Approaching Other Animals with Caution: Exploring Insights from Aquinas's Psychology

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Abstract

Aquinas offers resources that help address questions concerning non-human animals' psychological abilities, and what abilities are distinctively human. He regards animals as psychological agents; his 'critical anthropocentrism' steers between naïve anthropocentrism and the exaggeration of our ability to transcend anthropocentrism. He helps us avoid a crypto-Cartesian mental-physical dichotomy in favour of recognizing that much bodily behavior is observable psychological behavior. We need to supplement Aquinas's account of human and non-human animals' agency by exploring: (1) the ontogeny and ecology of their becoming attuned to affordances; (2) the collaboration involved in human knowing; (3) how to move from the unified psychological experience of objects to a psychological then an ontological analysis of objects, operations and powers; (4) how psychological attributes and conscious operations are hylomorphically united with sub-psychological biological systems; (5) the phenomenology and psychology of somatic affections; and (6) the wide range of behaviors covered by Aquinas's 'estimative sense'. On the other hand, we can note the value of *ST* I-II 6-17 for recognizing that non-human, non-linguistic animals engage in purposeful behavior, possessing analogous, non-rational versions of willing, enjoyment, choice, consent, command and use; they are determined to a finite variety of particular goods confined to their environmental niche.

Keywords

Aquinas, hylomorphism, critical anthropocentrism, affordances, common-sense psychology, sub-psychological systems

Introduction

What psychological abilities can we ascribe to nonhuman animals? What differentiates the psychological abilities of humans from those of other animals? Thomas Aquinas still provides insightful resources for addressing these questions today. His principles for psychological demarcation are in certain respects more precise and illuminating than many contemporary accounts in comparative psychology and ethology. In this essay I explore some of these insights via a constructive treatment of Aquinas's animal psychology.

I

Let us begin with a few presumptions that will clarify our enquiry's point of departure, starting with what differentiates humans from other animals. I presume that all known species of nonhuman animals fail to exhibit the conditions for rational and voluntary agency defined by Aquinas—conditions I discuss later. Additionally, I presume that linguistic competency presupposes something like Aquinas's criteria for rational and voluntary agency. I do not take these to be contentious claims even by the standards of contemporary ethology and comparative psychology. Indeed, once all the definitions and equivocations have been sorted out, only a minority of ethologists and comparative psychologists maintain there are species other than *Homo sapiens*

with genuine linguistic competencies. What *is* contentious is to claim there are no significant differences between human linguistic forms of social communication and the complex forms of social behavior and communication found in other animals.[1] How should we characterize animal behavior? Aquinas's animal psychology provides insights for addressing such questions.

Aquinas contends that animals are psychological agents in their own right. They are hylomorphic substances endowed with diverse apprehensive and appetitive powers, as well as powers for motility, homeostasis, ontogeny, and reproduction.[2] What we need to add to the general contours of Aquinas's doctrine of animal agency is a more adequate account of the complex ways in which an animal's capacities and activities—especially cognitive, conative, and motile ones—*develop* through a variety of biological, psychological, and social factors and encounters with conspecifics, other animals, and objects within the environment. The standard static model of the mature adult animal is inadequate for explaining the *developing* animal. Understanding animal agency, including human agency, requires appreciating animal ontogeny and its embodied, enactive, and embedded developments.[3]

Aquinas's general approach to other animals illustrates what I call a *critical anthropocentrism*. This critical anthropocentrism governs his theories of divine, angelic, and animal naming. Our psychological insights, concepts, and rationally justified knowledge about the psychological abilities of other animals, spiritual creatures, and God are all rooted in our experiential, and later theoretical, knowledge of an array of *human* psychological abilities. Psychological discourse is first and foremost an attempt to give expression to the lived psychological behavior and experiences of human animals. We do this by employing univocal, analogical, metaphorical, equivocal, and similar forms of predication to describe and explain human psychological behavior. Even a comprehensive list of the psychological verbs found in all human languages (e.g., seeing, hearing, smelling, tasting, touching, feeling, loving, hating, desiring, avoiding, hoping, fearing, enjoying, being angered, intending, deliberating, deciding, executing, and so forth) would fall extraordinarily short of expressing the complex spectrum of human psychological behavior and discourse we encounter and articulate every day.[4] As we learn to speak about human psychological behavior we also learn how to speak about the psychological behavior of other animals we observe and interact with. And as with speech about human behavior, we also deploy metaphors, distinctive vocabularies, or make appropriate qualifications in order to capture more accurately the psychological behavior we observe in other animals. The task is easier in the case of the nonhuman animals that exhibit a form of life similar to our own. We have little trouble recognizing an aggressive, angry, or hostile dog, cat, cow, horse, bear, bird, chimpanzee, or alligator, but we might, at least initially, have considerable difficulty distinguishing a content from an angry fish, medusa, or cephalopod. Our competencies with such psychological attributions are dependent upon the kinds of animals we have the most exposure to—a fact that is made more complex by zoos and video documentaries, which sometimes have misleadingly anthropomorphic narrations. Many humans also learn how to employ metaphors, qualified predications, and distinctive vocabularies to speak about God, deities, or spiritual creatures. In all of these cases, it is human psychological behavior that provides the paradigm for our psychological vocabulary, for the aim of psychological discourse is to render intelligible and enhance our lives as human beings. It is because the human form of life ubiquitously involves complex engagements with other animals, spiritual creatures, and

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[1] Even Frans de Waal concedes this much. 'You won't often hear me say something like this, but I consider us the only linguistic species. We honestly have no evidence for symbolic communication, equally rich and multifunctional as ours, outside our species. It seems to be our own magic well, something we are exceptionally good at. Other species are very capable of communicating inner processes, such as emotions and intentions, or coordinating actions and plans by means of nonverbal signals, but their communication is neither symbolized nor endlessly flexible like language. For one thing, it is almost entirely restricted to the here and now.' Frans de Waal, *Are We Smart Enough to Know How Smart Animals Are?* (W. W. Norton & Company, 2016), 106 (= *Animals*).

[2] David Oderberg, *Real Essentialism* (Routledge, 2007), chs. 8-9; Daniel De Haan, 'Hylomorphic Animalism, Emergentism, and the Challenge of New Mechanisms in Neuroscience', *Scientia et Fides* 5 (2) (2017): 9–38.

[3] The general contours of Aquinas's animal psychology are complemented by these *3 E*'s of radical embodied, enactive, embedded cognition theorists. See Daniel Hutto and Erik Myin, *Radicalizing Enactivism: Basic Minds Without Content* (MIT Press, 2013); idem, *Evolving Enactivism: Basic Minds Meet Content* (MIT Press, 2017).

