



## The Rational Animal and Modern Science: The Research Context of the Papers

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### Abstract

The papers collected in this issue of *New Blackfriars* were delivered at Aquinas Seminar series in Oxford and represent research interests of the Aquinas Institute. This article contextualises them by giving an impression of areas of contemporary research to which they contribute or to which they point. These areas concern animal psychology, the human being as complex rational animal, body-and-soul, and human evolution. Some of the many possible issues are identified, so as to suggest that in all these areas the Aristotelian-Thomistic tradition can enter into a real and fruitful conversation with modern discoveries in biology and psychology; it can take them on board and at the same time pose questions and offer perspectives that stand to be illuminating.

### Keywords

Aquinas, rationality, evolution, soul, hylomorphism, unity, consciousness

### Introduction

The Aquinas Institute at Blackfriars, Oxford organises an annual seminar series, a series established, and for a long time convened, by Dr William Carroll. The November 2013 issue of *New Blackfriars* comprised papers from the 2010–2012 series. In this issue we are pleased to present papers from more recent seminars,<sup>1</sup> papers that

<sup>1</sup> 'The Intellectual Animal' was in fact the Aquinas Lecture delivered by Prof. Candace Vogler on 2 March 2017. The Aquinas Seminar Series that year focused on 'Agency in Human Beings and Other Animals', and three of our papers come from it: Dr Daniel De Haan spoke on 'Diverse Dimensions of Animal Agency in Aquinas, Bermudez, and MacIntyre', Prof. John Finley on 'The Unity in Human Agency', and Dr Janice Chik Breidenbach on 'Thomistic Animalism: Language Animals or Animal Agents?' Within the 2018 Aquinas Seminar Series on 'God and the Metaphysics of Human Action', Prof. John D. Love spoke on 'Hand in Hand: Divine and Human Collaboration in Prudential

represent the Institute's interest in research under the broad theme 'Human Nature and Dignity: Resources for the 21<sup>st</sup> Century'. These papers, like those published in 2013, suggest that a real and fruitful conversation between the Aristotelian-Thomistic tradition and modern science is more possible than might have seemed the case a few decades ago. Rather than simply introduce the papers, I seek to contextualise them by offering a necessarily partial impression of four areas of research in which I think Thomistic reflection can pose pertinent questions and offer helpful perspectives. The papers contribute significantly to reflection on animal psychology and on the human being as the complex rational animal; they point to further questions concerning body and soul, and invite us to ponder the issue of human evolution. A Thomistic perspective on human nature can be enriched, and the value of Aquinas' 'psychology of virtue' can be affirmed, by taking on board recent psychological discoveries and scientific theories.

Like Albert the Great, Thomas Aquinas stood for a respectful conversation between the inherited, revealed, Christian faith, and the newly-available works of Aristotle which he and Albert recognised as offering fresh insights into the natural world and human nature.<sup>2</sup> Aquinas posed questions that were illuminating in *both* directions. For example, some of Aristotle's followers held that he had shown the cosmos to be infinite in time, which seemed to contradict Scripture. Aquinas clarified the exact force of Aristotle's arguments: they showed that by examining the cosmos we cannot tell whether it is finite or infinite in time.<sup>3</sup> On the other hand, incorporating Aristotle's teaching into his own accounts of the Christian faith enabled Aquinas to argue that each human being is a single organism, rather than a soul merely *using* a body; to explore how we learn through the senses; and to recognise the great complexity of the human

Decision-Making According to Thomistic Texts'. Recordings of these and other papers are available at <https://www.bfriars.ox.ac.uk/study/online-resources/>

<sup>2</sup> The determination of Albert and Aquinas to employ Aristotle respectfully and judiciously is touched on by Simon Tugwell, OP, in *Albert and Thomas: Selected Writings* (New York: Paulist Press, 1988), pp. 10-11, 14-15, 21, 25-35, 226-228 & 257-259; and by Ralph McInerny in *St. Thomas Aquinas* (Notre Dame: University of Notre Dame Press, 1982), ch. 2. On Albert see (e.g.) Michael W. Tkacz, 'Albert the Great and the Revival of Aristotle's Zoological Research Program', *Vivarium* 45 (2007), pp. 30-68. For Aquinas, see, among much else, Stephen L. Brock, *The Philosophy of St. Thomas Aquinas: A Sketch* (Eugene, OR: Cascade Books, 2015), ch. 1; Gilles Emery, OP, and Matthew Levering, eds., *Aristotle in Aquinas's Theology* (Oxford: OUP, 2015).

<sup>3</sup> Texts in: St Thomas Aquinas, Siger of Brabant and St Bonaventure, *On the Eternity of the World* (*De aeternitate mundi*), transl. with intro. by Cyril Vollert, Lottie H. Kendzierski and Paul M. Byrne (Milwaukee: Marquette University Press, 1964); *Aquinas on Creation*, transl. by Steven E. Baldner and William E. Carroll (Toronto: PIMS, 1997). The discovery of the 3K black-body radiation left from the 'Big Bang', which does indicate the age of the cosmos, would have to wait for the invention of radio telescopes.

psyche.<sup>4</sup> As we shall see, it helped him explore how God's grace 'takes flesh' in the 'fabric' of the human psyche; it also enabled him to explain better why the resurrection of the body is essential for *human* salvation and to demonstrate the value of the Sacraments.<sup>5</sup>

### Animal Psychology

Descartes proposed envisaging animal and human bodies as 'hydraulic machines'. He held that human beings also have immaterial souls, which interact with the body using the pineal gland as a kind of joystick – he was unaware that other animals also possess a pineal gland.<sup>6</sup> The illusion that animals are mere machines has been pervasive. I recall seeing newspaper headlines roughly 20 years ago proclaiming: 'Scientists have shown that animals are conscious,' and thinking, 'We knew that in the 13<sup>th</sup> Century.' Around the same time, as I recall, adverts promoting safe sex were shown on TV around the 9 o'clock watershed: we saw rhinoceroses copulating and swans courting, and the voice-over declared: 'They don't have emotions, they don't make commitments; you're different.' The advertisers must have imagined their slogan could be convincing, even though animals *do* have what Aquinas called *passiones animae*,<sup>7</sup> and some animals *do* bond in a fairly loyal way. Richard Dawkins seems to envisage animals as deterministic machines, but so complex are the higher animals that it is convenient to *pretend* that if, say, a tiger is in the room it will *want* to eat you.<sup>8</sup>

