Empathy and Human Experience

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1. Introduction

This volume addresses the question "How may we understand science and religion as arising from, yet somehow transcending, the human experience?" My work bears on this question because I am interested in the relationship between human experience and the scientific investigation of the mind in cognitive science.[1] One of the central questions that has preoccupied me is "What form should a mature science of the human mind have?" By "mature science" I mean one that has developed to the point where its researchers are experienced and knowledgeable with regard to their subject matter. I believe that a mature science of mind would have to include disciplined first-person methods of investigating subjective experience in active partnership with the third-person methods of biobehavioral science. "First-person methods" are practices that increase an individual's sensitivity to his or her own experience through the systematic training of attention and self-regulation of emotion.[2] This ability to attend reflexively to experience itself—to attend not simply to what one experiences (the object) but to how one experiences it (the act)—seems to be a uniquely human ability and mode of experience we do not share with other animals. First-person methods for cultivating this ability are found primarily in the contemplative wisdom traditions of human experience, especially Buddhism. Throughout history religion has provided the main home for contemplative experience and its theoretical articulation in philosophy and psychology. Thus my work in cognitive science and the philosophy of mind intersects with religion not as an object of scientific study (as

it is for Pascal Boyer),[3] but as a repository of first-person methods that can play an active and creative role in scientific investigation itself.[4]

Religion includes many other things besides contemplative experience, and many religions have little or no place for contemplative experience. On the other hand, contemplative experience is found in important non-religious contexts, such as philosophy.[5] For these reasons, the term "religion" does not accurately designate the kind of cultural tradition or domain of human experience that I and others wish to bring into constructive engagement with cognitive science. Better designations would be "wisdom traditions" and "contemplative experience." Nor does the phrase "science-religion dialogue" convey the nature of our project, for our aim is not to adjudicate between the claims of science and religion, but to gain a deeper understanding of the human mind and consciousness by making contemplative psychology a full partner in the science of mind.

Three main bodies of knowledge are crucial for this endeavor. I have already mentioned two—cognitive science and contemplative psychology. The third is phenomenological philosophy in the tradition inaugurated by Edmund Husserl. The importance of phenomenology is that it provides a third mediating term between cognitive science and contemplative psychology, especially in the case of non-Western contemplative traditions such as Buddhism. Phenomenology is a Western intellectual tradition with strong roots in the Western scientific style of thought, but it is also a tradition that upholds the importance of rigorous attention to mental phenomena as lived experiential events. Thus, instead of the science-religion dialogue as it is standardly presented, the task in which I see myself engaged is one of circulating back and forth

among the three spheres of experimental cognitive science, phenomenology, and contemplative psychology. “Mutual circulation” is the term that Francisco Varela, Eleanor Rosch, and I introduced to describe this approach.[6] According to the logic of mutual circulation, each domain of cogntive science, phenomenology, and contemplative psychology is distinct and has its own degree of autonomy—its own proper methods, motivations, and concerns—but they overlap and share common areas. Thus, instead of being juxtaposed, either in opposition or as separate but equal, they flow into and out of each other, and so are all mutually enriched.

In this essay I will illustrate this approach through a discussion of the human experience of empathy. I choose empathy because it is one important aspect (though by no means the only one) of the intersubjectivity of human experience. Intersubjectivity is important in the context of discussing the relationship between cognitive science and contemplative experience because there has been a tendency in this area to focus on consciousness as if it were an intrinsically “interior” phenomenon or “inner reality” invisible to ordinary perception. I think this way of thinking about consciousness is distorted. It operates within the reified categories of “internal” and “external.” These categories are inadequate for understanding how human experience is constituted by our lived body and interpersonal social world. We see the experience of shame in the blushing face, perplexed thought in the furrowed brow, joy in the smiling face; we do not infer their existence as “internal” phenomena from “external” facts. Although it is true that not all experiences need be expressed in this bodily way, and that each of us has first-person access only to his or her own experience, these truths do not mean that experience is “interior” in some special (and unclear) metaphysical sense. Focusing on empathy

helps to remind us that we need a better framework for thinking about human experience —whether in cognitive science or contemplative psychology—than the framework of "inner" and "outer."

The key idea of the next part of this essay is that human experience depends formatively and constitutively on the dynamic coupling of self and other in empathy. After presenting this idea by interweaving cognitive science and phenomenology, I will then expand the discussion to include a contemplative perspective on the non-duality of self and other, as presented by the Madhyamaka or "middle way" tradition of Indo-Tibetan Buddhism. Finally, I will return to the importance of contemplative phenomenology for cognitive science in light of the theme of this volume.

2. Empathy Defined

At the outset, it is best to think of empathy broadly, and then to distinguish different kinds of empathy as we go along. Nevertheless, even in broad terms there are different ways of defining empathy—as a basic *intentional capacity*, as a unique kind of *intentional act*, and as an *intentional process*. (I use the term "intentional" here in its Husserlian sense of mental directedness toward an object or openness to what is other.) As an intentional capacity, empathy is the basic ability to comprehend another individual's experience, a capacity that underlies all the particular feelings and emotions one can have for another.[7] To exercise this capacity is to engage empathy as an intentional act and intentional process. As a unique kind of intentional act, empathy is directed toward, and thereby has as its intentional correlate, the experience of another person.[8] Although empathy so understood is founded on sense perception (of the Other's

bodily presence), and can involve inference in difficult or problematic situations (when one has to work out how another person feels about something), it is not reducible to some additive combination of perception and inference—after the fashion of any theory according to which we understand others by first perceiving their bodily behavior, and then inferring or hypothesizing that their behaviour is caused by experiences or inner mental states similar to those that cause similar behavior in us. Rather, in empathy we experience the Other directly as a person, that is, as an intentional and mental being whose bodily gestures and actions are expressive of his or her experience and states of mind. Finally, as an intentional process, empathy is any process in which the attentive perception of the Other's state or situation generates a state or situation in oneself that is more applicable to the Other's state or situation than to one's own prior state or situation.[9]

With this broad conception of empathy in place, we can turn to some of the different kinds of empathy. Psychologists have used the term "empathy" to describe at least three different processes: (1) *feeling* what another person is feeling; (2) *knowing* what another person is feeling; and (3) *responding compassionately* to another person's distress.[10] More structurally detailed analyses, however, have been given by phenomenologists, who have distinguished at least four main aspects of the full performance of empathy:[11]

(1) The involuntary coupling or pairing of my living body with your living body in perception and action.

(2) The imaginary movement or transposition of myself into your place.

(3) The interpretation of you as an Other to me and of me as an Other to you.

(4) The ethical and moral perception of you as a person.

3. Empathy as Coupling

The first kind of empathy—the dynamic coupling or pairing of the living bodies of self and other—belongs to the level of pre-reflective perception and action (what Husserl calls the "passive synthesis" of experience).[12] It is passive in the sense of not being initiated voluntarily, and it serves as a support for the other types of empathy. "Coupling" or "pairing" means an associative bonding or linking of self and other on the basis of their bodily similarity. This similarity operates not so much at the level of visual appearance, which forms part of the *body image* as an intentional object present to consciousness, but at the level of gesture, posture, and movement, that is, at the level of the unconscious *body schema*.[13] Thus empathy is not simply the comprehension of another person's particular experiences (sadness, joy, and so on), but the experience of another as a living bodily subject of experience like oneself.

