

# Spinoza's anticipation of contemporary affective neuroscience\*

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Spinoza speculated on how ethics could emerge from biology and psychology rather than disrupt them and recent evidence suggests he might have gotten it right. His radical deconstruction and reconstruction of ethics is supported by a number of avenues of research in the cognitive and neurosciences. This paper gathers together and presents a composite picture of recent research that supports Spinoza's theory of the emotions and of the natural origins of ethics. It enumerates twelve naturalist claims of Spinoza that now seem to be supported by substantial evidence from the neurosciences and recent cognitive science. I focus on the evidence provided by Lakoff and Johnson in their summary of recent cognitive science in *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (1999); by Antonio Damasio in his assessment of the state of affective neuroscience in *Descartes' Error* (1994) and in *The Feeling of What Happens* (1999) (with passing references to his recent *Looking for Spinoza* (2003); and by Giacomo Rizzolatti, Vittorio Gallese and their colleagues in the neural basis of emotional contagion and resonance, i.e., the neural basis of primitive sociality and intersubjectivity, that bear out Spinoza's account of social psychology as rooted in the mechanism he called attention to and identified as affective imitation.

**Keywords:** Spinoza; affective neuroscience; Damasio, Lakoff; Rizzolatti; Gallese; ethical naturalism; naturalistic fallacy

*"It is impossible for man not to be part of Nature and not to undergo changes other than those which can be understood solely through his own nature and of which he is the adequate cause" (EIVP4)<sup>1</sup>*

## Theories of Spinoza for which there is now evidence from modern emotion theory

Since the seventeenth-century our standard assumptions in the West have stemmed from Descartes, mind-body dualism, the independence of our thinking capacity from bodily determination, and the mind's openness to the world through knowledge in contrast with the body's narrow confinement to its bounds within the skin. In addition, our ethical capacity generally has been seen by philosophers, especially since Kant, as coming from the glory of our reason intervening in and overriding our (lowly) desires and emotions. We suppose that our desires and reason, i.e., our body and mind, are locked in a battle for control of our will, our moral triumph coming from the success of the latter over the former. And we confine scientific inquiry to that realm of law and necessity, the body, while locating our freedom in the independence of our mind from determination by nature. The philosopher Baruch Spinoza, a somewhat younger contemporary of Descartes, challenged all these assumptions, but it is only now in the early 21st century that evidence is mounting that Spinoza, not Descartes, may have been right. Spinoza is famous for having been what philosophers call an "ethical naturalist." He saw himself as putting the mind back into nature. Mind is as natural as the body is, he argued pointedly against Descartes. In his *Ethics* Spinoza offered what we today would call a moral psychology. His psychology was based on a view of the mind and body as one thing rather than two separable things barely holding together, as Descartes had claimed. Spinoza's doctrine is a radical but non-reductive psychophysical monism, a mind-body identity theory that reduces neither body to mind nor mind to body. He maintains the causal efficacy of both the mental and the physical.

Spinoza proposed that our mind, first and foremost, minds the body. The mind is the consciousness of the body. He intuited that even, or perhaps especially, our ethical capacity bubbles up from the deepest layers of ourselves, our most primitive selves, rather than being a product either of God or of reason alone. Ethics thus begins with our most basic *urge* for bodily survival and for the maintenance and enhancement of organic integrity. It is an overwhelming and overriding *desire* — Spinoza calls it the *conatus* — that informs and is expressed in all our behavior and also in all our *thinking*. So our highest cognitive abilities and achievements are as expressive as our bodily desires are of this basic desire for self, for organic continuity and dynamic stability. The *conatus* begins with the urge for mere survival and bodily integrity, but can be extended and elaborated through culture and education. We begin as infants

caring about our bodies in a narrow sense, but this concern grows to include concern for our social identities and symbolic selves and also concern for those around us, extending outward to the environment and the global community. This is Spinoza's naturalized ethic. It contrasts sharply with Kantian conceptions of the freedom of the will as the *sine qua non* of ethics understood as the (human rational) intervention in and overriding of natural necessity.<sup>2</sup> Spinoza envisioned how ethics could emerge from biology and psychology rather than disrupt them, and recent evidence suggests he might have gotten it right. His radical deconstruction and reconstruction of ethics is supported by a number of avenues of research in the cognitive and neurosciences. This paper gathers together and presents a composite picture of recent research that supports Spinoza's theory of the emotions and of the natural origins of ethics. If Spinoza's philosophy of mind and his theory of the affects turn out to be generally correct, we would do well to heed his suggestions about what ethics may really be about.

I will begin by enumerating twelve naturalist claims of Spinoza that now seem to be supported by substantial evidence from the neurosciences:

1. Thought (all mental processes including moral thinking) is affective and interested; it is the expression of interested, desiderative, self-determination and perpetuation; that is the *conatus* (EIIIDef of the Emotions #1; EIVP37Dem; EIIP12; EIIP13; EIIP2S).
2. The body is the *ideatum* of which the mind is the idea;<sup>3</sup> thought originates in images and through its reflexivity builds upon images based in the body and in body experience (i.e., it originates in and as the consciousness of the body — the mind minds the body) but the mind is not reduced to, or merely epiphenomenal to, the body<sup>4</sup> (EIIP13; EIIP17S; EIID3 & Exp; EIIP43S; EIIP49S; EIIP22).
3. Emotion is the registering of body experience (in body and mind) as it reflects the body's furthering or diminishing (pleasure or pain) by such experience or encounters (EIII General Definition of the Emotions, Explanation; EIIP11&S; EIIP37Dem).
4. Representation is always of the relation of self/body and object (external or internal), (a.) i.e., of changes in self/body in response to impinging objects; it is therefore (b.) more fundamentally of states of self than of objects and developmentally begins with self, yet requires an object; thereby (c.) creating an associative link (which is cognitive and affective) in imagination and memory between self and object; and (d.) the associative link can endure and its repetition is triggered subsequently even in the absence of



