Boundary crossings. The Blurring of the Human/Animal Divide as Naturalization of the Soul in Early Modern Philosophy

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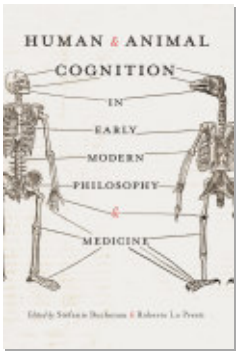
Human and Animal Cognition in Early Modern Philosophy and Medicine



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CHAPTER 9

BOUNDARY CROSSINGS

THE BLURRING OF THE HUMAN/ANIMAL DIVIDE AS NATURALIZATION OF THE SOUL IN EARLY MODERN PHILOSOPHY

Charles T. Wolfe

> It is not enough for the *libertin* that Brutes resemble us in some ways—he wants them to equal us.
>
> —DAVID BOULLIER

Introduction: From Animal Souls to the Materiality of the Mind

In dealing with the diverse, not to say patchwork varieties of early modern materialism, it is helpful to distinguish between two broadly understood positions or constellations of positions: the *world* is in its essence material (cosmological materialism), and the *mind* is material, which often implies an identity or correspondence between brain and mind (psychological or cerebral materialism). The thesis of the materiality of the world can of course rest on diverse matter theories, including one sometimes termed "vital materialism," in which all of matter is understood as active and self-organizing. For instance, John Toland asserted in his influential *Letters to Serena* (1704) that "Matter neither ever was nor ever can be a sluggish, dead and inactive Lump, or in a state of absolute repose"; "Activity ought to enter into the Definition of Matter, it ought likewise to express the Essence thereof."[1] Here, "action is essential to Matter";[2] such an attribution of properties to matter is further extended in Diderot's yet more "top-heavy" conception of all of matter as active, self-organizing, and in addition sensing. For Diderot, "life and animation are not a metaphysical

degree of beings but rather, a physical property of matter."[3] Obviously, some thinkers will seek to integrate "cosmological" and "psychological" materialism, notably by insisting that the mind belongs to the same material nature as the rest of the world, or that our ideas, which come to us through our senses, are themselves material. The heterodox Benedictine monk Dom Deschamps, author of a then-unpublished Spinozist treatise that he showed to Diderot in the 1760s, wrote that "sensation and the idea we have of objects are nothing other than these objects themselves, inasmuch as they compose us, and act on our parts, which are themselves always acting on one another."[4]

But what does this distinction (sometimes emphasized, sometimes downplayed, sometimes ignored) between these two forms of materialism have to do with the problem of the human/animal relation? In fact, several instances of what may be termed the *materialist blurring of the human/animal divide* participate in the articulation of an ontology of living, sensing matter with an account of the materiality of cognition—precisely, an articulation of cosmological and psychological materialism. For instance, the early eighteenth-century radical Protestant physician from Niort, Abraham Gaultier, whose clandestine *Réponse en forme de dissertation à un théologien* of 1714 circulated under the charming title *Parité de la vie et de la mort*, reflected critically on Cartesian animal-machines, but instead of seeking to rebut Descartes by appealing to the "fact" that animals can feel, sense, and perhaps even think (a common reaction including from immaterialists, notably Henry More), he immediately connected the issue to the basic properties of matter: "Descartes also denies that animals feel, solely on the grounds that he does not conceive how the matter of which they are made could feel. However that may be, one must consult nature closely and listen to her language, which is always very real. If she says that matter, however insensible it is naturally, can after changes and certain constructions acquire feeling, one must believe her."[5] I shall return to the various rejections of the animal-machine hypothesis below, but for now simply wish to emphasize that a shift in our matter theory can effect a corresponding shift in our vision of the human/animal boundary, as can be seen in Gaultier's statement that when we deny that animals can feel, it is based on an underestimation of the *matter* they are made of. Conversely, a shift in our understanding of animal cognition and its limits can nourish an enhanced, vital materialism in which, as Diderot wrote, "brutes are not as brutish as we think."[6] That brutes are not as brutish as we think implies something more general about the corporeality of the human mind, given that it is not so strictly cordoned off from the animal.

It implies, in the words of the anonymous clandestine manuscript from the 1720s, *L'Âme matérielle*, that "the mind is subject to the law of all corporeal beings." La Mettrie clearly saw the threat posed by such a continuum of corporeity, and wrote in (dubiously) reassuring tones: "that the mind possesses such a corporeal nature need not be feared as a blow to our self-esteem."[7]

In that sense, the gradual blurring of the boundaries between animals and humans, with a focus on the complexity of animal minds at the expense of anthropocentrism or human uniqueness, participated in the emergence of a new materialist concept of mind, which could be the effect of an *enhancement* or augmentation of the perceived animal capacities (cognitive, linguistic, affective, etc.) or of a *downgrading* of human uniqueness, which some authors of the period saw as a "humiliation" of man.[8] Sometimes, this means that humans can retain some of their core properties (in comparison with brute physical matter as a while)—animal properties. For instance, as Diderot wrote, "It is obvious that if man is not free, or if his instantaneous determinations or even oscillations stem from something material which is external to his mind, then his choice is not the pure act of an incorporeal substance or a simple faculty of this substance. There is, then, no rational goodness or wickedness, although there may be animal goodness or wickedness."[9]

Such blurring was composed of a variety of different projects, reactions, sometimes tentative, sometimes bolder, which alternately reached back toward antiquity (naturalized Aristotelian conceptions of an "organic soul," Epicurean conceptions of a "material soul" but also, less abstractly, accounts dating back to Chrysippus of the "animal syllogism") or forward to various combinations of (a) comparative empirical accounts of animal and human cognition, including the capacity for language, and (b) anatomical investigations of ape/human similarities and differences. The further these were radicalized—as in Anthony Collins's discussion of the volition of sheep, or La Mettrie's suggestion that some day orang-outangs could be sent to school and acquire language, as I discuss in section 4—the more we are in explicit materialist territory. That is, animal reasoning need not entail materialism, but materialism—at least in the forms discussed here—implies the existence of animal reasoning. As the Jansenist critic of the *Encyclopédie* Abraham-Joseph Chaumeix argued, "it is a fundamental principle for this kind of philosophers [*sc*. materialists—CW] that animals are barely different from humans."[10]

The comparative study of animal and human souls amounts to a comparative study of animal and human cognition; and the latter potentially

implies that human cognition is located on a scale, spectrum, or continuum of other sorts of minds. A further implication is that this continuum is itself *material*, as can be seen in Gaultier's observation that an expanded concept of matter completely does away with any absolute boundary between species (particularly human and animal). On a strictly conceptual level (i.e., not as an empirical claim about actual animal minds), Locke himself had observed in his discussion of thinking matter that the problem of the essential properties of matter (and thought), and the problem of human and animal minds could sometimes be one and the same, so that granting complexity to a peach, an elephant, or matter itself is the same act (of superaddition):

> God creates an extended solid substance, without superadding any thing else to it, and so we may consider it at rest: to some parts of it he superadds motion, but it still has the essence of matter: other parts of it he frames into plants, with all the excellencies of vegetation, life, and beauty, which are to be found in a rose or a peach tree, etc., above the essence of matter in general, but it is still but matter: to other parts he adds sense and spontaneous motion, and those other properties that are to be found in an elephant. Hitherto it is not doubted but the power of God may go, and that the properties of a rose, a peach, or an elephant, superadded to matter, change not the properties of matter. . . . But if one venture to go one step further, and say, God may give to matter thought, reason, and volition, as well as sense and spontaneous motion, there are men ready presently to limit the power of the omnipotent Creator, and tell us he cannot do it; because it destroys the essence, "changes the essential properties of matter." To make good which assertion, they have no more to say, but that thought and reason are not included in the essence of matter. I grant it; but whatever excellency, not contained in its essence, be superadded to matter, it does not destroy the essence of matter if it leaves it an extended solid substance; . . . and if every thing of greater perfection, superadded to such a substance, destroys the essence of matter, what will become of the essence of matter in a plant, or an animal, whose properties far exceed those of a mere extended solid substance?[11]

The freethinker Boyer d'Argens extended this argument in his scandalous *La philosophie du bon sens* (1737), claiming again on the basis of superaddition that one could not deny God's ability to elevate the faculties of an animal

soul to that of a human one,[12] and also turning the point around: "if animals thus possess a material Soul, Feeling is then not incompatible with Matter: the latter allows of it" (383; the chapter [XIV] is titled quite revealingly, "That the Animal Soul is a Proof that Matter can acquire the Faculty of Thought"). Now, Locke's implied agnostic attitude toward the existence of animal cognition—when his close friend and protégé, Anthony Collins, about whom we shall hear more below, wrote to him arguing that animals possess a degree of thought, Locke did not reply at length, except to grant that animals are not automata[13]—did not prevent him from denying such ideas in other contexts, when they were presented as empirical assertions. Thus when Pierre Coste, the French translator of the *Essay*, queried Locke regarding the fact that we can observe animals creating complex constructions as evidence for an innate instinct, Locke dismissed Coste's question rather sharply, declaring "I did not write my book to explain the actions of animals."[14] But D'Argens's example brings out a core point in this chapter, that there is an interaction between debates over the basic properties of matter (including more or less pronounced overdeterminations as in Cavendish or Diderot), and the various blurrings of the human/animal divide, in the way that these blurrings inscribe both animal and human minds in a living material universe. Differently put, there can be a connection, *pace* Locke, Gaultier, and d'Argens, between animal minds and whether we allow matter the capacity to think.

Ultimately, the expansion of the scope of animal cognition effected by the blurring of the human/animal divide, and its consequent humiliation of human sovereignty and uniqueness, is part of a broader conceptual process of naturalization, whereby cognition is integrated into the materiality of the world. Naturalization here is really several quite distinct subprocesses, which some texts try to unify or synthesize, but often occur independently of one another. Broadly speaking, I shall distinguish between metaphysically/conceptually based and empirically based naturalizations of the soul (each being a case of human/animal blurring). These break down as follows: in sections 1 and 2, I examine the shift from more conceptual challenges to anthropocentrism or human uniqueness, including ones focusing on a "material soul" concept, to more empirical (yet not fully naturalistic) challenges; in sections 3 and 4 I turn to the gradual focus on animal reasoning, complex behavior, but also comparative anatomy, leading to a "humiliation of man" and an emphasis on the hyperplasticity of species; in section 5 I examine a final strategy of naturalization: the portrayal of the human mind as deterministically animal, in a harbinger

of the cognitively oriented "New Unconscious"[15] which is also a return of Leibnizian *petites perceptions*, building both on Bayle's "Rorarius" and reflections on the "animal syllogism."

