to respect; and that the negro might justly and lawfully be reduced to slavery for his benefit. He was bought and sold, and treated as an ordinary article of merchandise and traffic, whenever a profit could be made by it. This opinion was at that time fixed and universal in the civilized portion of the white race. It was regarded as an axiom in morals as well as in politics, which no one thought of disputing, or supposed to be open to dispute; and men in every grade and position in society daily and habitually acted upon it in their private pursuits, as well as in matters of public concern, without doubting for a moment the correctness of this opinion.

Dred Scott v. Sandford, 60 U.S. (19 How) 393, 403-405, 407, 409 (1856). Modern examples exist. In Loving v. Virginia, 388 U.S. 1, 3 (1967), the Supreme Court reported that the trial judge, in upholding the Virginia Miscegenation statute, said:

Almighty God created the races white, black, yellow, malay and red, and he placed them on separate continents. And but for the interference with his arrangement there would be no cause for such marriages. The fact that he separated the races shows that he did not intend for the races to mix.

[6] The law of nature destines and qualifies the female sex for the bearing and nurture of the children of our race and for the custody of the homes of the world and their maintenance in love and honor. And all life-long callings of women, inconsistent with these radical and sacred duties of their sex, as is the profession of law, are departures from the order of nature; and when voluntary, treason against it . . . . There are many employments in life not unfit for the female character. The profession of law surely is not one of those. The peculiar qualities of womanhood, its gentle graces, its quick sensibility, its tender susceptibility, its purity, its delicacy, its emotional impulses, its subordination of hard reason to sympathetic feeling, are surely not qualifications for forensic strife. Nature has tempered woman as little for the juridical conflicts of the courtroom as for the physical conflicts of the battle field. Womanhood is moulded for gentler and better things.

In re Goodell, 39 Wis. 232, 245 (1875).

to some extent the Old Testament writers known as "P" and "J,"[7] envisioned a hierarchical universe in which everything fell along an immutable "Great Chain of Being" and was designed for the use of humans. It explains how these ancients believed that humans possessed powerful and complex minds, well-equipped for thought, emotion, and, above all, reason, and that nonhuman animals possessed minds good for little more than the recording of fleeting perceptions and lived only in the present, moment to moment, neither remembering the past nor anticipating the future, unaware that they existed.[8] Part III shows how St. Augustine of Hippo fused the Aristotelian-Stoic-Biblical beliefs of a universe designed in a "Great Chain" for human beings, then folded them into a still new Christianity, so that these ideas persisted in Western thought throughout the Renaissance and beyond. Part IV details how the rise of science crippled, then Darwinian evolution destroyed, both the "Great Chain of Being" and the idea of a Designed Universe. Part V concludes that while these ancient cosmologies are long dead to science, they animate the modern common law that regulates the legal relationships between human and nonhuman animals. This common law therefore requires a "deliberate reconsideration."

II. How the Ancients Designed the Universe and all its Nonhuman Animals for the Use of Human Beings

The denial of justice to nonhuman animals by the ancient Hebrews, Greeks, and Romans fit naturally into the physical and bio-

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[7] "P" and "J" are the traditional designations for the authors of the earliest portions of the Book of Genesis, The Anchor Bible - Genesis xxii - xxix, 3-20 (E. A. Speiser trans., 1964).

[8] How science fundamentally transformed the ancient cosmologies can be relatively easily explained, for it is history. But the story of how science altered the ancient idea that all nonhuman animals are virtually mindless is unfolding today. Some nonhuman animals, for example, species of the genus, *Pan,* which includes chimpanzees and bonobos, but which are often together referred to as chimpanzees, have already been found to possess many aspects of mind that the ancients once reserved exclusively for humans, including a complex consciousness and intelligence, the capacity for intense suffering, language and protomathematical capabilities, even the ability to experience and transmit simple culture. What has emerged from painstaking and lengthy studies of chimpanzees is the understanding that no generic "chimpanzee mind" exists, any more than does a generic "human mind." "After more than three decades of study of the chimpanzee, led by the landmark fieldwork of Goodall and her associates and by the equally significant work by pioneers intent on characterizing the behavioral and cognitive characteristics of this remarkable species in captivity, the chimpanzee has emerged as an animal whose capabilities cannot be easily compartmentalized. The chimpanzee has demonstrated its diverse capacities and traditions in use of tools, patterns of grooming, use of food resources, and capacity for attention as well as diversity in personality and temperament. Indeed, the phrase that best describes the range of chimpanzee features and the behavior represented across chimpanzee populations in the wild and in numerous captive environments is *remarkable variability*." Sarah T. Boysen, *Individual Differences in the Cognitive Abilities of Chimpanzees, in* Chimpanzee Cultures 335, 335 (Richard W. Wrangham et al. eds., 1994) (citations omitted). Chimpanzee and human minds may best be divined in the same way - one at a time. The minds of other nonhumans remain largely to be explored.

logical worlds that most of those cultures understood.[9] However, competing views on the proper nature of the relationship between human and nonhuman animals were vigorously pressed.[10] According to the philosopher, Robert S. Brumbaugh, the Romans were influenced by four broad Greek views of the relationship between human and nonhuman animals.[11] Animists urged that immortal souls, shared by both human and nonhuman animals, migrate to new beings. Mechanists claimed that humans and nonhuman animals alike were nothing but machines. Vitalists believed that a continuity, though not an identity, existed between human and nonhuman animals. But by and large these ancients believed in a "teleological anthropocentrism," the idea that the outer physical world had been designed, and that its Designer had created the world to serve humanity.[12] This designed world was populated, in theory, by an infinite number of finely-graded forms, immutably arranged in a hierarchical "Great Chain of Being" from the barely alive to the sentient to the intellectual to the wholly spiritual. That "great and true *Amphibium*," the rational human being, dwelt upon the topmost rung assigned to corporeal beings, which doubled as the meanest rung for spiritual beings, an infinite number of which towered invisibly above.[13]

A. Aristotle, the "Great Chain of Being," and the Early Denial of Justice to Nonhuman Animals

Human use of wild and domesticated nonhuman animals long preceded law and recorded history.[14] It is generally agreed that *Homo sapiens* has hunted wild nonhuman animals for 70,000 to 100,000 years. It is more controversial whether *Homo habilis*, or even its predecessor, *Homo erectus*, also hunted them, perhaps as long ago as 2.5

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[9] The second in the series of articles by this author shows how Mesopotamian cosmology did not view the natural world as a hierarchy. *See* J. J. Finkelstein, *The Ox That Gored*, 71 AM. PHIL. SOC. PART 2, 8-13, 39 (1981).

[10] RICHARD SORABJI, ANIMAL MINDS AND HUMAN MORALS 201-206 (1993). *See also* KEITH THOMAS, MAN AND THE NATURAL WORLD 166 (1983). Plato, Pythagoras, Porphyry, Plotinus, Celsus, Plutarch, Theophrastus, Basil of Caesaera, John Chyrsostom, Lactantius, and Arnobius were among the partial or total dissenters to the majority view that denied justice to nonhuman animals. DANIEL A. DOMBROWSKI, THE PHILOSOPHY OF VEGETARIANISM 35-54, 72-74, 85-102, 106, 119 (1984).

[11] Robert S. Brumbaugh, *Of Man, Animals, and Morals: A Brief History, in* ON THE FIFTH DAY - ANIMAL RIGHTS AND HUMAN ETHICS 6-10 (Richard Knowles Morris and Michael W. Fox eds., 1978).

[12] Brumbaugh used the term, "teleological anthropocentrism." *Id.* at 8. The historian of ideas, Arthur O. Lovejoy, used the synonym, "anthropocentric teleology." ARTHUR O. LOVEJOY, THE GREAT CHAIN OF BEING - A STUDY OF THE HISTORY OF AN IDEA 188 (1960).

[13] MATT CARTMILL, A VIEW TO A DEATH IN THE MORNING 99 (1993).

[14] David Brion Davis makes a similar point about human slavery. "Laws defining and regulating slavery have nearly always come along after the institution has been established." DAVID BRION DAVIS, THE PROBLEM OF SLAVERY IN WESTERN CULTURE 32 (1966).

million years.[15] The earliest record of the domestication of a wild, nonhuman animal - the dog - dates to just 12,000 years ago.[16] By 8,500 years ago, not just the dog, but the sheep, pig, goat, and cow were living in domestication along the northeastern part of the Mediterranean, which included Greece.[17]

As no written record was created, we can never know why humans first hunted and then domesticated nonhuman animals, but it was likely for their meat and skins.[18] This was a time before the development of law, science, or the state, when simple survival was difficult and the "rights" of any human were generally those of a kinship group.[19] In that world, justifications for killing nonhuman animals were unlikely to be necessary.

By the time the Greeks emerged from their Dark Ages, nearly 3,000 years ago, the use of nonhuman animals had come to be seen, as everything had come to be seen, as part of the sacred,[20] subject to the will of the gods,[21] and part of a universe whose workings were irrational, explained by myth, and wholly focused upon humanity.[22] The workings of nature itself were considered normative. Goddesses, the Erinyes, ensured that the natural order was not perverted. When, in the *Iliad,* Achilles' immortal horse, Xanthos, speaks to him of his impending death, the Erinyes shut Xanthos up, thereby restoring the natural order.[23] It was this world that framed the earliest justifications for the exclusion of nonhuman animals from human justice. Hesiod, the eighth-century B.C. contemporary of blind Homer, sang that Zeus had bestowed the law of justice upon human beings alone. Animals devoured each other because they had no sense of "right" (*dike*). Humans, able to know right, could eschew violence.[24]

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15 RICHARD LEAKEY, THE ORIGIN OF HUMANKIND 55, 59-79 (1995); DONALD JOHANSON AND JAMES SHREEVE, LUCY'S CHILD - THE DISCOVERY OF A HUMAN ANCESTOR 214-44, 263-69 (1989).

16 Charles A. Reed, *The Beginnings of Animal Domestication, in* ANIMAL AGRICULTURE - THE BIOLOGY OF DOMESTIC ANIMALS AND THEIR USE BY MAN 5, 12 (H. H. Cole and Magnar Ronning eds., 1974).

17 *Id.* at 13. Reed says that "this area, if any place, can be said to be the first center of domestication of 'meat and hide on the hoof.'"

18 *Id.* at 8, 12.

19 WILLIAM SEAGLE, THE HISTORY OF LAW 43-50, 59-69 (1946).

20 Herodotus reported that "Egypt, though it marches on the borders of Libya, is not very populous in wild animals. But those that there are, wild or tame, are all considered sacred . . . ." HERODOTUS, THE HISTORY 159 (David Grene trans., 1987).

21 The wills of Zeus and of the other Greek gods were nothing if not arbitrary. But, as in the *Iliad*, it is the "will of Zeus" and of the other gods that is done. HOMER, THE ILIAD 23 (E. V. Rieu trans., Penguin Classics 1950). "[F]or Homer, as for early thought in general, there is no such thing as accident." E. R. DODDS, THE GREEKS AND THE IRRATIONAL 6 (1951).

22 LEWIS WOLPERT, THE UNNATURAL NATURE OF SCIENCE 35-36 (1994).

23 LLOYD WEINREB, OEDIPUS AT FENWAY PARK - WHAT RIGHTS ARE AND WHY THERE ARE ANY 118 (1994); MALCOLM M. WILLCOCK, A COMPANION TO THE ILIAD 221 (1976).