This phenomenological conception of the embodied basis of empathy can be linked to cognitive science by going back to the broad notion of empathy as process—as any process in which the attentive perception of the Other generates a state in oneself more applicable to the Other's state than to one's own prior state. According to the "Perception-Action Model" of empathy,[14] when we perceive another person's behavior, our own motor representations for that kind of behavior are automatically activated and generate associated autonomic and somatic responses (unless inhibited). For instance, it has been shown that when one individual sees another execute actions with different

body parts (mouth actions, hand actions, and foot actions), the neural patterns of activation in the observer's brain correspond to those that would be active were the observer performing the same bodily actions.[15]

This kind of self-other coupling can be called sensorimotor coupling. In addition to sensorimotor coupling, there is affective coupling or "affective resonance."[16] In affective resonance, two individuals engaged in direct interaction affect each other's emotional states.

4. Empathy as Imaginary Transposition

The second kind of empathy—empathy as the imaginary transposition of oneself to the place of the Other—is more active and cognitive than the first kind. Instead of simply the involuntary, bodily pairing of self and other, cognitive perspective-taking processes are used to imagine or mentally transpose oneself into the place of the Other.

Comparative studies of empathy from cognitive ethology provide an important window on cognitive empathy. The presence and extent of empathy among non-human animals, especially primates, is a subject of much debate. According to an "all-or-none" view, cognitive empathy (the only kind of empathy according to this view) requires the cognitive ability to attribute mental states to another individual and to understand the other's behavior in light of them. This ability, usually called "mind-reading,"[17] is taken by some to require the possession of a "theory of mind," a theoretical body of knowledge about mental states and their role in generating behavior. Advocates of this way of thinking have argued that chimpanzees fail certain mind-reading tests and therefore do not possess a theory of mind, and accordingly are not capable of cognitive empathy. On

the other hand, as I have been suggesting here, and as others have proposed, most notably Frans de Waal, empathy should not be seen as an all-or-nothing phenomenon. In de Waal's words: "Many forms of empathy exist intermediate between the extremes of mere agitation and distress of another and full understanding of their predicament. At one end of the spectrum, rhesus infants get upset and seek contact with one another as soon as one of them screams. At the other end, a chimpanzee recalls a wound he has inflicted, and returns to the victim to inspect it."[18]

Other intermediate cases are consolation behavior and tailored-helping behavior. Consolation behavior is friendly contact by an uninvolved and less distressed bystander toward a victim of a previously aggressive encounter. For instance, de Waal, in his book *Good Natured*, presents a photograph of a juvenile chimpanzee comforting a distressed adult. Consolation behavior has been extensively documented in great apes only (and has not been found in monkey species despite great efforts to find it). Tailored helping is coming to the aid of another (either a conspecific or a member of another species) with behaviors tailored to the other's particular needs (as when one ape helps another out of a tree or tries to help an injured bird fly). Such behavior, in de Waal's words, "probably requires a distinction between self and other that allows the other's situation to be divorced from one's own while maintaining the emotional link that motivates behavior."[19] There exists a large number of anecdotal reports of tailored helping in apes.

Cognitive empathy at its fullest, however, is achieved when one individual can mentally adopt the other's perspective by exchanging places with the other in imagination. Described phenomenologically:[20] I am here and I imagine going there and being at the place where you are right now. Conversely, you are here (the *there* where I

imagine being) and you imagine you are going there, to the place where I am (my *here*). Through this imagined movement and spatial transposition, we are able to exchange our mental perspectives, our thoughts and feelings. Whether apes possess this kind of mental ability is unclear and a subject of debate.[21]

In human children, the ability to mentally transpose self and other seems to be linked to the emergence, at around nine to twelve months of age, of a whole cluster of cognitive abilities known collectively as "joint attention."[22] "Joint attention" refers to the triadic structure of a child, adult, and an object or event to which they share attention, and includes the activities of gaze following (reliably following where adults are looking), joint engagement with shared objects or events, using adults as social reference points, and imitative learning (acting on objects as adults do). At around the same time, infants also begin to point to things and hold them up for someone to see, gestures that serve to direct adult attention actively and intentionally. Michael Tomasello has argued that "infants begin to engage in joint attentional interactions when they begin to understand other persons as intentional agents like the self."[23] He proposes a "simulation explanation" of this developmental cognitive milestone, according to which the infant uses her primal understanding of others as "like me" (the grounding process of empathy, in phenomenological terms), and her newly emerging understanding of her own intentional agency, as the basis on which to judge analogically and categorically that others are intentional agents "like me" as well.

5. Empathy as the Understanding of You as an Other to Me and of Me as an Other to You

The third kind of empathy involves not simply imagining myself in your place, but understanding you as an Other who accordingly sees me as an Other to you. In other words, the imaginary transposition in this kind of empathy involves the possibility of seeing myself from your perspective, that is, as you empathetically experience me. Empathy thus becomes reiterated, so that I empathetically imagine your empathetic experience of me, and you empathetically imagine my empathetic experience of you. We also talk to each other about our experiences, and so linguistic communication and interpretation participate in and structure this exchange. The upshot is that each of us participates in an intersubjective viewpoint that transcends our own first-person singular perspectives.

We can turn again to developmental psychology for insight into the genesis of this third kind of empathy and the role it plays in constituting an intersubjective perspective. Let me quote a passage from Tomasello's book *The Cultural Origins of Human Cognition* that lucidly describes this genesis in the human infant:

> As infants begin to follow into and direct the attention of others to outside entities at nine to twelve months of age, it happens on occasion that the other person whose attention an infant is monitoring focuses on the infant herself. The infant then monitors that person's attention to *her* in a way that was not possible previously, that is, previous to the nine-month social-cognitive revolution. From this point on the infant's face-to-face interactions with others—which appear on the surface to be continuous

> with her face-to-face interactions from early infancy—are radically transformed. She now knows she is interacting with an intentional agent who perceives her and intends things toward her. When the infant did not understand that others perceive and intend things toward an outside world, there could be no question of how they perceived and intended things toward *me*. After coming to this understanding, the infant can monitor the adult's intentional relation to the world including herself… By something like this same process infants at this age also become able to monitor adults' emotional attitudes toward them as well—a kind of social referencing of others' attitudes to the self. This new understanding of how others *feel* about me opens up the possibility for the development of shyness, self-consciousness, and a sense of self-esteem… Evidence for this is the fact that within a few months after the social-cognitive revolution, at the first birthday, infants begin showing the first signs of shyness and coyness in front of other persons and mirrors…[24]

As Tomasello goes on to discuss, once the infant understands other individuals as intentional beings and herself as one participant among others in a social interaction, then whole new cognitive dimensions arise. The child comes to be able to participate in "joint attentional scenes"—social interactions in which the child and the adult jointly attend to some third thing, and to one another's attention to that third thing, for an extended period of time, and in which the child can conceptualize her own role from the same "outside"

perspective as the other person. Joint attentional scenes in turn provide the framework for the acquisition of language and other kinds of communicative conventions.[25]

Although Tomasello does not use the term "empathy" in this context, the cognitive achievement he describes of being able to conceptualize oneself from the perspective of another person corresponds to what phenomenologists call "reiterated empathy." In reiterated empathy, I see myself from the perspective of another and thus grasp myself as an individual in an intersubjective world.

Tomasello's discussion of the child's achievement of this intersubjective perspective emphasizes the developmental progression from the neonate's understanding of the other as an animate being, to the infant's understanding of the other as an intentional agent with attention and goal-directed behavior, to the four-year-old child's understanding of the other as a mental agent with thoughts and beliefs (which need not be expressed in behavior and can fail to match the world).