1. The Materiality of (Animal and Human) Souls and the Fiery Soul

There are various ancient and Renaissance elements used in early modern elaborations of what has been termed "the organic soul,"[16] and then more Epicuro-Gassendist iterations of the "material soul."[17] The former appealed to Aristotle's *De anima*, particularly in the way it was read as inscribed in a biological project,[18] and seen as available for more heterodox, early modern projects of "naturalization," as is patent in the opening lines of the treatise: the "study of the soul" contributes greatly to the "study of nature" (*De anima*, 402 a 5–6), because the soul is a "principle of life." In a Renaissance Aristotelian context, Pietro Pomponazzi's *Tractatus de immortalitate animae* (published 1516), for instance, took Aristotle in the direction of a material soul concept, building on the notion of "the first actuality of a natural body which has organs" (*De anima*, 412 b 5–6), which allows a naturalistic interpretation.[19] Already in the part of Avicenna's *Shifâ'* (published 1020–1027) which came to be viewed as a commentary on *De anima* during the later Middle Ages, a distinction was drawn between the study of the soul in itself, which belongs to metaphysics, and the study of the soul as the principle of animation, which belongs to natural philosophy.[20]

The ease with which Aristotle could be taken up in a naturalistic project *malgré lui* was noted early on by Pierre Bayle. In the entry "Pereira" of his *Dictionnaire*, Bayle remarked that "one might believe" that "Aristotle recognized a difference between the animal soul and the human soul only in terms of greater or lesser [capacities] of organs (*une différence du plus au moins*)"; this merely quantitative difference would entail that the human soul could carry out subtle reasoning, while the animal soul could only do so "in a confused manner." And this, Bayle concludes, "confirms the claim of those who say he [Aristotle] did not believe in the immortality of the soul."[21] To be clear, Bayle is not agreeing with the view, but is noting the ease with which it can be proclaimed, and credited to Aristotle.

The difference between human and animal "souls"—really, between different cognitive abilities—is again stated as merely a matter of "le plus et le moins," that is, merely gradations, but still *metaphysical* rather than *empirical* gradations (without wanting to introduce too sharp a positivistic divide between the two), in the Epicurean notion of the material soul as "purest

fire" and "subtle wind," found notably in the physician Guillaume Lamy's seventeenth-century writings, and clandestine discussions in manuscripts such as the *Treatise of the Three Impostors*. Lamy, a philosopher and physician based in Paris, published his major works between the late 1660s and late 1670s. He was much appreciated by La Mettrie, and aroused some fierce reactions: Bayle described him as an "over-the-top Epicurean" (*un épicurien outré*).[22] Lamy's original, medical-materialist approach still verbally maintained a difference between the sensitive soul and the rational soul, but ultimately located all of these distinctions within a physiological frame. He described the soul in his *Discours anatomiques* as "a very subtle spirit or a very fine and always mobile matter, the greatest part of which and, so to speak the source, is in the sun. . . . It is the purest fire in the universe, which does not burn of itself but, by the different movements which it gives to the particles of the other bodies in which it is enclosed, it burns and gives off heat."[23] "Soul" here is simply part of the material world, rather than something materialism would directly eliminate. A longer version of this passage appears in the *Treatise of the Three Impostors*,[24] with a more explicit reference to animals. The treatise speaks similarly of a "very subtle spirit, or a very delicate matter" "in the universe," "the source of which is in the Sun, and the remainder is spread in all the other bodies, more or less, according to Nature or their consistency." This is the "Soul of the Universe," a "pure fire" which, "being enclosed in the body . . . is rendered capable of thought"; it "disperses at death" in humans "as in other animals."[25] These images of "subtle spirit," "very fine matter," or fire all convey the idea that the soul is composed of a special kind of *matter*. Yet to assert the materiality of the soul is not to overtly deny the soul's existence but rather (recall La Mettrie's remark on our corporeal existence) to affirm its *corporeality*, which allows it to interact with other entities populating the material world; it is not ontologically unique, yet it lives and acts, like a bodily organ.

Again, an implication that was crucial at the time was that this unified and immanent material world implies the greater proximity of animal and human souls. This was precisely the danger Bayle saw: "the natural consequence of this dogma is to declare that the soul of animals is of the same nature as that of man."[26] Out of the myriad rather murky discussions of human and animal souls, their relative or fundamental differences, and the place of rationality, mortality, and other key properties therein, Bayle saw most sharply that when a Pomponazzi or a Lamy reduces possible functional variations in "animal souls" to the "variety of organs and humours alone,"[27] the argument is in fact meant to apply to the human soul,

which only differs from that of the animal in quantitative terms (only "une différence du plus au moins," as Gassendi and later, Diderot and Priestley will also assert[28]). Indeed, the *Treatise of the Three Impostors*, after the above "chimiatric" discussion of "subtle spirits" and the materiality of the soul, simply states that "this soul [is] of the same nature in all animals."[29]

One may speak in the above cases of "naturalizations" of the soul in a monistic sense, but they are not yet empirical engagements with the destabilizing or "humiliating" potential of an expansive understanding of the animal mind. Nor are these concepts of organic, material, or fiery soul "naturalizations of the soul" in the sense most familiar to post-Quinean readers; that is, they are not arguments for putting metaphysical concepts on the same level as the results of experimental science (with the more or less strongly implied idea that the latter should modify the former). Rather, they are naturalizations in a broadly Spinozist sense, an expression of monism wherein "soul" cannot be metaphysically separate from the extended natural world, with radical, deflationary, and sometimes destructive implications. But they are primarily *conceptual* arguments, either for the existence of animal souls, and/or for the greater proximity of these to human capacities—although in greater detail than in the above examples concerning the "material soul." I shall mention three examples from the early to the mid-eighteenth century (the rest of the analysis is roughly chronological, although in seeking to provide a typology of these blurrings of the divide, I will sometimes present instances in a more analytic than chronological order): (a) the anonymous manuscript *L'Âme Matérielle*,[30] which can be dated to approximately 1725–1730 based on some of its citations, and the writings of (b) David Boullier and (c) Georg Friedrich Meier.

(a) Between the Montaignean focus on animals and the more explicitly naturalist moment in Collins, for example, a variety of libertine and/or clandestine manuscripts seek to connect earlier considerations on the materiality of the soul with reflections on animal minds. A characteristic, if late case is *L'Âme Matérielle*: a programmatic attempt at the *naturalization of mental phenomena*, in this case, locating mental phenomena within an integrated corporeal and cognitive scheme.[31] Its argument for the materiality of the soul has four basic elements: (1) a predominantly Malebranchian account of animal spirits, blood and brain, turned into a materialist claim, including the additional determinist motif that "I am determined by the blood in my veins," (2) the rejection of the difference between animal and human souls, (3) mortalism (the affirmation of the mortality of the soul)

and (4) Epicuro-Lucretian elements reminiscent of Lamy and the *Treatise of the Three Impostors*, which convey the idea of an emergent-materialist conception of the soul.

The author of the treatise argues that there is no inherent or metaphysical difference between animal souls and human souls, with texts partly taken from Montaigne and Bayle (and Antoine Dilly to a larger extent).[32] Similarly, a parallel is suggested between the fact that human cognitive abilities vary, as they are affected by early childhood development, language acquisition, and so on (examples discussed include some "wild children" from Poland and Borneo and the deaf and mute boy from Chartres), and the fact that animal cognitive abilities are also not uniform, especially in the absence of education (88–90); a point that will be made quite forcefully by La Mettrie and others with the "discovery" of the "orang-outang" (actually a chimpanzee), discussed below in section 4. The author insists here in a faintly Spinozist way that if our "soul" (or mind) were attached to a different body, whether a less sophisticated body such as that of an animal or a body with more potential than ours, its abilities would be correspondingly affected (94–96). The Cartesian conception of animal-machines—taken in its most literal sense, without taking into consideration the partly "skeptical" aspect of Descartes's position—is challenged by appealing to various descriptions of animal emotions, loyalty, intelligence, and so forth.[33]

(b) David Boullier, who coauthored the *Encyclopédie* article "Âme des bêtes," wanted to establish in his 1737 *Essai philosophique sur l'âme des bêtes* that animals have immaterial souls, for they possess a unity of their needs and behavior that machines do not possess.[34] Boullier critiqued the philosophical popularity of the automaton (including in Leibniz) and suggested that the fantasy of "human automata" is no worse or more fanciful than that of animal-machines.[35] In fact, not only do human bodies reveal by their structure (including that of the nervous system) that they are *made for* a soul, so do animal bodies.[36] (The exact opposite, incidentally, was argued by Kenelm Digby, for whom similar bodily structure and behavior patterns in animals and humans do not imply similar fundamental powers or principles: similar structure is not enough to postulate similar function, in contemporary parlance.[37]) As we will see in the next section, Willis argued precisely that comparable structures in animals and humans implied comparable function.

(c) Georg Friedrich's Meier's writings on human and animal souls from the 1740s–1760s are considered to have initiated the debate on animal souls

in Germany.[38] Contrary to the Cartesian animal-machine concept, Meier argued with Leibnizian-inflected arguments that mechanical laws cannot explain animal actions and movements in animals; they are the proximate, not the ultimate reason thereof. Animals have souls (although only a lower cognitive and appetitive faculty, with the ability to produce confused concepts), as the world is made up of monads, thinking substances that have a representative power (cognitive and appetitive faculties), and their different place in the hierarchy of beings depends on the clearness of their representations (i.e., on their possession of a higher or lower cognitive and appetitive faculty). It is a Leibnizian gradation in which animals possess a species of incorporeal substance (soul) that is nevertheless not a rational spirit. Interestingly, Meier held that animals possess a kind of language, "eine Art der Sprache" (with reference to Aesop's Fables).[39] The case of animal language will become a central issue of its own, in a sense a kind of "modernized" descendent of the animal souls issue, as I discuss in section 4.

The case to which I now turn, Thomas Willis's comparative neuroanatomy of humans and animals and his "problematization" of the animal/human divide in terms of types of souls, is *still* not an explicit or robust turn from a purely conceptual investigation to a material one, yet nevertheless, Willis performs a rather impressive displacement of the debate, from metaphysics to "neuroscience"—in fact, a shift especially toward a focus on abilities, languages, and reasoning.

2. Animal Neuroanatomy and the Corporeal Soul: Willis

Thomas Willis, best known for his great work on the anatomy of the brain, the 1664 *De cerebri anatome*, interlinked anatomy, the brain, and the soul in various works; the one that primarily concerns us here is his later study of the "souls of brutes," *De anima brutorum* (1672; English translation 1683), where he puts forth an extensive concept of "corporeal soul," and, in what seems like an inadvertent series of moves or consequences, displaces consideration of the soul in a naturalistic direction. Willis endorsed a modified version of what he had read in Gassendi: humans all possess a tripartite nature:[40] like all animals they possess bodies and sensitive souls, responsible for life functions,[41] but they also possess a rational soul. (Boullier will criticize Willis—"such a great naturalist"—for denying substance dualism; he suggests that in consequence Willis has to unnecessarily multiply the types of souls.[42]) The interrelation between these is the topic of *De anima brutorum*.