[4] Alasdair MacIntyre, *After Virtue*, 3rd ed. (Notre Dame University Press, 2007), ch. 14–15.

God, that our psychological discourse must also make room for rendering intelligible the ways these beings enter into human life.

These facts of human experience are expressed—albeit pragmatically and incompletely—in our ordinary psychological discourse. Rival theoretical psychologies present alternative ways of systematically explicating psychological attributes and their connections to humans and other beings. Some theories are naively anthropocentric and make no effort to distinguish univocal from analogical or other forms of predication both in the strictly human case, and with respect to how we can speak about God or other animals. Other theories uncritically exaggerate our abilities to transcend anthropocentrism of any kind and utterly eschew anthropomorphism. They contend we must aim for an ideal abstract and homogenous psychological or cognitive theory applicable to all psychological or cognitive agents. Aquinas steers us towards a more accurate middle road, that is, via a *critical anthropocentrism*. A critical anthropocentrism is *critical* insofar as it acknowledges that our theoretical enquiries are human enquiries. It recognizes that the insights, conceptual framework, and rationally justified judgments arrived at by our best psychology theory will be the fruit of a finite human endeavor that depends upon, even if it expands and transcends, our pre-theoretical psychological discourse. This inescapable human foundation provides the springboard for our theoretical enquiries, conceptual expansions, and rational reflections on both the way other beings figure into human lives (*quoad nos*) and what they are in themselves (*quoad se*). And just as analogy is indispensable for psychological discourse about humans, it is neither uniquely nor any less indispensable for psychological discourse about God, spiritual creatures, or other animals.

There are several lessons we have to learn from the way Aquinas deploys his own critical anthropocentrism. First is the value of technical theoretical nomenclature for speaking about the capacities and operations distinctive of humans, or other animals, or spiritual creatures, or God. So, for instance, Aquinas assigns the estimative power to nonhuman animals, the cogitative power to humans, intelligence *as a power* to spiritual creatures, and intelligence *as pure act* which is identical to God. Aquinas either makes qualifications about the kinds of love found in humans, angels, and God, or he introduces novel terms that are proprietary to one kind of being and which he often studiously avoids attributing to other beings. An example of this latter case is the way 'rational' is distinctive of humans, even though Aquinas will on rare occasions—often because he is commenting on another author's wider understanding of rational—note qualified uses of 'prudence' in the case of nonhuman animals (e.g., Aristotle attributes a kind of prudence to animals)[5] or 'rational' for angels and God (e.g., Boethius's definition of a person as an individual substance of a rational nature, which applies to humans, angels, and God).[6]

Second is the way that precise theoretical demarcations between the fundamental psychological differences of humans, other animals, spiritual creatures, and God establish important boundaries for our theoretical enquiries. One's philosophical anthropology is headed down the wrong track if human psychological behavior becomes indistinguishable either from nonrational animals or from the pure disembodied minds of spiritual creatures. The same point is true *mutatis mutandis* with our theoretical enquiries in theology, angelology, or animal psychology. If God starts looking like an angel, or angels start sounding divine, or nonhuman animals become indistinguishable from humans, then a critical error has been made somewhere. Finally, the diverse enquires grounded in a critical anthropocentrism are not completely autonomous; the fruits of theology, angelology, and animal psychology also inform our philosophical anthropology, and vice-versa. This is, for Aquinas, one of the central insights provided by that datum of revelation known as the *imago Dei*.

Unpacking all of the implications of these claims is beyond the scope of this essay, but I hope what I have sketched so far illuminates the general contours of Aquinas's approach to animal psychology and what I have called his critical anthropocentrism.

II

[5] Thomas Aquinas, *Summa theologiae* (= *ST*), I-II, q. 13, a. 2, ad 3.

[6] Thomas Aquinas, *Quaestiones disputatae de potentia dei*, q. 9, a. 2, ad10; *ST,* I, q. 29, a. 3, ad4.

Aquinas's animal psychology is rich in the principled general distinctions it provides, especially for differentiating humans from other animals in general. However, it is impoverished when it comes to the task of differentiating species of nonhuman animals. This is not too surprising given that Aquinas did not write any work specifically on other animals. For this, we would be better off consulting the zoological works of Aristotle, Avicenna, and Albert the Great. But even then, we must be content with attempting to conceptualize the *differentiae* of animal species on the basis of their biological, psychological, and sociological *propriae* (e.g., different objects, operations, and powers), which are more known to us. This is an area that requires considerable investigation and expansion given the incredible advances in scientific knowledge and discoveries of diverse forms of vegetative and sentient life.[7] In this essay I focus on Aquinas's principled general distinctions, amplifying them in important ways along the way.

In *De anima* II.4 Aristotle articulates a taxonomical principle that is foundational to his psychology; Aquinas endorses and deploys this principle throughout his own psychology. Our theoretical enquiries into what is more known in itself must commence with what is more known to us, and in the realm of psychology, this comprises the psychological objects and operations that are grounded in their respective powers, which are grounded in the different natures of different animals.[8] The typical way in which this theoretical enquiry is conducted leaps over a number of crucial stages in our theoretical enquiry. The first is: How do we go from commonsense psychology to a theoretical psychology? A second is: How do we go from a preliminary holistic theoretical account of the observable biopsychosocial behaviors of an animal in its environment, to a theoretical analysis of the complex biopsychosocial factors that constitute this behavior and can be theoretically isolated into different objects, operations, and powers?

II.1

The first issue is too multifaceted to address in any detail here. Setting forth a few contentious presumptions will, however, help situate where I think Aquinas's animal psychology lands with respect to the rival views of what I call *commonsense psychology* and *folk psychology*. Contemporary comparative psychology and ethology have largely inherited the confused conceptual framework of *folk psychology*, which is defined by the standard moves of Crypto-Cartesian philosophy of mind.[9] In brief, enquiry into human beings or minds in general starts with the mental–physical dichotomy. On the basis of this dichotomy many philosophers and scientists hold that bodily behavior is observable but that mental phenomena—pains, perceptions, emotions, beliefs, desires, intentions, etc.—are unobservable. While my own mental phenomena are (directly) accessible, the mental phenomena of others are only indirectly known as theoretical postulates I invoke to provide causal explanations of their observable bodily behavior. It is called folk psychology, because it is commonly assumed that this *theoretical model* of ordinary psychological attribution is common to plain persons, philosophers, and scientists alike. The two standard accounts of folk psychology are theory-theory and simulation-theory. Neither model nor any hybrid models have made substantive headway in dealing with so-called theory of mind or mindreading versus behavior-reading problems.[10] And like their philosophical ancestors, no account of folk psychology has discovered a solution to philosophy of mind's problem of other minds.