The papers collected here show a better awareness of the psychologies of the higher animals, including their real wants, and note how, as Candace Vogler expresses it, 'Aquinas is exquisitely sensitive to the difficulty of describing and theorizing the highest forms of animal intelligence.' She refers to Aquinas' classification of animals into those that lack memory, those that possess it, and those

<sup>4</sup> E.g. *Summa Theologiae, Prima Pars* (henceforth *ST*, I), q. 75, a. 4; q. 76, aa. 1, 3, 4, 6 & 7; qq. 77, 78, 80 & 81; q. 84, aa. 6-8; q. 85, a. 1.

<sup>5</sup> *ST*, I-II, q. 4, a. 6; III, q. 61, a. 1.

<sup>6</sup> For the body as hydraulic machine, see René Descartes, *The Description of the Human Body*, Part One; for the soul using the pineal gland, *The Passions of the Soul*, articles 34-35 (both in *The Philosophical Works of Descartes*, Vol. 1 (translated by John Cottingham, Robert Stoothoff and Dugald Murdoch; Cambridge: CUP, 1985), pp. 314-316, 341-342). For Descartes on animals, see Gary Hatfield, 'Animals', in Janet Broughton and John Carrero, eds., *A Companion to Descartes* (Oxford: Wiley-Blackwell, 2008), pp. 404-425.

<sup>7</sup> *Passiones animae* is difficult to translate. False overtones intrude into 'passions of soul'. 'Emotions' suggests the complexity of contextualised human psychological experience, whereas *passiones animae* are the more 'animal' responses of attraction and repulsion, 'fight and flight', that are evoked in many contexts.

<sup>8</sup> *The God Delusion* (London: Bantam Press, 2006), pp. 182-184.

that both possess it and can be trained; while this classification is not fine-grained enough, we need not read his story in a crass way. Daniel De Haan mentions animals' receptivity to the 'affordances' in their environments, and argues that Aquinas recognised nonhuman animal actions as purposeful and (in an 'imperfect' way) 'voluntary'. Janice Chik Breidenbach also refers to how empirical sciences and commonsense observations support the Aristotelian-Thomistic account of the higher-level animals' extensive range of psychological capacities, including certain modes of cognition, emotions, and voluntary movement.

For Aquinas, as for Aristotle, a living thing is not a machine. Remarkable abilities flow from the souls, i.e. *the forms of life*, animals possess. On the perceptive side, they – and we – possess:

- The exterior senses of touch, taste, smell, hearing and sight;<sup>9</sup>
- A *sensus communis* to coordinate data from the exterior senses;
- An imagination to retain sense experiences;
- An 'estimative sense' to grasp the significance of things and situations;
- A 'sense memory' of significances, largely inherited/instinctive, that feeds into the interaction between coordinated sense-data and the estimative sense.

On the responsive side they – and we – possess:

- Six 'concupiscible passions' – inbuilt likes and dislikes that translate into drives of attraction or repulsion towards perceived goods and evils, and come to rest in the enjoyment of goods, or result in being pained by evils suffered;
- Five 'irascible passions' aroused by challenging situations, so that animals can meet challenges with courage born of the hope for success, or lash out with anger when afraid of some danger they despair of escaping.<sup>10</sup>

*ST*, I-II, q. 13, a. 2 is illuminating: in obj. 3 Aquinas recognises that if hunting dogs pursuing a deer (i.e. through a dense forest) come to where the path divides into three, they might smell two of the three paths, and, if they don't pick up the deer's scent, will run down the third path without smelling again. In the reply Aquinas attributes this sagacity not to 'reason' and true choice (*electio*) but to a 'natural

<sup>9</sup> Daniel De Haan's paper mentions other senses now recognised, such as proprioception (which we also possess), electroreception and magnetoception.

<sup>10</sup> See Aquinas' *Sententia libri De anima*, Book 2, *lectiones* x-xiii, xxiv; Book 3, *lectiones* i-vi, xiv-xviii. These faculties are also explored in *ST*, I, qq. 78 & 81; I-II, qq. 22-48, but chiefly in relation to human beings. For a succinct account, see Herbert McCabe, *On Aquinas* (ed. & intr. by Brian Davies; London: Continuum, 2008), chh. 8, 12 & 13.

inclination towards certain very structured processes’, an inclination granted by the Creator’s art. The estimative sense enables animals to interpret their environment, but does not enable the open-endedness that reason enables.<sup>11</sup>

Daniel De Haan points out that Aquinas does not only regard animals as psychological agents; he sees them as possessing non-rational analogues of ‘enjoyment, intention, choice, deliberative consent, use, and command’, being ‘determined to a finite variety of particular goods of action and passion that are all confined to their environmental niche’. Dr De Haan points out that we need to develop Aquinas’ account of both human and non-human animals’ sensory abilities and agency in the light of recent research: we need a richer account of the ‘estimative sense’, and must take account of the ways animals *become* attuned to ‘affordances’. Further, there is more to learn about the phenomenology and psychology of somatic affections. Noting that Aquinas himself recognised that the investigation of the affections has lagged behind the investigation of cognition,<sup>12</sup> I should agree that his account of the estimative sense and sense-memory downplays the abilities to learn and to adapt found in certain non-human animals. Aquinas could not know of the complex cognitive and social behaviour of the ape species whose ability to engage in forms of symbolic behaviour is regularly reported in the media, but it is worth noting that they exhibit symbolic behaviour under experimental conditions set up by human scientists, and that it is not linguistic in a *human* way.<sup>13</sup> Hence we can still ask whether even apes’ behaviour is non-rational, being (in the phrase quoted above) ‘determined to a finite variety of particular goods ... [within] their environmental niche.’

