PRIMATES, HOMINIDS, AND HUMANS—FROM SPECIES SPECIFICITY TO HUMAN UNIQUENESS? A RESPONSE TO BARBARA J. KING, GREGORY R. PETERSON, WESLEY J. WILDMAN, AND NANCY R. HOWELL

by J. Wentzel van Huyssteen

Abstract. In this response to essays by Barbara J. King, Gregory R. Peterson, Wesley J. Wildman, and Nancy R. Howell, I present arguments to counter some of the exciting and challenging questions from my colleagues. I take the opportunity to restate my argument for an interdisciplinary public theology, and by further developing the notion of transversality I argue for the specificity of the emerging theological dialogue with paleoanthropology and primatology. By arguing for a hermeneutics of the body, I respond to criticism of my notion of *human uniqueness* and argue for strong evolutionary continuities, as well as significant discontinuities, between primates, humans, and other hominids. In addition, I answer critical questions about theological methodology and argue how the notion of human uniqueness, theologically restated as the image of God, is enriched by transversally appropriating scientific notions of species specificity and embodied personhood.

Keywords: bipedalism; doctrinal abstractions; embodiment; evolution of sexuality; hermeneutics of the body; *imago Dei*; interdisciplinarity; paleoanthropology; primatology; proto-morality; relationality; religious propensities; spirituality; transversality

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I want first of all to thank the editors of *Zygon* for their willingness to publish a series of excellent papers, by an outstanding group of scholars, read at the American Academy of Religion's Science and Religion Section November 20, 2006, in Washington, D.C., on my book *Alone in the World? Human Uniqueness in Science and Theology* (2006). I am honored that the

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editors have dedicated so much space to a discussion of my book and am especially grateful for the opportunity to respond to my colleagues' challenging papers in this special forum. I respond to each of the essays in the order of their appearance in this volume.

Response to Barbara J. King

I am delighted that Barbara King, as a scientist, would take my book so seriously and respond so positively to my call for opening up the theology-paleoanthropology dialogue. Not only that, in claiming her own "situated place" in this conversation, namely, that of the discipline of biological anthropology, she evidently proceeds from a shared interdisciplinary methodology that I, following various philosophers and scientists, have tried to both pursue and develop further.

Dr. King is well known for her remarkable research on the communication and cognition of African apes and how it might illumine the prehistory of human religious imagination. In my response to her paper I argue that not only in the evolutionary history of primates but also in the history of hominid evolution we find a surprising answer to this vexing question. We are indeed closer to each other's positions than some of her critical interpretation of central themes from my book might suggest.

To this end, I track some contemporary proposals on the evolution of two crucially important aspects of human personhood that were of great significance for Charles Darwin: the evolution of sexuality and the evolution of morality. I contend that the evolution of sexuality and morality illustrates well my own position on the issue of the continuity/discontinuity between humans, hominids, and primates and that it indirectly allows us to infer important traits about the evolution of religious imagination. I also assert, first, that very early in the history of the emergence of the most distinctive aspects of what we would now call embodied personhood, *bipedalism* (exactly in the way that King argues) played a crucial role by definitively shaping the evolution of human sexuality, proto-morality, and cognition; and, second, that precisely through the evolution of our embodied minds, the evolution of our linguistic, aesthetic, moral, and religious dispositions is also firmly embedded in our human bodies. It is in the *embodied* self that we will find the key not only for overcoming the challenge to an integrated self but also for rediscovering how, ever since prehistoric times, religious behavior has been a definitive part of human behavior. A focus on the embodied self also enables a responsible and more nuanced way of talking about continuities and discontinuities between humans and primates.

It is precisely in developing a "hermeneutics of the body" that we could find, I believe, an important key for evaluating the continuities and discontinuities between primates, hominids, and humans. Some of the very

best examples of the kind of embodied relationality that is so crucially important for King are found also in Maxine Sheets-Johnstone's marvelous work on the evolution of sexuality as well as in Frans de Waal's important contributions to the evolution of morality. By lifting up the important contributions of these two scholars and their creative influence on my own recent work, I hope to answer King's most important concerns about my proposal for continuing to employ language of "human uniqueness." I am especially concerned that I may have created the impression that I dualistically divide biology and culture or that I may have inadvertently defined the species specificity of *Homo sapiens* in exclusive, elitist terms.

In her fascinating study on hominid and human behavior, *The Roots of Thinking*, Sheets-Johnstone goes to the evolutionary roots of human cognition, human relationality, and language and communication by developing what she has called a "hermeneutics of the human body" (1990, 334ff.). Throughout this important book her emphasis falls on the role of the human body in understanding meaning and mind. In so doing she endorses the Darwinian view that *Homo sapiens* emerged continuously with other forms of animal life and correctly views our differences with other animals as matters of degree and not of kind. The fundamental theme advocated in her work, however, is the existence of a biological disposition to use one's own body as a semantic template for the way we communicate with others. Sheets-Johnstone wants to go further, however, and "get back" to our hominid roots through the evolutionary continuum of the tactile-kinesthetic body (1990, 280).