- the object (EIIP16 and Cors 1 & 2; EIIP19; EIIP26; EIIP27. EIIAx3; EIIP18S; EIIP17 & Cor & Dem).
5. Consious thought arises as self-reflection on body processes and body-world interactions; thinking is (progressively) self-reflexive (EIIP22; EIIP23; EIIP21S; EVP30).
  6. Our mental and emotional processes are largely unconscious, especially the etiology of our emotions; (EIIP12, EIIP28, Dem & S, and EIIP29 taken together indicate that the mind has only unconscious knowledge of many of its own processes. See also EIIIP2S and EIV Preface).
  7. Bodily/affective imitation and contagion is a primitive source of sociality and thus the default position. The self as such is not atomic, but also it is not only partly socially/environmentally constructed and relationally enmeshed and constituted, but also *identified* (Ravven and Goodman, 2002)<sup>5</sup> (EIIIP21; EIIIP27; EIIIP31S). This is Spinoza's famous doctrine of the Imitation of the Affects.
  8. Value arises from the embodied pursuit of survival and well being through homeostatic/homeodynamic somatic mechanisms (Ravven, 1989, p.3–32)<sup>6</sup> governed by pleasure and pain — the conatus) (EIIP13 Lemma 5; EIVP39; EIVP38 & Dem; EIVP18S; EIVP22Cor; EIIIP28).
  9. Ethics, at core, is not about reasoning from principles or finding the right principles or virtues and determining a hierarchy or coherent set of values. It does not consist in a process of cost-benefit analysis resulting in decision making and then in the implementation of those convictions or decisions. Instead ethics consists in a process of affective (embodied) development, rationally informed, and in expanded self-consciousness. *Ethics is about revising or educating the innate body-mind conatus promoting survival and self-determination (through the pain-pleasure axis) to integrate into itself, i.e., into one's affective experience of benefit and harm (what we refer to today as) more rational, flexible, responsive, and long term perspectives, thereby transcending our more automatic and primitive response repertoires. It also consists in incorporating into our self-boundaries an initially primitive affective identification with others, in the automatic process Spinoza calls the Imitation of the Affects, which can be reflectively transformed into an empathy that extends more widely, finally encompassing the entire natural and social universe* (EIIIP39S; Cf. EIIIP9S; See also EIIIP51S; EIVP8; EIVP14; EIVP7 & Dem; EIIIP27; EIIIDef 3; EVP3Cor; EVP42; EVP35Cor; EVP30).
  10. Language is imaginative and uses (metaphorical and other) images based in and on the body (EIIP49S).

11. Faculty psychology is wrong; the mind is not modular but integrated (EIIP48S).
12. There are primary and secondary emotions. The primary are universal in all human beings and governed by the conatus for survival and homeodynamic stability, whereas the secondary vary according to individual and culture and happenstance. The secondary are constructed from the primary plus imaginative associations reflecting personal history and cultural location (EIIP11S; EIIP15; EIIP56&Dem; EIIP51S; EIIP57&Dem; EIIP46).

### The evidence from the cognitive and affective neurosciences

#### *Lakoff and Johnson's "Philosophy in the Flesh"*

One arena of support for Spinoza's account of the mind comes from the work of second generation cognitive scientists. Spinoza's understanding of our rational capacities as embodied rather than independent, which he developed as a critique of Cartesian mind-body dualism, anticipates Lakoff and Johnson's conclusions from recent cognitive science. *Philosophy in the Flesh* is thus the first source of the empirical evidence that supports a philosophical turn from Cartesian assumptions and toward Spinozist ones. In addition to Lakoff and Johnson, we find a *second* arena of support for many of the Spinozist points enumerated above in affective neuroscience. Both the work of one of the founders of affective neuroscience, Antonio Damasio, and Damasio's assessment of the state of the field in his *The Feeling of What Happens*, bear out the core of Spinoza's account of the emotions and of the origin of value. They do so to such an extent, in fact, that Damasio himself has come to see his work and also the general thrust of the field as anticipated by Spinoza! The third book in Damasio's trilogy to bring his discoveries and those of other affective neuroscientists before the general public is entitled *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain* (Harcourt. 2003). I have decided not to discuss this book in this context despite its promising title because I believe that Antonio Damasio may have backtracked a bit from what I see as his more radically Spinozist psychophysical monism in *The Feeling of What Happens*. He seems in this book to attribute to Spinoza a rather cognitivist account of the emotions in which independence from the grip of the passions occurs via a kind of cognitive therapy that can override the bodily affects in a voluntarist manner (Ravven, 2003).

Finally, there are also telling discoveries, especially those of Giacomo Rizzolatti, Vittorio Gallese and their colleagues, in the neural basis of emotional contagion and resonance, i.e., the neural basis of primitive sociality and intersubjectivity, that bear out Spinoza's account of social psychology as rooted in the mechanism to which he called attention and which he identified as affective imitation. This is the *third* domain of contemporary research that Spinoza's theory of the emotions anticipated.

Spinoza anticipated many of the conclusions that George Lakoff and Mark Johnson draw from recent cognitive science in *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (Basic Books, 1999). This work attempts to initiate a revolution in contemporary philosophy in the light of a body of recent discoveries in cognitive science. Lakoff and Johnson contrast the assumptions of Anglo-American analytic philosophy over the past century with the developing consensus in cognitive science. They argue that the evidence now strongly suggests that analytic philosophy has been mistakenly committed to the position that the mind is disembodied in important ways.

It is the [analytic] view that the contents of mind, the actual concepts, are not crucially shaped or given any significant inferential content by the body. It is the view that concepts are formal in nature and arise from the mind's capacity to generate formal structure in such a way as to derive further, inferred, formal structures. (Lakoff & Johnson, 1999, p. 37)

Analytic philosophy, of course, does not deny that the body is necessary for there to be a mind or that neurons carry out the thinking processes. What it denies is that thinking is given any significant content by the body. Instead, "conceptual structure must have a neural *realization* in the brain that just *happens* to reside in a body" (37) but there is little or nothing in the body that actually informs concepts. In thus positing a radical difference between perception and conception (Lakoff & Johnson, 1999, p. 37), analytic philosophy is in keeping with the modern philosophical tradition, and merely develops further the Cartesian dualistic conception of the human person as well as Kantian notions of human autonomy and the independence of reason, and hence of morals, from the body and from desire. But second generation cognitive scientists, they say, have discovered strong evidence that all these basic tenets of analytic philosophy are false. Lakoff and Johnson call for "an empirically responsible philosophy" (Lakoff & Johnson, 1999, p. 3) that brings to bear empirical evidence on philosophical claims largely considered up to now amenable only to reasoning and argument. Even ethics can and ought to be



considered empirically, they insist. Toward the end of the book Lakoff and Johnson offer an extended treatment of how human beings actually think about moral issues. "Every aspect of second-generation cognitive science," they say, "is at odds with the account of reason that Kant requires [for his moral theory]," namely, that reason functions independently of the body overriding desire and the affects — a radicalization of Descartes' position (Lakoff & Johnson, 1999, p. 438).

