

## Human Uniqueness: Standing Alone?

Abstract: Discussion of human uniqueness requires careful attention to what ‘uniqueness’ means. The word is commonly deployed as meaning both distinctiveness and superiority, which implies contrasting relations of continuity and distinction between what is ‘unique’ and what it is contrasted with. Human uniqueness has come into sharp focus in recent years because of discussions of ‘exobiology’: life beyond Earth. Intelligence has frequently been put forward as definitive of human uniqueness, but the ‘convergent evolution’ of intelligence suggests that intelligence would also evolve elsewhere, leaving human beings unique neither as to distinctiveness nor to excellence. However, while evolution might be convergent over basic characteristics such as intelligence, to how the body is structured seems to be more contingent, and we must take the role of the body’s role in thought (‘embodied cognition’) seriously. Basic bodily differences between putative life-forms might, therefore, lead to strong distinctions between the forms that intelligence takes. Human beings might not be ‘unique as superior’, but they would be unique as distinct, bodily speaking, and that distinction might be strongly determinative of the way in which intelligence is worked out.

Keywords: human uniqueness, exobiology, embodied cognition, extended cognition, convergent evolution, theological anthropology

Discussions of human uniqueness need to be clear about what they mean by uniqueness; the word is not without its ambiguities. I will seek for clarity here, first in more abstract, philosophical terms, and then in relation to the particular worked example, of the impact upon our sense of human uniqueness that would be posed by discovery of life elsewhere in the universe. My principal theological source will be Thomas Aquinas (1225-1274).

The principal ambiguity about the word ‘unique’ comes in a contrast between two uses, one roughly synonymous with ‘distinctive’ and the other with ‘superior’. The first, to quote the *Oxford English Dictionary*, means ‘of which there is only one’. For humans to

be unique in this sense would be for them to be different in character from other sorts of things. The second, and later, usage goes further. To be unique in this sense is to be *better*. It adds the sense of ‘standing alone in comparison with others, frequently by reason of superior excellence’.<sup>1</sup>

The first sense is closer to the etymological root in the Latin *ūnicus*, meaning ‘single, sole, alone of its kind’.<sup>2</sup> If the second sense involves a value judgement, the first is flatter and more objective. If the first suggests ‘unparalleled’ as a basic fact, the second implies ‘unparalleled’ as an ascription of praise. I will call the first usage ‘unique-as-distinct’ and the second ‘unique-as-better’.

That the second, ‘unique-as-better’, sense is firmly established in contemporary usage<sup>3</sup> is attested by the adjectival phrase ‘very unique’.<sup>4</sup> Judged according to the earlier (unique-as-distinct) meaning, this construction hardly makes sense.<sup>5</sup> That it springs readily to anyone’s lips or pen demonstrates the extent to which the unique-as-better usage is prevalent, within which ‘very unique’ means something like unique-as-best. We might say, slightly facetiously, that what is often proposed in Christian theology is ‘human *very-unique*ness’: that human beings belong in a different, superior, and indeed incomparable, order from the rest of creation.

### *Uniqueness, Continuity and Discontinuity*

Which sense of uniqueness we mean in ‘human uniqueness’ matters, not least because of their different implications when it comes to the relation of human beings to other creatures. The more recent sense of uniqueness, of ‘standing apart’ as something *better*,

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<sup>1</sup> ‘unique, adj. and n.’, *Oxford English Dictionary Online*. Oxford University Press, March 2015. <http://www.oed.com/view/Entry/214712> (accessed 9.4.2015).

<sup>2</sup> ‘unique’, *OED*.

<sup>3</sup> ‘in very common use’ since the middle of the nineteenth century (‘unique’, *OED*).

<sup>4</sup> The phrase ‘very unique’ is popular with estate agents, as a quick internet search will confirm. The real estate usage goes back at least to the turn of the twentieth century: “‘Toad Hall”, said the Toad proudly, “is an eligible self-contained gentleman’s residence, very unique”” (Kenneth Grahame, *The Wind in the Willows*, London: Methuen and Co, 1908, chapter 6).