The awareness that non-human animals have complex psyches has fed into discussions of the ethics of our interactions with them, and into claims that some can be part of the human political community while others form communities with rights analogous to ours.<sup>14</sup> If we are to evaluate such claims and engage in these discussions with conceptual clarity and without anxiety, we need to recognise

<sup>11</sup> Cf. *Commentary on Book III of the Sentences*, d. 35, q. 1, a. 2, qc. 2 ad 1: ‘animals border on humans in their estimative power, which is highest in them, and by which they do things similar to the works of reason.’

<sup>12</sup> In *ST*, I, q. 37, a. 1 he remarks that we haven’t found as many ‘love’ words with which to speak about the ‘movements’ of the will as we have with which to speak about the workings of the intellect.

<sup>13</sup> Ian Tattersall, ‘Brain Size and the Emergence of Modern Human Cognition’ (in Jeffrey H. Schwarz, ed., *Rethinking Human Evolution* (Cambridge, MA: MIT Press, 2018), pp. 319-334), p. 324, points out that bonobos and chimps can *add* symbols but not ‘shuffle’ them ‘to mentally transcend the world that Nature presents to us’.

<sup>14</sup> For example, Sue Donaldson and Will Kymlicka, *Zoopolis: A Political Theory of Animal Rights* (Oxford: OUP, 2011).

what Candace Vogler points out, that Aquinas' account of how our intellectual powers qualify the cognitive and conative powers we share with other animals, and *vice versa*, should make us sensitive to the difficulty of expressing really accurately 'the ways in which the intellectual animal's mental life is . . . distinct from anything to be found among other animal species.' At the same time, as Dr De Haan points out, Aquinas' recognition of animal psychology, including his often overlooked nuanced account of the *conation* of non-human animals, may offer useful conceptual tools. Aquinas' receptivity to the available knowledge of animal psychology encourages us to take on board modern discoveries in this area, and to reflect on them with philosophical care and precision.

### The Acting Person as Complex Rational Animal

The foregoing implies that we need to work harder than some thinkers have done to set out clearly the precise difference between animal and human psychology, to demonstrate convincingly that this does imply that the human soul is immortal whereas animal souls are not,<sup>15</sup> and to bring into focus the precise dignity of human nature as such.<sup>16</sup> An investigation of what truly characterises human nature might fittingly begin by laying aside the idea that *consciousness* is a marker for the possession of humanity, not only because other animals are conscious, but also because *we* are not always conscious, and when we are conscious the 'quality' of our consciousness is highly variable.<sup>17</sup> Janice Chik Breidenbach's paper questions the value of consciousness as a marker for personhood; the precise concept of 'consciousness' seems to have scant importance for Aquinas.<sup>18</sup>

For Aquinas, the distinctively human powers are *intellect* and *will*. Intellect is the ability to draw out universal concepts from sense-data, and to retain, organise and apply these concepts; will is the ability to *be attracted by* the good perceived intellectually.<sup>19</sup> Consciousness is

<sup>15</sup> Cf. Aquinas' *ST*, I, q. 75, a. 2; *Quaestio Disputata De Anima* (henceforth *QDA*), aa. 1 & 14.

<sup>16</sup> This, of course, requires us to defend human nature as a well-defined reality in an evolutionary world, and to argue that it has an ontological status, not merely a socially-constructed status.

<sup>17</sup> It is difficult to be conscious of anything else when suffering from a raging toothache or in the presence of something towards which one has a phobia; intense concentration on a mathematical or philosophical problem (or a gripping film or novel) can distract one from the passage of time or the development of hunger.

<sup>18</sup> When Aquinas uses the adjective *consciuis*, it is nearly always in the context of being 'conscious of sin'.

<sup>19</sup> *ST*, I, qq. 79 & 82; I-II, qq. 8-10. The will is not a pro-active deciding power that 'floats above a landscape of choices' arbitrarily opting for one of them; most basically,

not to be simplistically connected with the intellect: consciousness of intense pleasure or pain, or grave fear, may chiefly involve powers at the sensory level. Further, I am not currently conscious of most of the concepts I have acquired; nor am I fully conscious of the priorities in my will.<sup>20</sup>

The papers collected here bring out the close ‘organic’ cooperation between intellect and will, on the one hand, and the interior senses and ‘passions’, on the other. Janice Chik Breidenbach argues that Aquinas supports the claim that human beings really are animals; to recognise this is crucial for understanding his view (and, implicitly, forming our view) of human nature and rationality. As Candace Vogler points out, the interior senses that we share with the other animals are *transformed* when they become part of truly human nature; for example, we can play with the sense-data we retain in our imaginations, and the estimative sense becomes the ‘cogitative sense’ – one result of this is that more of our assessment of situations is learned, and less is instinctive, by comparison with the other animals.<sup>21</sup> Of course our higher powers are also transformed: while angels are typically *intellectual* (they rest in the possession of powerful concepts), human beings are typically *rational*, acquiring, connecting, disconnecting and applying concepts in reasoning processes.<sup>22</sup> Further, the affective powers, the will and the *passiones animae*, are also transformed in their interaction with each other: our will is mutable, unlike the angels’, and our ‘passions’ affect whether, as responsible beings, we perceive things as attractive or repugnant; at the same time, it is through the passions that the will effects voluntary movements. The passions are under the ‘political’, not a ‘despotic’, control of the higher powers.<sup>23</sup>

John Finley’s paper explores an aspect of the distinction between human beings and the other animals that seems not to have received the attention it deserves. He argues for human beings having a higher degree of *metaphysical unity* than other animals, and points out the

it is the ability to *respond* to the good recognised by reason. Nevertheless, thinking and wanting are so entangled that Mark Jordan can speak of ‘the untellable circlings of will and intellect’ (*Teaching Bodies: Moral Formation in the Summa of Thomas Aquinas* (New York: Fordham University Press, 2017), p. 102.)

<sup>20</sup> In *ST*, I, q. 87, Aquinas explains that we are well aware that we understand, but find it hard to think about the mind’s nature. The intellect can reflect on itself, and we are able to know our *acts* of will, but we can’t know by introspection the *habits* that shape the will; in other words, we sometimes *discover* our wants and may *surprise* ourselves by what we do! Cf. *ST*, I-II, q. 112, a. 5.