24 HESIOD, *Works and Days*, *in* HESIOD AND THEOGNIS 67 (Dorothea Wender trans., 1973). Raphael Sealey analyzes *dike* as a procedure or mode of proof that could lead to resolving disputes nonviolently. RAPHAEL SEALEY, THE JUSTICE OF THE GREEKS 92-102

Thales, Anaximander, and Anaximenes were the trio of sixth-century, B.C. Milesian philosophers who, it is said, invented Western philosophy and physical science.[25] In their work first glimmered a universe that operated by the cause and effect of physical laws and not through divine caprice or myth; theirs was a cosmography, not a theogony. Ever so lightly, they uncoupled humanity from sacred nature. Humans, for the first time, viewed the world without seeing their own reflections.[26] This idea, which occurred just once, and then in a form so primitive that even scientific experiment lay beyond the horizon, was to take a very long time to mature.[27] A century later, Xenophon, the Greek soldier and historian, claimed that Socrates, whom he had known as a youth in late fifth-century, B.C. Athens, believed that animals existed for humans.[28]

In the fourth century, B.C., Aristotle attributed the idea of a nature resulting from intelligent design to Anaxagoras, who lived in the fifth century, B.C.[29] Empedocles, a contemporary of Anaxagoras, was, in Aristotle's view, the source of the competing claim that nature, including animals, had originated not from an intelligent design, but by chance.[30] But Aristotle ranged far wider in his discussions of cosmology.

First, Aristotle explicitly rejected the theory of Empedocles that nature operated by chance and not design. In the *Physics,* he conceived that everything in nature had been created for a purpose; everything had a "final cause" for which it existed. Everything acted for the sake of something else. To understand a part of nature, one had to know its purpose.[31]

(1994). Hesiod recognized this, as did Homer in the manner in which he resolved the dispute between Menelaus and Antilochus in Book 23 of the *Iliad. Id.*

[25] REGINALD E. ALLEN, *Introduction* to GREEK PHILOSOPHY: THALES TO ARISTOTLE 1-5 (Reginald E. Allen ed. 1966).

[26] WOLPERT, *supra* note 22, at 35-36.

[27] *Id.* at 35

[28] XENOPHON, MEMORABILIA 126 (Amy L. Bonnette trans., 1994) (After Socrates explains how the sun moves through the heavens for the sake of humanity, he says, "Is not this, too, visible, that [animals] are born and sustained for the sake of human beings"). This is the first known appearance of teleological anthropocentrism. Brumbaugh, *supra* note 11, at 8.

[29] HENRY FAIRFIELD OSBORN, FROM THE GREEKS TO DARWIN—AN OUTLINE OF THE DEVELOPMENT OF THE EVOLUTION IDEA 42 (2d ed., 1894). Aristotle was a student of Plato, who had been a pupil of Socrates.

[30] 1 ARISTOTLE, *Physics, in* THE COMPLETE WORKS OF ARISTOTLE, 315, 334-35 (Jonathan Barnes ed., 1984); 1 ARISTOTLE, *On the Parts of Animals, in* THE COMPLETE WORKS OF ARISTOTLE , 994, 995-96; OSBORN, *supra* note 29, at 39-40.

[31] Aristotle elaborates this idea in the *Physics*:

> We must explain . . . why Nature belongs to the class of causes which act for the sake of something . . . A difficulty presents itself: why should not nature work, not for the sake of something, nor because it is better so, but just as the sky rains, not in order to make the corn grow, but of necessity? What is drawn up must cool, and what has been cooled must become water and descend, the result of this being that the corn grows. Similarly if a man's crop is spoiled on the threshing floor, the rain did not fall for the sake of this - in order that the crop might be spoiled - but

In the *Politics*, Aristotle identified the purposes of plants and animals, along with various kinds of human beings. One could infer that plants existed for animals,

> and that the other animals exist for the sake of man, the tame for use and food, the wild, if not all, at least the greater part of them, for food and for the provisions of clothing and various instruments. Now if nature makes nothing incomplete, and nothing in vain, the inference must be that she has made all animals for the sake of man.[32]

In short, Aristotelian nature was teleological, in that nature and all her processes were directed towards some goal.[33]

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that result just followed. Why then should it not be the same with the parts in nature, e.g. that our teeth should come up of necessity - the front teeth sharp, fitted for tearing, the molars broad and useful for grinding down the food - since they do not arise for this end, but it was merely a coincident result; and so with all other parts in which we suppose that there is purpose? Wherever then all the parts came about just what they would have been if they had come to be for an end, such things survived, being organized spontaneously in a fitting way; whereas those which grew otherwise perished and continue to perish, as Empedocles says his "man-faced oxprogeny" did.

Such are the arguments (and others of the kind) which may cause difficulty on this point. Yet it is impossible that this should be the true view. For teeth and all other natural things either invariably or for the most part come about in a given way; but of not one of the results of chance or spontaneity is this true. We do not ascribe to chance or mere coincidence the frequency of rain in winter, but frequent rain in summer we do; nor heat in the summer, but only if we have it in winter. If then, it is agreed that things are either the result of coincidence or spontaneity, it follows that they must be for the sake of something; and that such things are all due to nature even the champions of the theory which is before us would agree. Therefore action for an end is present in things which come to be and are by nature . . . .

[I]t is plain then that nature is a cause, a cause that operates for a purpose.

1 ARISTOTLE, *Physics*, *supra* note 30, at 339. *See, e.g.*, 1 ARISTOTLE, *On The Parts of Animals*, *supra* note 30, at 994-96; 1 ARISTOTLE, *On the Generation of Animals*, in THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 1111. *See also* JAMES RACHELS, CREATED FROM ANIMALS 112-15 (1990); STEPHEN JAY GOULD, *Hutton's Purpose, in* HENS' TEETH AND HORSES' TOES 79, 79-81 (1983); E. E. SPICER, ARISTOTLE'S CONCEPTION OF THE SOUL 45-47 (1934).

[32] 2 ARISTOTLE, *Politics*, *in* THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 1988, 1993-94.

[33] "Telos," in Ancient Greek, meant goal or end. Aristotle believed that "nature makes nothing incomplete, and nothing in vain." 2 ARISTOTLE, *Politics*, *supra* note 32, at 1993. Some modern students of Aristotle claim that he has long been mischaracterized as a universal or cosmic teleologist. ERNST MAYR, TOWARD A NEW PHILOSOPHY OF BIOLOGY 60-61 (1988); MARTHA CRAVEN NUSSBAUM, ARISTOTLE'S DE MOTU ANIMALIUM 60 (1978); D. M. BALME, ARISTOTLE'S DE PARTIBUS ANIMALIUM I AND DE GENERATIONE ANIMALIUM I, at 93-98 (1972). Mayr lays blame on the interminglings of three kinds of processes, each of which has been termed "teleological." The first are "teleomatic" processes, by which inanimate objects reach an end state as a consequence of such natural physical laws as gravity and the laws of thermodynamics. MAYR, *supra* at 44, 60. The second are "teleonomic" and concern animate beings. Mayr defines a teleonomic process as one that "owes its goal-directedness to the operation of a program." *Id.* at 45. It necessarily implies both the existence of a program and of a goal toward which the program drives an organism's behavior. *Id.* In living organisms, the program may be

Second, Aristotle postulated a world populated by species that had once been created and never changed. The natural world of Classical and Hellenistic Greece was identical to the world as it had been created and as it would forever remain.[34]

Third, from Aristotle emerged the partially inconsistent but influential ideas of continuity, which included the continuity of biological organisms, and of a natural hierarchy of beings.[35] Two things were "continuous when the limits of each, with which they touch and are kept together, become one and the same."[36] There was a seamless continuity, for example, between the inanimate and the animate and from plant to animal.[37] Aristotle discussed several ways in which organisms

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"closed," as in those, like embryological development, spelled out in the DNA. Or the process may also be "open," in that it can be affected by new information acquired through such experiences as learning and conditioning. *Id.* at 49. The third is "cosmic teleology," which holds that everything in nature has a purpose. Such was the power of the idea of cosmic teleology that "even among the evolutionists this belief had more followers in the first 80 years after 1859 (when Darwin published *The Origin of Species*) than did Darwin's theory of selection." *Id.* at 59.

Except for teleology in the cosmic sense, Aristotle appears almost certainly to have been correct. "Teleology . . . has a place in nature, not because the universe has a cosmic purpose, or even because God had created and endowed each being with a purpose. Rather, teleology exists because the very nature of living things involves the potential that is irreducibly for development to maturity." DOUGLAS B. RASMUSSEN AND DOUGLAS J. DEN UYL, LIBERTY AND NATURE: AN ARISTOTELIAN DEFENSE OF LIBERAL ORDER 45 (1991) (discussing teleonomic processes). *See* DAVID J. DEPEW AND BRUCE H. WEBER, DARWINISM EVOLVING 476-77 (1995).

Even those who contend that Aristotle has been traditionally, but badly, misunderstood as a cosmic teleologist, in that most of his goal-directed processes refer not to cosmic teleology, but to teleonomic processes, concede that, if the traditionalists were led astray, it was Aristotle's hand that pointed the wrong way. MAYR, *supra* at 38, 55 and n. 47, 235; NUSSBAUM, *supra* at 60, 95-96; BALME, *supra* at 96. These untraditional interpretations do not detract from the truth that, misinterpreted or no, Aristotle was, until recently, nearly uniformly understood to be a cosmic teleologist and that it was these traditional understandings that affected the formation of the law of nonhuman animals.

34 NEW DEVELOPMENTS IN BIOTECHNOLOGY: PATENTING LIFE - SPECIAL REPORT, OTA-BA-370, AT 98-100 (1989); PETER J. BOWLER, EVOLUTION - THE HISTORY OF AN IDEA 5, 59 (rev. ed., 1989) ("As originally understood, the chain was a static plan of natural arrangements, representing creation as it was first formed and as we still see it today"); Oliver L. Reiser, *The Concept of Evolution in Philosophy, in* A BOOK THAT SHOOK THE WORLD - ANNIVERSARY ESSAYS ON CHARLES DARWIN'S ORIGIN OF SPECIES 38, 40 (Ralph Buchsbaum ed., 1967); JOHN DEWEY, THE INFLUENCE OF DARWIN ON PHILOSOPHY 5-7, 9-11 (1951); LOVEJOY, *supra* note 12, at 57.

35 DEWEY, *supra* note 34 at 61, quoting HENRI DAUDIN, DELINNE A JUSSIEU 81, 91-93 (1926).

36 2 ARISTOTLE, *Metaphysics, in* THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 1552, 1688.

37 2 ARISTOTLE, *The History of Animals, in* THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 922; 1 ARISTOTLE, *Parts of Animals, supra* note 30, at 1062-63. However, "[n]othing is clearer, as Lovejoy has amply demonstrated in his discussion of the subject in *The Great Chain of Being*, than that the concept of continuity scarcely ever, from Aristotle to Liebniz [late 17th and early 18th centuries] signified any sort of transformation of species." Bentley Glass, *The Germination of the Idea of Biological Species, in* FORERUNNERS OF DARWIN: 1745-1859, at 39 (Bentley Glass et al. eds., 1959).

could be classified within a linear hierarchy. One conception accorded each type of organism its natural degree of perfection.[38] Heat was his measure. The greater the heat an animal generated, the more it developed.[39] Women, colder than men, were less perfect.[40] Equally, if not more, powerful was his classification according to the characteristics possessed by the soul of each kind of organism. Plants, animals, and humans were imbued with souls of increasing and ascending complexity, as their heat increased.