<sup>5</sup> ‘The usage [of ‘unique’] in the comparative and superlative, and with adverbs as *absolutely*, *most*, *quite*, *thoroughly*, *totally*, etc., has been objected to as tautological’ (*OED Online*, ‘unique’).

stresses discontinuity. In contrast, and perhaps unexpectedly, an understanding of uniqueness as *distinctiveness* typically encompasses elements of continuity: an apple, in its distinctiveness, is not an orange, but both are kinds of fruit. Unique-as-distinct, in other words, relates closely to the idea of *uniquely* or *unique among*: it singles out respects in which what we are talking about is distinguished from others, with which it nonetheless belongs within the larger class. So, we can say of the number 153 that, *uniquely among numbers* (discounting the number 1), it is equal to the sum of the cubes of its digits. However, while it may be unique in that respect, no implication is made that it is unique in others: it is not unique in being odd, or in being a number. Similarly, in the statement ‘Monotremes<sup>6</sup> are unique among mammals for laying eggs’, uniqueness is explicitly expressed against a background of likeness, since it affirms that monotremes are mammals although, *uniquely among mammals*, they lay eggs.<sup>7</sup>

A parallel way to express these relations of likeness and unlikeness, taken from classical antiquity into the theological language of Christianity, is Aristotle’s vocabulary of genus, species and specific difference.<sup>8</sup> A species, as he defines it, stands in a dual relationship, with both a larger class to which it belongs (the genus) and with other species, from which it differs in one or more respects. ‘Genus’ describes what is common between species, while ‘specific difference’ describes how one species differs from others that are also members of the genus. In our terms, the specific difference is what makes the species unique-as-distinct, within the wider genus.

Philosophers and theologians (in this Aristotelian lineage, and beyond) have singled out rationality as constitutive of human distinctiveness: human beings are rational animals.<sup>9</sup>

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<sup>6</sup> The platypus and spiny anteaters.

<sup>7</sup> Not only does unique-as-distinctive entail continuity as well as discontinuity, it is also non-competitive: the *distinctiveness* of one sort of creature does not preclude, compromise or diminish the distinctiveness of any another. Indeed, the distinctiveness of one entity acts cooperatively with the distinctiveness of another. In being distinctively what it is, it both preserves its own distinctiveness and fails to trespass upon the distinctiveness what it is not.

<sup>8</sup> E.g. *Topics* IV, VI and VII. For a discussion of the variety of presentations of this idea in Aristotle, see Herbert Gerber, ‘Aristotle on Genus and Differentia’ in Lloyd Gerson (ed.), *Aristotle: Critical Assessments* (Abingdon: Routledge, 1999), vol. 1, 256-77.

<sup>9</sup> Aristotle, *On the Soul* III.11; *Nicomachean Ethics* I.13. (Matthew Boyle notes, however, that ‘although Aristotle does think that human beings are essentially rational animals, he does not think “rational animal” exhausts our essence’ – ‘Essentially Rational Animals’ in Günter Abel and James Conant, eds, *Rethinking Epistemology*, Berlin: De Gruyter, 2012, vol. 2, 395-427,

To describe human beings in this way both affirms that they are a kind of animal and that, uniquely among animals, they are rational: there is a unique element (rationality – the ‘specific difference’), but being an animal (the generic likeness) is also part of what it means to be human. Both senses of uniqueness are in play here since a specific difference has to be distinctive, and rationality is the most highly prized of distinctive creaturely attributes. Nonetheless, the second sense of uniqueness does not undo the element of continuity implied by the first.