Lakoff and Johnson suggest that recent cognitive science builds upon three major discoveries: First, that the mind is embodied in the sense that "reason is shaped crucially by the peculiarities of our human bodies, by the remarkable details of the neural structure of our brains, and by the specifics of our everyday functioning in the world" (Lakoff & Johnson, 1999, p. 4). Thinking develops from our sensory motor experience and neural structures toward higher cortical areas (Lakoff & Johnson, 1999, p. 4). Second, reasoning, far from being literal, operates by means of metaphors from bodily experience. Inference is body-based and metaphorical, and hence our concepts are largely metaphorical and imaginative (Lakoff & Johnson, 1999, p. 3). Also, because reason is body based, it is not dispassionate but emotionally laden. Finally, the third discovery is that thought is predominantly unconscious. The "unconscious thought [that] shapes and structures all conscious thought" (Lakoff & Johnson, 1999, p. 13) includes "all our automatic cognitive operations, ...[and] all our implicit knowledge." "All of our knowledge and beliefs are framed in terms of a conceptual system that resides mostly in the cognitive unconscious." It "shapes how we conceptualize all aspects of our experience" (Lakoff & Johnson, 1999, p. 13).

Spinoza anticipated all three major discoveries of second generation cognitive science in at least rudimentary ways and he went on to rethink philosophy, in large part contra Descartes, on their basis. Lakoff and Johnson's point, that the body shapes thinking, is captured in Spinoza's tenet that the body is the ideatum of which the mind is the idea, i.e., thought is the consciousness of the body, the body made conscious (Spinoza, #2).<sup>7</sup> As a result, all thinking is affective and involves *somatic images* from which it cannot be detached at any level. Their argument for the evolutionary character of thought, that is, that it builds self-reflexively upon perception and always retains its bodily and perceptual basis, is captured in Spinoza's understanding of bodily images and thinking as the self-reflexivity of the mind upon those images and always with associated images (Spinoza, #5). The bodily basis of thinking, the images, are never transcended or left behind but always reconstructed and restructured, as we find in Ethics V when Spinoza writes at length about the reordering of images. Spinoza captures the metaphorical character of language

in his claim that language is imaginative, although he doesn't anticipate the full range of how the metaphorical character of thinking operates, focusing primarily on the associative (personal and cultural) character of thinking and its symbolic character, and also its incorporation of memory (#10). Spinoza also believed that our categories are imaginatively constructed, and he lays out in detail (EIIP40S1) the way categories arise imaginatively from body experience. Finally, he is acutely aware that our motivations are unconscious (Spinoza, #6). He is not fully aware of the full range of the cognitive unconscious, but the current understanding of it is completely consistent with his theory and point of view. Philosophic and scientific thinking, according to Spinoza, can and ought to inform imaginative metaphor with a rigorous and infinitely expanding delineation of causes. The mind never transcends its imaginative basis but instead ideally puts it in the service of knowledge and reason.

### *Antonio Damasio*

Antonio Damasio (1997) identifies "the central issue in the neurobiology of emotions" as "the long-standing controversy over the role of the body in the processing of emotions." He locates emotions in the body as well as in the brain. "People probably have both body-loop and as-if-body-loop mechanisms to suit diverse processing conditions," Damasio writes. "The critical point," he goes on, "is that both mechanisms are body-related." Damasio concludes that "the combination of animal and human studies will eventually reveal ... the continuity of processes that begin with a triggering mind stimulus, proceed to emotional responses and to their sensory representation, and conclude with the conscious readout known as feelings." Damasio's break with (once) standard cognitive and neuroscience is *first* in treating emotions as an object of study at all, and *second*, in locating emotion in the body as well as the brain. And his *third* break from the standard view is suggested by Daniel Dennett. Dennett (Dennett, 1995) calls the conclusion that more primitive brain regions become the basis for higher operations, for rational thinking, a "major implication" of Damasio's research and one that is "underappreciated." He quotes the first book in Damasio's trilogy, *Descartes' Error*, p. 128: "Nature appears to have built the apparatus of rationality not just on top of the apparatus of biological regulation, but also *from* it and *with* it." Hence Damasio's account, although based in the body and avoiding free floating rules of mental operation, is not reductionist either somatically, neurophysiologically, or materially. The mind is embodied but not epiphenomenal to either the body or to primitive brain functions. He puts



it precisely: "the dependence of high reason on low brain does not turn high brain into low reason"<sup>8</sup> — or, we might add, into no reason at all.

That is to say, consciousness, higher cortical mental processes, and reflexive thought are real — have causal efficacy — and they bestow evolutionary advantage. Lakoff and Johnson and Damasio are clearly in agreement on this point as is Jaak Panksepp, the major investigator of the neurobiology of both human and animal emotion (Panksepp, 2002). Lakoff and Johnson, as we saw above, emphasize the bodily basis in perception of conception, especially of category formation. Lakoff's discoveries in the metaphorical character of thinking provide evidence from a different set of body-brain mechanisms for the claim that higher mental processes use and build upon the mechanisms of the lower, and Panksepp provides evidence from animal studies. So, on the one hand, Damasio (and Lakoff and Panksepp) avoid the Cartesian Scylla of the computational model of the independence of mind from shaping by the body; and on the other, they avoid the Charybdis of a materialist reductionism that maintains the epiphenomenalism of consciousness, and hence of all thinking and emotion (Harnad, 2001, vol. 21).<sup>9</sup> (We might say that they avoid the Cartesian danger of splitting body and mind and then oscillating between the two as to which is really "real.") Thought is embodied; it is first and foremost about the body.