In Willis's analysis, the sensitive soul and the rational soul interact; the former supplies impressions and ideas to the latter by means of the animal spirits, and those ideas are in turn ordered and utilized by the rational soul. The sensitive soul, which governs both life and sensorimotor functions, is corporeal, while the rational soul is not: it is the immaterial, immortal human intellect. The former is sometimes governed by the latter, sometimes dependent on it, sometimes in conflict with it: "The Corporeal Soul does not so easily obey the Rational in all things, not so in things to be desired, as in things to be known: for indeed, she being nearer to the Body, and so bearing a more intimate Kindness or Affinity toward the Flesh, is tied wholly to look to its Profit and Conservation."[43] Thus Willis finds himself dealing with perennial problems of "communication" between levels of soul: "And so as our Intellect, in these kinds of Metaphysical Conceptions, makes things almost wholly naked of matter, or carrying it self beyond every sensible Species, consider or beholds them wholly immaterial."[44] One can distinguish three parts in Willis's account of the soul: a chimiatric matter theory with particular focus on life functions, localized physiological explanations of cognitive processes, and, most relevant here, the derivation of an incorporeal human soul on the basis of comparative anatomical studies—at the same time a blurring of the divide between the corporeal and the incorporeal soul.[45]

The complexity here is both metaphysical, species-level (animals and humans), and neurophysiological (how the animal spirits produce sensations and motions: the motions of the spirits occasion sensations or natural instincts in animals, but they are also the corporeal basis for all human perception). Willis thereby emphasizes the physicality of the sensitive soul in humans and animals, and the physical motions of these animal spirits through the nerves and brain. Even before any comparison with the animal soul, the human soul is thus severely limited in its powers by the instruments of the brain, nerves, and animal spirits. In a way we might recognize as "modern Epicurean" (à la Gassendi and Lamy), Willis looks for *types of soul* in the context of functional anatomy, a more bottom-up approach. He found the human nervous system more refined and complex than that of any other animal, but so analogously constructed as to be indistinguishable in terms of cognitive function by any physiological principle—in contrast, say, to Kenelm Digby, as noted above. Structure and function are intimately linked; Willis could find no sufficient physiological difference between humans and animals to account for their differences in cognitive capacity. He definitely made distinctions between human and animal

"souls," including the role of instinct in self-preservation. But in providing a richer, more complex account of animal cognition, Willis contributed to the blurring of the boundaries between the two, granting animals a propositional ability: "Experience," in addition to making them "more certain of simple things," "teaches them to form certain Propositions, and from thence to draw certain Conclusions."[46] For instance, when discussing the cunning of foxes ("the Subtleties and Craft of the Fox, which is he wont to perform for the getting of his living") or the ability of hunting dogs (a classic example, as I discuss below), he speaks of "a certain kind of Discourse or Ratiocination" there, "continued by a certain Series or Thread of Argumentation,"[47] even if this is located within the "Sensitive Soul" (all these ratiocinations can be "explained and reduced into Competent notions of the Sensitive Soul" [38]). The question of whether animals had the ability to engage in "discourse or ratiocination" was an old one, usually traced back to Chrysippus's tale of the hound and the hare. It has broad implications and repercussions (if animals have language, can they reason? and if they can reason, what should separate them from us?), which I discuss below.

3. Hounds, Hares, and Humans: The Animal Syllogism and the Rationality of Animal Action

Sextus Empiricus described Chrysippus as having particular interest in "irrational animals." The tale of the hound and the hare is essentially one of several variants of a hunting story that shows the canine intellect (or sensory apparatus, or reasoning ability) to be much closer to ours than that of a mere animal-machine. In pursuit of a hare, the hound pauses at a fork in the road, and—in one interpretation of the events—reasons syllogistically, as it "smells out the minor with its nose," and "follows the conclusion."[48] The key claim is that the hound was not just relying on a kind of automatic behavior or instinct, but performed a type of deduction, specifically, the fifth complex disjunctive syllogism. Plutarch disagreed and felt that the "appearance of canine logic" was just that, an appearance; he was willing to grant that the hound identified the minor premise in the syllogism (the hare has not gone down this path), at the level of sensation. Montaigne defended Chrysippus but—skeptically—felt that it was also possible the hound was seeking to join its master (while nevertheless performing a kind of syllogistic reasoning).[49] Interestingly, in 1615 at Cambridge University, this was put to debate—"whether Dogs could make syllogisms"—in the presence

of King James I, an avid hunter.[50] It seems the King insisted on blurring the boundary between actual syllogistic reasoning and instinct, based on a case of one of his dogs that disagreed with the pack as to the route to take, and argued with them vocally, convincing them to go along with him.[51]

These appeals to the hound's syllogistic reasoning sometimes read like they were deliberately written against the animal-machine concept, and indeed, post-Descartes, there were many such reactions, which usually emphasized (minimally) a dimension of feeling present in animals, or even a weak form of rationality, although the latter could then be interpreted as instinctive or not (but nevertheless not "mechanical," as in Condillac's analysis of animal instincts). Sometimes, these reactions appealed to our moral sensibility, for instance with regard to vivisection, as was notably the case in Henry More and especially Margaret Cavendish.[52] Or, in a less direct but equally moral reaction, but also less concerned with the nature of human and animal cognition, there was a querying of the moral dimension of our relation to animals, and what happens to our sense of self if we cease to view them from our standpoint alone. Thus Montaigne famously asked, "when I play with my cat, who knows if I am not more of a game to her than she is to me?"[53] Here the animal is seen, not as an object for use (as Spinoza, conversely, suggests: animals, even though they may feel, are there for us to do what we want with them) but as a subject in its own right, as Erica Fudge puts it.[54]

Sometimes, reactions to the animal-machine invoked the features of animal behavior that often were seen as having to imply a degree of agency. So, for instance, in a short essay on instinct written in the 1660s, Fontenelle reflected on automatic behavior in humans and animals, stating unequivocally that he found them identical on this point. Against the Cartesian animal-machine concept, Fontenelle held that "animals think, and are not machines." In an elegant inversion of the ordinary animal-machine argument (i.e., that animal behavior is entirely mechanical or automatic, whereas ours is only such at the lower level), Fontenelle suggested that if we observe what is common in human and animal behavior, and focus on what is voluntary and nonmechanical, we see that here too there is commonality between species.[55]

Yet even within the defense of animal agency, positions differ: some will assert that *animals literally think and perform complex mental operations* based on descriptions like that of the hound above (or many others, of songbirds, foxes, and of course "orang-outangs"), while others, like Montaigne and also Sextus, will warn prudentially that we don't actually know what is happening in

the mental world of the animal—but the most likely case is that of genuine cognitive activity. In Sextus's terms: "even if we do not understand the sounds of the so-called irrational animals, it is not unlikely that they converse and we do not understand them."[56] Montaigne's version sounds more noncommittal but is actually quite similar: we do not know "what beasts are," even if they possess several features "which relate to ours."[57]

But it is more the former approach that I investigate here: neither a skeptical refusal of drawing boundaries between animals and humans, nor a usage of the "animal souls" trope as a form of anthropocentric self-investigation, but rather, an increasingly empirical consideration—and expansion—of the scope of animal abilities and behavior. Further, this consideration is then employed in the service of a materialist inscription of humanity on what I called above a "continuum of corporeity," itself potentially resting on a metaphysics of "animalizing" matter (Diderot), or a less metaphysical consideration of the deterministic "animality" of the human mind, building on an account of animal agency (Collins). In contrast to Montaigne's (and Charron's) perspective, the more "realist" line can also be termed "Epicurean," since this tradition has always portrayed a lack of sharpness in the human/animal divide, specifically with regard to animals and humans sharing agency, understood as "the ability to make different particular choices within the general constraints imposed by the animal's or human's atomic constitution,"[58] such that we have differing degrees of rationality and thus of agency, but on a continuum. The modern Epicurean naturalist will hold that the difference between animals and us is merely a matter of degree (as Bayle worried). This is notably the case of Pierre Gassendi.

Gassendi presented a strong challenge to Descartes's depriving animals of reason, in the Fifth Objections to the *Meditations*. He conceded that they may not use "rational argument," nor "reason as perfectly about so many as subjects as man does," but maintained that "they still reason, and the difference seems merely to be one of degree (*magis et minus*)" (AT VI, 271), perhaps the source for Bayle's "du plus au moins." Like Gassendi, the academician Marin Cureau de la Chambre argued that the idea that humans needed to be distinguished from animals was itself specious.[59] For Cureau, animals possessed a degree of reason because they possessed a "sensitive soul" that included a degree of memory. A bit like Willis and Locke in their respective contexts, Cureau nevertheless maintained a kind of "two-tier" distinction between two levels of reason, a lower level based on observation and particulars, possessed by animals, and a higher level

of reasoning based on universals, unique to humans. Both animals and humans reason, but animal reasoning is formed of particular notions, not universals.[60]

This two-tiered approach could nevertheless be used to defend an expanded vision of animal capacities. So Guillaume Bougeant's 1739 *Amusement philosophique sur le langage des bêtes*, while arguing that we should not treat the song of songbirds as a merely automatic, mechanical behavior (we are not capable of hearing all the nuances in their language, just as a foreigner has trouble hearing the nuances in our own language: 119, 121, 127), nevertheless acknowledges that they do not vary the meanings of their speech the way we do, for "Nature has so tightly bounded their knowledge, that they can only consider one object at a time" (105). The factors of this limitation are both the animal's own self-preservation, and the fact that they have one expression per object (106). Bougeant thinks the language of the beast is essentially a language of the passions (131), which he intends as a restriction, but is of course allowing them *language*.

Similarly, for Cureau, the rationality of animal actions, that is, the point that they do what is best for them in concrete circumstances, as Justin Smith puts it,[61] is evidence that they themselves possess the faculty of reason: "We must conclude, [that there] is a faculty born with [animals], which ought to be of an order as elevated, as its effects are excellent, and which consequently acts with a great knowledge. If it be so, who will not have cause to believe, that actions whose successes are so well ordered, which have so well regulated a progress and a concatenation, which so justly ties together the means with their ends, must needs be enlightened by Reason."[62] Animals may not have been the equal of humans, but neither were they entirely unconscious, as evidenced by the fact that they could learn to perform certain actions: "Reason [is] no longer that difference which distinguisheth Man from other Animals."[63] Again, even though animals are being located at the lower cognitive level (just like Willis's limitation of the animal soul), this level is in fact being considerably expanded.

A problem that emerges here, and will become central with Condillac, is the specific status of instinct (also discussed in Cureau's *Le système de l'âme*). In Cureau's case, rather than expanding the concept of instinct, he insisted that animal action be attributed to reason, arguing that the former option results in the theological difficulty that God somehow left animals incomplete, requiring divine intervention to enable the functioning of instinct, whereas the existence of animals created with a degree of reason dispenses with such problems (*Traité de la connoissance des animaux*, 8).