> [S]ome kinds of living things . . . possess all, some less than all, others one only. Those [souls] we have mentioned are the nutritive, the appetitive, the sensory, the locomotive, and the power of thinking. Plants have none but the first, the nutritive, while another order of living things has this *plus* the sensory. If an order of living things has the sensory, it must also have the appetitive; . . . now all animals have one sense at least. . . . Certain kinds of animals possess in addition the power of locomotion, and still others, i.e. man and possibly another order like man or superior to him, the power of thinking, and thought.[41]

This classification of souls suggested both continuity, in that the lower souls are subsumed within the higher souls, and a hierarchal discontinuity, in that portions of the higher souls had no antecedents in the lower.[42]

Plato had believed that every conceivable kind of living being that could exist, did. The historian of ideas, Arthur O. Lovejoy, called this Plato's "principle of plentitude."[43] It "was, as usually understood, inconsistent with any belief in progress or, indeed, in any sort of significant change in the universe as a whole."[44] Aristotle's idea of a linear hierarchy fused with Plato's principle of plentitude to form the "Great Chain of Being."[45] It became, in Lovejoy's words, "one of the half-dozen most potent and persistent presuppositions in Western thought. It

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38 1 ARISTOTLE, *On the Generation of Animals*, *supra* note 31, at 1136-37; D. R. OLDROYD, DARWINIAN IMPACTS 5-7 (1980).

39 1 ARISTOTLE, *On the Generation of Animals*, *supra* note 31, at 1128.

40 NANCY TUANA, THE LESS NOBLE SEX 18 (1993).

41 1 ARISTOTLE, *On the Soul*, *in* THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 641, 659-60; LOVEJOY, *supra* note 12, at 58-59. Nearly a century before, Plato had envisioned three sorts of souls. The immortal soul, located in the human head, was the seat of reason and the connection to the divine. The mortal soul, shared by human and nonhuman animals, lay in the chest and belly, and was responsive to reason and passion. The third soul lay below the navel, was shared with plants, and had nothing to do with reason. PLATO, *Timaeus*, *in* THE COLLECTED DIALOGUES OF PLATO 1193-95 (Edith Hamilton and Huntington Cairns eds. & Benjamin Jowett trans., 1961)

42 DOMBROWSKI, *supra* note 10, at 69-70.

43 LOVEJOY, *supra* note 12, at 52.

44 *Id.* at 242.

45 One implication of the principle of plentitude was that each link in the Great Chain of Being existed "not merely and not primarily for the benefit of any other link, but for its own sake, or more precisely for the sake of the completeness of the series of forms, the realization of which was the chief object of God in creating the world." *Id.* at 186. This conflicted with teleological anthropocentrism, but proved the weaker force until the final collapse of the Great Chain in the nineteenth century.

was, in fact, until not much more than a century ago, probably the most widely familiar conception of the general *scheme* of things, of the constitutive pattern of the universe."[46] "[A] perfect example of an absolutely rigid and static scheme of things,"[47] it was "explicitly and vehemently antievolutionary."[48]

As plants, animals, and humans were assigned their permanent places in this natural and designed hierarchy, so were there different natural and permanent levels within orders of beings. Akin to fractals, each segment of the Great Chain of Being appeared to recapitulate the whole. All humans were not equally imbued with a rational soul. Aristotle differentiated that portion of the rational soul that could reason from that which could merely listen to and appreciate the reasoning of another.[49] Some humans, males, free men, and adults, for example, occupied superior positions with respect to others, such as females, slaves, and children.[50] Women, believed deficient in reason and, in a sense, in justice, occupied a place between men and nonhuman animals.[51] That species of "thinking property," the natural human slave, was endowed with just that portion of the rational soul that permitted the appreciation of reason.[52] Two thousand years later, Chief Justice Taney alluded to the Great Chain in *Dred Scott,* when he claimed that blacks had been "looked upon as so far below [whites] in the scale of

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46 *Id.* at viii.

47 *Id.* at 242.

48 STEPHEN JAY GOULD, *Bound by the Great Chain, in* THE FLAMINGO'S SMILE 281, 282 (1985). Gould notes that "[t]he chain of being had always vexed biologists because, in some objective sense, it doesn't seem to describe nature very well. How can we arrange all organisms in a single, finely gradated chain when enormous gaps seem to pervade nature's system . . . ?" *Id.* at 283.

49 2 ARISTOTLE, *Nichomachean Ethics, in* THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 1729, 1735; *id.* at 1742; 2 ARISTOTLE, *Eudemian Ethics, in* THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 1922, 1931. For Plato, the part of the soul that merely listened to reason was irrational. PLATO, *Republic, in* THE COLLECTED DIALOGUES OF PLATO, *supra* note 41, at 681-82 (Paul Shorey trans.); PLATO, *Timaeus, supra* note 41, at 1193.

50 "The male by nature is superior, and the female inferior; and the one rules, and the other is ruled; this principle, of necessity, extends to all mankind," and "[i]t is clear, then, that some men are by nature free, and other slaves, and that for these latter slavery is both expedient and right." 2 ARISTOTLE, *Politics, supra* note 32, at 1990-91. Aristotle based many of his ideas of natural inferiority upon Plato's idea of the slave's natural deficiency in reason. DAVIS, *supra* note 14, at 69-70.

51 TUANA, *supra* note 40, at 3.

52 2 ARISTOTLE, *Politics, supra* note 32, at 1990; 2 ARISTOTLE, *Eudemian Ethics, supra* note 49, at 1930-31; 2 ARISTOTLE, *Nichomachean Ethics, supra* note 49, at 1735; *id.* at 1741-42; Alan Watson attributes the term "thinking property" to Aristotle's *Politics*. Alan Watson, *Thinking Property at Rome*, 68 CHI.-KENT L. REV. 1355, 1355 n.1 (1993). Edith Hamilton reminds us that slavery was then universal and that no one paid attention to slaves or considered the justice or injustice of enslavement. Thus, "[w]hen the Greek achievement is considered, what must be remembered is that the Greeks were the first who *thought* about slavery." EDITH HAMILTON, THE ECHO OF GREECE 23-24 (1957) (emphasis added). The ending of an unjust practice requires the breakthrough thought that the practice is unjust.

created beings."[53] Children could not fully reason. Their ability to "deliberate" was a higher form of reason than mere appreciation, though it was inferior to mature reason.[54] Whatever place each organism, human, nonhuman animal, or plant, occupied was its appropriate, necessary, and permanent place in the natural hierarchy ordained by a designed and ordered universe.[55]

Aristotle lodged such powers of the inner mental world as intellect, reason, thought, and belief exclusively in human beings.[56] Nonhuman animals could merely use their senses to perceive.[57] These sense perceptions gave them the capacity for memory and therefore experience, for experiences consisted of a chain of memories.[58] Nonhuman animals could also feel pleasure and pain; they could even learn. But because they lacked reason, they lacked true emotion. They could, however, sometimes *act* as if they had emotion, but remained in the end oblivious to justice and injustice, to good and bad, even to their own harm and benefit.[59]

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53 Dred Scott v. Sandford, 60 U.S. (19 How.) 393, 409 (1856). *See* MICHAEL ADAS, MACHINES AS THE MEASURE OF MEN 118-119 (1989).

54 Children who presumably were not natural slaves were said to possess an incomplete capacity for deliberation that was a higher reason than that possessed by a natural slave. 2 ARISTOTLE, *Politics*, *supra* note 32, at 1999-2000. The place of children in the Great Chain is unclear. Either they were the only beings with the capacities to migrate as they intellectually matured, or they occupied one place in childhood and another in adulthood, when they changed so dramatically that they became, in essence, separate beings.

55 DAVIS, *supra* note 14, at 68; LOVEJOY, *supra* note 12, at 200-207.

56 1 ARISTOTLE, *On the Soul*, *supra* note 41, at 657-60; 1 ARISTOTLE, *On The Parts of Animals*, *supra* note 30, at 998 ("but in none but [humans] is there intellect"). *See* SORABJI, *supra* note 10, at 14. Aristotle's classic illustration of the difference between perception and belief is that one may *perceive* that the sun is very small, but *believe* it is very large. 1 ARISTOTLE, *On the Soul*, *supra*, at 681.

57 *Id.* at 660, 680-81, 689-90. Aristotle's limited grant of emotions to animals is difficult to reconcile with his denial of cognition to them, at least to the extent that cognition is a component of emotion. SORABJI, *supra* note 10, at 56-58. In Sorabji's opinion, "[e]ven Aristotle's gradualism in biology is carefully qualified so that it allows for a sharp intellectual distinction between animal and man. . . . Thus when he says that most animals have traces (*ikhne*) of human characteristics, this is illustrated by their actually sharing with us certain temperaments, but when it comes to *intellectual* capacities, only by their having likenesses (*homoiotetes*) of the kind of understanding that has to do with thought (*he peri ten dianoian sunesis*). Again, whereas some differences from animals are only a matter of degree, others are more distant - a matter of mere analogy." *Id.* at 13-14.

58 2 ARISTOTLE, *Metaphysics*, *supra* note 36, at 1554; 1 ARISTOTLE, *Posterior Analytics*, in THE COMPLETE WORKS OF ARISTOTLE, *supra* note 30, at 114, 165 ("So from perception there comes memory, as we call it, and from memory (when it occurs often in connection with the same thing), experience").

59 2 ARISTOTLE, *Politics*, *supra* note 32, at 1998; 1 ARISTOTLE, *On the Soul*, *supra* note 41, at 685; *See* SORABJI, *supra* note 10, at 55-58. On the other hand, it was common knowledge for Holmes that "even a dog distinguishes between being stumbled over and being kicked." OLIVER WENDELL HOLMES, THE COMMON LAW 7 (Mark DeWolfe Howe ed., 1963).

It was important for Aristotle to separate those who could reason, to any degree, from those who could not. For those who could reason would neither share friendship nor agreements nor systems of law with those who could not. Justice, which complete reasoners owed only one to the other, was no more owed to slaves or nonhuman animals than it was owed to lifeless tools.[60]

B. The Influence of the Stoics

The first Stoics[61] began to teach within in the Athenian agora short years after Aristotle's death. Their philosophy was to exert a tremendous influence upon Greek and Roman ethics, science, and law for the next five hundred years.[62] One of their greatest contributions was the crystallization of the hitherto diffuse idea of natural law, which concerns the moral component of law and the degree to which law exists apart from government. The primal sources of natural law were, even in Hellenistic Greece, lost in the mists of the earliest Greek speculations about the relationship between humans and the universe.[63] Thus, "from Homer until the transmission of Greek culture to Rome, the belief that the course of events fulfilled an inherent normative order affected Greek thought profoundly and pervasively."[64] Both the pre-Socratic philosophers, Anaximander[65] and Heraclitus,[66] are said to have been the first to write, if somewhat obliquely, of natural law. But it was not until the first century B.C. that the Roman Stoic, Cicero, lucidly interwove those natural law ideas that had been playing among the Greek Stoics for centuries.[67] It was fundamental that Sto-

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60 2 ARISTOTLE, *Nichomachean Ethics, supra* note 49, at 1835 ("For where there is nothing in common to ruler and ruled, there is not friendship either, since there is not justice; e.g. between craftsman and tool, soul and body, master and slave; the latter in each case is benefited by that which uses it, but there is no friendship nor justice towards lifeless things. But neither is there friendship towards a horse or an ox, nor to a slave *qua* slave. For there is nothing common to the two parties; the slave is a living tool and the tool is a lifeless slave").