Phenomenologists, without neglecting the intentional and mental aspects of the self, draw attention to the ambiguity of the lived body in reiterated empathy. The lived body is that which is most intimately me or mine, but it is also an object for the Other. Because it is so intimately *me*, my body cannot stand before me as an object the way that other things can. No matter how I turn, my body is always *here*, at the zero-point of my egocentric space, never *there*. It is through empathetically grasping the Other's perception of me that I am able to grasp my own lived body as an object belonging to an intersubjective world. In this way, my sense of self-identity in the world, even at the basic level of embodied agency, is inseparable from recognition by another, and from the ability to grasp that recognition empathetically.

6. Empathy as the Ethical and Moral Perception of You as a Person

The fourth kind of empathy is the recognition of the Other as a person who deserves concern and respect. Empathy in this sense is not to be identified with any particular feeling of concern for another, such as sympathy, love, or compassion, but instead as the underlying capacity to have such other-directed and other-regarding feelings of concern.[26]

This kind of empathy can also be introduced from a developmental perspective. As we have seen, there is a progression from the infant's understanding of others as intentional agents (with attention, behavioral strategies, and goals) to the young child's understanding of others as mental agents (with beliefs, desires, and plans). According to Piaget and Tomasello, moral understanding begins to emerge at around the same time as the child comes to understand others as mental agents. It derives not from the rules adults impose on behavior, but from empathizing with other persons as mental agents and being able to see and feel things from their point of view.[27]

Within Western moral philosophy there is a long tradition going back to Immanuel Kant that privileges reason over feeling. To act out of duties legislated by reason is thought to have greater moral worth than acting on the basis of feeling or sentiment. Yet as Frans de Waal observes, echoing David Hume and Adam Smith: "Aid to others in need would never be internalized as a duty without the fellow-feeling that drives people to take an interest in one another. Moral sentiments came first; moral principles second."[28]

Empathy is the basic cognitive and emotional capacity underlying all the moral sentiments and emotions one can have for another. The point here is not that empathy exhausts moral experience, for clearly it does not, but that empathy provides the source of that kind of experience and the entry point into it. Without empathy, concern and respect for others as persons in the moral sense—as ends-in-themselves—would be impossible. As Mark Johnson has argued:

> the Kantian imperative always to treat others (and oneself) as ends-in-themselves has no practical meaning independent of our imaginatively taking up the place of the other. Contrary to Kant's explicit claims, we cannot know what it means to treat someone as an end-in-himself, in any concrete way, unless we can imagine his experience, feelings, plans, goals, and hopes. We cannot know what respect for others demands of us, unless we participate imaginatively in their experience of the world.[29]

The four aspects or kinds of empathy I have presented are not separate, but occur together in face-to-face intersubjective experience. They intertwine through the lived body and through language. You imagine yourself in my place on the basis of the expressive similarity and spontaneous coupling of our lived bodies. This experience of yours contributes to the constitution of me for myself, for I experience myself as an intersubjective being by empathetically imagining your empathetic experience of me. Conversely, I imagine myself in your place, and this experience of mine contributes to the constitution of you for yourself. As we communicate in language and gesture, we

interpret and understand each other dialogically. This dialogical dynamic is not a linear or additive combination of two pre-existing, skull-bound minds. It emerges from and reciprocally shapes the nonlinear coupling of oneself and another in perception and action, emotion and imagination, and gesture and speech. It is this picture that I had in mind earlier when I said that human experience depends on the dynamic coupling of self and other in empathy.

7. The Non-duality of Self and Other

To appreciate the experiential depth and developmental possibilities of empathy we need to turn to the perspective of contemplative psychology. Buddhist contemplative psychology is particularly significant for this discussion because of the way it combines first-person contemplative practices of empathy with a philosophical vision of the non-duality of self and other.

For the purposes of this essay, I will take as my reference point the classic text *The Way of the Bodhisattva* (*Bodhisattvacharyavatara*) by the eighth century Indian philosopher Shantideva.[30] According to the Buddhist philosophical system Shantideva expounds—the *Prasangika Madhyamaka* or "Middle Way Consequence" school—"self" and "other" have no independent existence and intrinsic identity, but exist only on the basis of conceptual or mental imputation. In the words of a famous Tibetan commentary:

> Although they have no ultimate grounds for doing so, all beings think in terms of "I" and "mine." Because of this, they conceive of "other," fixing on it as something alien, although this too is unfounded.

> Aside from being merely mental imputations, "I" and "other" are totally unreal. They are both illusory. Moreover, when the nonexistence of "I" is realized, the notion of "other" also disappears, for the simple reason that the two terms are posited only in relation to each other. Just as it is impossible to cut the sky in two with a knife, likewise, when the spacelike quality of egolessness is realized, it is no longer possible to make a separation between "I" and "other," and there arises an attitude of wanting to protect others as oneself, and to protect all that belongs to them with the same care as if it were one's own. As it is said, "Whoever casts aside the ordinary, trivial view of 'self' will discover the profound meaning of great 'selfhood'."[31]

It is important to understand that no nihilistic point is intended when it is said that self and other are unreal aside from being mental imputations. The Madhyamaka philosophers uphold the middle way between nihilism and absolutism, and accordingly they distinguish between two kinds of truth—conventional truth and ultimate truth. According to conventional truth, individuals like you and me exist, and thus nihilism is repudiated. According to ultimate truth, on the other hand, there is no intrinsically existent and intrinsically identifiable ego or "I" (and hence no intrinsically existent and identifiable "other" or "alter-I"), and thus absolutism is repudiated. The middle way is the ultimate truth of the dependent origination of "self" on the basis of prior contributing causes and conditions, constantly changing mental and physical processes, and conceptual imputations of "I" and "other" upon those mental and physical processes.

Nevertheless, as unenlightened beings, we mistakenly believe on a deep emotional level that there does exist a real "I" or ego within our mind and body, and therefore our experience of ourselves and others is profoundly egocentric. According to Madhyamaka, and indeed all Buddhist schools, it is this egocentric attachment to a mentally imputed self that is the true source of all suffering. Enlightenment, it is said, consists in uprooting this egocentrism at its very source so that one's experience is no longer governed by this attachment to self.

There are, to be sure, significant differences between this philosophical viewpoint and phenomenology. What concerns me here, however, are not those important and interesting differences, but rather the parallel role that active empathetic imagination plays in both traditions in decentering the ego and thus opening human experience to an originary intersubjectivity prior to the reified mental imputations of "self" and "other."

In the eighth chapter of his text, Shantideva presents two meditations, the meditation on the equality of self and other, and the meditation on the exchange of self and other. In the first meditation on self-other equality, one starts from the egocentric conviction that "This is my self" and then critically reflects that "my self" is simply a name applied to a collection of physical and mental elements. One mentally imposes an intrinsic "I"-ness and an intrinsic "otherness" onto phenomena, but "I and "other" are simply relative designations imputed onto elements in which there is no inherently existing "I" and "other." Each "I" is an "other," and each "other" is an "I." All beings are in exactly the same situation of imputing "mineness" and "otherness," and all are in exactly the same predicament of wanting to be happy and not wanting to suffer. On the basis of this realization of the equality of self and other, one then visualizes the sufferings

of other beings as one's own. In the words of the Tibetan commentary from which I quoted earlier: "the teachings affirm that by applying the name *I* to the whole collection of suffering beings, and by entertaining and habituating oneself to the thought '*They are myself*,' the thought of 'I' will in fact arise with regard to them, and one will come to care for them as much as one now cares for oneself… [F]rom the standpoint of suffering *as such*, the distinction between '*others'* suffering' and '*my* suffering' is quite unreal. It follows that, even if the pain of another does not actually afflict me, nevertheless, if that other is identified as 'I' or 'mine,' the suffering of that other becomes unbearable to me also."[32]

Training in this first meditation on self-other equality is the essential prerequisite for the second meditation on the exchange of self and other. In this second meditation, through empathetic and sympathetic imagination, one visualizes oneself in the position of others and how one appears in their eyes. This meditation also works explicitly with specific negative emotions, or unwholesome "mental factors" as they are known in Buddhism.[33] These emotions are pride, competitive rivalry, and jealousy. One feels pride toward someone inferior; competitive rivalry toward an equal; and jealousy toward a superior. As an antidote to these emotions, one looks back at oneself through the eyes of someone inferior, equal, and superior, and generates the corresponding emotion toward oneself so that one knows what it is like to be on the receiving end. For instance, empathetically experiencing an inferior's envy toward oneself and the suffering it involves is the antidote to pride. At the same time one takes on the sufferings of those others as one's own (as prepared for by the meditation on self-other equality).