Exponents of what I call *commonsense psychology* reject *folk psychology* and the mental-physical dichotomy it is based upon. The proponents of commonsense psychology include Wittgensteinians, most

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[7] Oderberg, *Real Essentialism*.

[8] Thomas Aquinas, *Sentencia libri De anima* II, 6; *ST,* I, q. 77, a. 3.

[9] Maxwell Bennett and Peter M. S. Hacker, *Philosophical Foundations of Neuroscience* (Oxford: Blackwell, 2003) (=*PFN*); Hubert Dreyfus and Charles Taylor, *Retrieving Realism* (Harvard University Press, 2015).

[10] Robert W. Lurz, *Mindreading Animals: The Debate over What Animals Know about Other Minds* (MIT Press, 2011); Daniel Hutto, *Folk Psychological Narratives: The Sociocultural Basis for Understanding Reasons* (MIT Press, 2007); Dan Zahavi, *Self and Other: Exploring Subjectivity, Empathy, and Shame* (OUP, 2014), ch. 11; P.M.S. Hacker, *The Passions: A Study of Human Nature* (Wiley Blackwell, 2017), ch. 12.

phenomenologists, radical enactive cognition theorists, and Aristotelians. I presume Aquinas is an exponent of commonsense psychology. Commonsense psychology claims ordinary psychological attribution is not theoretical. It contends that much of the bodily behavior of animals, including humans, is itself observable psychological behavior; this includes linguistic discourse and other forms of embodied communication. Like linguistic, rational, and volitional competencies, our capacities to dissimulate, lie, or think to ourselves in ways that are not overtly expressed in our behavior are developmentally late, and even then, they nevertheless frequently (or necessarily in the case of dissimulation and lying) involve stereo-typed observable embodied behaviors.[11] Unlike folk psychology, commonsense psychology does not render all of our quotidian forms of psychological discourse into kinds of naïve theorizing at the personal or sub-personal levels. Instead, it holds that theoretical psychology is itself a reflective and systematic form of enquiry that depends and draws upon commonsense psychology for its endeavors to deepen and expand it; furthermore, theoretical psychology is a kind of human practice that develops late and is rare, both within human history and among individual humans today.[12] Enquiry is a collaborative human endeavor and the speculations and fruits of theoretical enquiry transform commonsense in various ways for good and sometimes for ill. It enables talk of genetics, biological evolution, neuroscience, astrophysics, and quantum mechanics to be commonplace, even if these theories are frequently distorted and misrepresented as they enter into the fabric of commonsense discourse. But being a theorist is no panacea against such errors, for even theorists commonly distort and misrepresent rival theories. A case in point: Contrary to a misrepresentative script of its critics, commonsense psychology unequivocally rejects behaviorism.[13] What these critics fail to understand is that behaviorism and cognitivism both endorse *folk psychology*'s account of observable bodily behaviors and unobservable mental phenomena. What distinguishes them is that behaviorism contends there can be a science of psychology based exclusively on the conditioning of observable bodily behavior without appealing to any unobservable mental phenomena. Whereas cognitivism contends that unobservable cognitive information processes or other mental phenomena *are required* to explain observable bodily behavior.

The implications of these two views on the everyday psychological encounters of ordinary persons are significant. Commonsense psychology and folk psychology expound rival views of psychological attribution because they endorse fundamentally different accounts of observation, of what is observable, of animal behavior, and of the connection between psychological phenomena and bodily movements of animals. As I noted, I believe Aquinas is an exponent of commonsense psychology, and I shall presume this view henceforth.

This brings us to the second issue which concerns the shift from a preliminary holistic theoretical psychology to the kind of theoretical analysis exemplified by the Aristotelian principle that objects specify operations, which specify powers, which specify natures. Here we encounter one more crucial way in which our theoretical enquiries in psychology differ from those of Aristotle and Aquinas. Given the complexities of intellectual history—the advent of more and more rival philosophical frameworks and worldviews, scores of scientific discoveries, and the rise, downfall, and retrievals of abandoned traditions of theoretical enquiry—contemporary Aristotelians must endorse a more human theory of knowledge. Human knowledge requires *collaborative practices* of theoretical enquiry, insight, conceptualization, and rationally justified judgments which are cumulative, often abductive and provisional in certain respects, and sometimes require substantive revisions in light of new data and superior insights, conceptual frameworks, and rationally justified judgments.[14] Enquiries in animal psychology are no different; our preliminary theoretical psychology will be

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[11] For representative accounts of commonsense psychology, see Alasdair MacIntyre, 'What is a human body?' in *The Tasks of Philosophy* (CUP, 2006), 86–103; Hutto, *Folk Psychological Narratives*; Dan Zahavi, *Self and Other*; Bennett and Hacker, *PFN*.

[12] On commonsense, practices, and theory, see Bernard Lonergan, *Insight: A Study of Human Understanding* (University of Toronto, 1992), chs. 6-7; Alasdair MacIntyre, *After Virtue*, 14-15; idem, *Ethics in the Conflicts of Modernity: An Essay on Desire, Practical Reasoning, and Narrative* (CUP, 2016) (=*ECM*).

[13] Dan Zahavi, 'Empathy and Direct Social Perception: A Phenomenological Proposal' *Review of Philosophy and Psychology* 2 (3) (2011): 541–558; Maurice Merleau-Ponty, *The Structure of Behavior*, trans. Alden L. Fisher (Duquesne University Press, 1983); MacIntyre, *After Virtue*, ch. 15 (esp., 208); Bennett and Hacker, *PFN*, chs. 3, 11, 14.

[14] Bernard Lonergan, *Insight*; Alasdair MacIntyre, *After Virtue*; idem, 'First principles, final ends, and contemporary philosophical issues,' in *The Tasks of Philosophy*, 143–178; idem, *ECM*, ch. 4.

amplified, refined, and revised in light of theoretical analysis and later synthesis that draws upon diverse enquiries into the biological, psychological, social, and ontological factors that contribute to the lives of animals. All of which will be expanded and refined by future enquiries.