61 The name "Stoic" came from the *Stoa Poikile*, or "Painted Stoa," where Zeno, the founder of Stoicism, taught in the Athenian agora in the third century B.C. EDUARD ZELLER, OUTLINES OF THE HISTORY OF GREEK PHILOSOPHY 209 (L. R. Palmer trans., 13th ed. 1931).

62 M.L. CLARKE, THE ROMAN MIND 133-34 (1956). "After the establishment of the Empire, [Stoic] philosophy attained a still greater influence; and although it was proscribed by a few despotic princes, it was the object of favorable regard on the part of nearly all the early emperors." WILLIAM C. MOREY, OUTLINES OF ROMAN LAW 108 (2nd ed., 1914).

63 LLOYD L. WEINREB, NATURAL LAW AND JUSTICE 1 (1987).

64 *Id.* at 15. *See also* LUDWIG EDELSTEIN, THE MEANING OF STOICISM 32 (1966); B. J. T. Dobbs, *Stoic and Epicurean doctrines in Newton's system of the world, in* ATOMS, PNEUMA, AND TRANQUILLITY (Margaret J. Osler ed., 1991).

65 CHARLES H. KAHN, ANAXIMANDER AND THE ORIGINS OF GREEK COSMOLOGY 191 (1960).

66 Raghuveer Singh, *Herakleitos and the Law of Nature, in* 24 J. HIST. IDEAS 457 (1963).

67 WEINREB, *supra* note 63, at 1.

ics sought to live as closely as possible to nature, which they sometimes identified with God, because it embodied universal, immutable, natural justice and law.[68] While Cicero's natural law expositions merely "conform[ed] to the moderate, eclectic, and practical Stoicism that was popular in Rome,"[69] they were written such that "he gave to the Stoic doctrine of natural law a statement in which it was universally known throughout western Europe from his own day down to the nineteenth century."[70]

The Stoics did not share similar ideas on causes and effects with Aristotle.[71] But they shared with Aristotle the view of Socrates on the natural hierarchy of humans and animals, believing

> that everything in the world was created for the benefit of some other thing - plants for the support of animals, animals for the support and the service of man, the world for the benefit of Gods and men - not unfrequently degenerating into the ridiculous and pedantic, in their endeavours to trace the special end for which each thing existed.[72]

Stoic fleas existed to awaken slumbering humans, asses to bear human burdens, horses to carry humans themselves, sheep to provide human clothing, dogs to guard and protect humans, mice to stimulate human tidiness; pigs were ensouled to keep their meat fresh for human consumption.[73] The steady influence of the Stoic teleology from

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[68] A. A. LONG, HELLENISTIC PHILOSOPHY: STOICS, EPICUREANS, SKEPTICS 169 (2d ed. 1986); THE HELLENISTIC PHILOSOPHERS Vol. 1, 331 (A. A. Long and D. N. Sedley eds., 1987) ("The Stoics' god is, first, an immanent, providential, rational, active principle imbuing all matter, sometimes identified with nature . . . ") (citations omitted). Virtue was "action in accord with nature, as revealed to man through uncorrupted reason." DAVIS, *supra* note 14, at 73. Sorabji finds it interesting that "two of the earliest discussions of . . . natural rights . . . concern *animals*. The first . . . is Empedocles' insistence that it is a universal law (*nomimon*), valid for everyone not to kill living things (*to empsukhon*). The second is Aristotle's riposte, which equally grounds in *nature* the entitlement of humans to domesticate, hunt and kill animals." SORABJI, *supra* note 10, at 156-57 (citations omitted).

[69] WEINREB, *supra* note 63, at 39.

[70] GEORGE H. SABINE, A HISTORY OF POLITICAL THEORY 161 (4th ed. 1973).

[71] In contrast to Aristotle's four causes, the Stoics assumed the universe operated under a divine plan that could be understood by careful observation and thought. Gerard Verbeke, *Ethics and Logic in Stoicism, in* Atoms, Pneuma, and Tranquillity *supra* note 64, at 11, 19.

[72] EDUARD ZELLER, THE STOICS, EPICUREANS AND SCEPTICS 185-86 (Oscar J. Reichel trans., 1962) (citations omitted); *see also* CLARKE, *supra* note 62, at 39; CICERO, DE NATURA DEORUM 271-79 (H. Rackham trans., 1933) (all of nature's abundance was provided for men).

[73] *See* ZELLER, *supra* note 72, at 186 n. 2; EDWARD VERNON ARNOLD, ROMAN STOICISM 205 n. 39 (1911); CICERO, *supra* note 72, at 277; *Id.* 159 ("For as Chrysippus cleverly put it, just as a shield-case is made for the sake of a shield and a sheath for the sake of a sword, so everything else except the world was created for the sake of some other thing; thus the corn and fruits produced by the earth were created for the sake of animals, and animals for the sake of man: for example the horse for riding, the ox for ploughing, the dog for hunting and keeping guard); PORPHYRY, ON ABSTINENCE, Book 3.20.1 ("It was certainly a persuasive idea of Chrysippus' that the gods made us for our own and each other's sakes, and animals for our sake: horses to help us in war, dogs in

Hellenistic Greece through Republican and Imperial Rome over four centuries can be seen in the resemblance of the *Meditations* of the second century Roman Emperor, Marcus Aurelius, to earlier Stoic writings.

> [C]onsider that for whatever purpose each thing has been constituted, for this it has been constituted, and toward this it is carried; and its end is in that toward which it is carried; and where the end is, there also is the advantage and the good of each thing. . . . Is it not plain that the inferior exist for the sake of the superior—but the things which have life are superior to those which have not life, and of those which have life the superior are those which have reason.[74]

As did Aristotle, the Stoics denied concepts, reason and belief to nonhuman animals.[75] Unlike Aristotle, the Stoics attributed to nonhuman animals a sharply narrowed version of perception, similar to the vision of Plato.[76] As explained by the philosopher, Richard Sorabji, Plato believed

> that the soul uses the senses merely as channels to perceive sense qualities like whiteness, but cannot use them for distinguishing and comparing qualities, or for hitting on something's *being* the case or *being* white (*ousia*), or the truth (*aletheia*). For that requires reasoning (*sullogismos*) and belief (*doxazein*). Reasoning is in turn described as the silent debate of the soul with itself, and belief as the silent conclusion of this debate, or as silent affirmation and negation in the debate, or the silent answer to a question - to a question posed in the inner debate.[77]

Concepts lay within the grasp only of those able to perceive, remember, and experience; these abilities were found only in humans.[78] Other than the purely recognitional, memory required the ability to reflect, even to give assent,[79] while nonhuman animals only perceived

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hunting, and leopards, bears and lions to give us practice in courage. As for the pig, that most appetizing of delicacies, it was created for no other purpose than slaughter, and god, in furnishing our cuisine, mixed soul in with its flesh like salt."); CICERO, DE FINIBUS BONORUM ET MALORUM 287 (H. Rackham trans., 2nd ed. 1931) (The Stoic speaker, Cato, says "But just as [Stoics] hold that man is united with man by the bonds of right, so they consider that no right exists as between man and beast. For Chrysippus well said, that all other things were created for the sake of men and gods, but that these exist for their own mutual fellowship and society, so that men can make use of beasts for their own purposes without injustice").

74 MARCUS AURELIUS, THE MEDITATIONS OF THE EMPEROR MARCUS AURELIUS ANTONINUS, V. 16, at 184 (George Long trans., The Chesterfield Society 1890). *See id.* VI. 23, at 196-97 ("[A]s to the animals which have no reason, and generally all things and objects, do thou, since thou hast reason and they have none make use of them with a generous and liberal spirit"). Marcus Aurelius was known as the "last of the Stoics."

75 SORABJI, *supra* note 10, at 20-21. Stoic reason was a "collection of concepts." *Id.* at 113 (citation omitted).

76 *Id.* at 20.

77 *Id.* at 9-10 (citations omitted). *See* PLATO, THEAETETUS 88-91, 96-97 (Robin A.H. Waterfield trans., 1987).

78 SORABJI, *supra* note 10, at 21.

79 The concept of "assent" involves the ability to evaluate and not act automatically. *Id.* at 40-42.

through their senses.[80] From the beginning, the Stoics understood that perceptual appearances were received by the senses, both in human and nonhuman animals. But assent was necessary for animals, human or nonhuman, to know or to think that they had perceived; assent was also necessary to the formation of beliefs and emotions, which Chrysippus said were judgments about good and harm.[81] Reasoning humans could assent. Nonhuman animals, limited to life, sensation, and impulse, could not.[82] Nor could they desire, know good, or even learn from experience.[83] Even their voices were merely air struck by an "impulse," unlike the human voice, which was directed by the mind.[84]

> The dumb animal grasps what is present by its sense. It is reminded (*reminiscitur*) of the past when it encounters something that alerts its senses. Thus the horse is reminded of the road when it is brought to where it starts. But in its stable, it has no memory of it, however often it has been trodden. As for the third time, the future, that does not concern dumb animals.[85]

For Chrysippus[86] in the third century B.C., and his Stoic followers, humans owed no justice to animals, as animals were irrational. Echoing Aristotle, the Stoics divorced nonhuman animals from the community of reasoning beings that was the single source of human justice.[87] "[E]verything . . . exists only for the sake of what is endowed

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[80] *Id.* at 52.

[81] *Id.* at 40-41, 59.

[82] *Id.* at 42. Aristotle compares nonhuman animals to *automata* or "automatic puppets." 1 ARISTOTLE, *Movement of Animals*, *supra* note 30, at 1087, 1092.

[83] SORABJI, *supra* note 10, at 114.

[84] *Id.* at 81; A. A. Long, *Language and Thought in Stoicism, in* PROBLEMS IN STOICISM 87 (A. A. Long ed., 1971). Some Stoics, however, conceded the possibility that nonhuman animals possessed some very limited instinctual, self-conscious understanding of their own bodies that allowed them to know what could harm or help them. *Id.* at 86, 89; EDELSTEIN, *supra* note 64, at 35-36.

[85] SORABJI, *supra* note 10, at 52, quoting the Stoic, Seneca (citation omitted). The Stoic, Cicero, agrees that nonhuman animals perceive little or none of the future or past. CICERO, DE OFFICIIS 13 (Walter Miller trans., 1913). *See also* SORABJI, *supra,* at 62, (discussing Seneca's denial of emotions to nonhuman animals); *id.* at 86 (Seneca further denied nonhuman animals the ability to learn from experience).

[86] Chrysippus was the third head of the Stoic school, after Zeno and Cleanthes. ZELLER, *supra* note 61, at 209-210.