### *Image and Vestige*

Quite apart from the scientific basis for wanting an account of human uniqueness that acknowledges our kinship with the rest of creation, there are theological reasons for wanting to do so, whether from Biblical studies (starting with the observation that the human being is, like other creatures, an earthling – Genesis 2.7, 19) or from doctrine (since which theologian would want to deny that the fundamental characteristics of creatures in general, such as finitude, dependence, and relationality, are also fundamental to human beings?)<sup>10</sup>

The mediaevals, again, left a useful tradition for thinking about how the ascription of some property in its highest mode to one creature need not cut that creature off from others, nor entirely exclude those other creatures from that property. They did so with respect to the particularly crucial category when it comes to thinking about human uniqueness, that of bearing the image of God.

Taking Aquinas as our primary example, we might note three points in particular. First, that his sense of human uniqueness sits at ease with some degree of continuity with that with which it is being contrasted, rather than denying it. For Aquinas, the divine likeness is uniquely in human beings (among material creatures) in a unique-as-better sense, but this does not exclude others from bearing some sense of that likeness. If human beings

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401.) In Aquinas, e.g. *De Potentia* 8.4 *obj.* 5; *Summa Contra Gentiles* [hereafter *SCG*] 3.39; *De Esse et Essentia* 54. The definition was widely known from Porphyry, *Isagoge*, ch. 2.

<sup>10</sup> Such characteristics are discussed, for instance, by Robert Jenson, *Systematic Theology*, vol. 2, 17-28 (Oxford: Oxford University Press, 1999) and Ian McFarland, *From Nothing: A Theology of Creation* (Louisville: Westminster John Knox, 2014), 59-83.

bear the fullest likeness to God – of them alone will he call this likeness ‘the *image* of God’ – then some lesser form of likeness is also present in all other creatures. For this, he reserves the name *vestigium*: a vestige, trace or footprint of God’s likeness

While in all creatures there is some kind of likeness to God, in the rational creature alone we find a likeness of ‘image’... whereas in other creatures we find a likeness by way of a ‘trace’.<sup>11</sup>

The second point identifies another feature of the ‘unique among’ construction. As well as allowing for a sense of *continuity* with what (in this case) lies ‘beneath it’ (other material creatures), such ‘among’ language also allows for a particular form of disjunction: *not* in terms of a distinction from that which it is *among*, but rather in terms of what this ‘among’ *does not take in*. Aquinas would say that human beings are uniquely in the image of God *among material creatures*, but not if we removed the words in italic, since the angels also bear the image, and in general they bear it more perfectly than human beings.<sup>12</sup> If ‘unique *among*’ language serves to link human beings with other animals, it also separates distinguishes them, in this regard, from angels.

Thirdly, here Aquinas partially subverts the implication that there is a one-dimensional hierarchy to the likeness. While human beings bear the image generally less perfectly than the angels, there are, nonetheless, specific ways in which the image is more perfectly in human beings than in the angels.<sup>13</sup> He goes no further but we might wonder whether this admission ought to be expanded. Once we start to single out various respects in which the likeness of God is more perfectly in one creature than another, we could perhaps speak of the way in which the stone stands apart in the excellence of its solidity, or the eagle in the keenness of its sight.

### *Exobiology*

At this juncture we can turn to a particular practical example, namely to the topic of

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<sup>11</sup> *Summa Theologiae* [hereafter *ST*] I.93.6 *resp* (London: Washburne, 1911). Bonaventure uses this distinction between image and vestige in *Breviloquium* II.12.1.

<sup>12</sup> *ST* I.93.6 *resp*. The category of material creaturehood is clearly in view here, although not mentioned, since angels are said to outstrip human beings elsewhere (*ST* I.93.3).

<sup>13</sup> *ST* I.93.3 *resp*.