A preliminary holistic theoretical psychology is the first theoretical stage coming out of our commonsense understanding of the psychological prowess of other animals. Today, our commonsense psychology of other animals has been amplified exponentially in countless ways. Consequently, our initial theoretical task is one of conceptual therapy, of interrogating the untidy conceptual framework deployed by commonsense psychology—which is pragmatic and often intermingled with bits from folk psychology as well as exaggerated and piecemeal bits from science—so as to arrive at a more perspicuous and accurate theoretical psychology of other animals. But our preliminary *holistic* theoretical psychology must also attend to crucial elements that are often lost in more ambitious leaps from commonsense to abstract theoretical *analysis* of other animals, namely, *ecology* and *ontogeny*. All animals *develop* their psychological abilities through their interactions with other animals and objects *situated* or *embedded* in their environmental niche. This point does not contravene the Aristotelian taxonomical principle, it amplifies it. To truly understand the objects and operations of animals requires understanding, as Aristotle himself attempted to do, the ecology of these objects, their embeddedness in the environment, and at what stages of development can the animal interact, engage, or acquire such objects.[15] This requires a holistic theoretical enquiry into the ways the animal as a whole, and considered developmentally, behaves and flourishes with respect to a range of objects, also considered holistically. Dogs do not pursue colors and sounds as such, but cats and squirrels. What must the dog do to visually observe the squirrel it might hear and smell in the tree? It circumnavigates the tree. To get the mole? It digs. To retrieve the stick? It runs and picks it up with its mouth. Throughout its development, and often via social imitation or instruction, an animal learns by *exploring* and *enactively* making actually present various potentialities for interaction embedded in diverse objects and other animals, that is, in their affordances. 'The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill.'[16] It is only after we have appreciated the complex ways in which the conscious animal as a whole developmentally engages, explores, and flourishes by learning, often socially, how to perform purposeful operations with respect to what the other animals and objects embedded in its environment afford, that we can commence the task of theoretical analysis of these unified complex objects and pair them with the specific operations and powers that enable the animal to harness such affordances. This is because, as Aristotle notes and Aquinas frequently seconds: Strictly speaking neither the eye sees nor memory recollects, rather it is only the animal as whole that sees and recollects in virtue of its powers of vision and memory and the neural and other biological systems that enable the operations of these psychosomatic powers.[17] Acknowledging this holistic point of departure sets our theoretical analysis on the right track.

II.2

Following Aristotle, Aquinas's theoretical analysis of psychological objects, operations, powers, and nature commences with sensible objects and sensory operations. Aristotelians start here because they maintain all cognition and appetition begins with the senses, and this is true of all animals, including humans. But there are a number of respects in which our theoretical enquiries differ from those of Aristotle and Aquinas. As we just saw, some of these differences are due to advances in philosophical and scientific knowledge, others are due to the need to spell out what Aristotelians can no longer take for granted given that the contemporary intellectual world is largely populated by non-Aristotelians. This is also the case with our theoretical analysis

[15] 'In considering the problem of perception in man and animals the first question to ask should be, what is there to be perceived? And the preliminary answer would be, the environment that is common to man and animals.' James Gibson, *Senses Considered as Perceptual Systems* (Boston: Houghton Mifflin, 1966), 7.

[16] James Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton Miffliin, 1979), 127.

[17] Hacker and Bennett, *PFN*, ch. 3.

of the psychological objects and operations of other animals. Aristotle, Aquinas, and their disciples all too often leap into a metaphysical analysis of psychologically primitive objects, operations, and powers. That is to say, they tend to omit any thematized account of how we move from our *unified psychological experiences* of objects—which are enabled by exercising in concert different psychological operations of different powers—to a *psychological analysis* of different objects, operations, and powers, and then, and only then, to an *ontological analysis* of these objects, operations, and powers and their grounding in the hylomorphic nature of the animal. These have always been implicit stages in the Aristotelian form of enquiry from the more known to us to the more known in itself, but they must be made explicit today.

In the first section I drew attention to animal psychology's reliance on a critical anthropocentrism. Most of the points I have just touched on with respect to ontogeny, ecology, and theoretical analysis apply no less to our enquiries in philosophical anthropology; humans are rational *animals*. But Aristotelian philosophical anthropology also needs to address in more detail two areas that traditionally have been left unexplored, and both of these areas teach us important lessons that inform animal psychology. The first is articulating an Aristotelian account of consciousness; the second is addressing the way the psychological attributes, powers, and conscious operations of humans and other animals are hylomorphically united with sub-psychological biological systems, especially neural *cum* glial systems.[18] For the first, I presume we find magisterial *Aristotelian* treatments of consciousness in the works of Bernard Lonergan, P.M.S. Hacker, Maurice Merleau-Ponty, and Robert Sokolowski. The second area requires engaging debates concerning the way personal level phenomena link up with, are correlated with, are identical to, are constituted from, or are enabled by sub-personal level phenomena. This area requires investigating the ways a hylomorphic ontology can clarify and learn from a deeper engagement with the relevant experimental sciences as well as coming to appreciate better the way commonsense informs theoretical psychology by commencing with a phenomenology of the immanent unity of different conscious operations and their intentional objects, prior to an ontology of these objects and operations. Uniting these diverse strands of enquiry will enable Aristotelians to take a more perspicuous stand on the way psychological level attributes are hylomorphically constituted from and enabled by the formally organized sub-psychological level neural and glial components. Hylomorphism has the potential to illuminate deep explanatory insights that help us to appreciate without exaggerating or downplaying the integrated harmony of psychological and sub-psychological factors that contribute to the psychological behavior of animals. The particular relevance of an hylomorphic understanding of psychological and sub-psychological levels is that it can explicate a clearer account of their differences without conflating explanations of the sub-psychological biological levels with those of the psychological level.[19]

II.3

It is at this point that our enquiry can return to and amplify the theoretical analysis of sensible objects and sensory operations of Aristotle and Aquinas. In addition to appreciating the conscious unity of sensory, perceptual, memorative, intellectual, affective, and volitional operations and their intentional objects, along with the multifaceted ways in which some of these psychological attributes are hylomorphically constituted from the sub-psychological components of the animal's biological systems, a critical anthropocentrism requires an account of sensation—its different objects and operations—that goes beyond the naïvely anthropocentric model of the five external senses. We have discovered there are many animals that engage

[18] Contemporary theorists typically employ some version of Daniel Dennett's distinction between personal and subpersonal levels. Aristotelians can generalize the distinction between personal and sub-personal levels to include other animals by employing an equivalent distinction between the *psychological* and *sub-psychological* levels. Jennifer Hornsby, 'Personal and Sub-Personal: A Defence of Dennett's Early Distinction,' *Philosophical Explorations* 3 (1) (2000): 6–24.