[87] SORABJI, *supra* note 10, at 122-24; STEPHEN R. L. CLARKE, THE MORAL STATUS OF ANIMALS 23 (1984); DOMBROWSKI, *supra* note 10, at 75-76, 155 n. 3 ("This Stoic conception of justice obviously relies heavily on Aristotle's treatment in the *Nichomachean Ethics* of justice and friendship").

> To be very close to moral perfection is to be wholly inadequate, because you drown, as Chrysippus put it, when you are just beneath the surface no less certainly than when you are at the bottom; similarly, animals have no *logos* and there is no such thing as a justice which can obtain between them and humans.

S. G. Pembroke, *Oikeiosis*, in Long, *supra* note 84, at 121 (citations omitted). Epicureanism, a rival to Stoicism, taught that that which was the product of a social contract and was expedient was just. Since animals could not contract, as they were not rational, they were not entitled to human justice. DIOGENES LAERTIUS, *Epicurus, in* DIOGENES LAERTES II, 673-77 (R. D. Hicks trans., 1925). "Thus Epicurean theory reaches the same

with reason, individual beings endowed with reason exist for the sake of each other . . . Towards animals we never stand in a position to exercise justice . . . . Justice can only be exercised towards other men and towards God."[88] In Cicero's first-century B.C. work, *De Natura Deorum*, Balbus, speaking for the Stoics, reaffirmed that the world had been made for humans and that

> So far is it from being true that the fruits of the earth were provided for the sake of animals as well as men, that the animals themselves, as we may see, were created for the benefit of men . . . . Why should I speak of oxen? the very shape of their backs makes it clear that they were not destined to carry burdens, whereas their necks were born for the yoke and their broad powerful shoulders for drawing the plough.[89]

The Stoics believed, then, that the universe existed to serve only the interests of the rational.[90] As nonhuman animals were irrational, and for a Stoic, "the irrational was totally beneath consideration,"[91] Stoic writings almost completely ignored them.[92]

C. The Bible Designs a World for Human Beings

"From Xenophon through Aristotle through the Stoic school, the preposterous idea of a world designed for human exploitation diffused quite thoroughly into Western common sense."[93] This world echoed throughout the sacred, as well, in Hebrew and especially primitive Christian beliefs, both of which derived principally from the *Book of Genesis* in the Old Testament.[94] *Genesis* related the story that God had originally granted humans dominion "over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon

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point as Stoic theory by denying justice to animals on the grounds they are not rational." SORABJI, *supra*, at 162.

88 ZELLER, *supra* note 72, at 313. "The Stoics . . . saw and said that in the world, after God, there is nothing so important as man, and in man nothing so important as reason." ALEXANDER BALMAIN BRUCE, THE MORAL ORDER OF THE WORLD IN ANCIENT AND MODERN THOUGHT 387 (1899).

89 CICERO, *supra* note 72, at 275-77.

90 JOHN PASSMORE, MAN'S RESPONSIBILITY FOR NATURE 15 (1974).

91 DOMBROWSKI, *supra* note 10, at 76.

92 "About this fact there can be no doubt, since we [do not] hear of any treatises by the Stoics on this subject." ZELLER, *supra* note 72, at 208. Sorabji agrees. "Although the Stoics poured out handbooks on every kind of issue in practical ethics . . . in no case, so far as I know, do they devote one to the need to treat animals well." SORABJI, *supra* note 10, at 125.

93 Brumbaugh, *supra* note 11, at 11.

94 *Cf.* DOMBROWSKI, *supra* note 10, at 76-77 (The Stoics echoed *Genesis* and Hesiod). The first century Jewish philosopher, "Philo not only takes over into Jewish philosophy the idea of animals, except snakes and suchlike, being for man, but declares it sacrilege to question providence by denying this." SORABJI, *supra* note 10, at 199 (citations omitted).

the earth."[95] While humans were originally not permitted to kill animals for food,[96] after the Flood, God told Noah and his sons that

> the fear of you and the dread of you shall be upon every beast of the earth, and upon every fowl of the air, upon all that moveth upon the earth, and upon all the fishes of the sea; into your hand are they delivered. Every moving thing that liveth shall be meat for you; even as the green herb have I given you all things.[97]

The first-century New Testament addressed the proper relationship between human and nonhuman animals only indirectly. In the *Gospel of Mark*, Jesus was said to have cast devils from a man into a herd of two thousand swine, who then ran "violently down a steep place into the sea . . . and were choked in the sea," while the Apostle Paul later emphasized that God cared only for human beings, by claiming He did not care for oxen.[98] It was Paul, however, who stitched Stoic natural law into the fabric of Christianity.[99]

Stoicism waned following the death of Marcus Aurelius and ultimately contributed little to Latin Christianity, which borrowed much from Platonism from the second century on.[100] "There was, however, one part of the Stoic doctrine which passed into Christian theology, the idea of a providence ordaining all for the benefit of mankind."[101] In the second century, the Church Father, Clement, used the Great Chain of Being to explain evil. The lower a being was on the scale the "least real, least good, least spiritual, most deprived of being, and consequently most evil" it was.[102] In the next century, the Christian theologian, Origen, sought to invoke both Stoic and Old Testament

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[95] *Genesis* 1:28. This first of the two *Genesis* Creation stories was probably composed in the sixth century B.C. ROBIN LANE FOX, THE UNAUTHORIZED VERSION - TRUTH AND FICTION IN THE BIBLE 21 (1992). The second was likely written in the eighth, but perhaps as early as the tenth century B.C. *Id.*

[96] *Genesis* 1:29.

[97] *Genesis* 9:1-3. This, too, was probably formulated in the sixth century B.C. Fox, *supra* note 95, at 177.

[98] *Mark* 5:2-13 (the story of the swine); I *Corinthians* 9:9-10 (Paul's story of the oxen).

[99] "The incorporation of natural law into Christian thought is often traced to St. Paul's statement in the Epistle to the Romans. '[W]hen the Gentiles, who have not the law, do by nature those things that are of the law, these having not the law, are a law to themselves; who shew the work of the law written in their hearts, their conscience bearing witness to them.'" WEINREB, *supra* note 63, at 47, quoting *Romans* 2:14-15.

[100] In the opinion of one historian, it was Plotinus, a major founder of Neoplatonism, who made explicit Plato's implications of The Great Chain of Being "and from him they passed on to Augustine, Aquinas, and all Western thought." JEFFREY BURTON RUSSELL, THE DEVIL - PERCEPTIONS OF EVIL FROM ANTIQUITY TO PRIMITIVE CHRISTIANITY 163 (1977).

[101] CLARKE, *supra* note 62, at 148. This is primarily the doctrine of natural law. "Stoicism became a bridge from the ancient to the Christian world, and, more particularly, transformed classical Greek speculation into a theory unmistakably identifiable as natural law." WEINREB, *supra* note 63, at 36.

[102] JEFFREY BURTON RUSSELL, SATAN - THE EARLY CHRISTIAN TRADITION 110 (1981).

traditions in order to develop a Christian doctrine that animals were created for the use of humans.[103]

III. St. Augustine Fuses the Ideas of Aristotle, the Stoics, and the Bible into Christian Belief That was to Persist Beyond the Renaissance

It was Augustine of Hippo, in the early fifth century, who firmly consolidated the Christian and Stoic streams of thought.[104] In a discourse on why Christians were forbidden from committing suicide, he explained why the commandment "Thou shalt not kill" applied to all, but only in respect to other humans.

> [H]ow much greater reason have we to understand that a man may not kill himself, since in the commandment, "Thou shalt not kill," there is no limitation added nor any exception made in favour of any one, and least of all in favour of him on whom the command is laid! And so some attempt to extend this command even to beasts and cattle, as if it forbade us to take the life from any creature. But if so, why not extend it also to the plants, and all that is rooted in and nourished by the earth? For though this class of creatures have no sensation, yet they also are said to live, and consequently they can die; and therefore, if violence be done them, can be killed. So, too, the apostle, when speaking of the seeds of such things as these, says, "That which thou sowest is not quickened except it die;" and in the Psalm it is said, "He killed their vines with hail." Must we therefore reckon it a breaking of this commandment, "Thou shalt not kill," to pull a flower? Are we thus insanely to countenance the foolish error of the Manichaeans? Putting aside, then, these ravings, if, when we say, Thou shalt not kill, we do not understand this of the plants, since they have no sensation, nor of the irrational animals that fly, swim, walk, or creep, since they are dissociated from us by their want of reason, and are therefore by the just appointment of the Creator subjected to us to kill or keep alive for our own uses; if so then it remains that we understand that commandment simply of man. The commandment is, "Thou shalt not kill man;" therefore neither another nor yourself, for he who kills himself still kills nothing else than man.[105]

Augustine embraced the traditional Aristotelian model of a hierarchy of three general and ascending degrees of soul, the nutritive or vegetative (for plants), the sensitive-appetitive-locomotive (for nonhuman animals), and the intelligent or thinking soul (for humans and

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103 Origen, Contra Celsum, Book 242-248 (Henry Chadwick ed. and trans., 1953); Sorabji, *supra* note 10, at 200; Passmore, *supra* note 90, at 16. Passmore, however, believes that Origen misinterpreted Hebrew tradition. "It is one thing to say, following Genesis, that man has dominion over nature in the sense that he has the right to make use of it: quite another to say, following the Stoics, that nature exists only in order to serve his interests." *Id.* at 17.

104 Augustine, together with his teacher, Ambrose "took natural law from Cicero, baptised it, and handed it on for preservation in the Church." Gerard Watson, *The Natural Law and Stoicism*, *in* Problems in Stoicism, *supra* note 84, at 235-36.

105 Augustine, The City of God 26 (Marcus Dods trans., 1950). Weinreb has observed that "[f]rom the first, there was an affinity between moderate Stoicism and Christianity." Weinreb, *supra* note 63, at 47.

angels).[106] The lowest soul comprised the life-giving power, which was found in everything alive. The middle irrational soul was the source of such powers as perception, memory, movement, instinct, and appetite. The highest rational soul included both the irrational and the rational, mind, intelligence, language, ethics, and understanding.[107] Nonhuman animals could recognize and remember. Their ability to perceive could be substantially more acute than were abilities of humans. This explained how, in *The Odyssey,* Odysseus' faithful dog, Argos, could recognize him after a wait of twenty years for his master's return to Ithaca. The powers of perception, appetite, and habit combined to allow a nonhuman animal to "know" instinctively what gave it pleasure or pain.[108] But only humans could memorize, deliberately recall, imagine, or know whether what they perceived was true.[109] Humans and nonhuman animals alike perceived that which their senses transmit, but only humans were conscious that they were doing so.[110] Nonhuman animals had no true knowledge of anything, though they "have certainly something resembling knowledge."[111] Following the Stoics, Augustine deprived nonhuman animals of emotions, as a consequence of their lack of reason[112] and their inability to assent.[113]

Augustine's adaptation of the Aristotelian and Stoic dogma on "community" to Christian thought reaffirmed that the irrationality of animals excluded them from sharing in human community and justice.[114] He further illustrated this exclusion with the story of Jesus driving the devils into the swine, along with another incident in which Jesus cursed a barren fig tree.

> Christ himself shows that to refrain from the killing of animals and the destroying of plants is the height of superstition, for, judging that there are no common rights between us and the beasts anthe trees, He sent the devils into a herd of swine and with a curse withered the tree on which he found no fruit.[115]

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106 GERARD O'DALY, AUGUSTINE'S PHILOSOPHY OF MIND 11 and n. 32 (1987); AUGUSTINE, *supra* note 105, at 158, 228.