The meditation on self-other exchange is thus a disciplined contemplative form of reiterated empathy. By "disciplined" I mean not simply that the meditation is a step-by-step visualization exercise. It is disciplined also because it requires for its performance—as does the first meditation on self-other equality—the fundamental Buddhist contemplative practices of attentional stability (*shamatha*) and insightful awareness (*vipashyana*). To accomplish the visualization one needs to be able to sustain the mind attentively on the image of the other as "I" and on the image of oneself as seen by this "alter-I," and one needs to have insightful awareness of the myriad mental and physical phenomena that arise from moment to moment in the field of intersubjective experience.

From a cognitive scientific perspective the meditations on self-other equality and self-other exchange are remarkable because of the disciplined manner in which they intertwine first-person methods of attentional stability, visualization and mental imagery, and the cognitive modulation of emotion.[34] From a phenomenological perspective, they are remarkable because of the disciplined manner in which they make use of the key phenomenological technique of "imaginative variation"—varying phenomena freely in imagination so as to discern their invariant forms.

The Madhyamaka philosophy underlying the meditations also readily lends itself to comparison with the phenomenological analysis of intersubjectivity in terms of "ipseity" and "alterity," or "I-ness" and "otherness."[35] This level is deeper than the analysis in terms of empathy, and radically dismantles the egocentric perspective in a manner parallel to Madhyamaka.

According to phenomenology, alterity or otherness belongs to the very structure of experience prior to any actual empathetic encounter. Empathy exhibits alterity by being a "self-displacing" or "self-othering" experience. In empathy, I imagine myself as other—and in reiterated empathy I become other to myself by looking back on myself through the eyes of another. The same dynamic of self-othering displays itself throughout experience. It occurs in bodily experience when one hand touches the other, and the two alternate and intertwine in their roles of feeling and being felt. Self-othering occurs when I recollect my past self, when I reflect on my just-elapsed experiences, and when I imagine myself. What these self-displacing experiences indicate is that "I" and "other" are not simply co-relative and interchangeable, like the spatial perspectives of "here" and "there," but that "I-ness" is already internally constituted by "otherness." Experience is intrinsically intersubjective in the sense that alterity and openness to the Other are a priori characteristics of the formal structure of experience. Thus the key presumption of egocentrism—that subjectivity can assert itself as ego and thereby exclude the Other—is exploded.[36]

We have now seen how both phenomenology and contemplative psychology transcend egocentric experience by revealing an originary intersubjectivity prior to the reified conceptions of self and other. In Husserl's phenomenology, this transcendence of egocentrism stays mainly within a theoretical and cognitive orbit, but other phenomenologists, such as Max Scheler and Emmanuel Levinas, have shifted the orbit to an affective and ethical one.[37] One main contribution of Buddhist contemplative

psychology is to show how the theoretical, cognitive, affective, and ethical can be yoked together using disciplined first-person methods.

8. Contemplative Cognitive Science and the Science-Religion Dialogue

Let us recall our opening question, "How may we understand science and religion as arising from, yet somehow transcending, the human experience?" To conclude this essay, I would like to address this question in light of the importance of first-person methods and contemplative experience for a renewed mind science.

Central to the guiding question of this volume is the notion of transcendence. Phenomenologists understand transcendence as a dynamic structure of experience—experience aims beyond itself and is always already open to what is other. Phenomenologists also insist that science is itself a form of human experience. Clearly, scientific experience aims to transcend ordinary experience, in the sense of pre-scientific experience. Similar aims of transcendence are shared by phenomenological and contemplative modes of investigating the mind: both aim to transcend unreflective or mindless experience. Yet how exactly is this movement of transcendence to be understood?

To address this question, let me simplify and idealize scientific practice in the form of the following "ABC strategy," in which the aim is to go from A to C by way of B:[38]

From:

A. The level of ordinary (pre-scientific) cognition of the actual phenomena under study,

Via:

B. The imagination-based cognition of phenomena as "pure possibilities" subject to invariant laws,

To:

C. The level of scientific cognition of the actual phenomena by applying the insights gained at Level B.

The classical example is Galileo, who in inaugurating the shift from Aristotelian to modern physics, gave a theoretical account (Level C) of the actual phenomena of falling bodies (Level A) by seeing them (at Level B) as instances out of a range of law-governed possibilities using the instrument of mathematics.

Suppose we apply this schema to cognitive science and its attempt to understand human conscious experience. The prevailing strategy in cognitive science has been to endeavor to go from ordinary (pre-scientific) cognition of conscious experience to scientific cognition by relying (at Level B) mainly on third-person observation and functional models. In other words, there has been no sustained effort at Level B to seek out the invariant structures of experience as such, that is, as they are lived in the first-person. Such an effort requires disciplined first-person methods of investigating experience.[39] Thus the force of this analogy is to suggest that cognitive science needs to incorporate first-person methods into its research.

First-person methods aim to transcend ordinary experience, not by leaving it behind, but by cultivating a higher or more intensive form of wakefulness within it. Consider these basic generic features of first-person methods, common to both phenomenology and the contemplative tradition of mindfulness-awareness meditation (*shamatha-vipashyana*):[40]

(1) *Suspension*. Suspending preconceived ideas, beliefs, and prejudices about experience. Inducing an attitude of "suspension" with regard to these.

(2) *Reorientation*. Orientation of attention not simply to the content of experience (the "what"), but to the experiencing process itself and its lived, moment-to-moment quality (the "how").

(3) *Intimacy*. Gaining intimacy or familiarity with experience on the basis of (1) and (2) (and through additional techniques such as imaginative variation).

(4) *Training*. Long-term training to acquire know-how and proficiency in (1)-(4).

Practices with these features are important for cognitive science for several reasons. First, they help subjects gain access to aspects of their experience that would otherwise remain unnoticed, such as transient affective state or quality of attention. Second, the refined first-person reports subjects thereby produce can help experimenters to understand physiological processes that would otherwise remain opaque, such as the variability in brain dynamics as seen in neuroimaging experiments.[41] For instance, first-person methods have been used to reveal important phenomenological differences in the subjective quality of attention during visual perception, and these differences have been

correlated with distinct frequency and phase-synchrony patterns in the large-scale dynamics of brain activity on a millisecond time-scale.[42] Finally, individuals who can generate specific sorts of mental states and report on those mental states with a high degree of phenomenological precision, such as adept contemplatives, provide a route into studying the causal efficacy of mental processes, considered neurodynamically as global or large-scale processes that can modify local neural and somatic events.[43]

Cognitive science is only now just beginning to be open to first-person methods, so it is too early to envision all that could be accomplished through the mutual circulation of cognitive science, phenomenology, and contemplative psychology. So far cognitive science has explored only one small corner of the human mind—the one accessible to phenomenologically naïve subjects reporting to phenomenologically naïve cognitive scientists. The encounter among phenomenology, contemplative psychology, and cognitive science raises another prospect—the prospect of individuals with a high degree of phenomenological expertise reporting to phenomenologically informed cognitive scientists. The prospect of such collaboration and mutual illumination among cognitive science, phenomenology, and contemplative psychology signifies another kind of transcedence for both science and religion—a transcendence of the positivistic dismissal of experience on the part of cognitive science, and a transcendence of dogma and pre-scientific belief on the part of religion. In both cases the key to such transcendence is to make contemplative psychology and phenomenology a full partner in the science of the mind.