‘exobiology’, or life beyond Earth. This has been a matter of long standing, if sporadic, theological speculation. For some commentators, the non-uniqueness of life on Earth has been approached only in terms of possibility (that God could make other ‘worlds’, without any particular consideration as to whether he has),<sup>14</sup> whereas other theologians have suggested not simply that it is possible for God to have populated the universe broadly with life, but that it is also likely.<sup>15</sup>

Until recent decades, such discussion was purely speculative. In 1988, however, the first detection was made of a planet around another star (that has subsequently been confirmed). While life has not been discovered elsewhere in the universe, our sense of its likeliness has been transformed. As of May 2015, 1924 ‘exoplanets’ (planets outside our solar system) are listed on the Extrasolar Planets Encyclopedia.<sup>16</sup> A thorough study of the proportion of stars with orbiting planets is currently being undertaken by the Kepler Space Telescope, but a good estimate is presently that about 20% of Sun-like stars are orbited by at least one Earth-like planet. If around 10% of stars are Sun-like, and if our, a typical galaxy contains 400 billion stars, then the roughly 200 billion galaxies in the observable universe are likely to contain around one and a half thousand billion billion ( $1.6 \times 10^{21}$ ) habitable planets.

The ill-determined factor in any attempt to estimate the extent of life in the universe is the likelihood that life might emerge on any given habitable planet. All the same, from a scientific perspective we can now say not only that the emergence of life is not impossible (we ourselves serve as evidence of that) but also that the seedbeds are profoundly numerous: those perhaps one and half thousand billion billion habitable planets.

If we return to the question as to whether human life is unique, particularly in the sense of ‘standing alone... by reason of superior excellence’, broadly three scenarios can be put

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<sup>14</sup> A pivotal moment in thinking about the place of the Earth was Etienne Tempier’s condemnation in 1277 of 219 propositions, one being the idea that ‘the First Cause cannot make more than one world’ (numbered either 27 or 34). The question of *life* elsewhere was not primarily in view here, but the condemnation certainly shifted the balance of thought about the uniqueness of the Earth.

<sup>15</sup> Examples include Nicholas of Cusa (*On Learned Ignorance* 2.12, completed in 1440), John Wilkins, *A Discovery of a New World* (1684) and John Ray, *The Wisdom of God in the Works of Creation* (1704).

<sup>16</sup> <http://exoplanet.eu/catalog>, accessed 26.5.2015.

forward that would render human life on Earth unique, in this better-or-best sense.<sup>17</sup> The first two are strictly scientific: that life has only emerged once, anywhere, namely on Earth, and that life, however abundant it may be across the heavens, has only achieved intelligence once, again on Earth. A third, strictly theological, possibility would be to insist upon a distinction between forms of intelligence that emerge *naturally* by evolutionary processes and a ‘spiritual awareness’ that is bestowed by God *outside the natural process* and, on this view, has been conferred only upon human beings.

Of these three options, the second seems increasingly unlikely on account of the phenomenon of convergent evolution. This relates to a matter of significant disagreement in recent evolutionary biology. The Stephen Jay Gould was a prominent advocate of a divergent account of evolution, according to which, in his words, if one was to ‘replay the tape’ of evolutionary history in the same setting, we would find that life took a radically different trajectory.<sup>18</sup> Gould’s vision favours contingency while, in contrast, Simon Conway Morris has argued for a convergent understanding of evolution, where such contingency is rendered more marginal.<sup>19</sup> ‘Replay’ that ‘tape’ again and again, and evolution would repeatedly produce features that are recognizable, and even closely parallel to life as we know it today. The evidence for this is that evolutionary processes have arrived at various features several times, independently: intelligence and the camera eye (one with a lens) are the most commonly cited examples.<sup>20</sup>

To a first approximation, we might give Gould the details and Conway Morris the large scale. That a being evolves with ten fingers, or with eyes coloured in one of a certain number of ways, is a matter of contingency. Run the tape of evolution again, here or on another planet, and none of that is set to occur again. But that beings evolve that can

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<sup>17</sup> I am excluding from this discussion the question of how primary and secondary causation are related. That is to say, the question as to how contingent events serve to fulfil the divine will. The theologian may be unhappy to suppose that God, desiring to create life, simply gambled that a universe that was *very likely* to produce it would in fact do so. Indeed, that would be to cast God as a thing among things.