From an Epicurean perspective (including in the "modern Epicurean" sense of La Mettrie), the more one grants to animal instinct, the closer one is to dangerous Epicurean reductionism. Yet some authors defended the combination of physiological and instinctive "structure" found in animals as itself evidence of design. For instance, Hermann Samuel Reimarus argued that the innate perfection of drives or instincts in animals implied the existence of a Creator (following Swammerdam, Réaumur, and others), precisely in the context of a refusal of Epicurean chance and La Mettrian materialism.[64]

Condillac's account of animals, their behavior, their instinct, their mental capacities, and what it means for them to "sense" tries to steer a median way in between what he views as the profoundly mistaken Cartesian position, and the unnecessary complications of both Buffon and Scholasticism. Condillac seemed to think that common sense, according to which animals can sense, remember, learn, and "think," has it right, but needs some further distinctions and definitions, since ultimately, their mental capacities are not the same as ours. Animals are motivated primarily by self-preservation, which indeed cannot be purely mechanical.[65] Their cognition is based on *need*, which entails that they do not learn beyond their immediate needs (beavers learn to build the best dams, birds to build the best nests: II, ii). Thus the passions of animals are also more restricted than ours (II, viii), and they have much more difficulty in getting rid of bad habits than we do (II, ix). The key difference, in line with Condillac's general concern with philosophy of language, is language (II, iv). This enables us to imitate each other and to evolve in a way animals do not. Ultimately Condillac tries to maintain a category difference between human and animal minds, regardless of their empirical similarities. "Our soul is not of the same nature as that of beasts."[66] Like Cureau and Boullier, Condillac maintains a human/animal boundary, yet *what animals do* in the name of self-preservation is far from mechanical. As John Zammito puts it in a different context, animal cognitive capacities are being understood, gradually, as "natural and yet agential" (ms. 2014).

What is so interesting, and powerful, about the story of the hound and the hare, or Condillac's beavers, is how vernacular, how disconnected from traditional metaphysical disputation they are. And this is not an effect of a chronological shift: the hound's ability to reason is being debated "empirically," for example, in 1615 with King James I, and conversely, long considerations of animal souls, boundaries, and delimitations are still common in the eighteenth century (as in Meier and Reimarus).

4. Language and Anatomy: Orang-Outangs and the Humiliation of Man

From considerations on types of "souls" to a more empirical stance adopted toward animal perception, cognition, behavior, and even rationality (building on the "animal syllogism" discussions), we turn now to the particularly *anatomical* focus, which will open onto the possibility of a "hyperplasticity" of species. That is, if Cureau, citing Montaigne and Charron (while also disagreeing with them), called attention to the "voices" of animals, and Bougeant stressed that the song of songbirds is not merely automatic behavior (while insisting that animal language, unlike our own, is restricted by the imperative of self-preservation, as a kind of "pointing" at basic objects with coded emotional responses), the anatomical turn is potentially much more dangerous. Late seventeenth-century anatomists such as Claude Perrault and Edward Tyson asserted that "the vocal equipment of monkeys and apes was identical to that of humans."[67] Curiously, Fontenelle, in the 1674 edition of the annual reports (*Mémoires*) he prepared for the Académie des sciences, conceded that "monkeys could speak if they wanted to," which he presented as a proverb attributed to tribal peoples. Yet he then turns the issue around by distinguishing (unlike most other commentators) linguistic and cognitive ability: "It is not due to a defect in their organs that monkeys do not articulate sounds and establish a language amongst themselves; it is because they are deficient in intellect (*esprit*)."[68]

Tyson, who dissected what he called an orang-outang (chimpanzee), referring to it as a pygmy, worried about the anatomical and physiological similarities between apes and humans, as regards speech. As Justin Smith notes, in his anatomical study of the chimpanzee, Tyson was consistently surprised at the anatomical similarities between chimpanzee and human anatomy, but it is the particular physiological likeness of apes in the region responsible, at least in humans, for the production of speech, that worried Tyson most.[69] For James Burnet, Lord Monboddo, writing in the later eighteenth century, the great apes are "a barbarous nation, which has not yet learned the use of speech."[70] It is important, though, that for Monboddo the orang-outang alone was human: "Though I hold the Orang Outang to be of our species, it must not be supposed that I think the monkey, or ape, with or without a tail, participates of our nature, on the contrary, I maintain, that, however much his form may resemble ours, yet he is, as Linnaous [*sic*] says of the Troglodyte, 'nec nostri generis, nec sanguis.'"[71] But while Monboddo saw the orang-outang as a kind of élite specimen, a

"a natural gentleman emerging from the undifferentiated herd . . . naturally noble"[72] (nonincidentally, Monboddo was also fascinated by feral children), the potential that thinkers like La Mettrie saw in this story of the malleability and even plasticity of species, was quite the opposite: it was the collapse of boundaries and élites into an immanent plane of living, transforming animal matter—closer to Tyson's worries. These implications come out most strongly in La Mettrie's plans for educating the orang-outang:

> I should choose a large ape, [one that] resembles us so strongly that naturalists have called it "wild man" or "man of the woods." I should take it in the condition of the pupils of Amman, that is to say, I should not want it to be too young or too old; for apes that are brought to Europe are usually too old. I would choose the one with the most intelligent face, and the one that, in a thousand little ways, best lived up to its look of intelligence. . . . You know by Amman's work, and by all those who have interpreted his method, all the wonders he has been able to accomplish for those born deaf. . . . Why then should the education of monkeys be impossible? Why might not the monkey, by dint of great pains, at last imitate after the manner of deaf mutes, the motions necessary for pronunciation? But, because of the great analogy between ape and man and because there is no known animal whose external and internal organs so strikingly resemble man's, it would surprise me if speech were absolutely impossible to the ape. . . . Let us not limit the resources of nature; they are infinite, especially when reinforced by great art. Could not the device that opens the Eustachian canal of the deaf, open that of apes? . . . such is the likeness of the structure and functions of the ape to ours that I have very little doubt that if this animal were properly trained he might at last be taught to pronounce, and consequently to know, a language. Then he would no longer be a wild man, nor a defective man, but he would be a perfect man, a little gentleman, with as much matter or muscle as we have, for thinking and profiting by his education. *The transition from animals to man is not violent*.[73]

Benoit de Maillet, author of the "proto-evolutionary" text *Telliamed* composed during his years as French consul in Cairo (1692–1708), a phantasmagoric vision of fish being accidentally stranded on the earth and learning to fly through random attempts lasting one million years,[74] similarly

remarked on the orang-outang's similarity to humans and potential educational plasticity, in terms quite close to La Mettrie: "Even if one could not say that these creatures were human, they resembled humans so strongly, that it would be a bold assertion to say they were merely animals."[75] Maillet added that if one brought males and females of this species to our lands so that they would have reproduced there, their offspring could quite possibly have been brought up so as to acquire language and a more perfect form than what they had earlier.[76] That the orang-outang could, if given the opportunities afforded humans, come perhaps to equal us, as a "perfect man" or "little gentleman,"[77] was a position also taken by Diderot, now expressed as the claim that humanity is an "animal species": "man is also an animal species, his reason is but a perfectible and perfected instinct; in the careers of sciences and the arts there are as many different instincts as there are dogs in a hunting party."[78]

These are not wild or in any case unique speculations. Many authors appealed to examples from animal breeding (e.g., horses) to show, contra Descartes, that animals can be taught just as children can, whether they also look back to Chrysippus and Montaigne or strictly to their own contemporary experience. For instance, William Cavendish, Marquess of Newcastle (and husband of Margaret Cavendish, herself a prolific writer on the topic of animals and the positions to which humans illegitimately confine them):

> If the horse does not think (as the famous philosopher Des Cartes affirms of all beasts) it would be impossible to teach him what he should do. But by the hope of reward, and fear of punishment; when he has been rewarded or punished, he thinks of it, and retains it in his memory (for memory is thought) and forms a judgment by what is past of what is to come (which again is thought;) insomuch that he obeys his rider not only for fear of correction, but also in hopes of being cherish'd.[79]

But of course, Cavendish is not extrapolating from the horse's capacity to think, to "hyperplasticity," presented speculatively, for example by Diderot as an articulation between the anatomico-physiological "fact" that "the entirety of a dog's soul is at the tip of his nose. It's a question of organization,"[80] and the implication, "lengthen the nose of the Sorbonne doctor . . . he will hunt partridges."[81]

Of the diverse kinds of "naturalizations" we have encountered, this is

perhaps the first that has such an explicitly destabilizing intent. Somehow, we have come a long way from types of souls, the hound's syllogism, or the song of the songbird. "Naked" anatomical revelations coupled with the potential plasticity of species put any barrier between humanity and animality, in a fragile situation. A consequence of the elimination of any firm boundary between animal and human minds and capacities, in addition to an increasing focus on the complexity of the former, is—quite symmetrically—a downgrading of the latter: to misuse a famous Freudian phrase, "man is no longer master in his own house." Following an expression of Guillaume Bougeant's, one can call this a "humiliation of man." Bougeant's thought is that beasts, who have a demon where we have a soul, have deliberately been degraded, precisely inasmuch as they *do possess* higher-level cognitive faculties: "God wishes to humiliate them in and through their reason itself, by rendering them subject (we might say 'dependent') on such crude organs"; "the spirits animating them are punished by being subject to material senses."[82] Boullier also identifies such "humiliation" as a freethinking strategy: "it is not enough for the libertine that Brutes resemble us in some ways—he wants them to equal us" (*Essai philosophique*, Preface, xxix).

With equal irony but sounding even less encumbered by traditional worries, Bernard Mandeville in his 1711 *Treatise of the Hypochondriack and Hysterick Diseases, in Three Dialogues* (revised 1730), also expresses a strong naturalistic dismissal of the human/animal distinction in the mode of humiliation: "The Body of Man is thought to be of mean Descent; the animal Functions of it have a near resemblance to the same Functions in Brutes: it is generated and born like theirs."[83] In the same text, when the character Misomedon has insisted, following tradition, on the soul as that which separates man from the beasts, Philoprio replies by describing how the organs of generation generate mental images—a process that is necessary for the perpetuation of our species (164). In his 1707 *Essay Concerning the Use of Reason*, Collins appeared to grant that "a proper distinction between Men and Brutes [is] that the one is capable of Religion," but quickly concluded that this "gives no advantage to Men."[84]

This humiliation thus amounts to a loss of uniqueness—as described clearly by an unexpected source, Buffon:

> it is by our soul that we differ from each other; it is by our soul that we are *ourselves* (*que nous sommes nous*); from the soul that we get both the diversity of our characters and the variety of our actions. Animals,

> on the contrary, who lack a soul, have no *self* that is the principle of this difference, the cause that constitutes the person: hence, when their organisation is similar or they belong to the same species, they necessarily copy each other, all act in the same way; in one word, they imitate each other much better than human beings do. . . . [85]

If it is my soul that makes me myself or a self, and this is what animals lack, then the naturalistic weakening of this *differentia specifica* does not just open onto a project of scientific investigation of, for example, animal cognition; it also brings about a loss of selfhood. In this sense the problem of animal souls becomes "the problem of the human soul itself," as Henri Busson once put it.[86] Thus Condillac's first thought, at the beginning of his *Traité des animaux*, is that it would be strange to inquire into animals if not to understand ourselves.[87] But as I noted earlier, my analysis here is less concerned with this conceit (inquiry into animals as ultimately an aspect of self-inquiry) and more with an increasingly naturalized picture of human and animal capacities, on a continuum—even if there is an aspect of materialist reconstruction of our own self-knowledge in the insight that "brutes are not as brutish as we think": Diderot adds after this reflection that "they may judge us as badly as we judge them."[88]