To conclude, let me draw out some implications of this conception of mind science for the broader science-religion dialogue represented by this volume. As I stated

at the outset of this essay, the mutual circulation of cognitive science and contemplative/wisdom traditions does not fit easily within the established frameworks of the science-religion dialogue. We can appreciate this point by distinguishing the mutual-circulation perspective from some of the main representative positions staked out in the science-religion dialogue, particularly as this dialogue touches on the nature of the human mind.

First, exploring the mutual circulation of mind science and contemplative experience is different from viewing science and religion as "non-overlapping magesteria."[44] This separate-but-equal strategy of insulating science and religion is highly problematic. It divides science and religion along the lines of a subject-object dualism: science addresses the empirical world conceived as a realm of objectivity, whereas religion address the subjective realm of human purposes, meaning, and value. As I have tried to illustrate in this essay, however, this subject-object dualism breaks down in the face of the intersubjectivity of human experience. Intersubjective experience is the common terrain of both science and religion, and it is poorly understood when fractured along the lines of a subject/object (or fact/value) dichotomy.[45]

Second, the mutual circulation approach is different from looking for the physiological correlates of religious experiences.[46] The key difference is that adept contemplatives are not mere experimental subjects, but scientific collaborators and partners.[47] Thus the mutual circulation approach enables us to envision future cognitive scientists being trained in contemplative phenomenology as well as brain-imaging techniques and mathematical modeling, and future contemplative practitioners being knowledgeable in neuroscience and experimental psychology. Science and contemplative

wisdom could thus mutually constrain and enrich each other. It was precisely this prospect that William James envisioned over a century ago in his writings on scientific psychology and religious experience.[48]

Third, the mutual circulation approach is different from the view that religion can be entirely explained and accounted for by evolutionary psychology."[49] This view is well represented by Pascal Boyer's essay in this volume. It will therefore be informative to contrast his project with mine.

Contrary to the non-overlapping magesteria perspective, I think it is illuminating to examine religion as Boyer does from the perspectives of cognitive science and evolutionary theory. Boyer's analyses linking religious concepts to our intuitive understandings of agency, social relations, and misfortune are enlightening. By the same token, however, in focusing on folk-religious belief structures, Boyer does not address an important aspect of religion, namely, religion (or certain religious traditions) as the main cultural repository of contemplative experience and first-person practices of investigating human experience. Boyer's project takes "religious notions and norms" or "religious concepts" as scientific objects, as something "out there" in the world to be investigated and explained according to third-person, evolutionary and functionalist cognitive science. My project, however, looks both to the role contemplative experience can play in a phenomenologically enriched mind science—a mind science including first-person and second-person modes of phenomenological investigation, in addition to third-person biobehavioral ones—and to the role such a renewed mind science can play in facilitating forms of contemplative experience (or "spirituality" more broadly) appropriate to a pluralistic and non-sectarian scientific culture.

It is interesting to consider how Boyer's approach to religion could also be taken toward science. The upshot would be an anthropology of folk-scientific belief-structures. One could ask people what they believe about "genes," "black holes," "neural networks," and so on, and then study how these concepts are related to other concepts and belief-structures that inform human life in modern Western societies. It seems likely that the folk-scientific concept of "gene," for instance, would be closely linked to human concepts of agency. As a result of writings by theorists such as Richard Dawkins as well as popular science journalism, many people believe that genes are hidden inner agents with their own agendas that influence our motives and feelings. On the other hand, some scientists have more sophisticated and nuanced conceptions of genes and their relationship to cellular and evolutionary processes. The point of this analogy is that folk-religious belief-structures may stand in the same relationship to contemplative knowledge in certain religious communities as folk-scientific belief structures stand to scientific knowledge in modern Western societies.

Although I have drawn attention to the differences between my project and Boyer's, Boyer does make one claim that could be taken as implying a challenge to my approach. He states that there is no "instinct for transcendence" in human beings, and hence religion cannot be understood (at least from an evolutionary psychological perspective) by appeals to transcendence. My objection to this claim is that it presupposes the problematic notion of a "mental instinct." It is impossible, I believe, to invoke the concept of instinct without falling into the conceptual morass of the nature/nurture, innate/acquired, and instinctual/learned dichotomies. I agree with those theorists in biology and psychology who argue that we need to replace this dichotomous framework

with a "developmental systems" approach.[50] According to developmental systems theory, "inherited" (or instinctual) and "acquired" do not name two mutually exclusive classes of developmental characteristics. On the one hand, phenotypic traits are as much "acquired" as "inherited," because they must be developmentally constructed, that is, "acquired" in ontogeny. On the other hand, environmental conditions are as much "inherited" as "acquired," because they are passed on inseparably with the genes, and thus enter into the formation of the organism from the very beginning. The point, as Susan Oyama eloquently argues in her book *The Ontogeny of Information*, "is not that genes and environment are necessary for all characteristics, inherited or acquired (the usual enlightened position), but that there is no intelligible distinction between inherited (biological, genetically based) and acquired (environmentally mediated) characteristics."[51] For this reason, I am suspicious of any explanatory framework that tries to single out a class of biological and mental capacities and label them as "instincts."

How does this relate to religion? Boyer thinks that we have certain instincts that get expressed in our intuitive assumptions about agency and social relations, and that these instincts shape religious concepts, such as those of supernatural agency. On the other hand, other religious inclinations, he believes, are not based on instinct. On this basis he states there is no instinct for transcendence in human beings, and hence that religion cannot be understood on the basis of transcendence.

My response is that this notion of "instinct" is unhelpful. There are no instincts, because the term has no clear application. Organismic life cycles propagate from one generation to the next by reconstructing themselves in development, rather than unfolding according to transmitted, genetic blueprints or programs. The processes of developmental

reconstruction involve numerous, interdependent causal elements, which relate to each other reciprocally as process and product, rather than belonging to the conceptually dichotomous categories of genetic nature versus environmental nurture. There is therefore no good basis within science for trying to understand religious concepts and norms using the explanatory construct of "instincts." I therefore do not accept the statement that there is no human instinct for transcendence—not because I believe there is such an instinct, but because the concept of "instinct" is simply inapplicable to biological and cultural development.

This debate within psychology and biology over the concept of instinct has an important bearing on the concerns of this volume. Once we set the concept of instinct aside, we are free to say that some religious concepts and norms, and certainly some religious experiences—particularly those in well developed contemplative traditions—may very well have to be explained in relation to a human striving for transcendence, a striving that can be culturally maintained and transmitted from generation to generation. The developmental psychologist Margaret Donaldson, for instance, has mapped this sort of striving in relation to modes of human intellectual and emotional development throughout the life-span, as exemplified in particular by what she calls the "value-sensing transcendent modes" of expereince cultivated by the world's contemplative traditions.[52] From a developmental systems perspective, which rejects the concept of instinct, there is no theoretical obstacle to recognizing that human striving for transcendent modes of contemplative experience can form part of the developmental resources that shape the human mind in certain societies and traditions.