<sup>18</sup> *Wonderful Life: The Burgess Shale and the Nature of History* (London: Norton, 1989), 45-52.

<sup>19</sup> *Life’s Solution: Inevitable Humans in a Lonely Universe* (Cambridge: Cambridge University Press, 2005).

<sup>20</sup> This independence is strongly supported by biochemical analysis, which shows that different genetic and protein precursors have been pressed into service in the various cases. Conway Morris discusses a wide range of convergences in *Life’s Solution*, 147-228.

perceive the world, and interact with it reflectively, seems to constitute a deep groove in the contours of reality, into which life is wont to roll as it explores the evolutionary landscape of possible adaptation.

Convergent evolution, therefore, stands against the middle of the three scenarios, listed above, that would lead to human uniqueness-as-superiority. Although we have evidence that life has evolved only *once* on Earth, some degree of intelligence (that attribute seen as so central to our ‘uniqueness’) seems to have evolved *several times* and *independently*: in apes, corvids and dolphins.<sup>21</sup> The processes of evolution, at least as observed on Earth, appears to show a propensity towards ‘hitting upon’ intelligence, and if life on Earth has followed the path to intelligence several times, it becomes difficult to uphold the assumption that life, if abundantly present throughout the universe, would not also evolve to intelligence elsewhere.

The third, theological, position lies closest to official Roman Catholic teaching, which has embraced a broadly evolutionary perspective on the development of life, but has insisted on a more-and-other-than-natural transition from the non-human to the human.<sup>22</sup> There are resonances here with the ‘Intelligent Design’ movement, at least in the sense that a historical transition in biological development is said to require ‘intervention’ by God, rather than conforming to any scientific explanation. Intelligent Design is rightly, and strongly, criticized by theologians, philosophers and scientists<sup>23</sup> but on this point, concerning intelligence itself and the transition to humanity, even these critics can fail to carry their criticism through. David Bentley Hart, for instance, has recently excoriated a general Intelligent Design interpretation of natural history while, in the same book, taking up the divine intervention position over the emergence of human beings as fully rational creatures:<sup>24</sup> for Hart, there is simply no natural history of rationality that would take us, in

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<sup>21</sup> Corvids include crows, ravens, and magpies. Octopuses are also a candidate for intelligence.

<sup>22</sup> Pius XII, *Humani Generis* (1950), §36. For an Evangelical parallel, see P. P. T. Pun, ‘Evolution’ and H. D. McDonald, ‘Mankind, Doctrine of’ in Walter A. Elwell (ed.), *Evangelical Dictionary of Theology* (Grand Rapids: Baker, 1984), 415-422, 416 and 730-34, 730.

<sup>23</sup> ‘We believe that intelligent design is neither sound science nor good theology’ (International Society for Science and Religion Joint Statement on ‘The Concept of “Intelligent Design”’ – <http://www.issr.org.uk/issr-statements/the-concept-of-intelligent-design>, accessed 11.4.2015).

<sup>24</sup> *The Experience of God: Being, Consciousness, Bliss* (New Haven: Yale University Press, 2013), 37-9.



biological terms, from an ape to a human being.<sup>25</sup>

*Uniqueness and Contingency in Bodily Forms of Life*

Assuming, however, that theology expects that a fully scientific story can be told about the emergence of intelligent life – that this belongs to general rather than special providence – then the proposal that life has emerged only once, or that it has reached intelligence only once, may be difficult to uphold and, with it, the assumption that human beings are unique in this way. Life elsewhere would no doubt look profoundly different, but when it comes to some of the facets that matter most to theologians, such as perception and intelligence, science suggests that evolution converges upon them.