[19] Lonergan, *Insight*; Oderberg, *Real Essentialism*; Daniel De Haan, 'Hylomorphism, New Mechanisms, and Explanations in Biology, Neuroscience, and Psychology' in *Neo-Aristotelian Perspectives on Contemporary Science*, eds. W.M.R. Simpson, R.C. Koons, N.J. Teh (Routledge, 2017).

their environment by exercising sensory powers constituted from sense organs that detect and cognize forms of electromagnetic, thermal, and chemical energy and information not detected and cognized by the suite of sub-psychological biological systems and psychological sensory powers of humans and similar animals;[20] like echolocation in bats and dolphins, electroception in rays, sharks, and duck-billed platypuses, magnetoception in birds, and the detection of infrared light in serpents and ultraviolet light in butterflies and reindeer. We must also articulate a better phenomenology and psychology of somatic affections (pleasure and pain), interoception, proprioception, as well as introspection (which is not inner perception but intellectual reflection), without falling into the errors and confusions of theories about sense-data, qualia, access and phenomenal consciousness, and so forth. Once again, Bernard Lonergan and P.M.S. Hacker have provided magisterial treatments of these thorny issues.

Our preliminary holistic theoretical psychology also teaches us another lesson crucial for an accurate theoretical analysis of animal psychology. The embodied, enactive, and embedded psychological behaviors of animals are principally focused on the affordances of objects in the environment (i.e., *per accidens* sensibles or particular intentions), not on the parade of fluctuating colors, sounds, smells, and tangibles of shaped magnitudes in motion (i.e., *per se* sensibles: proper and common) that at any moment concur with the affordances available to an animal. Aquinas, following Avicenna's development of Aristotle's distinction between *per se* and *per accidens* sensibles and sensation, recognized the importance of distinguishing between what we might call *sensation* and *perception*. Sensation pertains to the aforementioned *per se* sensibles, but these are always integrated into what the animal's conscious perceptual attention—especially in its exploratory and purposeful behaviors—focuses upon, namely, affordances. Aquinas assigned the animal's ability to perceive affordances—what he called *per accidens* sensibles or particular intentions—to the estimative power (*vis aestimativa*) or natural instinct (*naturalis instinctus*). The similar power in humans is called the cogitative power (*vis cogitativa*).[21] Elsewhere I have argued that the estimative power enables animals to perceive in the environment or register—via interoception (e.g., pangs of hunger), innate releasing mechanisms (e.g., sucking, migration), or forms of classical and instrumental/operant conditioning—aspectual, actional, and affectional intentions.[22] Roughly, *aspectual intentions* pertain to *what* an object is (e.g., a conspecific, the alpha male, a subordinate male, a reproductive partner, offspring, predators or prey, etc.); *actional intentions* pertain to *what can be done by or to* an object (e.g., from simple flight or fight to more complex exploratory, appetitive, and consummatory behaviors); *affectional intentions* pertain to cognitive specifications of an executive or conative signal *to do* or carry out some behavior as specified by aspectual and actional affordances. These three kinds of particular intentions are features of the affordances animals perceive or register that engage the animal's biopsychosocially constituted somatic affections and motivational, emotional, conative, and executive dispositions and operations.

Once again, ontogenic and ecological factors must be investigated. The psychological behaviors of animals develop in time and in light of social and other environmental interactions. Sensations enable perceptions, which transform sensations; perceptual learning via social imitation or associative conditioning enables estimative registrations and memory, which transforms enactive perception, motivations, and conation, and so forth. The enactive perceptual and registrative operations of the estimative power enables the animal to imitate, learn, and acquire dispositional sortals and rules or routines for psychological behavior, that is, ways of being better attuned to the affordances of objects embedded in its environment. For instance, animals learn to utilize tools to acquire food and many birds and rodents cache their food and later retrieve it. Clark's nutcrackers cache over 30,000 pine seeds a year, which they retrieve over the course of six months. Corvids not only develop their abilities to recognize the affordances of edible food and suitable locations to cache food, register interoceptive affections as signaling hunger, and exercise the memorative and navigational competences required for retrieving food from diverse locations, they also learn how to discriminate (and so to sortalize)

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[20] Gibson, *Senses Considered as Perceptual Systems*.

[21] *ST,* I, q. 78, a. 4; I, q. 83, a. 1; *Sentencia libri De anima* II, 13.

[22] Daniel De Haan, 'Perception and the *Vis Cogitativa*: A Thomistic Analysis of Aspectual, Actional, and Affectional Percepts', *American Catholic Philosophical Quarterly* 88, 3 (2014): 397–437.

pilfering from non-pilfering birds, adopt alternative caching strategies in the presence of these different birds, and recognize the food preferences of mates as well as the perishability of some cached foods over others.[23] We find a similarly impressive spectrum of flexible psychological and social behaviors exhibited by primates, cetaceans, canines, felines, horses, elephants, pigs, cephalopods, and many other species.[24] All of these animals acquire abilities to discriminate among individual conspecifics and other animals (e.g., predators and prey), and some are even attuned to the rise and downfall of the social status of conspecifics and other species. Animals learn from their experiences; experiences which transform the variety of flexible and less flexible ways in which they behave as psychological agents. And yet we have no reason to think nonhuman animals reflect upon or attend to the sortals or rules they follow to perform the exploratory and purposeful behaviors they do. As Aquinas, following Aristotle, points out, while nonhuman animals cannot understand the *one apart from the many*—i.e., they cannot absolutely consider sortals or true universals in themselves—they do estimatively judge the *one in the many*.[25] Estimative sortals are context bound, and even if they enable flexible discriminations, associations, and novel behavior, they are fixed by their relevance to being the starting point or aim of an action or passion.[26] The range of psychological abilities attributed to animal estimation, therefore, fall short of the psychological abilities identified by Aquinas's criteria for rational and voluntary agency. Nevertheless, what this brief digest of the psychological abilities of other animals does make clear is that employing the term 'instinct' (or even the 'estimative power') as a catchall term to cover the wide range of flexible and inflexible psychological and social behaviors exhibited by other animals is naïvely anthropocentric and inadequate. There is an enormous difference between more limited abilities for perception of object permanence, innate releasing mechanisms, stimulus generalization and discrimination, classical and instrumental conditioning and the more complex forms of cognitive control, social imitation and communication, tool use, non-immediate and flexible purposeful behavior, and innovative problem solving. Based on Aquinas's taxonomy this entire gamut of psychological abilities should be ascribed to the estimative power insofar as they are all united by the same formal object, namely, particular intentions. However, in light of the discoveries of ethology and experimental psychology the estimative power, like instinct, is best understood as a genus that requires significant differentiation into species of psychological abilities. It is beyond the scope of this essay to undertake this task, however, in the final section I will take note of some ways in which Aquinas himself provides resources for explicating more nuanced conceptions of animal instinct and estimation.