Thus three basic conclusions of Damasio's research were anticipated by Spinoza, namely, the attempt to establish a science of the emotions; the claim that the mind "minds" the body and builds upon that basis through the reflexivity of thinking; and the claim that thinking processes build upon and with bodily processes (images and homeostatic mechanisms — the latter is Spinoza's *conatus* and *ratio*, #8). Three additional Spinozist anticipations now come into play in Damasio's account, the complete affectivity of thinking, the *identity* (or perhaps, *overlap*, for Damasio) of thought and emotion, and also the primarily self-focus of emotions (Spinoza, ##1, 2, and 3). Emotions are *about* the body, about the self. Let's turn to *Descartes' Error* to see how all this fits together.

### "Descartes' Error: Emotion, Reason, and the Human Brain"

Antonio Damasio's major thesis in his first book for the general public, *Descartes's Error: Emotion, Reason, and the Human Brain*, is the affectivity of thought. Damasio reports that he had come to the conclusion that all thinking is affectively laden, having first accepted the standard notion of the separation of reason from the emotions (Damasio, 1994, p.xi). But as a result of his experience with patients whose neurological defect kept their reasoning power

intact whereas their emotions were severely truncated, he changed his mind. For he discovered that, oddly enough, those with injury to their ability to experience emotions but not to their cognitive capacities were incapable of the kind of rational decision making (including ethical decisions) and the carrying out of those decisions that philosophers standardly (and wrongly) ascribe to reason and thinking alone. Rational decision and action, he concluded, require emotion and cannot take place in its absence. "Feeling," he realized, "was an integral component of the machinery of reason" (Damasio, 1994, p. xii). To say that feeling has a strong role to play in reason is to claim not only the affectivity of thought but also the incorporation into thought of the regulatory mechanisms that drive emotions. Emotions are not merely feelings, but "expressions" of the "mechanisms of biological regulation" (Damasio, 1994, p. xii). It is thus the feedback loops of biological regulation that are operative in reason through the infusion of it with emotion (Spinoza ## 1, 3, 8). Damasio thus proposes that:

Human reason depends on several brain systems, working in concert across many levels of neuronal organization, rather than on a single brain center. Both "high level" and "low level" brain centers, from the prefrontal cortices to the hypothalamus and brain stem, cooperate in the making of reason. The lower levels in the neural edifice of reason are the same ones that regulate the processing of emotions and feelings, along with the body functions necessary for an organism's survival. In turn, these lower levels maintain direct and mutual relationships with virtually every bodily organ, thus placing the body directly within the chain of operations that generate the highest reaches of reasoning, decision making, and, by extension, social behavior and creativity. *Emotion, feeling, and biological regulation all play a role in human reason. The lowly orders of our organism are in the loop of high reason* (Damasio, 1994, p. xiii, my emphasis).

Feeling, including emotion, has another important dimension besides its affectivity and its regulatory role. It is the feeling of the body (Spinoza #2). It is "the direct perception of a specific landscape: that of the body," Damasio emphasizes (p. xiv). Feeling offers us momentary glimpses into body states, into salient parts of the body landscape (Damasio, 1994, p. xv). They offer us "a glimpse of the organism in full biological swing, a reflection of the mechanisms of life itself as they go about their business" (Damasio, 1994, p. xv). And finally, feelings are not isolated and merely consecutive, but have associations with objects to which they are connected through temporal proximity and the recall of memory. "Because the sense of the body landscape," Damasio writes, "is juxtaposed in time to the perception or recollection of something else that is not part of the body — a face, a melody, an aroma — feelings end up being

'qualifiers' to that something else." Feelings connect the external world to internal body states (Spinoza #4).<sup>10</sup>

Moreover, the particular state of the body, positive or negative, depends on its state of pleasure or pain, and also helps determine the style and adequacy of the thinking — quickly operative and fecund, or sluggish and impoverished, respectively (Spinoza #3).

The qualifying body state, positive or negative, is accompanied and rounded up by a corresponding thinking mode: fast moving and idea rich when the body-state is in the positive and pleasant band of the spectrum, slow moving and repetitive, when the body-state veers toward the painful band (Damasio, 1994, p. xv).

So it is not only feeling and emotion whose primary object is the body, but thinking itself is about the body — as it was for Spinoza. For "the mind had to be first about the body, or it could not have been" (Damasio, 1994, p. xvi). "Our very organism," Damasio proposes, and not "some absolute external reality is used as the ground reference for the constructions we make of the world around us and for the construction of the ever-present sense of subjectivity that is part and parcel of our experiences" (Damasio, 1994, p. xvi). "On the basis of the ground reference that the body continuously provides," the mind must be first about the body, but "can then be about many other things, real and imaginary" (Damasio, 1994, p. xvi) (Spinoza ##2, 4). Damasio's research suggests precisely the theory that Spinoza adumbrated! Damasio's account of emotion, of how it arises and what it signifies, is very close to Spinoza's, even eerily so (##2, 3, & 4)!

*Descartes' Error* focuses on three main themes. Piero Scaruffi, (1999) the Italian cognitive scientist, identifies them succinctly as follows:

1. Human reason depends on the interaction among several brain systems rather than a single brain centre.
2. Feelings are views of the body's internal organs. *Feelings are percepts and they are as cognitive as any other percept.*
3. The mind is about the body: the neural processes that are experienced as the mind are about the representation of the body in the brain. ...the mind derives from the entire organism as a whole. The mind reflects two types of interaction: between the body and the brain, and between them and the environment (my emphasis).

The first theme elaborates and provides evidence for Spinoza's #11, the second for ##1, 2, 3, and the third for ## 2, 4, 5.

In maintaining that "the background state of the body is monitored continuously" (Damasio, 1994, p. 153), Damasio makes a distinction between feeling and emotion:



The process of continuous monitoring, that experience of what your body is doing *while* thoughts about specific contents roll by, is the essence of what I call a feeling. If an emotion is a collection of changes in body state connected to particular mental images that have activated a specific brain system, *the essence of feeling an emotion is the experience of such changes in juxtaposition to the mental images that initiated the cycle*. In other words, a feeling depends on the juxtaposition of an image of the body proper to an image of something else, such as the visual image of a face or the auditory image of a melody (Damasio, 1994, p. 145).