A common feature of the three approaches to science and religion I have contrasted with my mutual circulation approach is that they take the concepts of "science" and "religion" largely for granted. These concepts, however, are deeply problematic. They are European intellectual categories that have been shaped in recent Western history by the science-religion conflicts of the European enlightenment and modernity. As such, they do not map in any clear way onto the knowledge formations and social practices of certain other cultural traditions, in particular those of Asian contemplative/wisdom traditions.[53] As Wallace has recently written in his introduction to a volume on Buddhism and science:

> The assertion that Buddhism includes scientific elements by no means overlooks or dismisses the many explicitly religious elements within this tradition… Buddhism is very much concerned with human purposes, meaning, and value. But, like science, it is also concerned with understanding the realms of sensory and mental experience, and it addresses the questions of what the universe, including both objective and subjective phenomena, is composed of and how it works… Buddhism does address questions concerning the meaning and purpose of life, our ultimate origins and destiny, and the experiences of our inner life. But the mere fact that Buddhism includes elements of religion is not sufficient for singularly categorizing it as a religion, any more than it can be classified on the whole as a science. To study this discipine objectively requires our loosening the grip on familiar conceptual categories and preparing to

> confront something radically unfamiliar that may challenge our deepest assumptions. In the process we may review the status of science itself, in relation to the metaphysical axioms on which it is based.[54]

In this essay (and my book *The Embodied Mind*), I have argued that certain contemplative/wisdom traditions (Buddhism most notably though not exclusively) and certain approaches in science (the embodied approach in cognitive science and its more recent elaboration in the research program of "neurophenomenology"[55]) are not simply compatible, but mutually informative and enlightening. Through back-and-forth circulation, each approach can reshape the other, leading to new conceptual and practical understandings for both.

At stake in this developments is ultimately not simply whether we can have a methodologically mature science of the human mind, but whether we can have an ethically mature and spiritually informed science of the mind. Put another way, giving subjectivity and contemplative experience an active and creative role to play in cognitive science is as much an ethical step as a methodological one. My long-term hope is to see in my lifetime a flourishing contemplative, phenomenological, and experimental science of the mind.

Dedication

This text is dedicated to the memory of Francisco J. Varela (1946-2001), whose presence as an "all joyful bridge" among science, phenomenology, and contemplative wisdom is deeply missed and continues to inspire.

Endnotes

[1] See Francisco J. Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: The MIT Press, 1991).

[2] See Francisco J. Varela and Jonathan Shear (eds.), *The View from Within: First-Person Approaches to the Study of Consciousness* (Thorverton, UK: Imprint Academic, 1999). Natalie Depraz, Pierre Vermersch, and Francisco J. Varela, *On Becoming Aware: A Pragmatics of Experiencing* (Amsterdam and Philadelphia: John Benjamins Press, 2003).

[3] See Pascal Boyer, "Gods, Spirits, and the Mental Instincts that Create Them," this volume.

[4] See Antoine Lutz and Evan Thompson, "Neurophenomenology. Integrating Subjective Experience and Brain Dynamics in the Neuroscience of Consciousness," *Journal of Consciousness Studies* 10 (2003): 31-52.

[5] See Michael McGee, *Transformations of Mind: Philosophy as Spiritual Practice* (Cambridge: Cambridge University Press, 2000).

[6] Varela, Thompson, and Rosch, *The Embodied Mind*.

[7] See Arne Johan Vetlesen, *Perception, Empathy, and Judgment: An Inquiry into the Preconditions of Moral Performance* (University Park, PA: Pennsylvania State University Press, 1994).

[8] See Edith Stein, *On the Problem of Empathy*, trans. Waltraut Stein (The Hague: Martinus Nijhoff, 1964).

[9] See Stephanie Preston and Frans B.M. de Waal, "Empathy: Its Ultimate and Proximate Bases," *Behavioral and Brain Sciences* 25 (2002): 1-72.

[10] Robert W. Levenson and Anna M. Reuf, "Empathy: A Physiological Substrate," *Journal of Personality and Social Psychology* 63 (1992): 234-246.

[11] See Natalie Depraz, "The Husserlian Theory of Intersubjectivity as Alterology: Emergent Theories and Wisdom Traditions in the Light of Genetic Phenomenology," *Journal of Consciousness Studies* 8(5-7) (2001): 169-178, also printed in Evan Thompson (ed.), *Between Ourselves: Second Person Issues in the Study of Consciousness* (Thorverton, UK: Imprint Academic, 2001), pp. 169-178.

[12] Edmund Husserl, *Analyses Concerning Passive and Active Synthesis. Lectures on Transcendental Logic.* Translated by Anthony J. Steinbock. (Dordrecht: Kluwer Academic Publishers, 2001).

[13] For the distinction between body image and body schema, see Shaun Gallagher, "Body Image and Body Schema: A Conceptual Clarification," *The Journal of Mind and Behavior* 7 (1986): 541-554.

[14] Stephanie Preston and Frans B.M. de Waal, "Empathy: Its Ultimate and Proximate Bases."

[15] G. Buccino, F. Binkofski, G.R. Fink, L. Fadiga, L. Fogassi, V. Gallese, R.J. Seitz, K. Zilles, G. Rizzolatti, and H.-J. Freund, "Action Observation Activates Premotor and Parietal Areas in a Somatotopic Manner: An fMRI Study," *European Journal of Neuroscience* 13 (2001): 400-404.

[16] See Frans B.M. de Waal, "On the Possibility of Animal Empathy," in T. Manstead, N. Fridja, and A. Fischer (eds.), *Feelings and Emotions: The Amsterdam Symposium* (Cambridge: Cambridge University Press, 2002).

[17] "Mind-reading" seems a poor term to describe the fundamental nature of our intersubjective cognitive abilities. It suggests that we are mainly spectators of each other, that human social life is based primarily on a spectatorial or observational ability to "read" inner mental states on the basis of outward behavior (as we read the meaning of words on the basis of written marks). For criticism of this view see Victoria McGeer, "Psycho-practice, Psycho-theory and the Contrastive Case of Autism," *Journal of Consciousness Studies* 8(5-7) (2001): 109-132, also in Evan Thompson, *Between Ourselves*,. pp. 109-132, and Shaun Gallagher, "The Practice of Mind: Theory, Simulation, or Primary Interaction?", *Journal of Consciousness Studies* 8(5-7) (2001): 83-108, also in Evan Thompson, *Between Ourselves*, pp. 83-108.

[18] Frans B.M. de Waal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals* (Cambridge, MA: Harvard University Press, 1996), p. 69.

[19] Frans B.M. de Waal, "On the Possibility of Animal Empathy."

[20] This description is taken (with modifications) from Natalie Depraz, "The Husserlian Theory of Intersubjectivity as Alterology," p. 173.

[21] See Gordon Gallup, Jr., "Can Animals Empathize? Yes," *Scientific American* 9 (1998): 65-75, and Daniel J. Povinelli, "Can Animals Empathize? Maybe Not," *Scientific American* 9 (1998): 65-75.

[22] See Michael Tomasello, *The Cultural Origins of Human Cognition* (Cambridge, MA: Harvard University Press, 1999), pp. 62-63.

[23] Ibid., p. 68.

[24] Ibid., pp. 89-90.

[25] Ibid., Chapter 4.

[26] See Arne Johan Vetlesen, *Perception, Empathy, and Judgment.*

[27] Michael Tomasello, *The Cultural Origins of Human Cognition*, pp. 179-181.