<sup>21</sup> *ST*, I, q. 78, a. 4; cf. *QDA*, a. 13. Aquinas seems to play down what is instinctive in humans, as well as what can be learned by other animals; we might see less sharp a divide between humans and other animals in these respects.

<sup>22</sup> *ST*, I, q. 79, a. 8; *QDA*, a. 7 ad 1. Janice Chik Breidenbach makes a similar point in Part IV of her paper.

<sup>23</sup> *ST*, I, q. 64, a. 2; q. 81, a. 3; I-II, q. 9, a. 2; q. 10, a. 3.

paradoxical result that we are *more* animal than they are. Human unity is manifest at the level of action and expressed in *speech*; and speech illustrates how bodiliness is needed for the soul's intellectual activity. Prof. Finley notes how Sokolowski's analysis presents 'declarative speech' as 'reveal[ing] our unity as wholes, as beings that are most what we are in and through self-return' – but this self-return is not of a 'Cartesian' kind in which introspection is primary: 'self-return [is] only accomplished through awareness of exterior reality.' This suggests that *self-consciousness* is a more significant concept than consciousness. Arguably, the *rationality* that is especially characteristic of human nature does enable us to reflect on ourselves, and so to 'possess' ourselves and to express ourselves in word and deed in a higher way than other animals can. Janice Chik Breidenbach also brings out our unity: she warns against taking the distinction between the acts of a human being, on the one hand, and truly human, freely chosen acts on the other,<sup>24</sup> to imply a separation between our animality and our rationality.

Prof. Finley's paper also explores the apparent paradox that we, more unified than the other animals, experience more *disunity*, and experience it more sharply, than they do. This observation can remind us of the role of *virtue*, as understood by Aristotle and Aquinas, in the development of greater psychological *unity* and of moral *integrity*.<sup>25</sup> Aquinas offers a uniquely complex account of the virtues. Besides explaining the 'theological virtues' (Faith, Hope and Charity) that unite us to God, he distinguishes between the humanly-acquired and the 'infused' (God-given) forms of the 'cardinal' virtues (Prudence, Justice, Temperance, Courage).<sup>26</sup> Acquired temperance, for example, empowers us to eat and drink with a view to bodily and psychological

<sup>24</sup> Aquinas makes this distinction in, for example, *Summa contra Gentes* III, ch. 2, n. 9; *ST*, I-II, q. 1, a. 1; q. 18, a. 6. Truly human acts, subject to moral analysis, involve reason and will. Acts such as fidgeting or scratching an itch are simply 'acts of a human being'; they do not result from deliberation but from 'sudden imaginations' or 'disorder in [bodily] humours'.

<sup>25</sup> Being, unity, truth and goodness are 'transcendentals' as applying across every category and genus; they are 'convertible' in the sense that 'deep down' they 'coalesce': *ST*, I, q. 5, a. 1; q. 11, a. 1; q. 16. They keep step with each other both ontologically and morally: *ST*, I-II, q. 18, a. 1 makes this point regarding the being and goodness of moral acts. Beauty is allied with the transcendentals in some way: James F. Anderson, ed. & translator, *An Introduction to the Metaphysics of St. Thomas Aquinas* (2<sup>nd</sup> ed., Chicago: Henry Regnery, 1997), includes it among them. Moral/spiritual beauty is mentioned in *ST*, II-II, q. 145, a. 2; q. 180, a. 2 ad 3.

<sup>26</sup> Scotus denied the need for infused cardinal virtues: Odon Lottin, *Psychologie et morale aux XIIe et XIIIe siècles* (Gembloux, Belgium: Duculot, 1942-54), vol. 4.2, pp. 739-42. Michael Sherwin has argued that this view fails to account for how adult converts who lack acquired virtues can yet do what virtue demands: 'Infused Virtue and the Effects of Acquired Vice: A Test Case for the Thomistic Theory of Infused Cardinal Virtues', *The Thomist*, 73 (2009), pp. 29-52.



health; ‘infused’ temperance enables us to fast and abstain in the fight against sin within a journey towards the *divine* Goal.<sup>27</sup> In *ST*, II-II, under the headings of the theological and cardinal virtues, Aquinas identifies a panoply of other virtues, strengths of mind or character that facilitate our pursuit of human and divine happiness. We also need the ‘Gifts’ of the Holy Spirit to attune us to his guidance in making decisions on which much may hang, in cases when, as no law tells us what to do, we must depend on God’s providence.<sup>28</sup>

Aquinas’ complex ‘psychology of virtue under grace’ is represented by the penultimate paper in this collection. John Love sets out Aquinas’ account of the components that contribute to truly prudent decisions. He locates this account within the relationship between God’s government and the human freedom that God enlarges (rather than suppressing it), and brings out the interpenetration of acquired and infused virtue. A range of ‘subsidiary’ virtues (‘integral parts’ of Prudence) is involved in the process of making a wise decision, including sensitivity to the situations we are in, and a readiness to learn from those who are wiser and more experienced, and from the past.

By bringing out the complexity of Aquinas’ account of what is needed for but one component of a truly moral life, and the variety of ways in which we can fall short in this area, Prof. Love gives us a glimpse of how Aquinas’ portrait of the successful pursuit of happiness corresponds, in a realistic way, both to the complexity of the human psyche and to the complexity and contingency<sup>29</sup> of the human world within which we make our common pilgrimage. By noting our dependence on the more experienced, he helps us see Prudence as a ‘life-skill’<sup>30</sup> needing a kind of apprenticeship.

Prof. Love hints at further lines of fruitful reflection. His section ‘Antecedent Principles, 4’, points out that the interaction among the humanly-acquired and the God-given components of a virtuous life remains a matter of debate among Thomists. Perhaps we can apply in this area, analogously, the concept Prof. Vogler employs regarding powers of soul, and see grace and nature working in a ‘*transformative*’ symbiosis. This symbiosis might explain why, in *ST*, II-II, Aquinas hardly ever distinguishes infused and acquired virtues; this seems to imply that, ideally, they interpenetrate or complement each

<sup>27</sup> *ST*, I-II, q. 63, a. 4. I hope we may legitimately add that infused temperance also enables us joyfully to feast at Christmas, Easter, Pentecost, etc.