This is similar to the account anticipated by Spinoza. An ongoing (background) monitoring is implicit in Spinoza's account insofar as the identity of body and mind entail that bodily images are ever occurrent and accompanying even when images are also being rearranged through reflexive cognitive processes. Thus Spinoza proposes that:

Whatever happens in the object of the idea constituting the human mind [i.e., the human body] is bound to be perceived by the human mind; i.e., the idea of that thing will necessarily be in the human mind. That is to say, if the object of the idea constituting the human mind is a body, nothing can happen in that body without its being perceived by the mind (EIIP12).

Emotions are affections of the human body and the ideas of those affections, Spinoza says (EIIP22) and in (EIIP19): "The human mind has no knowledge of the body, nor does it know it to exist, except through ideas of the affections by which the body is affected." Moreover (EIIP26): "The human mind does not perceive any external body as actually existing except through the ideas of affections of its own body."

Spinoza, like Damasio, locates the link between body and mind, and between emotion and cognition, in images, images arising from and in the body. In fact, contemporary neuroscience helps us understand how images can be bodily, a claim that Spinoza makes that on the face of it seems strange and even a category mistake. Spinoza writes in (EIIP17S) (#2), that he "assign[s] the word 'images' to *those affections of the human body* the ideas of which set forth external bodies as if they were present to us, although they do not represent shapes." The bodily image, the concept or idea of it, and the emotion are barely distinguishable intellectually — Spinoza in fact calls them one entity (see below) — and whenever one tries to define one, the entire constellation enters in. The idea is distinguishable as non-pictorial and reflexive, a reflexivity that characterizes and constitutes thinking but which remains linked to bodily images, which are induced either directly or via Spinoza's version of what Damasio calls the "as if" loop. Spinoza proposes an "as if" type mechanism

when he writes that the imagination reproduces the *somatic* state created by an initial association of emotion and an occasioning impinging object or state of affairs when it is recalled from memory (e.g., IIP18Dem, Spinoza #4d). For Spinoza, body and mind, the idea of the body and the idea of the idea, are one and the same — “the idea of the body and the body itself — that is mind and body — are one and the same individual thing, conceived now under the attribute of Thought and now under the attribute of Extension. Therefore the idea of the mind and the mind itself are one and the same thing, conceived under one and the same attribute, namely, Thought” (EIIP21S). One important implication of this point is the cognitive character of emotion along with its bodily character. The usual distinctions simply don't apply or work.

So too, Damasio: “The factual knowledge required for reasoning and decision making comes to the mind in the form of images” (Damasio, 1994, p. 96). Perceptual images are formed from the varied sensual modalities. “Those neural representations must also be correlated with those which moment by moment constitute the neural basis for the self” (Damasio, 1994, p. 99). Moreover, “*feelings*” Damasio contends, “*are just as cognitive as any other perceptual image, and just as dependent on cerebral-cortex processing as any other image*” (italics in the original, Damasio, 1994, p. 159).

To be sure, feelings are about something different. But what makes them different is that they are first and foremost about the body, that they offer us *the cognition of our visceral and musculoskeletal state* as it becomes affected by preorganized mechanisms and by the cognitive structures we have developed under their influence. Feelings let us *mind the body*. ...They let us mind the body ‘live,’ when they give us perceptual images of the body, or ‘by rebroadcast,’ when they give us recalled images of the body state appropriate to certain circumstances, in ‘as if’ feelings (italics in the original; Damasio, 1994, p. 159).

What Damasio calls the “as if” loop plays an important role in both his and Spinoza's account of emotions. Damasio here provides the empirical evidence from neurobiology for what Spinoza describes as imaginative “association” and associative memory and Damasio calls “juxtaposition” (Damasio, 1994, p. 159). Damasio's Juxtaposition or Spinoza's Association accounts for the affective valence, our sense of the value, of external objects. They have positive or negative value for us because they are associated with particular body states and the feelings (pleasure or pain) we experience as expressive of those body states — as Spinoza predicted! Association/Juxtaposition is also the source of ethical feelings, Damasio suggests, a source analogous to Spinoza's conatus. Both accounts locate the source of value in the basic functional state of the body, self-



monitored affectively as enhanced or diminished, pleasurable or painful, as objects and states of affairs affect it.

Feelings offer us a glimpse of what goes on in our flesh, as a momentary image of that flesh is juxtaposed to the images of other objects and situations; in so doing, feelings modify our comprehensive notion of those other objects and situations. By dint of juxtaposition, body images give to other images a quality of goodness or badness, of pleasure or pain (Damasio, 1994, p. 159).

Moreover, Damasio, like Spinoza, points out that these associations or juxtapositions are not one time affairs but enter into memory and have an ongoing influence. "Although the external bodies by which the human body has once been affected may no longer exist," Spinoza writes in the *Demonstration to IIP17C*, "the mind will regard them as present whenever this activity of the body is repeated." Spinoza's "association" and Damasio's "as if loop" suggest how experience is incorporated into emotional memory. "In numerous instances," Damasio writes, "the brain learns to concoct the fainter image of an 'emotional' body state, without having to reenact it in the body proper. ... There are thus neural devices that help us feel 'as if' we were having an emotional state, as if the body were being activated and modified" (Damasio, 1994, p. 155). Although Spinoza doesn't realize that these states may not be exactly the same body state as originally engaged but weaker versions (Damasio, 1994, p. 156), they nevertheless play exactly the role that Spinoza assigned to them:

As if devices would have developed while we were growing up and adapting to our environment. The association between a certain mental image and the surrogate of a body state would have been acquired by repeatedly associating the images of given entities or situations with the images of freshly enacted body states (Damasio, 1994, p. 156).

Spinoza's version (IIP28) is this: "If the human body has once been affected by two or more bodies at the same time, when the mind afterwards imagines one of them it will straightway remember the others too." Spinoza concludes in the scholium that we can now "clearly understand what memory is. It is simply a linking of ideas involving the nature of things outside the human body, a linking which occurs in the mind parallel to the order and linking of the affections of the human body."