We have less and less reason, then, to suppose that human life is unique-as-better: that it outranks every other form of life ‘by reason of superior excellence’, by means of a perceiving intelligence. Indeed, on this front, we have reason to suppose that human beings are not particularly distinctive (the other form of uniqueness) on the galactic stage. However, at this very juncture, the point just made in passing, about how this perceiving rationality is embodied (and the evolutionary divergence of that embodiment), becomes important, perhaps crucially so: uniqueness is preserved, after all, in the seemingly contingent detail.

Philosophically, we might turn to Ludwig Wittgenstein,<sup>26</sup> whose later work argued for the embeddedness of language and meaning in embodied and shared practices: ‘to imagine a language means to imagine a form of life’,<sup>27</sup> he wrote, as also that ‘words have meaning only in the stream of life’.<sup>28</sup> For Wittgenstein, by no means unusually among

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<sup>25</sup> *Experience of God*, 183.

<sup>26</sup> A parallel approach to this embodied perspective could be made through the work of Maurice Merleau-Ponty, e.g. *Phenomenology of Perception* (London: Routledge, 2002), xi–xii. See J. Wentzel van Huyssteen, *Alone in the World?: Human Uniqueness in Science and Theology* (Grand Rapids: Eerdmans, 2006), 276–7.

<sup>27</sup> ‘Und eine Sprache vorstellen heißt, sich eine Lebensform vorstellen’ (*Philosophical Investigations*, §19, German from bilingual edition, trans. G. E. M. Anscombe, Oxford: Blackwell, 2001).

<sup>28</sup> Ludwig Wittgenstein, *Remarks on the Philosophy of Psychology*, trans. G. E. M. Anscombe, C. G. Luckhardt and M. A. E. Aue (Oxford: Blackwell, 1980), vol. 2, 687. Quoted in Kerr, *Theology*

philosophers, language is central to human rationality, and if language is embedded in the ‘forms’ and ‘stream’ of life, then the contingent details of those forms, and of that stream, will matter for the shape of our rationality.<sup>29</sup>

Scientifically, the observation that this is so has flowered as the field of ‘embodied cognition’, whose exponents have argued, and increasingly demonstrated, that thought is not primarily abstract. Rather, it is constitutively bodily. As Mark Johnson has written, a pioneer in this field, the sense we make of the world is framed in bodily terms, growing out of our bodily experiences and rooted in the bodiliness of the ‘pre-conceptual structures of our sensibility (i.e., our mode of perception, or [of] orienting ourselves and of interacting with other objects, events, or persons).’<sup>30</sup> Indeed, the attempt establish an abstracted ‘computer cognition’ served to demonstrate the extent to which any seemingly abstract human ‘knowing about’ is not disconnected from the body, but operates rather on the basis of a vast web of ‘knowing how’, grounded in experience and interaction with the world.<sup>31</sup>

As J. Wentzl van Huyssteen has commented, writing in a theological vein, ‘we human beings are, first of all, embodied beings, and as such what we do, think, and feel is conditioned by the materiality of our embodiment.’<sup>32</sup> The recurrent motif in this literature is that thought is shaped by the body and its situation in two principal ways: it is ‘embedded in a more encompassing biological, psychological, and cultural context’<sup>33</sup> through *perception* and through *physical action*. Indeed, perception and action are often

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*After Wittgenstein* (London: SPCK, 1997), 134. See also Ludwig Wittgenstein, *Culture and Value*, trans. Peter Winch (Oxford: Blackwell, 1980), 85.

<sup>29</sup> The relation of exobiological cognition to its ‘lifeworld’ is discussed by Mathias Osvath in ‘Astrocognition: A Cognitive Zoology Approach to Potential Universal Principles of Intelligence’ in David Dunér *et al.* (eds), *The History and Philosophy of Astrobiology: Perspectives on Extraterrestrial Life and the Human Mind* (Newcastle: Cambridge Scholars Publishing, 2013, 49-66), with brief discussions in relation to language and signs, respectively, in this volume, from Arthur Holmer, ‘Greetings Earthlings! On Possible Features of Exolanguage’, 157-84 and Göran Sonesson ‘Preparations for Discussing Constructivism with a Martin (the Second Coming)’, 185-200.