In addition to the estimative power, Aquinas's account of the internal senses of animals includes the apprehensive powers of the *sensus communis*, imagination, and memory (which I shall not explore in this

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[23] Nathan Emery, *Bird Brain: An Exploration of Avian Intelligence* (Princeton University Press, 2016)

[24] Augustín Fuentes, *The Creative Spark: How Imagination Made Humans Exceptional* (Dutton, 2017); de Waal, *Animals*; Michael Tomasello, *Origins of Human Communication* (MIT Press, 2008); Eva Jablonka and Marion J. Lamb, *Evolution in Four Dimensions, Revised Edition Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life*, rev. ed. (MIT Press, 2014); Donald Griffin, *Animal Minds: Beyond Cognition to Consciousness* (Chicago University Press, 2001).

[25] Thomas Aquinas, *Expositio libri Posteriorum*, II, lt. 20.

[26] *Sentencia libri De anima*, II, 13. Hutto develops a similar point at length, but where I speak of estimative registrations he speaks of the iconically guided instrumental thinking and intentional attitudes of nonverbals. He writes '…perceptually based responding might be extended beyond the confines of an immediate here-and-now. If so, off-line imaginings can serve as the instrumental components for the kind of nonverbal thinking that Bermúdez has argued can only be achieved if we assume nonverbals have propositional attitudes. Off-line images can be thought of as the counterparts to local indexical guides (LIGs); they would be local iconic guides. Extended nonverbal cognition can therefore be thought of as being iconically guided. Importantly, iconic thinking could influence behavior "at a distance," enabling quite kinky links to associated remembrances. Surely the empiricists were right about this much. Yet because they resemble perceivings, imaginings—like their perceptual counterparts—inherit the properties of being tied to certain proprietary domains: they too are in a sense local *in their intentional directedness*. And in this explanatory context, this fact turns out to be a virtue, not a vice. For it would neatly explain why even the most sophisticated feats that nonlinguistic thinking exhibit are importantly limited. The means-end reasoning of our ancestors was apparently limited in scope, only being applicable in certain domains and with respect to certain tasks. Nonverbals, quite generally, seem incapable of reasoning in an open-ended way that characterizes true inferential, conceptual thought. Their thinking is best understood as being restricted to islands of practical rationality, as opposed to operating in the continuous, unfettered space of reasons ….' Hutto, *Folk Psychological Narratives*, 84.

essay) as well as the concupiscible and irascible appetitive powers.[27] I have already hinted at the role these appetitive powers play in the psychological behavior of animals. They are principally specified by the affectional intentions perceived or registered by the estimative power.[28] The concupiscible and irascible powers are crucial to the animal's affective responses and the execution of its appetitive and consummatory behaviors. "The criteria for the animal's perceptions are not independent of the criteria for its affective response, and the criteria for the affective response are not independent of the action the animal takes."[29]

Aquinas distinguishes the passions of the concupiscible power according to different *inclinations*, *movements*, or *rest* with respect to objects that afford either goods for flourishing or evils that thwart flourishing. The passions of the irascible appetites, except *ira*, pertain to *movements* with respect to arduous goods or evils that must be overcome in order to attain goods or avoid the evils. The details of Aquinas's complicated theory of the passions go beyond the aims of this essay.[30] In the next section I show how Aquinas's treatment of the *passions* that pertain to *movement* can be enriched by drawing on his seemingly incidental remarks on animal behavior.

III

I started this essay with a few presumptions, including the claim that no nonhuman animal meets Aquinas's criteria for being a rational and voluntary agent. I also endorsed the view that humans are the only known linguistic animal and that it is contentious to claim otherwise. All the evidence from ethology and comparative psychology unequivocally support this view. Such evidence also supports the presumption that no nonhuman animal is a rational and voluntary agent according to Aquinas's criteria. Aquinas does not address the essential role language plays in enabling human persons to become practical reasoners, but Alasdair MacIntyre, David Braine, and others have established this *sine qua non* condition.[31] Without language, no nonhuman animal can exercise the forms of complex cognition required to become a practical reasoner with intentional actions.

One of Aquinas's clearest treatments of the criteria for a rational and voluntary action is found in *Summa theologiae* I-II.6.1-2, which builds upon his earlier distinction between *acts of a human* (*actus hominis*) and *human acts* (*actus humani*). Acts of humans include an array of operations from reflexes, interoceptive affections, pleasures, pains, sensations, perceptions, estimative registrations, the dawning of a memory, passions, emotions, and a variety of reactions to diverse circumstances. Human actions are constituted from the exercise of rational and voluntary mastery or control over one's actions; they exemplify the actions of a rational animal.[32] The self-control or self-determination that comprises human action requires both *perfect rational cognition* and *perfect willing*. There are three criteria for perfect practical rational cognition. The agent

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[27] For us, Aquinas's demarcations of the internal senses must be regarded as provisional, in need of revision, and inexact given the enormous range of nonhuman animals with diverse psychological abilities. Addressing this problem will require resolving a host of issues with respect to phenomenology, the sublation of commonsense psychology into a theoretical psychological taxonomy, the relevance of double dissociations and other experimental evidence from neuropsychology and cognitive neuroscience, and a more perspicuous ontological taxonomy for individuating or differentiating psychological powers.

[28] Daniel De Haan, 'Moral Perception and the Function of the *Vis Cogitativa* in Thomas Aquinas's Doctrine of Antecedent and Consequent Passions', *Documenti e studi sulla Tradizione filosofica medievale* 25 (2014): 287–328 (= *Moral Perception*).

[29] Hacker, *The Passions*, 127.

[30] Peter King, 'Aquinas on the Passions', in *Aquinas's Moral Theory*, ed. Scott Mac Donald (Cornell University Press 1999), 101-132; Daniel D. De Haan, '*Delectatio*, *Gaudium*, *Fruitio*: Three Kinds of Pleasure for Three Kinds of Knowledge in Thomas Aquinas', *Quaestio: Journal of the History of Metaphysics* 15 (2015): 241–250. For a rich contemporary account of passions, emotions, affections, and agitations, which also engages Aquinas, see Hacker, *The Passions*.

[31] Alasdair MacIntyre, *Dependent Rational Animals: Why Human Beings Need the Virtues* (Open Court Publishing, 1999); David Braine, *Language and Human Understanding: The Roots of Creativity in Speech and Thought* (CUA Press, 2014); Mortimer J. Adler, *The Difference of Man and the Difference It Makes*, repr. ed., (New York: Fordham University Press, 1993)

[32] *ST,* I-II, q.1, a.1.

must (1) cognize the end of action, (2) understand the intelligibility of this end *qua* end, and so also (3) understand the way in which certain actions are intelligibly ordered to the attainment of this end. The imperfectly purposeful behavior of nonhuman animals fails to meet (2) and (3).[33] Perfect willing requires that the agent move itself to achieve an end or refrain from moving towards an end. This is enabled in part through the deliberative aspect of rational cognition which opens the agent's will to opposites that practical reason judges should incline or attract the will.[34] Human actions that are perfectly voluntary include acts elicited by the will (e.g., *intentio*, *consensus*, *electio*, *usus*, and *fruitio*) and acts commanded by the will (e.g., to perceive, to cogitate, to recall, to understand, to reason, to speak, or to ambulate.[35] Aquinas's complex and subtle treatment of human action in this part of the *Summa theologiae* is well known, but what is often overlooked is that this part also contains a nuanced account of nonhuman animal conation.