Sheets-Johnstone plausibly argues that there exists a reciprocal relationship between hominid thinking and hominid evolution, an understanding that comes through corporeal analyses of the hominid animate form (the species-specific body) and tactile-kinesthetic body (the sentiently felt body). Her thesis is that human thinking is modeled on the body, and it is precisely the sensorially felt and sensorially feeling body that serves as the cognitive source of those human concepts that shaped human thinking and evolution, thus functioning as a "semantic template" (1990, 5ff.). She contends that the conceptual lifeworld of ancestral hominids can be accessed through a hermeneutical methodology that is complementary to traditional paleoanthropological methodologies (p. 9). In this way she wants to construct a methodological bridge to full-scale hermeneutical analyses that "take full account of the living body" (p. 12). In this hermeneutics of the body, and in discerning how the body has functioned as a semantic template all through hominid history, Sheets-Johnstone, like King, finds the crucial and defining moment of this deep evolutionary history in hominid bipedality and thus in rethinking the remarkable implications for cognition and communication of upright posture. King makes the important point that bipedalism, in terms of emotions, rationality, and the evolution of empathy, led to a cascade of changes for hominids and later humans

(King 2008, 458). Sheets-Johnstone adds the convincing argument that the impact of hominid bipedality has been consistently overlooked in assessments of the evolutionary impact of upright posture and walking on two legs: Bipedalism also resulted in significant changes in bodily appearance. Male sexual characteristics relatively hidden in quadrupedal primates were now visibly exposed in bipedal ones, while female characteristics normally visible in quadrupedal primates become relatively hidden in bipedal ones. The phenomenon of sexual signaling in primates and early hominids in particular requires new analysis if we want to understand better the evolution of relationality and proto-linguistic communication (1990, 91). Early hominid sexual signaling behavior furthermore needs to be situated within the wider context of hominid communication.

Sheets-Johnstone argues that bipedal penile display in hominid males is exemplary of a fundamental biological matrix, a corporeal representation, and is thus on a semantic continuum with primordial language (1990, 91). Because of the increased visibility of male sexual characteristics in hominid evolution, reconstructions of early hominid sexuality cannot be conclusively or exclusively anchored in analogies to nonhuman primate sexuality. In the move from quadrupedal to bipedal movement there occurred a decisive shift in spatiokinetic possibilities. It is in this sense that bipedality, as a "prime diagnostic feature of hominids," allowed for "direct and continuous male sexual signaling" and also allows for the female monitoring of male sexual readiness (p. 93), thus demonstrating the centrality of bodily male display in relational, interhominid communication. This connection between hominid bipedality and penile erection, thereby connecting on a semantic continuum sexual display with primordial language, forms the heart of Sheets-Johnstone's argument. Erection and expansion are the means whereby the displaying animal calls attention *to itself,* which has direct and significant implications for bipedality as a consistent, even persistent, exposure of the penis (pp. 98ff.). Thus, "standing up both in part and in whole—double erection—has increased signaling power and is ultimately of increased selective advantage" particularly due to the importance of "apparent size" (of plumage or penis) in mating rituals (p. 100). In this way Sheets-Johnstone argues that not only is bipedality the prime diagnostic feature of hominids but that it should not be tied only to the advantages and efficiency of transporting food, tools, or infants from one place to another, or better visual range. Most important, and seriously neglected in paleoanthropological literature, bipedality as a form of display behavior should be tied to relational communication and sexual selection as an enhancement of the body itself (p. 92).

Against this background, Sheets-Johnstone argues that contemporary answers to the origins of language fall short as they continue to ignore the reality that "no language can be spoken for which the body is unprepared—and its consequence: to understand the origin and evolution of a language

is to understand a sensory-kinetic lifeworld" (p. 135). In her proposal for a sensory-kinetic model of the origin of language, Sheets-Johnstone thus claims that the root of language is to be found in the "literal understanding of the tongue as lingual organ, that is, as the locus of sensory-kinetic lingual powers" (p. 158). Clearly following Darwin, she proposes that there is evidence that human mental powers exist on a continuum with nonhuman mental powers and in this way represent an evolutionary consistency that is at odds with any form of Cartesian dualism (p. 306). For Sheets-Johnstone, it is precisely the integrity of the body (and I would add: the primate, the hominid, and human body) that is sustained in this Darwinian view (p. 311).

Convergent with Sheets-Johnstone's argument for a hermeneutics of the body, we find primatologist de Waal's argument that the roots of human morality can be clearly discerned in social animals like apes and monkeys. De Waal has made exactly the argument that we find at the heart of King's response to my book—that primates' relational feelings of empathy and their expectations of reciprocity are essential behaviors for mammalian group living and, from an evolutionary viewpoint, can be regarded as the building blocks of human morality. Behind this argument is the reality that all social animals have had to constrain or alter their behavior in various ways for group living to be worthwhile. Exactly these constraints, evident in monkeys and even more so in chimpanzees and bonobos, are part of the human inheritance, too, and in de Waal's view they form the sets of behavior from which human morality has been shaped (Wade 2006, 1). Importantly, de Waal is not asking us to think of animals as moral beings, and he does not claim that even chimpanzees possess morality. He does assert that human morality would be impossible without certain proto-moral emotional building blocks that clearly are at work in chimpanzee and monkey societies.

For his notion of proto-morality de Waal points especially to the presence of consolation and empathy in primates and humans. Social living requires empathy, which is especially evident in bonobos and chimpanzees, and ways of bringing hostilities to an end. De Waal has found that every species of monkey has its own protocol for reconciliation after fights and believes these actions are undertaken for the greater good of the community. As such they are a significant precursor of morality in human societies. Primates also have a sense of reciprocity and fairness. For de Waal, four kinds of behavior could be seen as the basis of sociality: (1) empathy; (2) the ability to learn and follow social rules; (3) reciprocity; and (4) peacemaking. Human morality in this sense has grown out of primate sociality, but with two extra levels of sophistication: humans (5) enforce their society's moral codes much more rigorously with rewards, punishment, and reputation building and (6) apply a degree of judgment and reason for which there are no parallels in animals (see also Wade 2006, 2f.).

In arguing that human morality grows out of the social instincts we share with bonobos, chimpanzees, and apes, de Waal also criticizes what he calls the "veneer theory," which holds that human ethics is simply an overlay of our selfish and brutish nature. De Waal draws on his own extensive work with primates to illustrate the evolutionary origins of morality. In this sense, for humans as well as for the great apes, morality is not a veneer masking self-interest. It is intrinsic to our embodied natures that the evolutionary outcome of altruism is conducive to species survival, and thus to understand not only that human nature is amoral, selfish, and savage but that humans are also moral by nature. Therefore, not just sympathy and empathy but also right and wrong are feelings that we share with other animals. Even our feelings for ethics and justice are part of nature. On this truly complete embodied view, goodness, generosity, and genuine kindness come just as naturally to us as do meaner, aggressive feelings.