<sup>28</sup> Aquinas’ still-maturing theology of the ‘Gifts’ is found in *ST*, I-II, q. 68; II-II, qq. 8, 9, 19, 45, 52, 121 & 139. For recent treatments see Andrew Pinsent, *The Second Person Perspective in Aquinas’s Ethics: Virtues and Gifts* (New York: Routledge, 2012) and Richard Conrad, *OP, 7 Gifts of the Holy Spirit* (London: Catholic Truth Society, 2009).

<sup>29</sup> *ST*, I-II, q. 94, a. 4.

<sup>30</sup> To paraphrase ‘virtue’ both as ‘strength or excellence of mind or character’, and as ‘life-skill’, can remind people of the attractiveness and even vibrancy of virtue.

other almost seamlessly.<sup>31</sup> It can exemplify Aquinas' principle that God's grace, typically, does not bypass nature or render it redundant, but brings it to perfection, purifying and healing it, elevating and ennobling it; this principle in turn helps explain why Aquinas devotes so much of the *Summa Theologiae* to aspects of human psychology: this is the 'material' in which grace 'takes flesh'. In *De Virtutibus in Communi*, aa. 10 & 11, Aquinas presents the infused moral virtues not only as adapting our lower appetites to the supernatural Goal to whom the Theological Virtues join us, but also as 'embracing' the acquired virtues (developed by the psychological mechanisms detailed in *ST*, I-II, qq. 51–53 & 63) so as to lift *their* acts up to the level of being meritorious.

Noting our dependence on those who are more experienced links to Dr De Haan's suggestion that we need to say more concerning the *collaboration* involved in human knowing, and (since collaboration involves language) to Prof. Finley's point that language intimately characterises human nature. To borrow Alasdair MacIntyre's phrase, we are 'dependent rational animals'. Andrew Pinsent has pointed out that there is something missing from an account of virtue-acquisition which simply relies on habituating ourselves; we need each other – and God.<sup>32</sup> Two Books of *Nicomachean Ethics* are devoted to forms of friendship; maybe this points towards our dependence on each other not only for happiness but also for virtue.<sup>33</sup> We need to say more about child development than Aristotle could, and about the way peer-pressure, law, public policy and charismatic leadership can promote or impede the development of virtue. Convinced of the value of Aquinas' 'psychology of virtue' and his teaching on human law, the Aquinas Institute will support some research relating the 'integral parts' of Prudence to the development of regulations and public policy in our large, complex societies in which readiness to learn from others' experience and from the past, care for the future, and caution regarding potential bad results of good policies, remain crucial.

<sup>31</sup> Many lives are not ideal. I have explored elsewhere how infused virtues can partially make up for the lack of acquired virtues *and vice versa*: 'Human Practice and God's Making-Good in Aquinas' Virtue Ethics', in David Carr, James Arthur and Kristján Kristjánsson, eds., *Varieties of Virtue Ethics* (London: Palgrave Macmillan, 2017), pp. 163–179.

<sup>32</sup> "'Till We Have Faces": Second-Person Relatedness as the Object, End and Crucial Circumstance of Perfect or "Infused" Virtues' (in Carr, Arthur and Kristjánsson, eds., *Varieties of Virtue Ethics*, pp. 267–279), pp. 268–270. See papers 12–15 and 19 in the same collection for related points.

<sup>33</sup> To the extent that one *can* distinguish happiness from virtue!

## Questions about Body and Soul

Arguably, the picture of the animal and human body as a machine, mentioned above, was reinforced when the modern atomic theory began to develop; I suspect there still lurks in many people's minds a picture of the atom as a mini-solar-system, with the implication that the laws governing the movement of electrons are as rigid as those that govern the movement of the planets. If the human body *is* a machine, and *if* the whole of human behaviour is fully explicable on the basis of this machine's extreme complexity, so that we may exorcise the Cartesian 'ghost in the machine',<sup>34</sup> there is no component of the human being that can survive death. If animal *and* human behaviour are subject to a *mechanical* determinism, it arguably follows that free decision is an illusion.<sup>35</sup>

For Aristotle and Aquinas, a living thing is not a machine. A machine is the sum of its parts; each part remains what it is whether it is inside or outside the machine, and the parts are what really exist. A living thing is a *single organism*, more than the sum of its parts; they are what they are only while they are in the living body;<sup>36</sup> the whole plant, animal, or human being, is what really exists. The living body does contain 'elements', whose varying proportions make bone, muscle, blood, etc., possible – but they are present 'virtually', subsumed into the 'nature' of bone, muscle, blood, etc.<sup>37</sup> A microscope would not reveal lumps of earth, droplets of water, and sparks of fire, but bone or some other tissue. A living thing is a single organism because it has a *soul*, which is not a ghost in a machine, but a 'form of life' which 'organises' 'materiality'<sup>38</sup> into a living,

<sup>34</sup> In *The Concept of Mind* (London: Hutchinson's University Library, 1949), pp. 15-16, Gilbert Ryle wrote, about 'the official theory' of mind/body dualism: 'I shall often speak of it, with deliberate abusiveness, as "the dogma of the Ghost in the Machine." I hope to prove that it is . . . one big mistake . . . , a category mistake'. In her entry 'Gilbert Ryle' in *The Stanford Encyclopedia of Philosophy* (substantive revision Wed Feb 4, 2015), Julia Tanney deals in a nuanced way with the widespread attribution of 'soft' behaviourism to Ryle.

<sup>35</sup> There is a range of philosophical opinions on whether free will (defined in some way or other) is compatible with determinism (of some kind or other). I do not at all want to equate free decision with an *indeterminacy* construed as randomness: to make a decision by mentally flipping a coin is in fact to abdicate the opportunity to decide, whereas to take rational account of needs, motives, etc., is to put oneself into the decision.