5. The Agency of Sheep and/as the New Unconscious

From reflection on animal minds to their instinctual and linguistic capacities, and ultimately anatomical analysis leading to the materialist assertion of the plasticity of species (La Mettrie's twist on Tyson's orang-outang/chimpanzee) or the *hyper*-plasticity of species (Diderot's syllogism-friendly Sorbonne doctor, his nose extended, transformed into a hunting hound), we have reached one possible terminus. It is one which fits quite well with what Gaultier and d'Argens asserted, and Locke intimated: that an "upward" revision of animal capacities goes hand in hand with a revision of our matter theory. But there is another possible outcome, which is both closer to Bayle's "Rorarius" and considerations on the animal syllogism and equally materialist, but has a much stronger focus on the naturalization of the *mind*. My example of this, and it will be the final one, is Anthony Collins's *Philosophical Inquiry Concerning Human Liberty* (1717). But, just as human sovereignty has been displaced and destabilized in the foregoing texts, here, the focus on the complexity of animal minds inscribes the human mind and its capacities in a broadly naturalistic outlook (although not

one which leads in any linear fashion to a positive science of psychology, or more generally, to a project for a "scientific" treatment of the mind). Collins's perspective is deflationary with regard to the purported uniqueness of human agency (and free will), and is original in its emphasis on unconscious cognitive processes, which is why I describe his perspective as conceptualizing a "new unconscious," in the wake of Locke and Leibniz on uneasiness. Unlike the psychoanalytic unconscious, Collins's version of the "new unconscious" is cognitive (some psychologists have indeed spoken of a "cognitive unconscious"[89]).

Collins's discussion of animal agency occurs in what is perhaps the single most perfect primer of philosophical determinism ever written, one which, quite uniquely, focuses on the mind (rather than on the causal structure of the world), and in a more deflationary than reductionist way (or, to use a different explanatory pair, more reductionist than eliminativist). As Collins's explanandum is action and mental processes, the types of deterministic causal relations that he described were specifically volitional. In Collins's own terms, appropriated from Samuel Clarke: what he is defending is the existence of a specifically "*moral* necessity," not just *physical* necessity.[90] Moral necessity is not a "kingdom within a kingdom" (e.g., a form of agent causation); rather, it opens onto the forms of necessitation shared by all sentient beings, that can be shown to follow variously biological, psychological, and social regularities.

Collins takes the examination of the purported difference between humans and animals as agents as a pretext for demystifying human faculties through a demonstration that these faculties exist in animals; we can see real continuity here with earlier discussions such as Bayle's "Rorarius,"[91] yet these are turned away from their skeptical intent, toward a more explicitly materialist descriptive project. Collins also sometimes suggests a different strategy, namely, an extension of the animal-machine thesis: if brutes are to be considered as purely necessary agents, let us accept this thesis and then ask how we differ from them.[92] The former approach seeks to describe the complexity of animal minds, animal behavior, animal morals, etc., while the latter is a form of a *reductio* argument which challenges the opposing party to show how we are different from the animals.[93] For instance, in an earlier text Collins had written, "If . . . Brutes are only mere Machines, the Difficulty of proving the Soul Immaterial will be increased. For if the Operations of Brutes are not sufficient to distinguish them from Clocks and Watches, the Operations of Men will not prove *them* to be superior to Machines."[94]

Collins's challenge to the purported transparency of human awareness of action takes an initially surprising first test case: sheep.

> Sheep for example are supposed to be necessary agents when they stand still, lie down, go slow or fast, turn to the right or left, skip, as they are differently affected in their minds; when they are doubtful or deliberate which way to take; when they eat and drink more or less according to their humour, or as they like the water or the pasture; when they chuse the sweetest and best pasture when they chuse among pastures that are indifferent or alike; when they copulate; when they are fickle or stedfast in their amours when they take more or less care of their young when they act in virtue of vain fears; when they apprehend danger and fly from it and sometimes defend themselves when they quarrel among themselves about love or other matters and terminate those quarrels by fighting; when they follow those leaders among themselves that presume to go first; and when they are either obedient to the shepherd and his dog or refractory. And why should man be deemed *free* in the performance of the same or like actions? [Man has many more powers, and also some weaknesses sheep lack.] . . . But these larger powers and larger weaknesses which are of the fame kind with the powers and weaknesses of sheep cannot contain liberty in them and plainly make no perceivable difference between them and men as to the general causes of action in finite intelligent and sensible beings no more than the different degrees of these powers and weaknesses among the various kinds of beasts birds fishes and reptiles do among them Wherefore I need not run through the actions of foxes or any of the more subtile animals nor the actions of children which are allowed by the advocates of liberty to be all necessary.[95]

He feigns to see the crucial difference between us and them: they are fearful animals, and so are we, but we fear objects and situations in the future, thanks to our capacity of abstraction, etc. But in fact, this is a merely quantitative rather than qualitative difference: "These larger powers and weaknesses, which are of the same kind with the powers and weaknesses of sheep, cannot contain liberty in them" (56). It makes no difference to the causes of action in finite beings. We can see now why he chose sheep rather than a more intelligent animal: "powers and weaknesses" are distributed along the chain of species, but the fundamental point does not change. This is why he adds that there is no need to pursue the demonstration with

a more "subtle" animal such as the fox . . . or with the case of a child: here Collins asks, reiterating points Hobbes had made against Bishop Bramhall: if we declare children to be necessitated, when do they become free? If they are not free, do they have no soul? Do they only acquire rationality in the course of their "natural history"? [96]

In contrast with Locke's agnosticism (or the often tortuous attempts at differentiation we have encountered above, including Bougeant, Condillac, Meier, Reimarus . . .), Collins seems closer to Hobbes's position that "though men and beasts do differ in many things, yet they differ not in the nature of their deliberation,"[97] or to Hume (a reader of Collins, but also of Bayle), for whom "no truth appears to me more evident, than that beasts are endow'd with thought and reason as well as men" (*Treatise*, I.iii.16). Indeed, in his first "letter to Dodwell" in response to Samuel Clarke, Collins had said of animals, in language reflecting discussion of the animal syllogism, that "Experience as much convinces us, that they perceive, think, etc. as Men do. They avoid Pain and seek Pleasure, and give as good marks of Uneasiness under the one, and Satisfaction under the other, as Men do. They avoid Pain and seek Pleasure, by the same Motives that Men do, *viz*., by reflecting on their past Actions, and the Actions of their fellows, with the Consequences of them; which is apparent from their acting more to their advantage, the more experience they have had."[98] Collins's consideration of animal minds is naturalistic, not because he reasons based on experimental cases or insists on the subservience or at least immanence of philosophy with regard to the natural sciences, but because human and animal minds belong to one Nature. One should contrast Collins's view with Clarke's *anti-naturalism* (itself reminiscent of Cudworth's attacks on Hobbes's assimilation of human liberty and animal liberty). For Clarke, animal spontaneity is only one condition of human liberty: "In beasts, the same physical liberty or self-moving power, is wholly separate from a sense or consciousness or capacity of judging of *moral Good and Evil*, and is vulgarly called *Spontaneity*."[99] Further, animals for Clarke are qualitatively distinct from us because their wills are not determined by moral necessity, and their understandings are not determined by the absolute necessity of a demonstrated truth.[100] For Collins, there is no difference between humans and animals, except one of complexity: our rational, computational, and symbolic capacities do not flow from a separate faculty, but are rather elaborations upon our sensitive abilities. Our reasoning abilities (and thus our capacity to be "moved" by factors such as honour or virtue; by absent objects; by future goals) "plainly make no perceivable difference

between them [*sc*. animals] and men, as to the general causes of action, in finite intelligent and sensible beings."[101]

Collins also uses the example of sheep as a *reductio* case for the explanation of human group behavior: what we think of as the moral motives of our action are actually *social* motives, (groups of humans, like groups of sheep, displaying limitations on individual freedom that individual agents are not aware of).[102] It would doubtless be a rather absurd or at least quixotic task to repertory all possible usages of animal examples in this literature, but one can draw a clear contrast between Willis's foxes or Collins's sheep—which have both an empirical and a deflationary implication—and Montaigne's cat or Bougeant's appeals to our sympathy at the sight of a whipped dog or horse.

Conclusion

Whether in early concepts of the material soul, or later Enlightenment references to the "humiliation of man," there is no place here for a special concept of humanity, an *imperium in imperio*.[103] Yet the inscription of humans on a continuum of corporeity with animals, itself potentially resting on a metaphysics of living matter in a process of "animalization,"[104] is not a reduction of human action and necessitation to the action and necessitation of falling stones or clockwork (not a wholesale reduction of moral necessity to physical necessity, in Collins's terms). It is a reduction to the animal, so to speak—as when Diderot, in his commentary on Franz Hemsterhuis's 1772 *Lettre sur l'homme*, wrote "wherever I read *soul* I replace it with *man* or *animal*," or, in the article "Droit naturel," he stressed that in the absence of a "rational goodness or wickedness," there is still an "animal goodness or wickedness."[105] In that sense, the expansion of animal cognitive abilities and indeed here, animal moral faculties ("animal goodness or wickedness") is both a humiliation of man and at the same time a kind of residual humanism (what I have called elsewhere an embodied materialism): "That the mind possesses such a corporeal nature need not be feared as a blow to our self-esteem."[106] That is, it is not a kind of antihumanism where we disappear into a vast animal flux; our identity remains, yet it is also an animal identity (whether this be "animal goodness or wickedness," in Diderot's phrase, or the "corporeal nature" of our mind, in La Mettrie's). But at the same time, there is a potential humiliation here, in a world of differences between humans, primates, dogs and even sheep which are of the order of "degree, not kind" (Priestley, and already, Gassendi, Bayle, and Diderot).

This is perhaps best summed up by Voltaire, in a reflection on animals in his 1766 *Le Philosophe ignorant*:

> From men being supposed to continually have ideas, perceptions and conceptions, it naturally followed that brutes also did; for it is undeniable that a hunting dog has the idea of its master who it obeys, and of the game it brings him. It is obvious that the dog has memory, and combines some ideas. Thus if man's thinking was the essence of his soul, the dog's thinking was the essence of its soul; and if man always had ideas, animals must also have them always. To settle this difficulty, the inventor of vortices and channeled matter dared to assert that beasts were mere machines, which wished to eat without appetite, which possessed the organs of sensation without ever having any feeling, which cried out without pain, expressed pleasure without joy, possessed brains without ever receiving the slightest idea therein, and were thus a perpetual contradiction.[107]

Where is the materialism in all this? It is not just an isolated part of the theory, an optional supplement, as Gaultier and Boyer d'Argens indicated when they warned against underestimating the properties of matter itself. If La Mettrie's tale of the orang-outang going to school is to make any sense other than as a utopian fantasy, it must already imply a vision of living, self-transforming matter, in addition to a radicalized version of an anti-innatist approach to the mind. As Diderot put it, "if the animal's soul is matter, how much can matter do?" and "Grant me only one thing: Grant me that the animal can feel. I will take care of the rest."[108]

55. Barrington, "Experiments and Observations," 287.

56. Kant, *Kritik der Urtheilskraft*, AA V, 229. "Viele Vögel (der Papagei, der Colibrit, der Paradiesvogel) . . . sind für sich Schönheiten, die gar keinem nach Begriffen in Ansehung seines Zwecks bestimmten Gegenstande zukommen, sondern frei und für sich gefallen."