From a primatological viewpoint, then, de Waal has argued that in the slow process of evolution by natural selection structures are transformed, modified, co-opted for other functions, or tweaked in another direction—precisely what Darwin meant by "descent with modification" (see de Waal 2006, 21f.). De Waal now argues that the same is true for biological traits: The old always remains present in the new. Exactly this point is important for the debate about the origins of empathy. Although human cognitive, aesthetic, and moral capacities have reached "dizzying heights," it remains true that, both developmentally and evolutionarily, advanced forms of empathy are preceded by and grow out of more elementary ones (2006, 23).

With this, a popular origins story is turned on its head. Instead of language and culture appearing with a Big Bang in our own species, and then transforming the way we relate to each other, Stanley I. Greenspan and Stuart C. Shanker (2004) propose that it is from early relational, emotional connections and "proto-conversations" between mother and child that language and culture sprang. On this view empathetic understanding acquires a fundamental role in the evolution of human communication and interpersonal discernment. By implication de Waal is arguing here that in the end culture and language would, in a top-down sense, shape embodied expressions of empathy (2006, 24). Crucial to this argument is the distinction between *being the origin of* and *shaping*, and what de Waal wants to say ultimately is that empathy is the original, prelinguistic form of inter-individual linkage that only secondarily has come under the influence of language and culture.

Through this brief reference to the contributions of scientists Sheets-Johnstone and de Waal I hope to have shown how I would proceed to answer King's central question, "In what ways do other animals share with humans those qualities of being and relating that we tend to think of as uniquely human?" (King 2008, 452). Precisely through the evolution of

human sexuality and human morality, the building blocks of which we share with bonobos and chimpanzees, something more meaningful can be grasped about continuities and discontinuities between humans and our closest relatives among the living apes and extinct hominids (King 2008, 452). To this can certainly be added King's central concern: "Did the human religious imagination itself evolve gradually, or did it emerge full-blown to set *Homo sapiens* completely apart from all other species, living and extinct?" (p. 453) As in the case of sexuality and morality, I believe this deserves a both-and answer: If we share with animals of a certain kind the presence and pleasure of sexuality and the precursors for morality, there is no reason to believe that in primates and hominids the precursors for a religious propensity would not also be present to an important extent. But as with sexuality, proto-morality, and proto-language, each of these traits or characteristics, including proto-spirituality, could in humans be understood only as a new, emergent consequence of the symbolic transformation of cognition and emotions that gives us sexuality, morality, language, aesthetics, and spirituality in their very typical human forms (see van Huyssteen 2006, xvii).

I am hoping that this will clarify my statement that human cognition can be seen as an integrative "mediator between biology and culture" (van Huyssteen 2006, 49). I never meant to dichotomize biology and culture and with Darwin deeply believe in the embeddedness of culture in biology. We reach out toward our biological, evolutionary past as represented for us today in hominid and primate histories, but it is also clearly true that the full-blown evolution of human cognition and the emergence of mind directly led to the symbolic transformation of cognition, emotions, sexual pleasure, aesthetic perceptions, morality, and religion in ways that we do not find in our closest sister species. Surely this is what Darwin meant when he faced this problem and declared that the difference between us and our sister species is a difference in degree, not a difference in kind (Darwin 1981, 33, 49, 104). And I affirm with King (2008, 454) the very richness of this evolutionary perspective, a richness that insists our origins were at once biological and cultural. King is exactly correct on this point. Religiousness, or the religious imagination, is unique to our own species, but it grew out of very deep roots. Furthermore, the human imagination is not *determined* by these roots but certainly is *enabled* by them (King 2008, 454). I share King's hesitation of too easily reading "religious awe" off chimpanzee behavior, as Jane Goodall has argued, and finding too direct a continuity between ape behavior and human spirituality (King 2008, 455f.). However, I completely agree with King that we cannot fully understand our own religious disposition today without understanding its deepest roots in prehistory. In fact, from a more philosophical point of view, this is exactly what I wanted to argue in my second, third, and fourth chapters.

Finally, I am hoping that my strong focus on continuity/discontinuity in principle would never point away from early *Homo sapiens* sites in Africa, much in the same way that I would never want to point away from the possibility of Neanderthal proto-symbolism (King 2008, 460). What I stressed in both of these cases, and could have made clearer, is the piecemeal, inconclusive nature of what we can know today about these very ancient forms of proto-spirituality. Exactly this challenging aspect is what makes King's current scientific work so important for us today.

Response to Gregory R. Peterson

I find my work very well understood in Greg Peterson's nuanced overview of the central theme and various arguments in my book. He gives a careful overview of my postfoundationalist methodology and the central heuristic role that transversality plays in this interdisciplinary approach. He also correctly lifts up the role of context and tradition in my central theological and paleoanthropological arguments, and for its role in making an interdisciplinary argument about the species specificity or uniqueness/distinctiveness of *Homo sapiens*. I do see important differences between the natural, human, and social sciences, and theology and philosophy, and I do believe that disciplines are characterized by thematic canons that create "galaxies of meaning" as we move forward in interdisciplinary discourse to create a wide but fragile reflective equilibrium of agreement.