<sup>36</sup> *QDA*, aa. 9 & 10; Herbert McCabe, *On Aquinas*, ch. 2.

<sup>37</sup> *QDA*, aa. 9 ad 10. And, to repeat, bone, muscle and blood are subsumed into the whole organism, which really does have a nature.

<sup>38</sup> To speak of 'form organising matter' invites the mental picture of matter as 'basic stuff', with form as shape or structure. There are occasions when Aristotle and Aquinas speak that way; but they make it clear that *materia prima* is not any kind of stuff at all. It is a 'principle' that contributes to material things, but cannot exist by itself, or be conceived – it 'lies beneath' the possibility of change from one kind of thing to another,

organic, functioning body. Higher forms of life have more unity, and more powers, than lower ones; higher forms of life transcend mere materiality to a higher degree than lower ones.<sup>39</sup> This is particularly brought out in John Finley's paper in this issue: living things are wholes in a higher way than pieces of inanimate matter. The human form of life includes abilities that break free of the limitations of materiality: we have the ability to 'abstract' universal concepts from the instances located and observed within space and time – this is Aquinas' argument for the subsistence of the human soul.<sup>40</sup>

A mechanistic view that includes seeing the atom as a mini-solar-system relies more on half-understood diagrams in old-fashioned school text-books than on real Quantum Mechanics.<sup>41</sup> To envisage electrons as 'tiny ball-bearings' with well-defined size is misleading, and current research I am aware of is questioning whether subatomic particles should be seen as 'corpuscles' at all. We are a long way away from Democritus' atoms.<sup>42</sup>

The interpretation of Quantum Mechanics has always interfaced with philosophy, and even evoked Aristotelian categories.<sup>43</sup> Areas of fruitful research suggested to me by John Finley's reminder of the Thomist doctrine of different degrees of unity found at different levels of being include the following. Can we associate the indeterminacy of quantum 'particles' with the low degree of truth that goes with

and grounds the 'brute facticity' of material things that resists being universalised and allows many individuals to exist in one species. Conversely, 'substantial form' is not a structuring of pre-existing components, but more deeply pervasive. It makes something, through and through, to be precisely what it is, e.g. a rabbit. Thus it locates something within a species, allows us to 'abstract' and discuss scientifically the rabbit 'pattern of life', and makes this rabbit (or whatever) what it is for as long as it is. See Herbert McCabe, *On Aquinas*, chh. 4 & 5.

<sup>39</sup> For levels of life, see *ST*, I, q. 18, a. 3; q. 78, a. 1; *QDA*, a. 13. For Aquinas, 'to live is to be' (Albert E. Wingell, 'Vivere Viventibus Est Esse in Aristotle and St. Thomas', in *The Modern Schoolman* XXXVIII (1960-61), pp. 85-120). Hence levels of life map onto levels of the transcendentals.

<sup>40</sup> *ST*, I, q. 75, a. 2; *QDA*, a. 14. Herbert McCabe, *On Aquinas*, chh. 5 & 6.

<sup>41</sup> The circles that used to be drawn as if they were the electrons' orbits are actually symbols of the electrons' average distance from the nucleus: the electrons in the first four elements, and some of those in all other elements, being in S-orbitals, *do not revolve around the nucleus at all*, having a zero angular momentum quantum number.

<sup>42</sup> Aristotle seems to have found Atomism incoherent for several reasons: it implied action at a distance, and he could not see how the distance between atoms could be quantified if there was a complete void between them. *Physics*, Book IV, chh. 6-9 (whose interpretation remains a matter of debate) comprises a discussion of 'the void'. I suspect Aristotle also found Atomism unsatisfactory because it implied that the solid atoms are what truly exist, so that organisms are, like machines, nothing more than temporary assemblies of components.

<sup>43</sup> E.g. Ignacio Silva, 'Werner Heisenberg and Thomas Aquinas on Natural Indeterminism', in *New Blackfriars* 94 (2013), pp. 635-653.

a low degree of being?<sup>44</sup> How might the doctrine of the unity of an organism work in cases such as colonial organisms composed of many physically connected, interdependent individuals?

As Daniel De Haan says, we need to explore in more detail how sub-psychological biological systems support conscious operations. This points to questions concerning precisely how the atomic, biochemical and cellular structures of living things ‘support’ the forms of life into which they are subsumed. Is the way electrons are present within molecules, cells and organisms analogous to the ‘virtual’ presence of the elements within an Aristotelian organism?<sup>45</sup> How are cells and organs present in the bodies of living things? Are Aristotle and Aquinas right when they hold that organs are what they are only while within the whole? If so, how do we understand organ transplants? Might indeterminacy at the sub-atomic level somehow translate up into the levels of spontaneity and flexibility of response we find in animals and human beings?<sup>46</sup>

It seems that Aristotle’s and Aquinas’ view of matter and of living things is able to converse with authentic modern science.<sup>47</sup> May Aquinas’ picture of higher beings possessing powers (especially of perception) that transcend materiality to higher degrees even help achieve a satisfactory account of consciousness, which ‘is arguably the central issue in current theorizing about the mind’?<sup>48</sup> Of course, the very legitimacy of speaking of ‘levels of being’ needs to be defended. And if there really are *levels of being* among the things in the world, this encourages us to wonder at the very being of things, and whence it comes, and we are led both into a ‘metaphysical’

<sup>44</sup> Cf. the section ‘Indetermination and the Hierarchy of Being’ in Ignacio Silva, ‘Werner Heisenberg and Thomas Aquinas on Natural Indeterminism’.

<sup>45</sup> Joseph Bobik, *Aquinas on Matter and Form and the Elements: A Translation and Introduction of the De Principiis Naturae and the De Mixtione Elementorum of St. Thomas Aquinas* (Notre Dame: Notre Dame University Press, 1998), Part IV.