<sup>30</sup> Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning Imagination and Reason* (Chicago: University of Chicago Press, 1987), 14.

<sup>31</sup> Francesco Varela, Evan Thompson and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: MIT Press, 1991), 148.

<sup>32</sup> *Alone in the World?*, 312.

<sup>33</sup> Varela, Thompson and Rosch, *Embodied Mind*, 173.

spoken about together, as ‘sensorimotor capacities’, since they ‘are fundamentally inseparable in lived cognition.’<sup>34</sup>

By the end of the 1990s, the idea of embodied cognition had been extended to include ‘extended cognition’: the recognition that human beings have thought and reasoned with and through the means of pen and paper, slide rules and computers, epistolary exchanges and board meetings.<sup>35</sup> The social forms in which we live have themselves shaped our cognitive skills, and vice versa. Not only, then, does the distinct character of our bodiliness bear upon our perceptions and thoughts (as embodied cognition suggests), but so does the physical character of the world around us, and the ways in which we can interact with it. The story of learning to think plays out in terms of interactions with the world, whether that is the story of an individual or of the species.<sup>36</sup>

Returning to uniqueness, Conway Morris’s magisterial survey has made a cast iron argument for evolutionary convergence, furnished with a wealth of examples that take in faculties (such as sight, hearing, intelligence and grasp), behaviour (including agriculture and forms of societies) and molecular solutions for performing certain tasks. Keeping intelligence in focus, however, the considerations of embodied and extended cognition remind us of the significance that the degree of divergence in bodily form we would likely find among putative intelligent creatures across the universe would mean for cognition and perception. Very different bodily forms would suggest very different forms of embodied cognition.<sup>37</sup> Uniqueness, at least as distinctiveness, might be profound after all.

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<sup>34</sup> Varela, Thompson and Rosch, *Embodied Mind*, 173.

<sup>35</sup> The pivotal publication here was Andy Clark and David Chalmers, ‘The Extended Mind’, *Analysis* 58.1, 1998, 7-19. On the relation between social forms and cognitive skills, see F. Warneken and M. Tomasello, ‘Cognition for Culture’, in P. Robbins & M. Aydede (eds), *The Cambridge Handbook of Situated Cognition* (Cambridge: Cambridge University Press, 2009), 467-479, 467. On the embodied basis for language, see Rolf Zwaan and Michael Kashak, ‘Language in the Brain, Body, and World’ in this volume, 368-281, especially 317. On the necessity of language for extended cognition, see Clark and Chalmers, ‘Extended Mind’, 18.

<sup>36</sup> Clark and Chalmers, ‘Extended Mind’, 11-12.

<sup>37</sup> We might, however, ask whether convergence on Earth rests on evolution having contingently set off on a particular track at an early stage (to which fundamental lineage all the convergent forms belong), whether these convergences depend upon the specificities of Earth’s environment, and whether bodily structure in general is strongly under the influence of convergence. On this last question, Conway Morris points to some evidence of convergence on bipedalism (*Life’s Solution*, 269-70).

In summary, in a universe that exhibits convergent evolution, human uniqueness in the sense of ‘standing alone in comparison with others, frequently by reason of superior excellence’ is increasingly difficult to entertain. However, the older sense, of unique-as-distinctive may yet remain highly significant, and in particular concerning the physical forms which putative exobiology might take. Such life forms might be very different from each other, bodily and culturally speaking. Unless evolution were to be convergent to a spectacular degree, even down to physical structure, then even if humanity is not unique in possessing those elements we associate with the image of God, nonetheless, divergence in the *manner in which* that is worked out physically would lend a colouration to those properties which – in view of the proposals of embodied and extended cognition – would render us, and any form of intelligent life elsewhere, unique all the same: a thing apart in these important aspects, even if bound together in commonality across the cosmos in other respects, as a developed account of uniqueness allows.