Damasio proposes that the "as if" loop is not "a fixed repertoire of emotional/feeling patterns which would not be modulated by the real-time, real-life conditions of the organism at any moment" (Damasio, 1994, p. 158). Instead, "the body landscape is always new and hardly ever stereotyped." Thus not all



our feelings can be of the "as if" type, he says. Damasio proposes that the relation between "body signals and signals about the [external] entity causing the emotion" may occur through activity in "convergence zones ... by means of reciprocal feedforward and feedback connections ... maintained with their source of input" (Damasio, 1994, p. 162). He further maintains that his account makes clear that the chemical account of emotions is insufficient to understand them. The reason is that the neural account identifies the associative links between body and experience as necessary for understanding emotions, an understanding that we now realize cannot be adequate if it is reductively materialist as is the strictly chemical account.

### *The Somatic-Marker Hypothesis*

In *Descartes' Error*, Damasio introduces the Somatic-Marker Hypothesis: it is that the "mind is not a blank at the start of the reasoning process" that results in decision making but instead "is replete with a diverse repertoire of images, generated to the tune of the situation [one is] facing, entering and exiting ... consciousness in a show too rich ... to encompass fully" (Damasio, 1994, p. 170). Each of the possible options available for choice is presented in a set of images that carries with it affective valence, an associated feeling tone that "marks" the image. Damasio proposes that:

When the bad outcome connected with a given response option comes into mind, however fleetingly, you experience an unpleasant gut feeling. Because the feeling is about the body, I gave the phenomenon the technical term *somatic* state...; and because it "marks" an image, I called it a marker (Damasio, 1994, p. 173).

Thus it is associated affective valences from personal or cultural history incorporated into one's body images that mark one's (potential) choices in this way. Decision making is far from being a detached cost-benefit analysis. Instead it is an affective process driven by one's own history, one's own associative memory embodied in one's personally and culturally particular secondary emotions, the ones grafted upon the basic human emotional repertoire through experience (so too, Spinoza #12).

In short, *somatic markers* are a special instance of feelings generated from secondary emotions. Those emotions and feelings have been connected, by learning, to predicted future outcomes of certain scenarios. When a negative somatic marker is juxtaposed to a particular future outcome the combination

functions as an alarm bell. When a positive somatic marker is juxtaposed instead, it becomes a beacon of incentive (Damasio, 1994, p. 174).

Damasio's account elaborates and specifies Spinoza's theory except that his list of primary emotions versus the secondary associatively constructed ones is slightly different from Damasio's. Even so, both accounts graft emotions onto what Damasio terms "innate regulatory dispositions whose function is to ensure survival of the organism." These dispositions express themselves in an "internal preference system [that] is inherently biased to avoid pain, [and] seek potential pleasure." Moreover, "achieving survival coincides with the ultimate reduction of unpleasant body states and the attaining of homeostatic ones, i.e., functionally balanced biological states" (Damasio, 1994, p. 179). Damasio has provided the neurological evidence for (and translation into contemporary scientific terms) of Spinoza's theory of the conatus as a bodily survival mechanism that plays out as the maintenance of a homeostatic "ratio," expressed as desire and governed by pain and pleasure. The homeostatic mechanism, according to Damasio, also incorporates into itself personal and cultural associations that inform and can widely transform the pain/pleasure axis rather than operating in an automatic, pre-programmed way — as Spinoza, too, envisioned it would (#12). The reason is that both personal history and culture and socialization are incorporated in roughly the same way, namely, through the factual or cultural beliefs that inform the secondary emotions. Thus complex emotions, Damasio says, arise as a result of the socialization process, with the result that "specific classes of stimuli [become connected] with specific classes of somatic state" (Damasio, 1994, p. 177). Emotions are part of a somatic self-regulatory system that incorporates environmental data, including the cultural, into itself — precisely Spinoza's theory, a theory that is body-based but not reductively materialist. Our bodies, and not only our minds, in this way live and bring forth repeatedly our memories, personal and cultural, as attitudes, as an internal preference or motivational system embodying social conventions and even ethical rules (Damasio, 1994, p. 179).

*"The Feeling of What Happens: Body and Emotion in the Making of Consciousness"*

In his second book, Damasio takes on one of the two difficult problems of consciousness, not the more standard problem of its representational character but rather that of the sense of ownership we have of our internal states, perceptions, thoughts, etc. Building on *Descartes' Error*, Damasio extends the account

of our bodily (self-)monitoring to describe how our neurochemical signalling of the ever ongoing changes in our internal milieu is rendered into images and mapped neurophysiologically as well as regulated through homeostatic/homeodynamic feedback and feedforward loops that themselves become the rudiments of a bodily self (a proto-self) upon which the feeling of having (and owning) a moment-by-moment registering of the environment (a core self) can architectonically be built, and finally upon that an experience of an ongoing and ultimately historical self, extending into past and future (an autobiographical self), can emerge. Consciousness solves the problem of "the mismatch between the demands of the environment and the degree to which organisms can cope with these demands by means of automated and stereotyped devices" (Damasio, 1999, p. 303). For consciousness can provide novel images and integrate them into its own survival mechanisms (Damasio, 1999, p. 303).

The features that most distinguish Damasio's position are the following: 1. It develops a "multilevel, interactive, distributed view of self identity"; 2. it places an "emphasis on the bodily basis of the self"; 3. it entails an "insistence on emotion as a necessary and key component of consciousness"; and 4. proposes "that language is not necessary for the proto- and core selves, nor even for much of our autobiographical sense of self," and thus that language is at least initially a translation of pre-linguistic images (Johnson, 2001).

Douglas F. Watt, Director of Neurology at Quincy Hospital in Massachusetts, proposes that "what is largely unique about Damasio's formulation is the hypothesis that the most basic foundations for self (the proto-self) are in systems that represent the body, in the systems that face, as it were, *permanently inward*" (Watt, 2000, p. 74; italics in original) — a position that Damasio, we have seen, shares with Spinoza. In addition, Watt sees as central Damasio's claim that what is represented in consciousness is neither the "basic self structure" nor the object, but rather always and necessarily "*the interaction of the two*" (Watt, 2000, p. 73, italics in original). Damasio's account differs from most others, Watt further suggests, in the rootedness of its explanations in the body and in primitive brain areas upon which it builds rather than focusing narrowly on higher brain areas and on conscious and higher thinking. "Most of the current concepts about self ... centre on high level and consciously accessible representation of self in cortex and pre-frontal systems."