<sup>46</sup> This relates to the puzzle how indeterminacy at the quantum level relates to the laws of motion, etc., that we find at the macroscopic level. See for example Robert C. Koons, ‘Hylomorphic Escalation: An Aristotelian Interpretation of Quantum Thermodynamics and Chemistry’, *American Catholic Philosophical Quarterly* 92 (2018), pp. 159-78. The view is widespread that quantum indeterminacy is quite other than randomness on the macroscopic scale; in any case, as I remarked in note 35, freedom is quite other than mere randomness.

<sup>47</sup> For examples see Nancy Cartwright and John Pemberton, ‘Without Them, What Would Modern Science Do?’ in John Greco and Ruth Groff, eds., *Powers and Capacities in Philosophy: The New Aristotelianism* (New York: Routledge, 2013); and the papers in William M. R. Simpson, Robert C. Koons and Nicholas J. Teh, eds., *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2017).

<sup>48</sup> Robert Van Gulick, ‘Consciousness’, in *The Stanford Encyclopedia of Philosophy* (substantive revision Tues. Jan 14, 2014); cf. Bruce Weber, ‘Life’ (*Ib.*, substantive revision Mon. Nov 7, 2011).

perspective on things, and into two of Aquinas' famous Five Ways of demonstrating God's existence.<sup>49</sup>

### Conversations about Evolution

The themes of the papers collected here invite us to reflect on our place in the animal kingdom, and on why it is fitting for us to be in an evolutionary relationship with other species. One reason that seems to emerge is that we inherit from pre-human animals bodily structures (including neurological structures) that are involved in truly human being and truly human thinking.

The frequency of articles on issues raised by evolution in this periodical indicates the current interest in the subject.<sup>50</sup> In the conviction that Aquinas can help us ask illuminating questions, and provides us with relevant concepts, the Aquinas Institute will devote a future seminar series to such issues, and will collaborate with the next stage of the Thomistic Evolution Project.<sup>51</sup>

For the sake of philosophical and theological reflections, a key question is whether the boundary between true humans and pre-human species is 'fuzzy' or well-defined. Many reflections have assumed, as Martin Lembke puts it, that 'from an evolutionary point of view . . . all biological species, including *Homo sapiens*, have evolved gradually . . . speciation . . . is a gradual process' so that the 'biological parents' of the first human beings 'obviously belonged to the same biological species as themselves.' Lembke concludes 'that the decisive ontological difference (if such there were) between the first human couple and their non-human biological parents was of a non-biological sort – from which it follows that membership of a certain biological species is not a sufficient condition for being

<sup>49</sup> Aquinas' Third Way urges us to recognise that the being of even incorruptible entities (e.g. the heavenly bodies as then understood) needs a Source, i.e. God whose Being does *not* need a source. The Fourth Way relies on recognising that the degrees of being, goodness, etc., we observe point to God's transcendent Being and Goodness.

<sup>50</sup> Besides articles referenced later: David W. Opperbeck, 'Can Origen Help Us Understand Adam?' in *New Blackfriars* 99 (2018), pp. 561-577; Conor Cunningham 'Dawkins is Dead: Long Live Evolution!' in *New Blackfriars* 96 (2015), pp. 269-278; William Newton, 'A Case of Mistaken Identity: Aquinas's Fifth Way and Arguments of Intelligent Design', in *New Blackfriars* 95 (2014), pp. 569-578; Corey L. Barnes, 'Natural Final Causality and Providence in Aquinas', *ib.*, pp. 349-361; Marie George, 'What Would Thomas Aquinas Say about Intelligent Design?' in *New Blackfriars* 94 (2013), pp. 676-700; Michael Tkacz, 'Thomistic Reflections on Teleology and Contemporary Biological Research', *ib.*, pp. 654-675; Gerald O'Collins, SJ, 'Cosmological Christology: Arthur Peacocke, John Polkinghorne and Pierre Teilhard de Chardin in Dialogue' in *New Blackfriars* 93 (2012), pp. 516-523.

<sup>51</sup> <https://www.thomsticevolution.org/>

human'; he offers a 'dualistic soul-body anthropology'.<sup>52</sup> Darwin indeed noticed how small mutations accumulate over long periods. If this were evolution's only mechanism it might well imply that the boundaries between species are fuzzy. But it would not well explain the emergence of radically new 'body plans' (as when new phyla evolve) nor, perhaps, the survival of existing species alongside new ones. In fact at least one mechanism does stand to explain such phenomena, and may result in new species emerging 'ready-made'.<sup>53</sup> Other mechanisms of inheritance that do not involve alterations in the DNA sequence are now recognised, such as epigenetics, but whether they have a role in evolution is debated. Philosophical and theological reflection needs to be informed by such discoveries.

The papers in this issue of *New Blackfriars* all accept a Thomist anthropology in which the rational soul is *per se* the form of the body. The human body *has* to belong to a different biological species from non-human bodies, because it is formed by, and sustains, a human soul. Aquinas worked hard to give an account of how the subsistent human soul is *both* directly created by God *and* the unique substantial form of the human being; we, today, have to work at least as hard. But *if* the first human beings were born of pre-human parents, then it is no harder – and no easier – to give an account of the 'infusion' of the human soul into the *conceptus* of each of them, than it is to give an account of the soul's 'infusion' when *any* new human being is conceived.<sup>54</sup>

All the papers in this issue recognise the distinctiveness of human rationality, which correlates with the distinctiveness of human language. As mentioned above, Daniel De Haan points out the need to explore how sub-psychological biological systems support conscious operations. We may therefore ask what physiological features make the truly human body apt to sustain a truly human soul; they almost certainly include what is needed for human language, which includes brain structure as well as larynx.<sup>55</sup> But taxing questions

<sup>52</sup> 'An Evolutionary Adaptation of the Fall' (*New Blackfriars* 95 (2014), pp. 295-307), p. 296.

<sup>53</sup> See Jeffrey H. Schwarz, *Sudden Origins: Fossils, Genes, and the Emergence of Species* (New York: John Wiley & Sons, 1999), Chapters 11 & 12; *id.*, 'What's Real About Human Evolution? Received Wisdom, Assumptions and Scenarios', in *id.*, ed., *Rethinking Human Evolution* (Cambridge, MA: MIT Press, 2018), pp. 61-91, at pp. 73-81.