Peterson also voices important concerns and critical questions, and I welcome the opportunity to address some of them here. The first is addressed to methodology, where he finds my notion of *transversality* to imply a high level of disciplinary fragmentation, a level that is largely assumed. This is an unfortunate misunderstanding. First, I do not believe I ever used the word *fragmentation* in distinguishing between the distinct and very different epistemic natures of different disciplines. I always tried to point to the all-important role of disciplinary integrity in the interdisciplinary science-and-theology dialogue. The concept of transversality I take to function as a crucial part of our rational activity, broadly conceived, and rationality itself as a skill that enables us to gather and bind together the patterns of our interpreted experience through rhetoric, articulation, and discernment. It is on exactly this point that the important postfoundationalist notion of *transversal reasoning* replaces modernist, static notions of universality in a distinct move to see human reason as dynamic and practical in the way we use it to communicate with one another and between widely diverse disciplines. In my earlier book, *The Shaping of Rationality*, I argued for the "transversal performance" of rationality precisely when referring to this dynamic and multileveled interaction of our discourses with one another (van Huyssteen 1999, 135–39, 247–50). The notion of transversality thus emerges as a heuristic device, a way to describe what actually

happens in the performative praxis of our interdisciplinary reasoning. As such it is helpful for highlighting the human dynamics of consciousness that enables us to move between domains of intelligence with a high degree of cognitive fluidity, and as such it is at the heart of my notion of interdisciplinary reflection.

In rethinking interdisciplinary discourse as a form of transversal reasoning, human reasoning emerges as a practical skill that enables us to gather and bind together the patterns of our daily experiences and make sense of them through communal, interactive dialogue. This reveals much about the nature of interdisciplinarity itself as we learn that the dialogue between the partners of different discourses, like theology and the sciences, are almost always asymmetrical in the sense of focusing on radically different objects of study and using different explanatory and interpretative strategies. As a result, interdisciplinary dialogue has its own set of strengths and weaknesses, possibilities and limitations. Against this background I have argued that a multidisciplinary conversation can lead to true interdisciplinary results if postfoundationalist criteria are mutually honored.

Instead of seeing different disciplines as examples of the fragmentation of knowledge, I argue that in the conversation between theology and the sciences the boundaries between disciplines and reasoning strategies are indeed porous, but that does not mean that deep theological convictions can be easily or uncritically transferred to philosophy, or to science, to function there as "data" in foreign systems. In the same manner, transversal reasoning does not mean that scientific data, paradigms, or worldviews can be uncritically transported across disciplinary boundaries to set the agenda, as it were, for theological reasoning. Transversal reasoning means that we also have to be alert to *degrees* of transversality and that different theological approaches could have different degrees of success in interdisciplinary dialogue. Most important, though, theology and the sciences can share concerns, can indeed converge in their methodological approaches on specifically identified problems. But precisely by also recognizing the limitations of interdisciplinarity, the disciplinary integrity of theology, and that of the sciences, will be honored.

Second, I stand by my qualified endorsement of important forms of evolutionary epistemology (Peterson 2008, 467f.). I very much endorse the truth of evolutionary theory and its impact on human cognition and certainly do not see it as only one option among many others. In this sense evolutionary theory presents a point of no return in the life sciences. However, I fail to see how endorsing the truth of the theory of evolution can be "transparently foundationalist" (Peterson 2008, 469) in any meaningful philosophical sense of the word. All evolutionary epistemologists would agree that the theory of evolution in essence is a theory of knowledge precisely because the process of evolution is the principal provider of the organization of all living things and their adaptations. Evolution thus turns out

to be about much more than the "origin of species"; it is a much richer process that has shaped the way our minds work and how we know the world. Evolutionary epistemology highlights both the deeply embodied and the fallibilist nature of all human knowledge. There are advances and growth in human knowledge, but this "progress" is not necessarily an increase in the accuracy of depiction or in the certainty of what we know. This view is strengthened by the conviction, as I argued in my response to King, that human cognition exemplifies the continuities and discontinuities between humans, other hominids, and primates and as such is an interactive bridge between biology and culture, between biological evolution and cultural evolution. In addition, I believe a postfoundationalist approach provides a well-reasoned position for the evolutionary basis of human cognition.

Peterson also worries whether the kind of embodiment that evolutionary epistemologists speak of, one primarily informed by the sciences, is the same as my own notion of embodiment, which is informed by philosophical and theological notions of understanding. This is an excellent example of exactly what I mean when I argue for the interdisciplinary results that we may achieve transversally by a multidisciplinary approach. Moreover, I want to leave behind Peterson's implied dichotomy between explanation and understanding, epistemology and hermeneutics, and argue for a postfoundationalist fusion of hermeneutics and epistemology. In fact, it is precisely in evolutionary epistemology that the deeply hermeneutical dimension of all our knowledge is revealed. The interactionist nature of all human knowledge, because of its deep biological history, there emerges as a deeply embodied knowledge. Through our language abilities we have created cultures and a vast body of knowledge, and these can be seen as evolutionary artifacts that enable us to benefit from the trials and errors of our ancestors. Or, as some evolutionary epistemologists would put it, with the arrival of *Homo sapiens* human evolution became the evolution of this embodied knowledge. On this more embodied, holistic view of human knowledge, not only are narrowly conceived notions of reason or rationality transcended, but human consciousness itself becomes more richly redefined in terms of feelings, emotions, instinct, and intelligence. Thus, one of evolutionary epistemology's most valuable contributions to notions of biological and cultural evolution becomes clear: Once embodied intelligence evolved in our species, our self-conscious brains achieved a causal force equal to that of our genes.

This is the point I argued in my response to King by pointing to Sheets-Johnstone's version of a hermeneutics of the body. Such a hermeneutics reveals in hominid sexual evolution a classical Darwinian "descent with modification" and the human body as a semantic template and precursor for the evolution of human cognition, imagination, moral awareness, and language. It is also exactly this dimension of embodiment that I, toward

the end of my book, tried to integrate into a more complex, richer, Christian notion of the "image of God." And yes, in this sense we are embodied spiritual beings (Peterson 2008, 473).