In contrast with the dominant view, Damasio insists (Watt, 2000) that "the notion of self in its most primitive and basic foundations in the brain has to be unconscious, and mostly subcortical, and deeply grounded in the brainstem." This position is consistent with those of the neuroscientists Metzinger and



Panksepp. Metzinger's research suggests (Watt, 2000) that body images capture primitive levels of sensory-motor re-entry, and Panksepp's research gives further evidence of "the likely hierarchy of self systems in the brain, and the likely dependence of cortex on subcortical systems" (Watt 2000, 73–74). This view of the self emerges from *The Feeling of What Happens*<sup>11</sup> (Watt 2000):

[Damasio] makes the key point that in the shifting sands of sensory representations, the most stable anchor for a continuous self is in these dedicated homeostatic systems, whose job is intrinsically to keep basic physiological body fluctuations within the narrow parameters required for the maintenance of life. Because of this stable anchor for the 'proto-self' *the brain has both a biological and dynamical representation for the state of the organism, not the conscious state, but the state of the body in the deepest possible sense.* The proto-self is deeply unconscious in his scheme, because it is a 'first order mapping' as he calls it. But these systems project to other systems performing 'second order mappings', by which Damasio means a joint mapping of the proto-self, a mapping of the object and a mapping of changes in the proto-self being initiated by the interactions with the object. These second order mappings (forming the basis for a core self and 'core consciousness') in turn influence the higher systems in the cortex that map the object in greater detail, enhancing the salience of any sensorimotor mappings relating to both the interaction with and the perception of the object (my italics, Watt, 2000, p.74).

Core consciousness derives from the mapping of self-object interactions and is preverbal but grasped in images. It requires the continual updating of the core self, "which is based on these second order mappings of changes in the state of the organism generated by the interaction with the object, and also the essential ability to generate images of the object in any sensory modality" (Watt, 2000, pp.74–75). Objects are mapped as affectively laden images deriving their emotional charge from their positive contribution to, or interference with, the urge for survival instantiated in the mechanisms of homeodynamic stability.

Higher levels of consciousness, the third level of the self — for example, the extension of self into past and present, conscious thinking, language, complex secondary emotions, and, at the outer reaches, ethics and culture — are extensions of core consciousness and of the core self, of its overlapping mappings of the body and of its regulation of its interaction with the world to maintain dynamic stability and maximal functioning. If we add Lakoff's discoveries and theory into the Damasio hopper, we can now begin to explain the metaphorical bodily basis of thinking and language in extended consciousness's symbolization of its lower layers of body and body-object mappings. The

reader is no doubt aware by now that Damasio's account precisely (and astoundingly) captures and confirms Spinoza's account of the emotions and of the foundations of ethics (Spinoza, §§ 1–5), fleshing out the details of how it is instantiated in neurobiology and providing the empirical evidence to substantiate it. The crucial point is not merely that Spinoza anticipated contemporary discoveries in the neurosciences, but that he reconceived ethics in terms of his incipient neurobiological understanding and did so in a non-reductive way. Furthermore, he had some understanding of how the cultural components are integrated into and extend the biological, and he proposed how ethics could best be reconceptualized to reflect its natural origins and realistic natural human goals while also being reshaped to enable and facilitate the highest forms of cultural and social achievements.

"Consciousness," Damasio writes (Damasio, 1999, p. 11), "from its basic levels to its most complex, is the unified mental pattern that brings together the object and the self." The presence of the self in relationship to a given object in its simplest form occurs as an image, "the kind of image," Damasio proposes, "that constitutes a feeling.... The presence of you is the feeling of what happens when your being is modified by the acts of apprehending something" (Damasio, 1999, p. 10). The empirical evidence shows that "some parts of the brain are free to roam over the world and in so doing are free to map whatever object the organism's design permits them to map," whereas other parts of the brain are confined to representing an organism's own state. "They can map nothing but the body and do so within largely preset maps" (Damasio, 1999, p. 21). In maintaining the body's internal dynamic state within narrow parameters so as to ensure its survival, the brain needs to detect minimal variations in the body's internal chemical profile and to command actions aimed at correcting the detected variations. So "the part of the organism called the brain holds within it a sort of model of the whole thing" (Damasio, 1999, p. 22). This model, Damasio says, is "a collection of brain devices whose main job is the automated management of the organism's life." The information to accomplish this task is provided by "neural maps which signal, moment by moment, the state of the entire organism" (Damasio, 1999, p. 23).

Consciousness, Damasio proposes, "is a device capable of maximizing the effective manipulation of images in the service of the interests of a particular organism." For consciousness brings to the organism the capacity to connect inner regulation with the processing of images. It thus enables regulation to be fine tuned to the precise details of the environment (Damasio, 1999, p. 24). "It places images in the organism's perspective by referring those images to an



integrated representation of the organism, and in so doing allows the manipulation of the images to the organism's advantage" (Damasio, 1999, pp. 24–25). This constitutes evidence for Spinoza's notion of the *conatus* of the mind. We become conscious, Damasio proposes, neither in the self-mapping nor in the object mapping but instead precisely when we know that our own state has been changed by the object and, when that object is salient, affectively charged (Damasio, 1999, p. 25) — this is exactly what Spinoza says ideas grasp (§§ 4 & 5). One's internal states "occur naturally along a range whose poles are pain and pleasure," whose affective valence is then attributed to the juxtaposed (and seeming cause of the) external (and sometimes internal) object or event. Our internal states thus "become unwitting nonverbal signifiers of the goodness or badness of situations relative to the organism's inherent set of [survival] values" (Damasio, 1999, p. 30) — Spinoza's #8. They define an embodied personal point of view, an interested perspective from the standpoint of our body (Damasio, 1999, p. 127). Rudimentary consciousness further consists in the narrative (or the history) of the chain of experience of our encounters with objects and situations that acquire affective valence for us in this way. It is thus at bottom the story of our body's experience in the world and it is preverbal but capable of verbalization and endless self-reflexive elaboration (Damasio, 1999, p. 30). "The apparent self," Damasio concludes, "emerges as the feeling of a feeling" (Damasio, 1999, p. 31), the earlier stages of which are unconscious.<sup>12</sup> "There is good evidence in favor of the covert nature of emotion induction," Damasio writes (Damasio, 1999, p. 43), a position that again precisely supports Spinoza's claim that we are not consciously aware of *the causes* of our emotions (#6). Although Spinoza did not articulate the role of preverbal narrative in the formation of consciousness, I have argued that he did attribute to primitive thinking (*imaginatio*) a narrative and biographical, as well as a metaphorical, character (Ravven, 2002).