<sup>54</sup> For Aquinas' account of the soul's creation see *ST*, I, qq. 90 & 118. It is widely held that we need to update him on the moment of the soul's infusion (e.g. Norman M. Ford, *When Did I Begin? Conception of the Human Individual in History, Philosophy and Science* (Cambridge: CUP, 1988); David Albert Jones, *The Soul of the Embryo: An enquiry into the Status of the Human Embryo in the Christian Tradition* (London: Continuum, 2004)). See also the end of Janice Chik Breidenbach's paper in this issue.

<sup>55</sup> Language is a uniquely human behaviour, as is handedness; both are connected with the brain's lateral asymmetry. Brain asymmetry is not uniquely human; however,

arise, because the archaeological record has begun to suggest that a qualitatively different form of cognition emerged roughly 100,000 years ago, significantly later than the appearance of anatomically modern humans.<sup>56</sup> Did a final mutation give rise to a change in brain structure so subtle that it could leave no trace in the fossil record, a change that meant that some individuals were conceived whose body would be apt to sustain a rational soul? Ian Tattersall suggests that the neural structure that made the brain ‘language-ready’, and ‘the highly-derived vocal tract necessary for the expression of modern articulate language’, had already been part of the reorganisation that resulted in the skeleton of *Homo sapiens*, but the *qualitative* shift in ‘cognitive style’ was provoked by some individuals ‘attach[ing] meanings to specific spoken sounds, starting a self-reinforcing feedback in their brains’ – he notes this was something too abrupt to be driven by natural selection.<sup>57</sup> It is difficult to see how this kind of change could be passed on to offspring even by an epigenetic mechanism; the ways in which new-born humans are ‘hard-wired’ for the acquisition of language and relationships indicates that human nature *is* passed on by procreation. But if, at the beginning of the human race, the infusion of the rational soul exactly coincided with the conception of individuals in whom a mutation had led to a subtle change in neural structure making truly human language possible, then human nature, with the appropriate structures, could truly be *inherited* from these individuals.

Clearly the interaction among palaeontology, archaeology, evolutionary theory, philosophy, theology and other disciplines will remain complex, and must address further questions, such as how the ‘fittingness’ of our descent from pre-human species can balance the physical and psychological limitations that result from our evolutionary past.<sup>58</sup>

the precise way it developed in our relatively recent ancestors might have provided a foundation for truly human language (S. A. Skiba and J. P. Tagliatela, ‘Evolution of Laterality and Language in Primates’, in Jon H. Kaas, ed., *Evolution of Nervous Systems*, (2<sup>nd</sup> Ed., Cambridge, MA: Academic Press, 2017), Vol. 4, pp. 301-309). Aquinas saw our relatively large brain (the organ of imagination, cogitation and memory) as suiting a body animated by a rational soul (*QDA*, a. 8; cf. *ST*, I, q. 76, a. 5 c & ad 2). This does not imply that embryos are sub-human: Aquinas saw a truly rational soul as present long before the balance of humours supports the *use* of reason, and as present in people in whom some bodily defect prevents them ever having the use of reason (*ST*, I, q. 101, a. 2; III, q. 68, a. 12).

<sup>56</sup> Ian Tattersall, ‘Brain Size and the Emergence of Modern Human Cognition’, pp. 324-327. The slow development of flaked stone tools among *Homo* species for over a million years continued for 100,000 years among anatomically modern humans before any strong evidence of symbolic behaviour appeared.

<sup>57</sup> ‘Brain Size and the Emergence of Modern Human Cognition’, pp. 327-329.

<sup>58</sup> For Aquinas’ discussion of the limitations that are built into us owing to ‘*necessitas materiae*’, see *ST*, I, q. 76, a. 5 ad 1 & ad 2; I-II, q. 85, a. 6; II-II, q. 164, a. 1 ad 1; *QDA*, a. 8. For a persuasive account of how some ‘drives’ inherited from our pre-human



Aquinas' accounts of the way the human body is well fitted to the human soul despite its inbuilt drawbacks, of animal psychology, of human rationality, of the passions of the soul, of the gifts given to the first human beings, and of Original Sin,<sup>59</sup> can sensitise us to questions to ask, and offer lines of thought towards the answers we seek. Definitive answers to at least some of these questions may not be forthcoming for some time, especially while evolutionary biology continues to develop. However, in our philosophical and theological reflection on human origins we can at least begin to take account of the range of plausible scientific accounts of evolution and human origins.

### Conclusion

All the papers in this issue indicate that the Thomist accounts of body and soul, and of animal and human psychology, encourage us to take on board, without anxiety, modern discoveries in biology (including evolutionary biology) and psychology. These discoveries require us to enlarge on Aquinas' accounts, but he prompts fruitful lines of further research at the interface between science, philosophy and theology – research that will need to be interdisciplinary and cooperative – and can pose to contemporary science searching questions that are both affirming and illuminating. At the same time, science asks us to root our philosophy in the real world in all its strangeness, and to enrich our theology with a more detailed account of the human organism in which God's grace is at work.

To draw an analogy from *The Wizard of Oz*, aspects of contemporary science side with Aquinas to encourage us to move conceptually from a flat, monochrome world of little lumps of stuff interacting mechanically (even if in incredibly complex ways), to a Technicolor world in which we see living things in their vitality, appreciate their various 'ways of being', and recognise the array of powers that flow from their natures and enable them to rise above mere materiality to

ancestors can lead to evil if not controlled by 'higher' considerations, see Mary Midgley, *Wickedness: A Philosophical Essay* (London: Routledge & Kegan Paul, 1984).

<sup>59</sup> Discussion of the theology of original justice and fall is beyond the scope of this article. Lembke's article makes some helpful observations about Aquinas' account, though I would query some details. For a review of recent theology see James P. O'Sullivan, 'Catholics Re-examining Original Sin in light of Evolutionary Science: The State of the Question', *New Blackfriars* 99 (2018), pp. 653-674.

remarkable degrees. To push the analogy, the vibrancy of the ‘film’ can point us towards the God who, so to speak, projects it.

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