[28] Frans B.M. de Waal, *Good Natured*, p. 87.

[29] Mark Johnson, *Moral Imagination: Implications of Cognitive Science for Ethics* (Chicago: University of Chicago Press, 1993), p. 200.

[30] Shantideva, *The Way of the Bodhisattva*. Translated by The Padmakara Translation Group (Boston: Shambala Press, 1997).

[31] Ibid., pp. 180-181.

[32] Ibid., p. 182.

[33] For discussion of the relationship between the Western concept of "emotion" and the Buddhist concept of "mental factors" see George Dreyfus, "Is Compassion an Emotion? A Cross-Cultural Exploration of Mental Typologies," in Richard J. Davidson and Anne Harrington (eds.), *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature* (New York: Oxford University Press, 2002), pp. 31-45.

[34] It is worth noting that attention and cognitive control, mental imagery, and emotion were the three areas of investigation chosen for the conference on "Investigating the Mind: Exchanges between Buddhism and the Biobehavioral Sciences on How the Mind Works," September 13-14, 2003, with His Holiness the Dalai Lama and a group of cognitive scientists and Buddhist scholars. See http://www.InvestigatingTheMind.org

[35] See Dan Zahavi, *Self-Awareness and Alterity: A Phenomenological Investigation* (Evanston, IL: Northwestern University Press, 1999) and his "Beyond Empathy: Phenomenological Approaches to Intersubjectivity," *Journal of Consciousness Studies* 8(5-7) (2001): 151-167, also in Evan Thompson, *Between Ourselves*, pp. 151-167.

[36] The resonance between the non-duality of self and other according to Madhyamaka, and the interplay between ipseity and alterity according to Husserlian phenomenology, deserves to be explored in much greater detail than is possible here. Let me make one observation as a pointer toward future discussions. Although there is a fascinating parallel between the two traditions with regard to the interdependency of "self" and "other," they appear to diverge in the stance they take toward the "I" or ego. Whereas Madhyamaka asserts that the self is a mental imputation upon impermanent mental and physical phenomena, Husserl asserts that there is a "pure ego," which he conceives as an identity-pole that transcends any particular attentive act and that is shared by all experiences belonging to the same stream of consciousness. The point I wish to make now is that even if the Husserlian pure ego amounts in the end to the kind of notion of self rejected in Madhyamaka philosophy, it should not be seen as an uncritical or precritical version of that notion, because Husserl introduced the pure ego precisely in connection with the self-othering structure of subjectivity. As Dan Zahavi writes (*Self-Awareness and Alterity*, p. 150), "subjectivity only acquires an explicit I-consciousness in its *self-othering*" and "Husserl's notion of a pure ego cannot simply be taken as a manifestation and confirmation of his adherence to a metaphysics of presence, since Husserl only introduced the pure ego the moment he started taking intentional acts

characterized by self-division, self-absence, and self-alienation seriously." It may be that this aspect of Husserl's phenomenology resembles Advaita Vedanta more than Madhyamaka. On this connection, see Bina Gupta, *The Disinterested Witness: A Fragment of Advaita Vedanta Phenomenology* (Evanston, IL: Northwestern University Press, 1998).

[37] For an important study of the relationship between Levinas and Prasangika Madhyamaka, see Annabella Pitkin, "Scandalous Ethics: Infinite Presence with Suffering," *Journal of Consciousness Studies* 8(5-7) (2001): 232-246, also in Evan Thompson (ed.), *Between Ourselves*, pp. 232-246.

[38] See Eduard Marbach, "How to Study Consciousness Phenomenologically Or Quite a Lot Comes to Mind," *Journal of the British Society for Phenomenology* 19(3) (1998): 252-268.

[39] See Antoine Lutz and Evan Thompson, "Neurophenomenology."

[40] See Natalie Depraz, Francisco J. Varela, and Pierre Vermersch, "The Gesture of Awareness: An Account of Its Structural Dynamics," in Max Velmans (ed.), *Phenomenal Consciousness* (Amsterdam and Philadelphia, PA: John Benjamins Publishing Company, 1999), pp. 121-136, and Depraz, Vermersch, and Varela., *On Becoming Aware.*

[41] See Antoine Lutz and Evan Thompson, "Neurophenomenology."

[42] See A. Lutz, J.-P. Lachaux, J. Martinerie, and F.J. Varela, "Guiding the Study of Brain Dynamics by Using First-Person Data: Synchrony Patterns Correlate with Ongoing Conscious States During a Simple Visual Task,"*Proceedings of the National Academy of Sciences USA* 99 (2002): 1586-1591.

[43] For this conception of mental states as causally efficacious, global neurodynamical states, see Evan Thompson and Francisco Varela, "Radical Embodiment: Neural Dynamics and Consciousness," *Trends in Cognitive Sciences* 5 (2001): 418-425.

[44] See Stephen Jay Gould, *Rocks of Ages. Science and Religion in the Fullness of Life* (New York: Ballantine, 1999).

[45] See B. Alan Wallace, "The Intersubjective Worlds of Science and Religion," this volume.

[46] See Andrew Newberg, Eugene D'Aquili and Vince Rause *, Why God Won't Go Away: Brain Science and the Biology of Belief* (New York: Ballantine Books, 2001).

[47] See Antoine Lutz and Evan Thompson, "Neurophenomenology."

[48] See Eugene Taylor, *William James, on Consciousness beyond the Margin* (Princeton, NJ: Princeton University Press, 1996).

[49] See Pascal Boyer, *Religion Explained: The Evolutionary Origins of Religious Thought* (New York: Basic Books, 2001).

[50] See Susan Oyama, *The Ontogeny of Information: Developmental Systems and Evolution,* second edition (Durham, NC: Duke University Press, 2002), and Susan Oyama, Paul E. Griffiths, and Russell D. Gray (eds.), *Cycles of Contingency*: *Developmental Systems and Evolution* (Cambridge, MA: The MIT Press, 2001).

[51] Susan Oyama, *The Ontogeny of Information*, p. 138.

[52] Margaret Donaldon, *Human Minds: An Exploration* (London: Penguin Books, 1991).

[53] See Piet Hut, "Conclusion: Life as a Laboratory," in B. Alan Wallace (ed.), *Buddhism and Science: Breaking New Ground*, pp. 399-416 (New York: Columbia University Press, 2003).

[54] B. Alan Wallace, "Introduction: Buddhism and Science," in B. Alan Wallace, *Buddhism and Science: Breaking New Ground*, pp. 9-10.

[55] See Antoine Lutz and Evan Thompson, "Neurophenomenology."

Bibliography

Boyer, Pascal. *Religion Explained. The Evolutionary Origins of Religious Thought*. New York: Basic Books, 2001.

Boyer, Pascal. "Gods, Spirits, and the Mental Instincts that Create Them," this volume.

Buccino, G., Binkofski, F., Fink, G.R., Fadiga, L., Fogassi, L., Gallese, V., Seitz, R.J., Zilles, K., Rizzolatti, G., and Freund, H.-J. "Action Observation Activates Premotor and Parietal Areas in a Somatotopic Manner: An fMRI Study," *European Journal of Neuroscience* 13 (2001): 400-404.

Depraz, Natalie. "The Husserlian Theory of Intersubjectivity as Alterology: Emergent Theories and Wisdom Traditions in the Light of Genetic Phenomenology," *Journal of Consciousness Studies* 8(5-7) (2001): 169-178. Also in *Between Ourselves: Second Person Issues in the Study of Consciousness*, ed. Evan Thompson, pp. 169-178. Thorverton, UK: Imprint Academic, 2001.