57. Kant, *Kritik der Urtheilskraft*, AA V, 243. "Marsden in seiner Beschreibung von Sumatra macht die Anmerkung, dass die freien Schönheiten der Natur den Zuschauer daselbst überall umgeben und daher wenig Anziehendes für ihn haben."

58. Kant, *Kritik der Urtheilskraft*, AA V, 378.

59. Barrington, "Experiments and Observations," 284–85.

60. For a more comprehensive elaboration of the argument here merely limned, see Justin E. H. Smith, *Nature, Human Nature, and Human Difference: Race in Early Modern Philosophy* (Princeton: Princeton University Press, 2015).

CHAPTER 9. BOUNDARY CROSSINGS

Epigraph: David R. Boullier, *Essai philosophique sur l'âme des bêtes* (Amsterdam: Changuion, 1737), preface, xxix.

1. John Toland, *Letters to Serena* (London: B. Lintot, 1704), C3, 165.

2. John Toland, *Letters to Serena*, 160.

3. Denis Diderot, "Animal," *Encyclopédie*, I, 474a, quoting Buffon, *Histoire naturelle* (Paris: Imprimerie Royale, 1749), II: *Histoire générale des animaux*, "Comparaison des animaux et des végétaux," 17. (Unless otherwise noted all translations are mine.)

4. Léger-Marie Deschamps, "La Vérité ou le Vrai Système," in *Œuvres philosophiques*, ed. B. Delhaume (Paris: Vrin, 1993), 404.

5. Abraham Gaultier, *Réponse en forme de dissertation à un théologien, Qui demande ce que veulent dire les sceptiques, qui cherchent la vérité par tout dans la Nature, comme dans les écrits des philosophes; lors qu'ils pensent que la Vie et la Mort sont la même chose* (Niort: Jean Elias, 1714), 86.

6. Denis Diderot, "Observations sur Hemsterhuis, " *Œuvres complètes*, ed. H. Dieckmann et al. (Paris: Hermann, 1975–2004), 24:258.

7. Anon., *L'Âme Matérielle* (approx. 1725–1730), ed. A. Niderst, third edition (Paris: Champion, 2003), 56; Louis de Jaucourt, "Sens Internes (Physiol.)," *Encyclopédie*, 15:31b (this sentence may be taken from La Mettrie's 1740 free translation of and commentary on Boerhaave's *Institutiones medicae*).

8. Guillaume Bougeant, *Amusement philosophique sur le langage des bêtes* (Paris: Gissey, Bordelet & Ganeau, 1739), 52, 53.

9. Denis Diderot, article "Droit naturel," *Encyclopédie*, 5:155b.

10. A.-J. Chaumeix, *Préjugés légitimes contre l'*Encyclopédie *et essai de réfutation de ce dictionnaire, avec un Examen critique du livre* De L'Esprit (Paris: Hérissant, 1758), 1:200.

11. John Locke, *Second Reply to Bishop of Worcester*, in *Works*, III (London: Rivington, 1824), 460–61 (defending the superaddition passage, i.e., *Essay Concerning Human Understanding*, ed. P. Nidditch [Oxford: Oxford University Press, 1975], IV.iii.6).

12. Jean-Baptiste de Boyer, marquis d'Argens, *La philosophie du bon-sens ou réfléxions philosophiques sur l'incertitude des connoissances humaines, à l'usage des cavaliers et du beau-sexe* (Londres: aux dépens de la Compagnie, 1737), 382–83; Anton Matytsin, "Of Beasts and Men: Debates about Animal Souls in Eighteenth-Century France" (ms.).

13. Collins to Locke, letter of 15 March 1704; Locke to Collins, 21 March 1704, *Correspondence*, ed. E. S. De Beer, vol. 8 (Oxford: Clarendon Press, 1989). Overall, Locke granted animals sensitive memory and the ability to compare ideas, but not the power

of abstraction (*Essay*, II.xi.5, 7, 11), although he noted that this did not make them "bare Machines" (§ 11), for they have reason to some degree, but in particulars. Later, in the admittedly more agnostic context of his discussion of species and kinds, he allowed that "There are some Brutes, that seem to have as much Knowledge and Reason, as some that are called Men" (III.vi.12); "if we will compare the understanding and abilities of some men and some brutes, we shall find so little difference, that it will be hard to say, that that of the man is either clearer or larger" (IV.xvi.11). See also II.x.10, xi.5.

14. John Locke, *Œuvres philosophiques*, vol. II (Paris: Firmin Didot, 1821), 329 (a footnote to *Essay* II.xi.5). See Jean-Luc Guichet, "Enjeux de la question de l'animal sous les Lumières: Condillac, Diderot, Rousseau" (ms.). That Locke was not of one mind on the question of human and animal minds, and the boundary between them, is also evidenced by his notebook entries on Gassendi, where he mentions Gassendi, Willis, and Bacon on the topic (John P. Wright, "Locke, Willis, and the Seventeenth-Century Epicurean Soul," in *Atoms, Pneuma, and Tranquillity: Epicurean and Stoic Themes in European Thought*, ed. M. J. Osler [Cambridge: Cambridge University Press, 1991), 239n., 243n.]). It is this side of Locke that Priestley would doubtless have liked to have seen more of, as he expressed disappointment, given his overall admiration for Locke, with the latter's weak position on animal minds in his reflection on the "analogy between men and brutes" (*Essay* IV.xvi.12). Priestley surmises that Locke was just following the opinion of his times; he argues in contrast that animals have general and abstract ideas, without which they could not distinguish a man from a hare (*Disquisitions*, 239)—in another echo of the "animal syllogism" I discuss in section 3.

15. Ran R. Hassin, James S. Uleman, and John A. Bargh, eds., *The New Unconscious: Social Cognition and Social Neuroscience* (New York: Oxford University Press, 2005).

16. Katharine Park, "The Organic Soul," in *The Cambridge History of Renaissance Philosophy*, ed. C. B. Schmitt and Q. Skinner (Cambridge: Cambridge University Press, 1988).

17. 'Epicurean tradition' here refers to a line of development comprising, successively and cumulatively, Epicurean, then humoral, then chimiatric, and finally materialist elements, from Epicurus and Lucretius to Robert Burton, Francis Glisson, Thomas Willis, Guillaume Lamy, anonymous clandestine manuscripts such as the aptly titled *L'âme matérielle*, and La Mettrie. It is also, then, a 'humoral materialism.' On early modern Epicureanism see Catherine Wilson, *Epicureanism at the Origins of Modernity* (Oxford: Oxford University Press, 2008) and Neven Leddy and Avi Lifschitz, eds., *Epicurus in the Enlightenment* (Oxford: Voltaire Foundation, 2009).

18. Philip van der Eijk, *Medicine and Philosophy in Classical Antiquity* (Cambridge: Cambridge University Press, 2005).

19. Katharine Park, "The Organic Soul"; Dennis Des Chene, *Life's Form: Late Aristotelian Conceptions of the Soul* (Ithaca: Cornell University Press, 2000). There are multiple strands of these naturalistic reinterpretations of Aristotle; thus the anonymous manuscript of 1659 *Theophrastus redivivus* tries to restate Aristotle's Prime Mover in these terms (see Gianni Paganini, "L'anthropologie naturaliste d'un esprit fort. Thèmes et problèmes pomponaciens dans le *Theophrastus redivivus*," *XVII^e siècle* 149 [1985]).

20. Henrik Lagerlund, "John Buridan and the Problems of Dualism in the Early Fourteenth Century," *Journal of the History of Philosophy* 42(4) (2004): 369–70.

21. Pierre Bayle, "Pereira," remark E, in *Dictionnaire historique et critique* (1697), 4 vols., 5th edition (Amsterdam–Leiden–The Hague: Pierre Brunel et al., 1740), 3:653, and discussion in Paganini, "L'anthropologie naturaliste."

22. Pierre Bayle, *Nouvelles de la république des lettres* (March 1684), art. II, 32, cit. in Alain Mothu, "La pensée en cornue: considérations sur le matérialisme et la 'chymie' en

France à la fin de l'âge classique," *Chrysopoeia* 4 (1990–1991): 430. Lamy's most relevant works here are the 1675 *Discours anatomiques* (revised 1679) and the 1677 *Explication méchanique et physique des fonctions de l'âme sensitive*, as well as the earlier *De Principiis rerum* (1669).

23. Guillaume Lamy, *Discours anatomiques*, ed. Anna Minerbi Belgrado (Paris: Universitas / Oxford: Voltaire Foundation, 1996), VI[th] Discourse, 104; Ann Thomson, *Bodies of Thought: Science, Religion, and the Soul in the Early Enlightenment* (Oxford: Oxford University Press, 2008), 88, 160, 170.

24. The manuscript circulated in 1712, was printed once in 1719 and then in 1721 by Prosper Marchand and his friends; d'Holbach published an edition in 1777. The portion of the text that circulated as *L'esprit de Spinosa* (including the first French translation of a portion of Spinoza's *Ethics*) is today attributed to the Dutch diplomat Johan Vroesen, although this is sometimes contested, and another prime candidate for authorship is Jean-Maximilien Lucas.

25. *Traité des trois imposteurs* (1716; Yverdon: De Felice, 1768), 85; *The Three Impostors*, trans. Alcofribas Nasier (Cleveland: n.p., 1904), § VII, 99. This is an ancient Hellenistic theme (found in Peripatetic, Epicurean and Stoic writings).

26. "Je conviens que la suite naturelle de ce dogme est de dire que l'âme des bêtes est de la même nature que celle de l'homme" (Bayle, "Rorarius," remark D, in *Dictionnaire historique et critique*, 4:77b). For a good discussion of the animal souls problem in Bayle's "Rorarius" (which focuses on its relation to Descartes's and Leibniz's positions) see Dennis Des Chene, "Animal as Category. Bayle's 'Rorarius,'" in *The Problem of Animal Generation in Early Modern Philosophy*, ed. Justin E. H. Smith (Cambridge: Cambridge University Press, 2006).