Peterson faults me for not talking enough about God and divine action and for not being transversal enough by not including multiple other sciences that would be important for the discussion of human uniqueness. As to the latter, I am afraid there is only so much that one can do in a single book that already is in extensive interdisciplinary conversation with paleoanthropology and archaeology (the explicit focus of my book) but also with contemporary trends in neuroscience, linguistics, social science, and philosophy. This was also not the book to deal extensively with notions of God or divine action, but Peterson correctly senses my commitment to the category of mystery and to a form of apophatic theology. I am somewhat surprised that he could not infer from my final interdisciplinary results that I am not proposing any naturalistic account of human evolution, and thus a deistic understanding of God, but a commitment to a deeper theological judgment of directionality at play in our own evolution, and of God creating through the process of evolution.

Finally, regarding the notion of the image of God, I did indeed argue strongly against overly abstract trinitarian notions of the *imago Dei*. Peterson, however, finds my conclusions fairly conservative as exemplifying the old Protestant principle of *sola scriptura* (Peterson 2008, 471). This is an important misreading, however, as *sola scriptura* for me works only as a literary principle and not so much as a theological one. I am not saying that the earlier Hebrew understandings of the "doctrine" should take precedence over later theological interpretations. I am saying that the Hebrew understanding of the notion (not doctrine) of the image of God should be interpreted against the background of its Ancient Near Eastern context, that is, the immediate Babylonian and Akkadian influences at work in the ancient cosmologies of the time. These "royal readings" of the text take precedence over any atextual, abstract reading of it, but only within the context of the various *imago Dei* texts in Genesis—which points far beyond this to broader issues of moral awareness (Genesis 3:22). It was exactly this connection that enabled me to develop, in the final chapter of my book, the notion of *Homo sapiens* as moral human beings.

For me this shows how easy it would be to miss in the notion of the *imago Dei* the powerful thrust it should have toward justice, racism, human rights, and especially issues of sexism and heterosexism, which was the point of my final chapter. In my brief historical overview of the history of the idea of the image of God, I argued that already in Calvin's work there was a strong suggestion that the image of God has important ethical implications and as such directly requires human justice and mercy. For a number of theologians "human uniqueness" is powerfully exemplified by the fact that we image God concretely in our love for others and for the

world for which we are responsible. This crucial idea was developed further where, instead of the traditional picture of the *imago Dei* as a mirror reflecting God, this canonical notion emerged as a prism refracting God's presence through a multitude of sociocultural responsibilities and activities. On this view the *imago Dei* correctly implies an ethic of interhuman relationships and ecological practice, an idea powerfully resonating with the argument for the radical ethical dimension of all interdisciplinary work in theology and science. I pointed out that ultimately ethics should be rooted in the liberating character of the *imago Dei* and that an ethics of care implies care for, and solidarity with, the marginalized at a fundamental, interdisciplinary level. Thus conceived, the *imago Dei* points to reconciliation, justice, and liberation and strikingly reveals the issue of human rights to be at the very heart of any discussion of the *imago Dei*.

Response to Wesley J. Wildman

Wesley Wildman correctly sees that my book is first of all about taking science (in this case paleoanthropology) seriously but that I also often write against scientific reductionism, which, along with all forms of religious and theological imperialism, should be seen as an intellectual form of parochial arrogance. My choice has been for dialogue and interdisciplinary reflection as keys to heightened awareness of the world, respect for others, understanding of oneself, and social justice. Furthermore, in developing my own postfoundationalist approach to interdisciplinary theology, my methodology is indeed about highlighting disciplinary integrity through limited disciplinary autonomy while at the same time pursuing a public theology by means of transversal insights that cut across disciplinary boundaries to facilitate optimal forms of multidisciplinary understanding. Wildman supports my idea that the theme of human uniqueness is not only a vital topic but also a classic example of the kind of interdisciplinary problem that is shared by Christian theology and science.

Wildman recognizes that the central theoretical framework for my interpretation of human uniqueness is the bodily character of human life and that therefore our ability to respond to the world religiously completely depends on the symbolic, imaginative, cognitively fluid aspects of our embodied minds. It is exactly these crucial features of being human that emerge from nature itself through the evolutionary process. I interpret Wildman as agreeing with my deep dissatisfaction with disembodied, overly theoretical, theological abstractions and recognizing that I see significant resources within Christian theological anthropology for articulating human uniqueness in terms of embodiment.

Wildman raises some important points of criticism as well. He sees the book's central argument as problematic because, first, I have a restrained, even reluctant, interpretation of human embodiment that underestimates the importance of embodiment, a fact that materially affects the theologi-

cal anthropology in my book. Second, my idea of transversality contrasts in very particular ways with alternative metaphors for interdisciplinary inquiry in science and religion by protecting independent domains of experience and reasoning *before* considering domain overlaps, a fact that leads to a rejection of valid interdisciplinary connections (Wildman 2008, 478). In doing so I allegedly stress "flashes of insight" that create understanding while actually marginalizing arguments required to weigh plausibility. Third, Wildman suspects that the interests of my own theological tradition are overly active in my research, providing results more favorable to that tradition than the data might warrant. In an imaginatively constructed essay, Wildman's challenging comments are developed further around the themes of *bodiment in the book*; *bodiment out of the book*; and *bodiment of the book*.

In the space available, I hope to show that some of these critical comments—in spite of our important agreements—are based on a misreading of what I am really doing in this book.

Wildman's rich essay certainly warrants a more detailed response than I give here, but I try my best to respond to the salient critical points he raises. A recurring theme in his essay is what he calls "a proper radical view of embodiment." Because this goes to the heart of what my book is about I attend to this in some detail. In fact, Wildman sets up his whole argument by first of all claiming that "radical embodiment" stunningly reframes what he calls the "cultural ideology of the cognitively normal." The rest of the essay shows that "radical embodiment" always refers to embodiment as redefined in a socially explosive way by some forms of contemporary neuroscience and cognitive psychology. However important this line of thinking is, the logical track for developing further the consequences of embodiment for my book actually lies elsewhere. Of course a proper view of human embodiment (1) blurs the line between the cognitively normal and abnormal, (2) recognizes potential adaptive value in cognitive variations, and (3) invites value judgments within the domain of the cognitively normal. It is difficult, however, not to sense that Wildman is somehow mapping an important research trajectory of his own onto my related but significantly different project. Of course, if our Paleolithic ancestors are *us* in any important sense of the word, certainly autistics, schizophrenics, and the mentally retarded are us, too. Of course we should ask about the adaptive value of such genetic variations and oppose any position that would regard the cognitive insights of such persons as absent or useless.