Aquinas frequently sketches a conception of animal instinct that qualifies as being naively anthropocentric. These sketches suggest that animal instinct is extraordinarily blinkered wherein given a stereotypical circumstance one and only one single estimative judgment is possible.[36] So: a sheep meets a wolf; it estimates the wolf to be a predator and this is sufficient to specify a passion of aversion, which causes the sheep to take flight. This is not an implausible story, but as Avicenna and Aquinas both knew, it is also not an exemplary case of purposeful or flexible animal behavior. It is a paradigmatic case of *reactive behavior* for the sheep, and most human animals would react similarly—i.e., on the basis of cogitatively specified antecedent passions and not consequent passions specified by practical reason[37]—if they stumbled upon a wolf or grizzly bear. What this account wholly omits is the *purposeful behavior* of the wolf in pursuit of prey; wolves distinguish among other animals which have affordances of being prey (e.g., rabbits, squirrels, sheep, deer, bison) from those that ordinarily do not (e.g., humans and bears). Furthermore, hunting behavior is not equivalent to merely stumbling upon prey and *reacting*; many predators employ strategies and attempt to take their prey by surprise. Wolves, like cetaceans, engage in *purposeful hunting behavior* and do so in socially coordinated packs. This is but one instance of *purposeful animal behavior* that differs starkly from the *reactive* flight behavior of animals. Clearly, we cannot assimilate the latter into the former as any critical reflection on the extensive scientific research and battery of experimental tasks from ethology and comparative psychology reveals, but we also need conceptual space and insightful distinctions to adequately interpret this research. I think we can find insightful conceptual resources for interpreting this scientific research in Aquinas's somewhat muted remarks on the impressive abilities of nonhuman animals in his detailed treatment of human action.

Many of the questions central to Aquinas's investigation of human action in *Summa theologiae* I-II.6–17 include an article that queries whether nonhuman animals also possess some equivalent facet of human action, like *voluntas*, *fruitio*, *intentio*, *electio*, *consensus*, *usus*, and *imperium*.[38] The standard reading of these articles assumes that wherever Aquinas demarcates some distinctive phase in human action, he rejects any such distinctive phase in the behavior of other animals. Understanding human action requires a multitude of distinct phases in the nexus of practical reasoning and willing, but a monolithic conception of natural instinct is sufficient to explain the diverse behavior of nonhuman animals. I think this line of interpretation leaves us with an impoverished understanding of both Aquinas's thought and its resources for our enquiries in animal psychology. Instead, we should read each of these articles as introducing distinct imperfect nonrational versions of enjoyment, intention, choice, deliberative consent, use, and command. I do not have space to demonstrate it here; however, I think a more careful exegesis of these passages bears out this line of interpretation as well.

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[33] *ST,* I-II, q.6, aa.1-2.

[34] *ST,* I-II, q. 1, a. 2, ad 2; q. 6, a. 3.

[35] *ST,* I-II, q. 1, a.1, ad 2; q. 17, aa. 5–6. Stephen Brock, *Action and Conduct: Thomas Aquinas and the Theory of Action* (T&T Clark, 1998).

[36] *ST,* I-II, q. 6, a. 2; q. 13, a.2 (esp. ad 2).

[37] De Haan, *Moral Perception*.

[38] *ST,* I-II, q. 1, a. 2; q. 6, a.2; q. 9, a.1, ad 2; q. 10, a. 3, ad 3; q. 11, a. 2; q. 12, a. 5; q. 13, a.2 (cf. *ST,* I, q. 83, a.1; q. 103, a. 1, ad3); q. 15, a. 2; q. 16, a. 2; q. 17, a.2.

What might this look like? In these articles Aquinas introduces various qualifications for the animal versions of human action like quasi-, proto- or imperfect, but these only go so far; they are mere placeholders and promissory notes. He also introduces some pregnant expressions which require more rigorous explication. What we need are precise theoretical concepts that aim to understand these abilities from the liminal on their own grounds, not as reduced versions of some uniquely human paradigm or exaggerated capacities of the sub-psychological powers of the brain. Some of these aspects of nonhuman animal behavior can be assimilated to Aquinas's detailed account of the passions. His remarks about the animal version of *fruitio* are simply an alternative way of describing the concupiscible passions that rest in an obtained good.[39] Indeed, since they lack intellect and will all of Aquinas's remarks on other animals need to be understood as ways of characterizing and amplifying our understanding of a confluent cognitive-appetitive nexus, principally of estimation and sensual appetites. We need not assimilate all animal behavior to *mere reactions* in order to distinguish them from the rational behavior of human animals; doing so both falsifies our theory, given the putative evidence of purposeful animal behavior, and renders our theory less precise in its demarcations between humans and other animals. Where do we start?

Our constructive reinterpretation of Aquinas starts by introducing a distinction similar to that between acts of humans and human actions, say, between *actus brutorum animalium* and *actus bruti animales*. For animals with superior cognitive–conative abilities, *acts of nonhuman animals* include the aforementioned gamut of biopsychosocial responses and reactive behaviors. And just as human actions issue from the capacities distinctive of rational animals, *nonhuman animal actions* are the imperfectly purposeful and imperfectly voluntary behaviors that issue from the capacities distinctive of these animals, namely, their different estimative and conative powers.

A likely objection to this proposal will be: There cannot be nonhuman animal actions because the operations of sensual appetites for Aquinas are *passions*, not *actions*.[40] This objection articulates a correct understanding of Aquinas's position on the *primitive* operations and powers achieved by theoretical analysis, but neither human nor nonhuman animal actions are entirely treated and captured at the primitive level of analysis, for at that level they disappear. As we have seen, theoretically isolated operations of practical reasoning or willing do not constitute a *human action* because it is the confluence of reason and will, their nexus, that is required for a human action.[41] Similarly, it is the confluence of an *estimative registration* of an affectional affordance to seek some end via some course of action coupled with a *passion* of desire or aversion, audacity or fear, hope or despair that constitutes a nonhuman animal action. Imperfectly purposeful and imperfectly voluntary nonhuman animal *action* is constituted from the nexus of estimation and sensual appetition.