107 O'DALY, *supra* note 106, at 12-14.

108 *Id.* at 99.

109 *Id.* at 98.

110 *Id.* at 89.

111 AUGUSTINE, *supra* note 105, at 372.

112 O'DALY, *supra* note 106, at 47. "Augustine's debt to the Stoics here is obvious." *Id.* at 47, note 128.

113 *Id.* at 89.

114 AUGUSTINE, *supra* note 105, at 26. "In fact, the rigid dichotomy between men and animals is chiefly a Christian tradition, with Stoic roots." OLDROYD, *supra* note 38, at 2-3.

115 SAINT AUGUSTINE, THE CATHOLIC AND MANICHAEAN WAYS OF LIFE 102 (Donald A. Gallagher and Idella J. Gallagher trans., 1966). *See Mark* 5:2-13 (the story of the swine), *Matthew* 21:19 and *Mark* 11:13-14 (stories of the fig tree). Richard Sorabji believes that "in effect," Augustine was saying that Jesus was a Stoic as regards animals. SORABJI, *supra* note 10, at 196.

The claims of Aristotle, Augustine, and later, Thomas Aquinas, that nonhuman animals were irrational and naturally created for the use of humans permanently debarred them from any possibility of community with humans. Consequently, nonhuman animals lay not merely outside the circle of human justice, but, like slaves, were the appropriate targets of perpetual "just wars" to be waged by humans against them. To Aristotle, "the art of war is a natural art of acquisition, for the art of acquisition includes hunting, an art which we ought to practice against wild beasts, and against men who, though intended by nature to be governed, will not submit; for war of such a kind is naturally just."[116] Unlike Aristotle, Augustine and Aquinas believed that wild animals were not even entitled to be hunted in a just war, but could justly be the targets of an unrestricted, merciless, perpetual warfare. Aquinas' criteria for "just wars," derived in large part from Augustine, still influence modern thinking. "[J]ust cause, competent authority, and proper intention reflect Augustine's threefold strategy for restricting the application of Matt. 5:38, the biblical expression of the duty of nonmaleficence."[117] Animals did not even rise to the dignity of human enemies, for in a "just war," human "right intention insists that charity and love exist even among enemies. Enemies must be treated as human beings with rights."[118] Moreover, "right intention requires that the just belligerents have always in mind as the ultimate object of war a just and lasting peace . . . . [P]ursuit of a just and lasting peace is an essential characteristic of the difference between just and unjust war."[119]

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116 2 ARISTOTLE, *Politics, supra* note 32, at 1994. "[T]he just war against beasts was a familiar thought to the Greeks." CLARKE, *supra* note 87, at 23-24. "The philologist, Clodius, or the early Platonist Heraclides Ponticus on which he probably draws, defends the idea of a just war against wild beasts, basing it (*gar*) on their attacking men voluntarily (*hekontes*)." SORABJI, *supra* note 10, at 110 (citation omitted). The concept of a just war "here introduced for the first time into Western philosophy, is surprisingly applied in the first instance to hunting animals and in the second to capturing those who are naturally slaves." *Id.* at 199. Nearly two thousand years later, Sir Edward Coke held that, as infidels were the perpetual enemies of Christendom, they could justly be enslaved by Christians. Calvin's Case, 7 Co. Rep. folio 1, 17b (1608).

117 RICHARD B. MILLER, INTERPRETATIONS OF CONFLICT 23 (1991). "But I say unto you, That ye resist not evil: but whosoever shall smite thee on thy right cheek, turn to him the other also." *Matthew* 5:38. Augustine sought to restrict this injunction by "drawing on distinctions about objects of defense, types of acts, and forms of authority." MILLER, *supra* at 19. *See also* WILLIAM V. O'BRIEN, THE CONDUCT OF JUST AND LIMITED WAR 17-35 (1981).

118 *Id.* at 34.

119 *Id.* The forms of pursuing just cause are defensive and offensive wars.

> The justice of self-defense is generally considered to be axiomatic. Just-war doctrine, following Aristotle and St. Thomas (Aquinas), as well as the later Scholastics, places great importance on the state as a natural institution essential for man's development. Defense of the state is prima facie defense of an essential social institution.
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> Offensive wars raise more complications. In classical just-war doctrine, offensive wars were permitted to protect vital rights unjustly threatened or injured. Moreover, in a form now archaic, offensive wars of vindictive justice against infidels and

IV. How the Rise of Science and Darwinian Evolution Destroyed the Universe Designed for Human Beings

Robert S. Brumbaugh thought the Biblical-Aristotelian-Stoic tradition of teleological anthropocentrism "preposterous,"[120] while Arthur O. Lovejoy believed it "one of the most curious monuments of human imbecility."[121] But, preposterous and imbecilic as it may now appear, teleological anthropocentrism handily vanquished its animist, mechanist, and vitalist opponents[122] and heavily influenced philosophy, science, political science, and, finally, the law, for many centuries. It became a commonplace in the Middle Ages,[123] persisted powerfully to

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heretics were once permitted. Such wars disappeared with the decline of the religious, holy-war element as a cause of and rationale for wars. Thus, the forms of permissible wars today are twofold: wars of self-defense and offensive wars to enforce justice for oneself. . . . A war of vindictive justice wherein the belligerent fights against error and evil as a matter of principle and not of necessity is no longer condoned by just- war doctrine.

Id. at 21-22 (footnotes omitted).

120 Brumbaugh, *supra* note 11, at 11.

121 Lovejoy, *supra* note 12, at 186.

122 "Brumbaugh is certainly correct in holding that although all four tendencies could be found in Roman thought, teleological anthropocentrism definitely won the day." Dombrowski, *supra* note 10, at 84.

123 In the thirteenth century, Thomas Aquinas frequently drew upon Aristotle and Augustine in its support.

> Now all animals are naturally subject to man. This can be proved in three ways. First, from the order observed by nature. For just as in the generation of things we perceive a certain order of procession of the perfect from the imperfect (thus matter is for the sake of form, and the imperfect form, for the sake of the perfect), so also is there order in the use of natural things. For the imperfect are for the use of the perfect: plants make use of the earth for their nourishment, animals make use of plants, and man makes use of both plants and animals. Therefore it is in keeping with the order of nature that man should be master over animals. Hence the Philosopher [Aristotle] says that the hunting of wild animals is just and natural, because man thereby exercises a natural right. Secondly, this is proved from the order of divine providence which always governs inferior things by the superior. Therefore, since man, being made to the image of God, is above other animals, these are rightly subject to his government.

1 Thomas Aquinas, *The Summa Theologica*, *in* Basic Writings of Saint Thomas Aquinas 5, 918 (Anton C. Pegis ed., 1945). *See* 2 Thomas Aquinas, *The Summa Contra Gentiles*, *in* Basic Writings of Thomas Saint Thomas Aquinas, *supra*, 222 ("Hereby is refuted the error of those who said it is sinful for a man to kill brute animals; for by the divine providence they are intended for man's use according to the order of nature. Hence it is not wrong for man to make use of them, either by killing or in any other way whatever. For this reason the Lord said to Noe (Gen. IX.3) 'As the green herbs I have delivered all flesh to you'"). *See also*, St. Thomas Aquinas, *No Friendship with Irrational Creatures*, *in* Political Theory and Animal Rights 102-105 (Paul A.B. Clark and Andrew Linzey eds., 1990) ("According to the Divine ordinance the life of animals and plants is preserved not for themselves but for man. Hence, as Augustine says (De Civ. Dei i, 20), 'by a most just ordinance of the Creator, both their life and their death are subject to our use'. . . . Dumb animals and plants are devoid of the life of reason whereby to set themselves in motion; they are moved, as it were by another, by a kind of natural impulse, a sign of which is that they are naturally enslaved and accommodated to the uses of others. . . . [N]o irrational creature can be loved out of charity; and for

the beginning of the nineteenth century,[124] and faded only with the idea that the world in general existed for humans.[125] It was not finally to be defeated until the nineteenth century, when Darwin exposed the world to have been designed not by God, but by Greeks.[126] In the view

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three reasons. Two of these reasons refer in a general way to friendship, which cannot have an irrational creature for its object: first because friendship is toward one whom we wish good things. While properly speaking, we cannot wish good things to an irrational creature, because it is not competent, properly speaking, to possess good, this being proper to the rational creature, which, through its free will, is the master of its disposal of the good it possesses. Hence the Philosopher [Aristotle] says (Physics ii, 6) that we do not speak of good or evil befalling such like things, except metaphysically. Secondly, because all friendship is based on some fellowship in life; since 'nothing is so proper to friendship as to live together,' as the Philosopher proves (Ethics, viii, 5). Now irrational creatures can have no fellowship in human life which is regulated by reason. Hence friendship with irrational creatures is impossible, except metaphorically speaking. The third reason is proper to charity, for charity is based on the fellowship of everlasting happiness, to which the irrational creature cannot attain. Therefore we cannot have the friendship of charity towards an irrational creature"); LOVEJOY, *supra* note 12, at 187. The *Libri Sententiarum*, which Lovejoy called "[t]he principal textbook of Scholastic philosophy," which drew both from Augustine and Aristotle, said that "[a]s man is made for the sake of God, namely that he may serve him, so is the world made for the sake of men, so it may serve them." *Id.* at 187, quoting *Libri Sententiarum*, II, I, 8.

124 KEITH THOMAS, *supra* note 10, at 17-21. *See also* IMMANUEL KANT, CRITIQUE OF JUDGMENT 93-94 (J.C. Meredith trans., 1928) ("As the single being upon earth that possesses understanding, . . . [the human] is certainly titular lord of nature, and, supposing we regard nature as a teleological system, he is born to be its ultimate end").

125 As man's dominion over all nonhuman animals began to be challenged in the sixteenth century, the first attacks upon hunting since Roman times were mounted. CARTMILL, *supra* note 13, at 76. But, while the classical challenges were based on competing religious and philosophical views, these new challenges rested upon inferences drawn from the new science.

126 One might be pardoned for confusing writings from recent centuries with those of the Greek and Roman Stoics.

> It was with human needs in mind that the animals had been carefully designed and distributed. Camels, observed a preacher in 1696, had been sensibly allotted to Arabia, where there was no water, and savage beasts "sent to deserts, where they may do less harm." It was a sign of God's providence that fierce animals were less prolific than domestic ones and that they lived in dens by day, usually coming out only at night, when men were in bed. Moreover, whereas members of wild species all looked alike, cows, horses, and other domestic animals had been conveniently variegated in colour and shape, in order "that mankind may the more readily distinguish and claim their respective property." The physician George Cheyne in 1705 explained that the Creator made the horse's excrement smell sweet, because he knew that men would often be in its vicinity.
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> Every animal was thus intended to serve some human purpose, if not practical, then moral or aesthetic. Savage beasts were necessary instruments of God's wrath, left among us 'to be our schoolmasters', thought James Pickington, the Elizabethan bishop; they fostered human courage and provided useful training for war. Horse-flies, guessed the Virginian gentleman William Byrd in 1728, had been created 'so that men should exercise their wits and industry to guard themselves against them.' Apes and parrots had been ordained 'for man's mirth.' Singing-birds were devised 'on purpose to entertain and delight mankind.' The lobster, . . . provided men with food, for they could eat its flesh; with exercise, for they had first to crack its legs and claws; and with an object of contemplation, . . .

of the historian, Keith Thomas, the eventual disappearance of teleological anthropocentrism can be fairly regarded as "one of the great revolutions in modern Western thought."[127]

Western conceptions of the physical world began to change in the Renaissance, as natural philosophy evolved into science and an infant scientific method began to be rigorously applied, until little remained of the ancients' understanding. But, as it disappeared at a glacial pace, an *evolution* it more truly was, and upon evolution it was finally to founder. The story of this fall to earth begins late in the Renaissance, then gathers force throughout the scientific revolution of the sixteenth and seventeenth centuries into the Enlightenment of the eighteenth century. Only a few of its numerous themes and players can be mentioned.