I fail to see, however, how exploring specific definitions of the cognitively normal is something that is lacking from my own project and its specific focus on human origins and species specificity. Even more puzzling, however, is that this lack of discussing the possible spectrum of the cognitively normal would imply a *restrained* view of human embodiment. I have, on the contrary, made two arguments—one theological, one more scientific—that should not only have resonated with Wildman's concern

for a broader spectrum for cognitive normalcy but that also reflects a significant choice for what Wildman calls "a properly radical view of embodiment" (Wildman 2008, 479):

1. In my book I made the *theological* argument that any revisioned notion of the *imago Dei* should be so radically inclusive and embodied as to include those humans who are not in meaningful relationships, those who are in meaningful relationships regardless of their sexual orientation or sexual identity, those who are unable to be in normal relationships, those who live in vegetative states, those who are mentally or physically handicapped, sociopathic, or otherwise prevented from functioning in typically human ways (van Huyssteen 2006, 141ff.).

2. From a more *neuroscientific* point of view, in my very deliberate acceptance of the importance of altered states of consciousness I stressed this specific kind of continuity with our prehistoric ancestors precisely because of our shared embodiment. It is puzzling that Wildman never comments on the importance of this kind of embodiment for the origins of religion and of religious experience. Moreover, my complete acceptance of the wide spectrum of consciousness that Antonio Damasio and other neuroscientists have argued for certainly implies the kind of wider spectrum of cognitive normalcy that Wildman has claimed in his essay.

Wildman also suggests that any redefinition of the scope of cognitive normalcy will challenge what I, following all the paleoanthropologists and cognitive archeologists that I have worked with on this project, have called the central importance of language for human uniqueness. I am not singling out language as an isolated faculty that definitively defines human uniqueness, or that autistics and mentally challenged humans with few or no language skills could not be gifted individuals; I am suggesting only that once the modern human mind emerged in all its complexity, everything about this embodied mind is different and is filtered linguistically. In stead of *restraining* embodiment, this perspective actually *maximizes* embodiment. Steven Mithen (2006), for instance, in a provocative proposal, argues for the prelinguistic emergence of music and dance in our cousins the Neanderthals, which is precisely what Wildman wants us to recognize when he claims that symbolic forms of understanding (art, music, dance) may have preceded language. Furthermore, as I pointed our earlier in my response to King, in her book *The Roots of Thinking* Sheets-Johnstone argues that "no language can be spoken for which the body is unprepared," so to understand the origin and evolution of language is to understand the sensory-kinetic lifeworld of humans. And, as far as language and embodiment goes, for Sheets-Johnstone the roots of language are found in the "literal understanding of the tongue as lingual organ, that is, as an organ of sensory-kinetic powers" (1990, 135, 158). I do not think any view of the origins of language gets more embodied than this. We are thus enabled to see language not as an isolated faculty but as the way in which the linguis-

tic context is embedded in our cognitive fluid minds, our physical tongues, our descended larynxes, and our overall symbolizing capacity.

Against this background I also want to answer Wildman's critical question about the connections between embodiment and sexuality. Wildman writes that *Alone in the World?* is notably silent about sex despite its emphasis on embodiment. Elsewhere he writes that it never is possible to deal with everything in one book, but I would hope that the central importance of sex and sexuality for my argument for embodiment would shine through in spite of the fact that I did not deal with it in detail. I certainly agree with his comment "it is arguable that nothing more compactly expresses the meaning of human uniqueness than what human beings do culturally and morally with their embodied sexuality" (Wildman 2008, 360). I do believe, however, that Wildman's next conclusion is somewhat unfair—that I concentrate so much on whether the *imago Dei* must be articulated in terms of the man-woman relationship that I pass over issues of sexual identity (2008, 360). Moreover, he speculates that this is due to the controversial status of the question within the Reformed tradition. Even if this were true (which it is not, at least in the current open discussion in the Presbyterian tradition), why would I, writing about human uniqueness in paleoanthropology, be tempted to be so influenced as to be completely determined by the culture of my immediate context? To suggest this is to ignore the transversal movement of my entire postfoundationalist project.

On a more positive note, Wildman does have good academic instincts when he senses that I could have done more about the issue of sexuality. Coincidentally, I am pursuing exactly this issue in my current research. Wildman's demands for a "properly radical view of embodiment" is not answered, I believe, by the general focus of his essay on the powerful scope of cognitive science but is plausibly answered (in terms of the scope of my own book) by developing further the issue of sexuality within the context of hominid evolution. Again, as I stated earlier, a powerful argument for hominid sexual embodiment emerges from Sheets-Johnstone's *The Roots of Thinking*. In her work the evolution of hominid bipedality is of central importance for the emergence of human bodily sexuality in the most concrete sense of the word.

The final issues that I address here are Wildman's two critical comments that my book's argument is problematic because my idea of transversality (1) contrasts in particular ways with alternative metaphors for interdisciplinary inquiry in science and religion by protecting independent domains of experience and reasoning *before* considering domain overlaps and (2) stresses "flashes of insight" that create understanding while marginalizing arguments required to weigh plausibility. This is really important for me, because I still have the lingering feeling that Wildman has fundamentally misunderstood what I mean by *transversal rationality*. He suggests that I

protect independent domains of reasoning and retreat to an irrational commitment because my methodology is less systematic and depends too much on impressionistic moments of transversal insight. Moreover, for him the transversal method is more artistic than philosophically rigorous and encourages the exploration of favored connections only.