According to Aquinas's technical language, animals are led to ends, they do not direct themselves to ends because they fail to meet the aforementioned conditions for perfectly rational and perfectly voluntary actions; hence, they do not have self-mastery or self-determination.[42] Nevertheless, they can cognize ends, prefer to pursue some course of action over another, and purposefully seek some ends via some flexible course of action till it is obtained. Animals have learned preferences and can adopt determinate stances, but they can be cajoled or incentivized into acting contrary to them as well. They can also misbehave and in the case of domesticated, and especially trained, animals (e.g. dogs, horses, dolphins), they can both obey and disobey. Animals are not responsible *stricto sensu*, since they lack self-mastery, but we do hold them accountable for misbehaving when it is reasonable to describe their actions as misbehaving, that is, acting contrary to an end or course of behavior, some learned routine or rules, that we rightly expect them to adhere to.[43]

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[39] *ST,* I-II, q. 31, aa.1-8.

[40] *ST,* I-II, q. 22, aa. 1-3; q. 23, aa. 1.

[41] *ST,* I, q. 83, aa. 1-4; I-II, q. 1, aa. 1-2; q. 6, a. 1. Overindulgence in *analysis* is what leads to false dichotomies and problematically myopic queries like: Is Aquinas an intellectualist or voluntarist about free will? We actually need an even wider-angle lens than I have provided here if we are to understand the intelligibility of human actions. MacIntyre, *After Virtue*, ch. 15 (esp., 206-210).

[42] *ST,* I-II, q. 1, a. 2; q. 6, a. 1, ad 2; q. 12, a. 5, ad3.

[43] Vicki Hearne, *Adam's Task: Calling Animals by Name* (Skyhorse Publishing, 2007) (esp. ch. 5 'Crazy Horses'); Raimond Gaita, *The Philosopher's Dog* (Routledge, 2004).

Animals are attracted by two kinds of *motivational affordances*, which allows us to characterize their behavior as exhibiting two kinds of rules which they follow but do not register or apprehend as such apart from the manifold of instances they apply to; nonhuman animals follow rules, they do not formulate them. But we might formulate them as: Seek somatic pleasure and avoid or overcome somatic pain. At the level of the concupiscible appetite there is: Seek what is satisfying or delightful and avoid what is distressing or dysphoric. And for the irascible appetite there is: Overcome the arduous as it will ultimately be more satisfying or more harmful. In humans, these rules are transformed when developing children become connaturally attuned to *normative motivational affordances* at the dawning of practical reason. Aquinas calls this *synderesis*: seek good and avoid evil.[44] Nonhuman animals fail to meet Aquinas's criteria for perfectly rational and voluntary action, in part, due to the absence of this normative understanding of ends and actions ordered to ends.

This digest of nonhuman animal action illuminates how we should understand the animal equivalent forms of intention, deliberation, choice, and execution.[45] They perceive and register the affordances of ends and the activities that achieve these ends, yet without *intending* them *qua* ends or *qua* activities intelligibly ordered to the satisfaction of certain ends.[46] As even operant conditioning demonstrates, animal estimation enables associative attunement to the informational covariations and contingencies among activities and ends, but estimative registrations do not apprehend the intelligibility of any normative connections between them.[47] Animals lack intention, but exhibit conation. What about deliberation, choice, and execution?

For Aquinas, the determination of the animal appetite is merely passive and the execution of their activities are from the impulse of the appetite (*ex impetuoso appetitu*).[48] Without self-determination animals are unable to move themselves and so lack the active consent of deliberation and the liberty of choice and execution. Humans have self-determination because their will is indeterminately ordered to particular goods, even if determinately ordered to universal goodness. It is, however, misleading for Aquinas to say the appetites of animals are naturally determined to one particular thing (*ad unum aliquid particulare*).[49] Better to say, as he suggests elsewhere, that animals are determined to a finite variety of particular goods of action and passion that are all confined to their environmental niche.[50] Where does that leave deliberation?

Aquinas's response to the case of Chrysippus's Dog, for instance, is far too indeterminate to be adequate.[51] But this inadequacy does not entail that we must endorse something akin to José Luis Bermúdez's insightful, but unsuccessful, account of proto-reasoning based on success semantics in order to explain the striking psychological competencies for problem-solving in other animals.[52] Instead, I contend that we, following Charles Taylor and Daniel Hutto, chart a middle path that leaves space for investigating and detailing the impressive forms of associative, instrumental, flexible, and non-immediate purposeful psychological and social behaviors exhibited by some animals, especially in cases of innovative problem-solving.[53] Accordingly, given our critical anthropocentrism, we should not attribute to nonhuman animals capacities for prudence, disjunctive ratiocination, or hypothetical deliberations, when associative estimations continue to provide the best abductive explanations.

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[44] *ST,* I, q. 79, a. 12.

[45] Each of these phases of human action comprise cognitive-appetitive couplets, see Daniel Westberg, *Right Practical Reason: Aristotle, Action, and Prudence in Aquinas* (OUP, 1994); Stephen Brock, *Action and Conduct*.

[46] *ST,* I-II, q. 6, a. 2; q. 11, a. 2; q. 12, a. 5, ad 3.

[47] *ST,* I, q. 78, a. 4, ad 4.

[48] *ST,* I-II, q. 15, a. 2, ad 1 et ad 3.

[49] *ST,* I-II, q. 13, a. 2.

[50] *Sentencia libri De anima* II, 13.

[51] *ST,* I-II, q. 13, a. 2, obj. 3 et ad 3. In *ST,* I, q. 78, a. 4 he rejects attributing any form of quasi-syllogistic thinking to nonhuman animals.

[52] José Luis Bermúdez, *Thinking without Words* (Oxford University Press, 2003). We also need not contort all animal behavior to fit the Procrustean bed of dual process theories.

[53] Charles Taylor, *The Explanation of Behaviour* (London: Routledge & Kegan Paul, 1964); Hutto, *Folk Psychological Narratives*.

Conclusion

In this essay I explored the conceptual distinctions and resources Aquinas provides for enquiries in animal psychology. Drawing on the thought of Aquinas I sketched a critical anthropocentric approach to other animals, drew attention to the way ecology and ontogeny enrich animal psychology, and utilized Aquinas's doctrine of estimation and conation to formulate an account of nonhuman animal action that more adequately explains purposeful animal behavior. Finally, these largely conceptual explorations concluded with a clear *desideratum* for future enquiry into a genuinely hard problem in the explanation of animal behavior, namely, how to explain the nonrational purposeful problem-solving competencies of chimps, canines, corvids, cetaceans, cephalopods, and other species? I hope my constructive explorations of Aquinas's animal psychology shed some light on how to pursue this difficult question.

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