Depraz, Natalie, Varela, Francisco J., and Vermersch, Pierre. "The Gesture of Awareness: An Account of Its Structural Dynamics," in *Phenomenal Consciousness*, ed. Max Velmans, pp. 121-136. Amsterdam and Philadelphia, PA: John Benjamins Publishing Company, 1999.

Depraz, Natalie, Varela, Francisco J., and Vermersch, Pierre.*On Becoming Aware: A Pragmatics of Experiencing*. Amsterdam and Philadelphia: John Benjamins Press, 2003.

de Waal, Frans B.M. *Good Natured: The Origins of Right and Wrong in Humans and Other Animals*. Cambridge, MA: Harvard University Press, 1996.

de Waal, Frans B.M. "On the Possibility of Animal Empathy," *Feelings and Emotions: The Amsterdam Symposium*, eds. T. Manstead, N. Fridja, and A. Fischer. Cambridge: Cambridge University Press, 2002.

Donaldon, Margaret. *Human Minds: An Exploration*. London: Penguin Books, 1991.

Dreyfus, George. "Is Compassion an Emotion? A Cross-Cultural Exploration of Mental Typologies," in *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature*, eds. Richard J. Davidson and Anne Harrington, pp. 31-45. New York: Oxford University Press, 2002.

Gallagher, Shaun. "Body Image and Body Schema: A Conceptual Clarification," *The Journal of Mind and Behavior* 7 (1986): 541-554.

Gallagher, Shaun. "The Practice of Mind: Theory, Simulation, or Primary Interaction?", *Journal of Consciousness Studies* 8(5-7) (2001): 83-108. Also in Between Ourselves: Second Person Issues in the Study of Consciousness, ed. Evan Thompson, pp. 83-108. Thorverton, UK: Imprint Academic.

Gallup, Gordon, Jr., "Can Animals Empathize? Yes," *Scientific American* 9 (1998): 65-75.

Gould, Stephen Jay. *Rocks of Ages. Science and Religion in the Fullness of Life.* New York: Ballantine, 1999.

Gupta, Bina. *The Disinterested Witness: A Fragment of Advaita Vedanta Phenomenology*. Evanston, IL: Northwestern University Press, 1998.

Husserl, Edmund. *Analyses Concerning Passive and Active Synthesis. Lectures on Transcendental Logic.* Translated by Anthony J. Steinbock. Dordrecht: Kluwer Academic Publishers, 2001.

Hut, Piet. Conclusion: Life as a Laboratory. In *Buddhism and Science: Breaking New Ground*, ed. B. Alan Wallace, pp. 399-416. New York: Columbia University Press.

Johnson, Mark. *Moral Imagination: Implications of Cognitive Science for Ethics*. Chicago: University of Chicago Press, 1993.

Levenson, Robert W. and Reuf, Anna M. "Empathy: A Physiological Substrate," *Journal of Personality and Social Psychology* 63 (1992): 234-246.

Lutz, A., Lachaux, J.-P., Martinerie, J., and Varela, F.J. "Guiding the Study of Brain Dynamics by Using First-Person Data: Synchrony Patterns Correlate with Ongoing Conscious States During a Simple Visual Task," *Proceedings of the National Academy of Sciences USA* 99 (2002): 1586-1591.

Lutz, Antoine and Thompson, Evan. "Neurophenomenology. Integrating Subjective Experience and Brain Dynamics in the Neuroscience of Consciousness," *Journal of Consciousness Studies* 10 (2003): 31-52.

Marbach, Eduard. "How to Study Consciousness Phenomenologically or Quite a Lot Comes to Mind," *Journal of the British Society for Phenomenology* 19(3) (1998): 252-268.

McGee, Michael. *Transformations of Mind: Philosophy as Spiritual Practice*. Cambridge: Cambridge University Press, 2000.

McGeer, Victoria. "Psycho-practice, Psycho-theory and the Contrastive Case of Autism," *Journal of Consciousness Studies* 8(5-7) (2001): 109-132, also in Between Ourselves: Second Person Issues in the Study of Consciousness, ed. Evan Thompson, pp. 109-132. Thorverton, UK: Imprint Academic, 2001.

Newberg, Andrew, D'Aquili, Eugene, and Rause Vince. *Why God Won't Go Away: Brain Science and the Biology of Belief*. New York: Ballantine Books, 2001.

Oyama, Susan. *The Ontogeny of Information: Developmental Systems and Evolution,* second edition. Durham, NC: Duke University Press, 2002.

Oyama, Susan, Griffiths, Paul E., and Gray, Russell D., eds., *Cycles of Contingency*: *Developmental Systems and Evolution*. Cambridge, MA: The MIT Press, 2001.

Pitkin, Annabella. "Scandalous Ethics: Infinite Presence with Suffering," *Journal of Consciousness Studies* 8(5-7) (2001): 232-246. Also in Between Ourselves: Second Person Issues in the Study of Consciousness, ed. Evan Thompson (ed.), pp. 232-246. Thorverton, UK: Imprint Academic.

Povinelli, Daniel J. "Can Animals Empathize? Maybe Not," *Scientific American* 9 (1998): 65-75.

Preston, Stephanie and de Waal, Frans B.M. "Empathy: Its Ultimate and Proximate Bases," *Behavioral and Brain Sciences* 25 (2002): 1-72.

Shantideva, *The Way of the Bodhisattva*. Translated by The Padmakara Translation Group. Boston: Shambala Press, 1997.

Stein, Edith. *On the Problem of Empathy*. Translated by Waltraut Stein. The Hague: Martinus Nijhoff, 1964.

Taylor, Eugene. *William James, on Consciousness beyond the Margin*. Princeton, NJ: Princeton University Press, 1996.

Thompson, Evan, ed., *Between Ourselves: Second Person Issues in the Study of Consciousness*. Thorverton, UK: Imprint Academic, 2001.

Thompson, Evan and Varela, Francisco J. "Radical Embodiment: Neural Dynamics and Consciousness," *Trends in Cognitive Sciences* 5 (2001): 418-425.

Tomasello, Michael. *The Cultural Origins of Human Cognition*. Cambridge, MA: Harvard University Press, 1999.

Varela, Francisco J. and Shear, Jonathan, eds. *The View from Within: First-Person Approaches to the Study of Consciousness*. Thorverton, UK: Imprint Academic, 1999.

Varela, Francisco.J., Thompson, Evan and Rosch, Eleanor. *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge, MA: The MIT Press, 1991.

Vetlesen, Arne Johan. *Perception, Empathy, and Judgment: An Inquiry into the Preconditions of Moral Performance*. University Park, PA: Pennsylvania State University Press, 1994.

Wallace, B. Alan. "Introduction: Buddhism and Science," in B. Alan Wallace, ed., *Buddhism and Science: Breaking New Ground*, pp. 1-29. New York: Columbia University Press.

Wallace, B. Alan, ed., *Buddhism and Science: Breaking New Ground*. New York: Columbia University Press.

Wallace, B.A. "The Intersubjective Worlds of Science and Religion." This volume.

Zahavi, Dan. *Self-Awareness and Alterity: A Phenomenological Investigation*. Evanston, IL: Northwestern University Press, 1999.

Zahavi, Dan. "Beyond Empathy: Phenomenological Approaches to Intersubjectivity," *Journal of Consciousness Studies* 8(5-7) (2001): 151-167. Also in Between

Ourselves: Second Person Issues in the Study of Consciousness, ed. Evan Thompson, pp. 151-167. Thorverton, UK: Imprint Academic, 2001.