The first squalls blew through astronomy and physics. In 1543, Copernicus published *De revolutionibus orbium*, which urged a heliocentric, instead of a geocentric, universe. By the end of the seventeenth century, it was generally accepted that the universe was without boundaries and was even populated by other creatures that lived on other worlds.[128] At the same time, explorers were chancing upon vast areas previously unknown to Europeans that teemed with strange new plant and animal species, each adapted to live in lands in which human beings appeared never to have lived.[129] Scientists, like Anton van Leeuwenhoek, were discovering and exploring a previously unknown microscopic world inhabited by uncounted numbers of tiny organisms.[130] Galileo urged that "[w]e abrogate too much to ourselves if we suppose that the care of us is the adequate work of God, the end

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forged by the most admirable workman of the world. As for cattle and sheep, Henry More in 1653 was convinced that they had only been given life in the first place so as to keep their meat fresh 'till we shall have need to eat them.' As late as the 1830's the authors of the Bridgewater Treatises on 'God's goodness as manifested in the Creation' were still maintaining that all inferior species had been made to serve man's purpose. God created and ox and the horse to labour in our service, said the naturalist William Swainson; the dog to display affectionate attachment, and the chicken to show 'perfect contentment in a state of partial confinement'. The louse was indispensable, explained the Rev. William Kirby, because it provided a powerful incentive to habits of cleanliness.

THOMAS, *supra* note 10, at 19-20 (citations omitted); *see*, LOVEJOY, *supra* note 12, at 18. *See also*, BOWLER, *supra* note 34, at 53 (in 1732, the Abbe Pluche, in *Spectacle de la nature*, "declared that ocean tides were designed to help ships in and out of ports"). Bacon wrote that "all things were made subservient to man and he receives use and benefit from them all . . . so that everything in nature seems made not for itself, but for man." FRANCIS BACON, THE ESSAYS—WISDOM OF THE ANCIENTS 335 (1858).

127 THOMAS, *supra* note 10, at 166.

128 LOVEJOY, *supra* note 12, at 108-43. In Lovejoy's opinion, this "change from a geocentric to a heliocentric system was far less momentous than the change from a heliocentric to an acentric one." *Id.* at 109.

129 THOMAS, *supra* note 10, at 168.

130 *Id.* at 167-68.

beyond which the divine wisdom and power do not extend."[131] To the mind of Descartes,

> [i]t is not at all probable that all things have been created for us in such a manner that God has no other end in creating them .... Such a supposition would, I think, be very inept in reasoning about physical questions; for we cannot doubt that an infinitude of things exist, or did exist though they have now ceased to do so, which have never been beheld or comprehended by man, and have never been of any use to him.[132]

Scientists began to explain physical phenomena in mechanistic terms, as natural physical processes. For example, Galileo's student, Evangelista Toricelli, sought to explain the physics of a suction pump not in Aristotelian terms of the water finding its "proper place" or of nature abhorring a vacuum, but as a result of the weight of air.[133] Throughout the eighteenth century, geological evidence steadily accrued that the earth was vastly older than the few thousand years that a literal reading of the Old Testament appeared to indicate and that it had been subjected to long and violent upheavals throughout its long life.[134]

As plant and animal fossils of apparently remote origin were discovered, it became obvious that numerous species had lived and died long before human consciousness awoke. The very idea of extinct species disturbed a universe designed for human beings. Worse, breaches erupted that compromised the Great Chain of Being's inherent beauty, symmetry, and stasis. Some attempted to save the Great Chain by "temporalizing" it, so as to allow for the movement and progress of species.[135] For a time, the Chain became a "ladder" or an "escalator of being"[136] upon which species could ascend. A "temporalized" Chain required neither evolution nor the theory that species came to life, then died away. The great taxonomist, Linnaeus, having embarked as a young man upon a systematic attempt to reveal God's design of the biological world, devised a system that "was the complete antithesis of an evolutionary system."[137] In later life, forced by dissonant discoveries to include within his system of classification some mechanism for natural change, he charged that existing species merely formed hybrids, perhaps even new genera or species, but not new orders.[138] Also

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131 LOVEJOY, *supra* note 12, at 188 (quoting GALILEO, *Dialogo di due massimi systemi,* III, 400.)

132 LOVEJOY, *supra* note 12, at 188 (quoting RENE DESCARTES, ANTIDOTE AGAINST ATHEISM II, ch. 9, 8.)

133 RACHELS, *supra* note 31, at 113-15.

134 BOWLER, *supra* note 34, at 26-49; THOMAS, *supra* note 10, at 168-69; *see also* Francis C. Haber, *Fossils and the Idea of a Process of Time in Natural History, in* FORERUNNERS OF DARWIN: 1745-1859, *supra* note 37, at 222-61.

135 LOVEJOY, *supra* note 12, at 242-87.

136 CHARLES COULSTON GILLESPIE, THE EDGE OF OBJECTIVITY—AN ESSAY IN THE HISTORY OF SCIENTIFIC IDEAS 272 (1960).

137 OLDROYD, *supra* note 38, at 20. *See id,* at 15; BOWLER, *supra* note 34, at 56, 64-65.

138 OLDROYD, *supra* note 38, at 21-22; BOWLER, *supra* note 34, at 56.

undermining the idea of the fixity of species was the mechanist destruction of the embryological theory of preformation.[139] According to preformation, when God created the Universe, He had created "germs" destined to grow into the individuals of each species. The first individual female of each species contained within her "germ" the germs of every succeeding generation; likewise every subsequent female contained the germ of every generation that would succeed her.

In John Dewey's opinion, "[w]ithout the methods of Copernicus, Kepler, Galileo, and their successors in astronomy, physics, and chemistry, Darwin would have been helpless in the organic sciences."[140] Darwin used these scientific methods to argue for the evolution of species by natural selection. In *The Origin of Species*, he integrated three major observations about how nature could actually be seen to work. First, individuals within what was generally thought of as a single, sexually-reproducing species were not identical, but varied in numerous, often infinitesimal ways. Variations within a species were irrelevant if the individuals could breed one with another.[141] Second, parents passed characteristics to their offspring in a manner uninfluenced by the environment. Third, the natural competition for existence among individuals within a population generally resulted in those individuals best suited to their environment surviving to breed. Variations that best suited individuals for survival and breeding survived within those individuals to transform future generations.[142] Darwin's theory of evolution by natural selection explicitly held that evolution existed and that natural selection operated through a process of gradual change. Embedded within were the ideas that species multiplied either by splitting into daughter species or evolving into new species

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139 *Id.* at 58; LOVEJOY, *supra* note 12, at 243-44.

140 DEWEY, *supra* note 34, at 8.

141 The evolutionary biologist, Ernst Mayr, suggests that all the definitions of species that have ever been proposed can be fit into four broad categories. The "typological species concept" speaks of each species as having constant observable characteristics. The "nominalist species concept" conceives of species as nothing but arbitrary mental constructs that more or less arbitrarily seek to group individuals. The "biological species concept" sees species as groups of reproductively isolated interbreeding natural populations. The "evolutionary species concept" leads to a definition of species as a "lineage (an ancestral-descendant sequence of population) evolving separately from others and with its own unitary evolutionary role and tendencies." MAYR, *supra* note 33, at 315-323. Darwin's notebooks reveal that between 1837 and 1852, he had conceived of species as biological. But seven years later, in *The Origin of Species*, his species concept was "a mixture of the typological and nominalist species definitions." MAYR, *supra* note 1, at 29-30. Today, the biological species concept is most widely accepted. *Id.* at 31.

142 BOWLER, *supra* note 34, at 165-67; OLDROYD, *supra* note 38, at 85-90. Darwin's "mechanism, natural selection, would seem at first sight simplicity itself: if always the best, the fittest, survive, and if there is a difference in genetic endowment among individuals, the race will by necessity steadily improve. No wonder T. H. Huxley said on reading the *Origin,* ' How extremely stupid not to have thought of that.'" Ernst Mayr, *Introduction* to CHARLES DARWIN, ON THE ORIGIN OF SPECIES xv (1964) (A Facsimile of the First Edition).

when populations became isolated and that all organisms had descended from a common ancestor.[143]

The universe fluctuated ceaselessly. The structure of creatures could be explained as the gradual adaptation of species to change. As had chemistry and physics before it, biology required no purpose.[144] Darwin's world needed no design, thus it needed no Designer;[145] there was no cosmic teleology.[146] "There seems to be no more design in the variability of organic beings and in the action of natural selection, than in the course which the wind blows."[147] In Dewey's words, "[t]he Darwinian principle of natural selection cut straight under this philosophy [of design]. If all organic adaptations are due simply to constant variation and the elimination of those variations which are harmful in the struggle for existence that is brought about by excessive reproduction, there is no call for a prior intelligent causal force to plan and preordain them."[148] No linear Great Chain could possibly exist, as all organisms had descended from a common ancestor.[149] Thousands of phyletic lines of organisms bore no relevance either to humans or to human characteristics.[150] Life evolved not as rungs on a ladder but as a bristling bush. The Great Chain of Being, that "grand master metaphor [that had] dominated, perverted, and obstructed European efforts to discover man's place in nature,"[151] was destroyed.

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143 MAYR, *supra* note 33, at 196-212.

144 RACHELS, *supra* note 31, at 115-16. In his review of *Darwinism Evolving*, *see* note 33, the biologist, John Maynard Smith, accepts the authors' "claim that Newton is to Aristotle as Darwin is to Lamarck." In Smith's view,

> [t]he essential difference between Aristotle and Newton is that Aristotle thought that bodies move as they do because it is natural for them to do so, whereas Newton explained the elliptical orbits of planets as caused by an external force, gravity. A similar contrast exists between Lamarck and Darwin. Lamarck held that organisms evolve because they have an inherent tendency to become more complex. It was this idea that Darwin was rejecting when he said his theory had nothing in common with Lamarck's. Instead of explaining evolution by an inherent tendency, Darwin thought that change was directed by an external force, natural selection.

John Maynard Smith, *Life at the Edge of Chaos*, *in* XLII (4) THE N.Y. REV. OF BOOKS, March 2, 1995, at 28.

145 "If we had to name a single person as responsible for the refutation of cosmic teleology, it would be Charles Darwin." MAYR, *supra* note 33, at 3.

146 Richard Dawkins seeks to "persuade the reader, not just that the Darwinian world-view *happens* to be true, but that it is the only known theory that *could*, in principle, solve the mystery of our existence." RICHARD DAWKINS, THE BLIND WATCHMAKER x (1986).