However, as I argued in my response to Peterson, interdisciplinary conversation as I see it is not about "protecting" intellectual domains or reasoning strategies but about acknowledging that in radically different disciplines (here theology and paleoanthropology) different research trajectories are not only shaped by differences in epistemic focus and methodology but connected only when we successfully identify a common interdisciplinary problem. Transversal reasoning, on my view, is a pragmatic approach to the performative praxis of reason as we venture down the risky road of interdisciplinary dialogue. As such, it is not about arbitrarily opening ourselves up or closing ourselves off to other viewpoints. It is about discovering what it might mean to share an epistemic space that allows for the kind of interdisciplinary critical evaluation that includes a critical self-evaluation and optimal understanding. This means not only that to disagree is not to deny or to withdraw from the transversal dialogue but that both the possibilities and limitations of interdisciplinary dialogue include *dissensus tolerance*, include respecting disciplinary integrity as well as cultivating the kind of conversation in which metaphysical and other philosophical presuppositions can be critiqued, tolerated, or rejected. In this sense the notion of transversality emerges as a heuristic device, as a way to describe what actually happens in the performative praxis of our reasoning.

In addition to the possibilities and dangers of interdisciplinary dialogue, I have tried to show that there are also natural limitations to this kind of dialogue between disciplines. Mikael Stenmark (2004) has wisely warned against religious and scientific expansionism as the illegitimate crossing of disciplinary boundaries on the basis of one favored, foundational discipline only. This clearly means that we have to be careful that everything that we can say about religion is not enabled by, or derived from, or sanctioned by, science. It is therefore puzzling that Wildman would imply that a "properly radical view of embodiment" would sanction a final and decisive word from evolutionary psychology or neuroscience. Taking our embodiment seriously certainly may demand that we reconsider our traditional theological assumptions. However, it also implies that we should be very wary of reductionist scientific arguments that make massive metaphysical claims about the existence or nonexistence of God, the meaningfulness or senselessness of religion, and why people choose for or against religious faith in their lives.

Therefore, when I asked the question "why should we, so suddenly and only at this point—the development of this metaphysical aspect of our

cultural evolution—so completely distrust the phylogenetic memory of our ancestors?" (van Huyssteen 2006, 94) I was also asking why we should trust evolutionary psychology to have the last word, that on this aspect of our cognitively fluid, symbolizing minds we are totally mistaken. Wildman's answer to this is that "We only now, as never before, are developing a compelling understanding of the cognitive mechanisms whose side-effects probably produced many of the features of religion, so we must revisit our assumptions about the content of religious belief and the reasons we take it to be reliable" (2008, 485–86). This seems to me a strange version of a God-of-the-gaps argument: The more we know through evolutionary psychology about our cognitive mechanisms and the features that their side-effects might have produced for religious experience, the more minimalist our idea of God of religion should become. Moreover, the more compelling the scientific argument, the less likely that our religious belief should have any content at all. Missing from this, I believe, are the arguments of those in neuroscience or cognitive psychology who find compatibility between the way the human brain is "wired" and religious belief.

Here we see clearly that philosophically the notion of transversality, instead of exemplifying artistic flashes of insight and then retreating to protected domains of reasoning, in fact implies a distinct move away from the unity and domination of a narrowly conceived reason to the pluralization of human rationality. At the heart of my own philosophical approach is human reason as a dynamic faculty of performative transitions that interconnects various forms of human rationality and, therefore, also divergent disciplines. Over against any science that would claim the final, dominant, and definitive word in interdisciplinary dialogue, this plurality stands as nonhierarchical and irreducible. That is what I mean by protecting disciplinary integrity, precisely because the notion of transversality enables us to honor the nonhierarchical asymmetry between various disciplines, specifically between theology and the sciences. In this sense I am quite happy to be identified broadly with a specific theological tradition. Do recall, however, that a specific tradition is unavoidable only as a starting point, not as a final destination in any conclusive, epistemic sense of the word.

So, I am indeed arguing against any violation of disciplinary boundaries (something that I believe the nonhierarchical implications of transversal reasoning will help avoid) and also that recognizing the disciplinary limitations of evolutionary psychology does not have to imply a restrained approach to human embodiment. I am hoping that my resistance to granting any one of the sciences an imperial position in an authentic interdisciplinary dialogue will *not* be seen as defensive. The most important part of my argument in this section of my book was to point out that neither evolutionary epistemology or evolutionary psychology can explain, or explain away, the rationality or irrationality of religious belief.

This leads me to what I see as a quite problematic interpretation of my view of the cognitive content of religious beliefs. Wildman claims that I argue that the evolved character of our religious propensities and of religious belief means these beliefs must be adapted to reality and therefore that the naturalness of religion is evidence for the credibility of its cognitive claims (Wildman 2008, 484). This is exactly the *opposite* of what I argue in chapter 2, where I actually strongly criticize a former student who argued, in an otherwise excellent dissertation, that the hypothetical realism of evolutionary epistemology warrants conclusions about the reality of God. I very strongly objected to this line of argument in favor of the weaker claim that these sciences cannot explain, or explain away, the rationality of religious belief. There is a clear and important difference between "the naturalness of religion" and "the credibility of the cognitive claims of religion."

Finally, this makes me wonder whether Wildman's gentle critiques of my notions of transversality, the possibilities and limitations of interdisciplinarity, of notions of disciplinary integrity, and so on are not in fact more about a deeper philosophical difference between our notions of God or the Divine. Wildman, following the lead of evolutionary psychology, wants this notion to be as minimalist as possible; I, following Delwin Brown and others in developing a notion of tradition that offers a contextual starting point for theological reasoning (but a tradition that in the end does not imprison our theologies), would (in my own case) argue for a strong critique of doctrinal abstractions. This may not lead to a ontological minimalism in my view of God, but doctrinally it certainly empowers an epistemological minimalism where less is often more.