27. Guillaume Lamy, *Discours anatomiques*, VI[th] Discourse, 104, 106.

28. Pierre Bayle, "Dicéarque," remark L, in *Dictionnaire*, 2:287; "Rorarius," remark E, 4:79, and, for the formulation "du plus au moins," the article "Péreira," remark E, 3:652. Gassendi had retorted to Descartes that the difference between brutes and men was merely a "more or less (*magis et minus*)" issue (AT VI, 271). In his commentary on the Dutch philosopher Hemsterhuis' *Lettre sur l'homme*, Diderot wrote that the case of man and beast is the same: "il n'y aura que du plus ou du moins" (*Observations sur Hemsterhuis*, 258, 299). Priestley ridiculed the purely stipulative claim that the souls of men be immortal while those of brutes are not, which he identified as a condition for Christian faith rather than any empirically based claim. Rather, he claimed, brutes "differ from us in *degree* only, and not in kind" (*Disquisitions Relating to Matter and Spirit* [London: J. Johnson, 1777], § XVIII, 235).

29. *Traité des trois imposteurs*, 85; *The Three Impostors*, § VII, 99.

30. Niderst first suggested Du Marsais as the author, who is now considered to have been the priest Etienne Guillaume (Gianluca Mori and Alain Mothu, "'*L'Âme matérielle*'; '*De la conduite qu'un honnête homme doit garder pendant sa vie*'; '*Préface du traité sur la religion de M.****': trois manuscrits, un seul auteur?" *La Lettre clandestine* 12 [2003]: 311–39), but this has been contested (Thomson, *Bodies of Thought*, 157, who does not say why). The text, as Niderst has shown, is an ingenious patchwork of Spinoza via Bayle (particularly the article "Buridan," the *Pensées diverses sur la comète*, but also the *Réponse aux questions d'un provincial*), Malebranche's psychophysiology, the doctrine of the (material) soul as a "fiery soul" from Gassendi as mediated through François Bernier, Epicurean physiology (particularly borrowed from Guillaume Lamy), travel narratives, and various materialist prodromes from Lucretius to Vanini and Hobbes, typically using the analyses and summaries given in antimaterialist works. See Niderst's introduction to his new edition of *L'Âme Matérielle*, 13, 16–17.

31. For further discussion of "clandestine" strategies of naturalization of the mind see Wolfe, "Determinism/Spinozism in the Radical Enlightenment: the cases of Anthony Collins and Denis Diderot," *International Review of Eighteenth-Century Studies* 1 (2007): 37–51.

32. Recall Bayle's comment in "Péreira," remark E that animal and human souls were taken to differ only in degree ("du plus au moins"), so that "it was believed that the disposition of organs alone was the cause" (*Dictionnaire*, 3:652).

33. *L'Âme matérielle*, 96–106, with more details supplied after the criticism of Descartes, 106–22, including an elegant combination of Bayle and Lahontan on beavers. As regards the reception of the animal-machine (which is not the topic of the present chapter), one should note that Descartes was taken to literally be asserting that animals were machines, while he tended to stress instead the absence of empirical or otherwise visible indicators of a thinking animal nature (irreducible to instinct), so that, on the basis of our human minds, it would be difficult to reliably claim that animal minds exist—given that, again, he held that we can only infer the existence of interiority in other beings through external signs (AT V 276–277, AT IV 573–576). Thanks to Cinzia Ferrini for reminding me of this important nuance.

34. David R. Boullier, *Traité des vrais principes qui servent de fondement à la certitude morale*, ch. V, § viii, in *Essai philosophique sur l'âme des bêtes*, I, 151–52 (the *Traité* is not paginated sequentially with the *Essai*).

35. *Traité*, ch. V, § xiii, in *Essai philosophique*, I, 159–60.

36. *Traité*, ch. VI, § xi, I, 177–78; also *Essai philosophique*, I, i, 19–20.

37. Kenelm Digby, *Two Treatises. In the one of which, The Nature of Bodies; in the other, The Nature of Mans Soule; is looked into: In way of discovery, of the Immortality of Reasonable Soules* (Paris: Gilles Blaizot, 1644), 306. For Digby, the ingenious behavior of the fox could just as well result from its passions, environment, memory, and chance, as from any discursive processes, including the syllogism (308–14). The "doublings backward and foreward" of a hare pursued by dogs may just be produced by fear (315). As for language, Digby finds it is absurd to think that "beasts have complete languages" like humans, because their sounds are caused by passions (317, 318).

38. G. F. Meier, *Metaphysik*. Dritter Theil: *Die Psychologie* (1757; 2nd edition, Halle: J.J. Gebauer, 1765). VI. Von den denkenden Substanzen, welche ausser der menschlichen Seele noch in der Welt angetroffen werden. Meier also refers to his 1749 *Versuch eines neuen Lehrgebäudes von den Seelen der unvernünftigen Thiere* (original title: *Versuch eines neuen Lehrgebäudes von den Seelen der Thiere*). His sources include G. H. Ribov, *Dissertatio historico philosophica de anima brutorum*, included in his 1728 edition of *Rorarius*, and J. H. Winckler, *Untersuchung von dem Seyn und Wesen der Seelen der Thiere* (Leipzig, 1742–1745). I am indebted to Paola Rumore for sharing her work on Meier with me.

39. G. F. Meier, *Anfangsgründe aller schönen Wissenschaften* (Halle: Hemmerde, 1748), I, iv: Von der aesthetischen Wahrscheinlichkeit der Gedanken, § 109, p. 231. In the *Neues Lehrgebäude* Meier also gives examples of what may be language in ants.

40. Thomas Willis, *Two Discourses Concerning the Soul of Brutes* (London: Dring, Harper and Leigh, 1683), ch. VII, "The Corporeal Soul, or that of the Brutes, is Compared with the Rational Soul," 40. See in this volume Claire Crignon's chapter, "How Animals May Help Us Understand Men," which relates Willis's analysis in the *Cerebri anatome* to that of the *Animi brutorum*.

41. Thomas Willis, *Two Discourses*, 2.

42. Boullier, *Essai philosophique sur l'âme des bêtes*, I, i, 16 (not paginated sequentially with the *Traité des vrais principes qui servent de fondement à la certitude morale* included in the volume).

43. *Two Discourses*, ch. VII, 43.

44. Thomas Willis, *Two Discourses*, ch. VII, 39.

45. I am indebted to Michaela van Esveld's analysis of Willis here in the context of earlier collaboration.

46. Thomas Willis, *Two Discourses*, ch. VI, "Of the Science and Knowledge of Brutes," 36.

47. Thomas Willis, *Two Discourses*, ch. VI, 37. For additional remarks on Willis on foxes see Crignon, "How Animals May Help Us Understand Men."

48. Daniel Heller-Roazen, *The Inner Touch: Archaeology of a Sensation* (New York: Zone Books, 2007), 127f.; Erica Fudge, *Brutal Reasoning: Animals, Rationality and Humanity in Early Modern England* (Ithaca: Cornell University Press, 2006), 102; Luciano Floridi, "Scepticism and Animal Rationality: The Fortune of Chrysippus' Dog in the History of Western Thought," *Archiv für Geschichte der Philosophie* 79 (1997). For a more nuanced account of the anecdote of Chryssipus's dog see Cinzia Ferrini, "Kant, Reimarus and the Problem of the *Aloga Zoa*," *Studi Kantiani* 15 (2002): 31–63.

49. Michel de Montaigne, *Essais* [1588, 1595], ed. Pierre Villey (Paris: PUF, 1992), II, xii (Apologie de Raimond Sebond), 120. Kenelm Digby attributes the tale of Chrysippus's hound to Montaigne ("Montague"); Montaigne takes over a good deal of the story from Sextus or Plutarch (Floridi, 47), and Boyer d'Argens gives a distinctive spin to it in Letter 33, vol. I of his *Lettres juives* (The Hague: Pierre Paupie, 1742), 347, sounding a bit like Diderot will later on (the mastiff is capable of performing the three operations of logic, just as much as the Sorbonne doctor). I am obviously not attempting an exhaustive overview of the versions of the hound and the hare story in Western, or even early modern thought.

50. Daniel Heller-Roazen, *The Inner Touch*, 127–29.

51. Erica Fudge, *Brutal Reasoning*, 103.

52. I discuss these attitudes in my "Vitalism and the Resistance to Experimentation on Life in the Eighteenth Century," *Journal of the History of Biology* 46 (2013). One possible rhetorical strategy was to insist that the "problem" of animal souls was a modern one, as it were invented by Descartes with his animal-machine, while the ancients had no such difficulties: thus Priestley observed that "The souls of brutes, which have very much embarrassed the modern systems, occasioned no difficulty whatever in that of the ancients" (*Disquisitions*, 233), and cited Bacon and Willis approvingly, against Descartes.

53. Michel de Montaigne, *Essais* [1588, 1595], ed. Pierre Villey (Paris: PUF, 1992), II, xii (Apologie de Raimond Sebond), 108; Guillaume Bougeant will comment sarcastically that "one cat was enough to disturb all of philosophy" (*Amusement philosophique sur le langage des bêtes*, 108). See also Montaigne's essay "Of Cruelty" (II, xi), which discusses our relationship and mutual obligation to animals: their suffering should matter to us.

54. Spinoza, *Ethics* IVP37S (although he also considers that animals feel, first stated at IIIP57S; Luciano Floridi notes the presence of the same duality in Chrysippus: "Scepticism and Animal Rationality," 37); Fudge, *Brutal Reasoning*, 101.

55. Bernard Le Bovier de Fontenelle, *Sur l'instinct* (1660s), in *Œuvres complètes*, ed. A. Niderst, vol. VII (Paris: Fayard, coll. "Corpus," 1996), 474, 473.

56. Sextus Empiricus, *Outlines of Skepticism*, ed. and trans. Julia Annas and Jonathan Barnes (Cambridge: Cambridge University Press, 2007), 22.

57. Michel de Montaigne, *Essais* II, xii, 125–26.

58. Julia Annas, "Epicurus on Agency," in Jacques Brunschwig and Martha C. Nussbaum (eds.), *Passions and Perceptions: Studies in Hellenistic Philosophy of Mind* (Cambridge: Cambridge University Press, 1993), 70.

59. Cureau first addressed the issue in his 1645 *Des passions courageuses, de la connoissance des bêtes* (the second volume of *Les caractères des passions*), and gave a more extended treatment of

animal intelligence in the 1648 *Traité de la connoissance des animaux, où tout ce que a esté dict Pour, & Contre Le Raisonnement des Bestes, est examiné*.

60. On religious grounds, the Jesuit Ignace-Gaston Pardies (1636–1673) presented a related anti-Cartesian position in his 1672 *Discours de la connoissance des bestes*. While animals did not possess "the spiritual knowledge that only belongs to reasoning souls, and to pure spirits," they nonetheless possess "sensory knowledge [*connoissances sensibles*]," well suited "to all animals that Nature has equipped with diverse sense organs" (Pardies, *Discours de la connoissance des bestes* [Paris: Sébastien Mabre-Cramoisy, 1672], 148). In *The Courtiers' Anatomists* (Chicago: University of Chicago Press, 2015), Anita Guerrini discusses how these positions are taken up in the Académie des Sciences, e.g., by Jean-Baptiste Du Hamel, the academy's secretary, who argued similarly that the existence of sense organs must imply the existence of feeling in his *De corpore animato*.