147 CHARLES DARWIN, THE AUTOBIOGRAPHY OF CHARLES DARWIN 87 (Nora Barlow, ed. 1958).

148 DEWEY, *supra* note 34 at 11-12. *See* RACHELS, *supra* note 31, at 116 ("For Darwin there was nothing in the constitution of any organism that propels its development in any particular direction. Nor were there any 'higher' or 'lower' forms of life . . . there were only organisms adapted in different ways to different environments, by a process ignorant of design or intention").

149 MAYR, *supra* note 1, at 21.

150 MAYR, *supra* note 33, at 252.

151 DANIEL J. BOORSTIN, THE DISCOVERERS 457 (1985).

Yet design had not been necessarily contradicted. From within the scientific community burst challenges. After all, logically, a design *could* have been imposed when the universe was created by an omnipotent being. Two main responses arose to what John Dewey called this idea of a "design on the installment plan."[152] First, natural selection acted upon natural variations that were useful, but also on those that were useless, and even outright harmful. This was a wildly inefficient way for a Designer to run a universe, especially as it was apparent that organisms routinely evolved with a less than ideal design. Second, it seemed impossible, or at least exceedingly unlikely, that the earliest universe could have contained all the necessary information to allow organisms to evolve into the world we now see. But what mortal could possibly fathom the mind of God? Ultimately this variation of the argument from design, while not logically inconsistent with Darwinian evolution, could neither be proved nor disproved. It therefore did not pose a scientific question.[153] Today, opposition to a nature without design or purpose is generally confined to a small number of fundamentalist theologies.[154]

> Perhaps the most important consequence of the theory of common descent was the change in the position of man. For theologians and philosophers alike man was a creature apart from all other living nature .... But Ernst Haeckel, T. H. Huxley, and in 1871 Darwin himself demonstrated conclusively that humans must have evolved from an ape-like ancestor, thus putting him right into the phylogenetic tree of the animal kingdom. This was

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152 Dewey described it as "[i]f we conceive the 'stream of variations' to be itself intended, we may suppose that each successive variation was designed . . . from the first to be selected." DEWEY, *supra* note 34, at 12.

153 BOWLER, *supra* note 34, at 222-26; OLDROYD, *supra* note 38, at 247-49. Indeed, "[t]he whole thrust of modern evolutionism has been to eliminate the need for a supernatural purpose in accounting for the present structure of living things." BOWLER, *supra,* at 6.

154 *See* Epperson v. Arkansas, 393 U.S. 97, 107 (1968) (in striking down a state statute that forbade the teaching of evolution in public schools and universities, the Supreme Court could find nothing in the record that suggested that the law could be justified by anything other than certain religious views). In Edwards v. Aguillard, 482 U.S. 578, 593 (1987), the Supreme Court struck down a state statute that required any public school that taught human evolution to give equal treatment to so-called "creation science," as this "science" was designed exclusively to promote a religious view. In his concurring opinion, Justice Powell noted that the bill as originally introduced in the legislature had stated that the world has been "created *ex nihilo* and fixed by God." *Id.* at 600. Powell went on to explain that "(c)reation 'ex nihilo' means creation 'from nothing' and has been found to be an inherently religious concept . . . unique to Western religions." *Id.* at note 2, quoting McLean v. Arkansas Board of Education, 529 F. Supp. 1255, 1256 (E.D. Ark. 1982). Powell further noted that the principal "creation science" organizations were essentially religious. *Id.* at 602-603. *See also* Eugenie C. Scott, *The Struggle for the Schools, in* NAT. HIST. 103(7):10-13 (July 1994). A few fundamentalists cloak design in science. *See* PERCIVAL DAVIS AND DEAN H. KENYON, OF PANDAS AND PEOPLE (2nd ed., 1993). However, even those scholars who embrace design generally concede that it is a theological or philosophical, and not a scientific, concern. ETIENNE GILSON, FROM ARISTOTLE TO DARWIN AND BACK AGAIN xix (John Lyon trans., 1984).

> the end of the traditional anthropocentrism of the Bible and of the philosophers.[155]

Darwin's earthquake rumbled not just through science, but theology, philosophy, sociology, and inevitably, political science and the law.[156] The natural hierarchy and principle of plentitude inherent within the Great Chain were weapons that the privileged had frequently turned on agitators for human social reform and "especially against all equalitarian movements."[157] Inequality had for so long been thought a cornerstone of nature that any demand for equality was criticized as a subversion of the laws of nature and of God.[158] The destruction of the Great Chain of Being kicked open the door to the acceptance of modern ideas of human social equality. It also opened the human mind to the idea of the nonhuman mind.[159]

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155 MAYR, *supra* note 33, at 176. To a degree that far exceeds ancient understandings, modern biology has recognized both the enormous variations within and the continuities among the millions of known species. Yet, like Chrysippus, we frequently remain "inclined to believe that animals are so much protoplasmic stuff without species characteristics or individual personalities; all . . . are grey in the dark of our own blindness." CLARKE, *supra* note 87, at 59.

156 "To understand the strong normative appeal of evolutionary models, one must first appreciate that American law, like biology at the time of Darwin, faces the problem of providing a theory of creation which does not invoke a Supreme Being." Elliott, *supra* note 2, at 91. Elliott, who believes that the manner in which law is affected by the ideas that it routinely borrows from other disciplines has been largely unexplored, sets sail by chronicling how the Darwinian idea of evolution has affected the jurisprudential work of such legal scholars as Holmes, Wigmore, and Corbin. *Id. See also* Jan Vetter, *The Evolution of Holmes, Holmes and Evolution*, 72 Cal. L. Rev. 343, 362 (1984) ("Holmes' *The Common Law* is first of all an account of legal change, and its object in this respect is to exhibit the workings of Darwinian evolution in law"). Evolutionary jurisprudence was often shunned during the middle half of the twentieth century due to that period's association of evolution with Spencer's racist and reactionary Social Darwinism. Elliott, *supra* at 59, 76. It is shunned no longer. *Id. See* Roger D. Masters, *Evolutionary Biology, Political Theory and the State*, *in* LAW, BIOLOGY & CULTURE—THE EVOLUTION OF LAW 171 (Margaret Gruter & Paul Bohannon eds., 1983).

157 LOVEJOY, *supra* note 12, at 205.

158 The cosmic picture had in truth never been linked with the order of human affairs by any strictly logical connection; it did not follow from the Great Chain of all Being, of which mankind was one sector, that an identical system must exist among the creatures within that sector. It would have been possible to think of all men as being equals within their allotted sphere.

J. R. POLE, THE PURSUIT OF EQUALITY IN AMERICAN HISTORY 5, 156 (1978). "The Great Chain of Being, which held the whole of creation together in a fixed and permanent order, was compatible with the Biblical account of creation and offered a suggestive analogy with the orders of men, implicitly - though not necessarily - supporting notions of natural hierarchy." *Id.* The Stoics, for example, claimed that a natural equality among human beings existed, as all human beings could apply their abilities to reason to understand the dictates of the natural law. This led the Stoics to refuse to recognize Aristotle's human hierarchy of natural slaves or the natural superiority of the husband to the wife. EDELSTEIN, *supra* note 64, at 73-74, 83-84. *See also* ROBERT J. HARRIS, THE QUEST FOR EQUALITY 4-8 (1960) (discussing the Stoic idea of the natural equality of humans).

159 Some behaviorists claim that neither human nor nonhuman animals may be conscious and that the arguments for the existence of nonhuman minds are flawed in the

V. CONCLUSION

This history of the Western understanding of a physical world, dead for over one hundred years to science, philosophy, political science, and the law regulating human relationships, might today be of interest to few outside a small circle of historians of science. After all, we now know that the answers given by Greek science were overwhelmingly mistaken. In many respects, the average school child understands cosmography more truly than did Aristotle or Plato. Facts change and with them the scientific theories that assume those facts. "That is no disgrace, for being wrong is a constant feature of scientific method."[160] It is also a constant feature of law. When facts change, the law that assumes those facts should change. Today, the heart of this curious and imaginary physical world of the Ancients lies beating within the breasts of common law judges, animating the common law that regulates the modern relationships between human and nonhuman animals. Stagnant and dead as the Great Chain from which it derived, it has fixed within the living common law.[161] As will be explained in detail elsewhere, this Aristotelian-Stoic-Biblical understanding of the relationship between human and nonhuman animals was codified by the Emperor Justinian in the sixth century, based largely on the writings of the great Roman jurists of the second and third centuries, who wrote in and about this imaginary physical world.[162] Roman law passed into common law through the writings of, among others, Bracton,[163] Britton,[164] Fleta,[165] Coke,[166] Locke,[167] Blackstone,[168] Kent,[169] and Holmes.[170] "[T]he evidence of it is to be found in every book which has been written for the last five hundred years . . . we still repeat the reasoning of the Roman lawyers, empty as

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same way as were the arguments from design: as the universe is complex and operates very well, it must have been designed. Mark S. Blumberg and Edward A. Wasserman, *Animal Mind and the Argument from Design*, THE AM. PSYCHOLOGIST, March 1995, at 133, 133-37, 140-42. But mere complexity and fit are not offered as proof of the existence of nonhuman animal minds, but versatility, the adaptability to changing circumstances. DONALD R. GRIFFIN, ANIMAL MINDS ix, 3, 27-141 (1992). Further, no one claims more for the minds of nonhuman animals than for the minds of humans.

160 WOLPERT, *supra* note 22, at 39.

161 *See* 4 Am. Jur. 2d, *Animals*, §§ 1, 2, 5 (1962); 3A C.J.S. *Animals*, §§ 3, 4, 6-10 (1973).

162 THE INSTITUTES OF JUSTINIAN (Thomas Collett Sandars trans., 1927); THE DIGEST OF JUSTINIAN (Theodor Mommsen et al. eds., 1985).

163 HENRICI DE BRACTON, DE LEGIBUS ET CONSUETUDINIBUS ANGLIAE (Travers Twiss ed., 6 vols, Rolls Series 1878-1883); BRACTON AND AZO (Frederic William Maitland ed., 1895).

164 BRITTON (Francis Morgan Nichols trans., 1901).

165 FLETA (H. G. Richardson and G. O. Sayles eds. and trans., 1955).

166 The Case of Swans, 7 Co. Rep., at folio 17b (1592).

167 JOHN LOCKE, TWO TREATISES OF GOVERNMENT (Peter Laslett ed., Student ed. 1992).

168 WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND (1856).

169 JAMES KENT, COMMENTARIES ON AMERICAN LAW (O. W. Holmes, Jr. ed., 1873).

170 HOLMES, *supra* note 59.

it is, to the present day."[171] Its foundation has collapsed, yet its dead hand rules from the rubble.[172]

Simply knowing that is the first step towards its "deliberate reconsideration" and the recognition that some nonhuman animals may possess fundamental common law rights.

[171] *Id.* at 18. Holmes was referring to the law of master and servant.

[172] Steven M. Wise, *Of Farm Animals and Justice,* 3 PACE ENVTL. L. REV. 191, 203 (1986). "[T]he law that regulates . . . animals remains essentially grounded upon a Cartesian ethology and a pre-Darwinian biology." *Id.* Descartes advanced the ultra-mechanistic view that nonhuman animals were merely unfeeling machines. *Id.* at 202.