Response to Nancy R. Howell

I want to express my appreciation for Nancy Howell's careful reading of my work and for her creative suggestions and comments—all done with signature flair and verve! I especially appreciate the fact that she understands that a postfoundationalist epistemology is by definition a holistic epistemology that alerts us to the culture-bound, theory-laden character of rationality, often overlooked in science-and-religion scholarship. Howell correctly understands that this approach to interdisciplinary work starts with a focus on contextuality and that this kind of contextuality is of primary importance for understanding a problem such as human uniqueness. Ultimately it is this kind of specificity that frees science-and-religion scholarship from irrelevant, vacuous abstraction and enables coherent and meaningful argumentation.

Howell therefore is correct in her argument that both Western and Eastern science are embedded in specific cultural contexts. In the fascinating case of Japanese primatologist Kinji Imanishi, it is clear that his cultural

location directly led his scientific work to focus on harmony rather than competition in nature and among animals. Moreover, Howell correctly recognizes that in my book I wanted to appreciate the issue of human uniqueness as a valid interdisciplinary problem, that is, as the kind of intellectual problem that would manage to evoke a shared research trajectory in theology and the sciences. Indeed, I tried to displace the issue of human uniqueness from more generalized metanarratives to the sociohistorical context of specific theologians and specific scientists.

Howell raises some very challenging questions. If cultural context shapes the way questions are asked and problems are identified, should it not be logical that Western worldviews alongside Christian theology would influence and make even scientific claims rather predictable? For instance, is the way that some forms of contemporary science (in my book, the many references to the work of Ian Tattersall in paleoanthropology and Terrence Deacon in neuroscience) focus on human uniqueness not reminiscent of the vast historical influence of Christian theology in its quest to define the *imago Dei* and human uniqueness in contrast to animals?

These important questions touch on the deeper issue of whether my method demands *comparative* interdisciplinarity. I take Howell to acknowledge that an authentic interdisciplinary conversation would be possible only if we first identified, through specific shared problems validated by the work of specific scientists and specific theologians, a shared epistemic space for a clearly identified research trajectory. However, she proceeds to claim more—that although my methodology has achieved the important task of emphasizing the social location of science and theology, it has not yet argued for an equally important *strong reflexivity* (Sandra Harding's term for the importance of a critical reflection on our assumptions). In fact, my postfoundationalist approach claims exactly, through transversal connectivity, this kind of critical reflexivity. Already in my 1999 *The Shaping of Rationality* I argued that cross-disciplinary, cross-cultural, and by implication also comparative, religious reflection will expose biases, values, uncritical assumptions, and background beliefs, and this should indeed—as Howell also argues—raise fundamental questions about our various approaches to the concept of human uniqueness.

It is, however, on the difficult problem of *defining* human uniqueness that Howell wants to focus. Against the background of an impressive list of characteristics (Howell 2008, 370f.) for defining *species specificity* (my preferred term for human uniqueness in this interdisciplinary conversation), Howell acknowledges that the critical issue remains what differences are actually significant and what *difference* and *uniqueness* actually mean (p. 371). She refers to Marc Bekoff's powerful argument that comparisons of species are difficult and misleading if undertaken apart from the species' specific context: Animals' abilities are often not usefully compared across species contexts, because each animal species' abilities are a matter of fit

and adaptation to particular biological and social contexts. Moreover, individuals within a single species often differ from one another.

I agree with both Bekoff and Howell and oppose any generalizations about intelligence or cognition that reflect the limitations of our own observations rather than the limitations of the animals themselves. Or, in Bekoff's nice phrase, absence of evidence is not evidence of absence (Howell 2008, 371). Also, Bekoff's and Howell's strong claim that all species exhibit a specific uniqueness is exactly what I meant by *species specificity*. The question then is, of course, as Howell puts it, What difference makes a difference? (p. 372) She is correct in seeing that my attempt to revision the theological concept of the *imago Dei* is all about honoring the continuity between humans and animals in a way that respects the uniqueness of the animal world. Her question of whether this refers to the whole animal world, to species specificity, or to individual uniqueness within species can be answered only if we begin with species specificity. Her excellent examples of the anticipation of events far in the future, and of linguistic and symbolic abilities, as two paramount traits for talking about human uniqueness, I believe, reveal that Darwin was correct all along in arguing that our (human) difference from the animal world, and from individual animal species, is indeed a difference of degree and not of kind.

The important point I tried to make in my book was not to find the absolute difference between humans and other animals but to focus on degrees of continuity, specifically on the implications for talking about a continuum of capacities and proto-capacities between humans and animals. Whether this spectrum of continuity would imply, for instance, that chimpanzee culture includes proto-art, proto-language, or proto-morality, or whether we should even be talking about chimpanzee art, chimpanzee language, or chimpanzee morality, will in the end probably be a personal choice shaped by disciplinary traditions and worldviews. My own choice for talking about human uniqueness as a form of species specificity opened the door to dealing with this difficult problem precisely by focusing on the level of similarity in related behaviors between humans and our closest hominid relations, the Neanderthals. In principle, however, I believe that the same argument would stand for our sister species in the animal world. My point has never been that animals and especially primates do not communicate, cannot deceive or amuse, do not have some linguistic abilities, forms of moral awareness, or the experience of emotions, or—in terms of the two problematic points that Howell finally returns to in her paper—that animals cannot anticipate events far in the future and do not in any way share our linguistic and symbolic abilities. All I am claiming is that these shared abilities, which reveal such an important continuity between us and animals, all of them—like emotions—also look dramatically different when filtered through the complex, cognitively fluid human mind that is so typical of the species specificity of *Homo sapiens*.

NOTE

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