61. Justin E. H. Smith, "'A Corporall Philosophy': Language and 'Body-Making' in the Work of John Bulwer (1606–1656)," in *The Body as Object and Instrument of Knowledge: Embodied Empiricism in Early Modern Science*, ed. C. T. Wolfe and O. Gal (Dordrecht: Springer, 2010).

62. Marin Cureau de la Chambre, *Traité de la connoissance des animaux, où tout ce que a esté dict Pour, & Contre Le Raisonnement des Bestes, est examiné*, quoting from the 1662 edition (Paris: Jacques Allin), Avant-Propos, 4.

63. Cureau de La Chambre, *Traité de la connoissance des animaux*, Epitre (n.p.). Here I am indebted to the discussion of Cureau de la Chambre in Anita Guerrini, *The Courtiers' Anatomists*, which the author was kind enough to share with me in manuscript.

64. See Reimarus's *Die vornehmsten Wahrheiten der natürilchen Religion* (1754), ed. Günter Gawlick (2 vols., Göttingen: Vandenhoeck & Ruprecht, 1985) and the discussion in John Zammito, "Herder between Reimarus and Tetens: The Problem of an Animal-Human Boundary" (ms., 2014). The status of instinct was central in Reimarus's debate with Johann Gottfried Herder. The former's various writings on animal drives and instincts partly took off from Georg Friedrich Meier's earlier works, discussed above (again with a Leibnizian principle of sufficient reason in the background). Contra Condillac, Reimarus insisted on the innateness of instinct (also referring to Chrysippus's dog).

65. Etienne Bonnot de Condillac, *Traité des animaux* (1755), ed. M. Malherbe (Paris: Vrin, 2004), I, ch. iv.

66. Etienne Bonnot de Condillac, *Traité des animaux*, II, viii, 182.

67. Richard Serjeantson, "The Passions and Animal Language, 1540–1700," *Journal of the History of Ideas* 62(3) (2001): 442.

68. "Il ne tient pas aux organes que les singes n'articulent des sons, et n'établissent entre eux une langue, il tient à ce qu'ils n'ont pas assez d'esprit" (Fontenelle, *Mémoires de l'Académie royale des sciences*, 1674, cit. in Boullier, *Essai philosophique*, II, 213n.). (In the *Histoire des animaux*, Perrault had argued that even though monkeys had larynxes and other anatomical parts that could form human speech, they could not speak because they were not human.) Less speculatively, Diderot also rejected the idea of distinguishing between humans and animals in terms of the faculty of speech: "Speech is not a distinctive feature for me" (*Pensées sur l'interprétation de la nature*, § 49, in *Œuvres complètes*, 17:77; see Buffon, *Histoire naturelle*, 2:429–44).

69. Justin E. H. Smith, "Language, Bipedalism, and the Mind-Body Problem in Edward Tyson's *Orang-Outang* (1699)," *Intellectual History Review* 17(3) (2007): 291–304.

70. James Burnet, Lord Monboddo, *Of the Origin and Progress of Language*, vol. 1 (2nd revised edition, Edinburgh: J. Balfour, 1774), Bk. II, Ch. 4, 270.

71. Burnet, *Origin and Progress of Language*, 311; see Aaron Garrett, "Human Nature," in

The Cambridge History of Eighteenth-Century Philosophy, ed. Knud Haakonssen, vol. 1 (Cambridge: Cambridge University Press, 2006), 180.

72. Aaron Garrett, "Human Nature," 183.

73. Julien Offray de La Mettrie, *L'Homme-Machine*, in *Œuvres philosophiques*, 1987, 1:77–78, emphasis mine.

74. Benoit de Maillet, *Telliamed* (The Hague: Pierre Gosse, 1755), reprint (Paris: Fayard-Corpus, 1984); versions of the text date back to the 1690s. De Maillet argued that the Earth is several billion years old, on the basis of sedimentation in the Nile valley (thus current geological conditions are produced by long-duration processes). An ocean once covered the entire Earth and has been in gradual retreat for an incredibly long time. *Telliamed* is often understood to be an "anticipation" of evolutionary thought; however, Maillet does not formulate any idea of species-transformation, because he holds that all species already existed in the sea, and simply generated analogs on earth.

75. Benoit de Maillet, *Telliamed*, 202, new edition, 270.

76. Benoit de Maillet, *Telliamed*, 203, new edition, 271.

77. La Mettrie, *L'Homme-Machine*, 78.

78. Diderot, *Réfutation d'Helvétius*, in *Œuvres complètes*, 24:583.

79. William Cavendish, Marquess of Newcastle, *A General System of Horsemanship in all its Branches* (1658; translation, London: John Brindley, 1743; reprint, ed. by William C. Steinkraus and E. Schmit-Jensen, North Pomfret, Vermont: Trafalgar Square Publishing, 2000), 12.

80. Denis Diderot, *Observations sur Hemsterhuis*, in *Œuvres complètes*, 24:270.

81. Diderot, *Observations sur Hemsterhuis*, 24:270. A similar point is made at 325: the dog slaughters another dog for a bone, the Sorbonne doctor would do the same over an opinion.

82. Guillaume Bougeant, *Amusement philosophique*, 52, 53.

83. Bernard Mandeville, *A Treatise of the Hypochondriack and Hysterick Diseases, in Three Dialogues* (1st ed. 1711), 2nd corrected ed. (London: Tonson, 1730), 52.

84. Anthony Collins, *An Essay Concerning the Use of Reason in Propositions, The Evidence whereof depends upon Human Testimony* (London: s.n., 1707; reprint, New York: Garland, 1984), 16. Pliny considered religion to be among the virtues possessed by elephants (*Natural History*, book VIII, ch. 1), as discussed by Boullier (*Essai philosophique sur l'âme des bêtes*, I, book I, ch. iii, 57, note 11). Montaigne also plays on the trope of elephants "participating in religion," with their raised trunks . . . (*Essais* [1588, 1595], ed. Pierre Villey (Paris: PUF, 1992), II, xii [Apologie de Raimond Sebond], 126).

85. Georges-Louis-Leclerc de Buffon, "Discours sur la nature des animaux," *Histoire naturelle*, 4:89.

86. Henri Busson, "Introduction historique" in Jean de La Fontaine, *Discours à Mme de la Sablière* (Geneva: Droz, 1967), 35.

87. Etienne de Condillac, *Traité des animaux*, Préface.

88. Denis Diderot, *Observations sur Hemsterhuis*, in *Œuvres complètes*, 24:258.

89. Hassin, Uleman, Bargh, eds., *The New Unconscious*; J. F. Kihlstrom, "The Cognitive Unconscious," *Science* 237 (1987): 1445–52.

90. Charles T. Wolfe, "Determinism/Spinozism."

91. "I have look'd over the Article *Rorarius* in Mr Bayles dictionary which is a very long one but very entertaining. It allmost all relates to the question *Whether brutes have reason*? on the occasion of a book of Rorarius's . . ." (Collins, Letter of March 21, 1704, n° 3495 in Locke, *Correspondence*, 249–50).

92. Anthony Collins, *A Philosophical Inquiry Concerning Human Liberty* (London: Robinson, 1717; reprint, New York: Garland, 1978), 54.

93. Richard Serjeantson, "The Passions and Animal Language," studies this in earlier forms in Rorarius, Montaigne, and Charron.

94. Anthony Collins, *A Letter to the Learned Mr. Henry Dodwell; Containing Some Remarks on a (pretended) Demonstration of the Immateriality and Natural Immortality of the Soul, in Mr Clarke's Answer to his late Epistolary Discourse* (1707), in *The Works of Samuel Clarke*, 4 vols. (1738; reprint, New York: Garland, 1978), 3:753.

95. Collins, *Inquiry*, 55–56.

96. Collins, *Inquiry*, 57, 67. It is well known that challenges to human/animal boundaries often were presented together with analyses of other liminal cases such as feral children, mentally ill individuals, and indeed children per se. La Mettrie also uses human infants as an example, with the topos of their weakness compared to young animals: "what Animal would die of hunger in the midst of a river of milk?" (*L'Homme-Machine*, 86).

97. Thomas Hobbes, *Questions Concerning Liberty, Necessity and Chance* (1656), § viii, EW V, 95.

98. Collins, *Letter to Dodwell*, 752–53.

99. Samuel Clarke, "Remarks on a book, entitled, *A Philosophical Inquiry into Human Liberty*" (1717), in Clarke, *Works*, 4:729.

100. Samuel Clarke, *A Discourse Concerning the Unchangeable Obligations of Natural Religion* (2nd Boyle Lecture, 1705), in *Works*, 2:624.

101. Collins, *Inquiry Concerning Human Liberty*, 55, 56.

102. Collins, *Inquiry Concerning Human Liberty*, 54–57.

103. However, in Diderot's focus on the socioculturally sculpted human brain, he betrays a residual anthropocentrism and/or humanism; see my "'The brain is a book which reads itself.' Cultured Brains and Reductive Materialism from Diderot to J. J. C. Smart," in *Mindful Aesthetics: Literature and the Science of Mind*, ed. H. Groth and C. Danta (London: Continuum, 2014). (This relativizes the claim found in the Diderot scholar Lester Crocker: "Materialism, Diderot has come to realize, is a useful philosophy, the only possible philosophy for investigation of the material world. It is disastrous when applied *tel quel* to the inner, subjective world of human thought and emotion. When materialism is used to deny the reality of human experience and to dehumanize man, it has overstepped its bounds. Man's place in nature, his humanity, are defined not by his animality, Diderot proclaims, but by his humanity" (Crocker, *Diderot's Chaotic Order* [Princeton: Princeton University Press, 1974], 42.) But it is possible that this anthropocentrism reduces to a notion of embodiment (proper to all living beings).

104. Paul-Henri Thiry D'Holbach, *Système de la Nature* (1781; 1st edition 1770); reprint, ed. J. Boulad-Ayoub (Paris: Fayard, coll. "Corpus," 1990), I, viii, 135; Diderot, *Eléments de physiologie*, 296f.

105. Denis Diderot, *Observations sur Hemsterhuis*, in *Œuvres complètes*, XXIV, 340; article "Droit naturel," 155b.

106. Louis de Jaucourt, "Sens Internes," 31b.

107. François-Marie Arouet de Voltaire, *Le Philosophe ignorant* (1766), Premier doute, VI: *Les bêtes*, in *Complete Works*, vol. 62 (Oxford: Voltaire Foundation, 1987), 36–37.

108. Diderot, *Observations sur Hemsterhuis*, 299.

CHAPTER 10. HOW ANIMALS MAY HELP US UNDERSTAND MEN

For the wider context in which we can read and interpret Willis's thought, see in this volume Charles Wolfe, "Boundary Crossings: The Blurring of the Human/Animal Divide as Naturalization of the Soul in Early Modern Philosophy."

1. William F. Bynum, "The Anatomical Method, Natural Theology, and the Functions of the Brain," *Isis* 64 (1973): 447.