Spinoza's position, translated into the terms of neurobiology, seems to be that ethics operates by juxtaposing a wider and rigorously scientific understanding (mapping) of the world ("the object" in neurobiology) with the mapping of our internal state (the self) according to the criteria of our homeodynamic regulatory mechanisms of self-maintenance that guard the "selectively permeable wall that separates the internal environment from the external environment" (Damasio, 1999, p. 137). That would entail, just as Spinoza predicted, the correction and filling in of the associations that constitute secondary emotions to make them more realistic and more rational in their embedded assessment of their objects (causes). But in addition, Spinoza seems to claim that the



boundaries of the self that is mapped are transformed and not just the object. It is the self that is changed, the boundaries of the self widened, as much as the object comes to be reconceived in ethics, according to Spinoza. For we take as our object *the self* and come to understand ourselves in the fullest, in fact, infinite causal relations, relations that not only embed us in our natural context but define us. This theory, too, has some support in Damasio's account of the Extended Consciousness and the Extended Self. First, it seems entailed in the description of core consciousness that the feedback and feedforward mechanisms that Damasio delineates would allow for flexibility in the mapping of the self-maintaining mechanisms so that they integrate information from the object mappings into the self-mapping through the higher order map that relates the two. The higher level mapping of self and object would seem to be a dynamic moment-to-moment awareness that also reflects past experiences and future hopes. This seems to be what Damasio calls the Extended Self. "Extended consciousness," he writes (Damasio, 1999, p. 196), "still hinges on the same core 'you,' but that 'you' is now connected to the lived past and anticipated future that are part of your autobiographical record." Furthermore,

the autobiographical self hinges on the consistent reactivation and display of selected sets of autobiographical memories. In core consciousness, the sense of self arises in the subtle, fleeting feeling of knowing, constructed a new in each pulse. Instead, in extended consciousness, the sense of self arises in the consistent, reiterated display of some of our personal memories, the *objects of our personal past*, those that can easily substantiate our identity, moment by moment, and our personhood (*italics in original*; Damasio, 1999, p. 196).

Hence the autobiographical self focuses upon itself as object: "The secret of extended consciousness," Damasio writes, "is revealed in this arrangement: autobiographical memories are *objects*, and the brain treats them as such ... Each of them generate[s] a pulse of core-consciousness, a sense of self-knowing" (Damasio, 1999, pp. 196–97). So it would be an ever-transformed self-mapping that encounters a more filled in and wider object-mapping.<sup>13</sup> Damasio outlines the reflexive development of biographical identity in the interplay of self and object and self-taken-as-object in this way:

In short, extended consciousness emerges from two tricks. The first trick requires the gradual buildup of memories of many instances of a special class of objects: the objects of the organism's biography, of our own life experience, as they unfold in our past, illuminated by core consciousness. Once autobiographical memories are formed, they can be called up whenever any object is being processed. Each of those autobiographical memories is then treated by

the brain as an object, each becoming an inducer of core consciousness, along with the particular nonself object that is being processed. While relying on the same fundamental mechanism of core consciousness — the creation of mapped accounts of ongoing relationships between organism and objects — extended consciousness applies the same mechanism not just to a single nonself object X, but to a consistent set of previously memorized objects pertaining to the organism's history, whose relentless recall is consistently illuminated by core consciousness and constitutes the autobiographical self.

The second trick consists of holding active, simultaneously and for a substantial amount of time, the many images whose collection defines the autobiographical self and the images which define object. The reiterated components of the autobiographical self and the object are bathed in the feeling of knowing that arises in core consciousness (Damasio, 1999, pp. 197–98).

Damasio thinks that, in its most basic form, extended consciousness is attributable to primates, to baboons, chimps, and bonobos, and perhaps even to dogs (Damasio, 1999, pp. 198, 202). He suggests that there are “convergence zones” in the “higher level cortices and in some subcortical nuclei” where the memories that are widely distributed are brought together and activated in a coordinated manner, held over time by working memory and then treated as an object, a pulse of core consciousness (Damasio, 1999, pp. 221–22). Then particular objects trigger not just the core self but simultaneously the autobiographical self-complex of former objects now incorporated into self (Damasio, 1999, p. 222).

Damasio proposes that at the pinnacle of consciousness is conscience (Damasio, 1999, pp. 230–233) and cooperation.

The imagetic level of “self in the act of knowing” is advantageous for the organism because it orients the entire apparatus of behavior and cognition toward self-preservation, as Spinoza would have wished, and eventually toward cooperation with the other, as we must wish (Damasio, 1999, p. 305).

Damasio is mistaken in thinking that Spinoza urged us toward self-preservation but not toward cooperation as the latter's ultimate expression. Spinoza's progressive identification of the self with the natural cosmos in the highest kind of knowledge, *scientia intuitiva's* deepest and widest (scientific) grasp of self in nature, extending to infinity, in Damasio's terms, the self-object autobiographical dialectic, is the final ethical standpoint. It depends for its plausibility on the possibility of our permeable boundaries including wider parts of the world (the object) within its own urge to self-determination and stability, within its own experience as object-become-self through the reflexivity of thought (Spinoza #5), and finally through scientific self-understanding and social engagement. I



think we can safely conclude from the discoveries of neurobiology that, while surely overstating his case, Spinoza may nevertheless have been on the right track in his insistence that the *conatus* is the "sole basis for virtue," that is to say, the furthering of the homeodynamic stability of the self as it encounters the world is the source of value and the centre from which all value extends outward.

To take a page from George Lakoff, I think that our implicit assumptions about the mind-body relation are in part driven by an image that is false and leading us to false conclusions. We falsely think of cognition on the analogy of seeing (as Spinoza explicitly warned us not to) and so we assume that our thoughts, like our eyes, are focused outward and also that both the perception and the processing are located in our heads. We think of our bodies as discrete but our minds as opening the world to us through representation. This model turns out to be largely false. Neurobiological evidence suggests, instead, that, through an ongoing mapping of the self and interactions among different self-maps, we enact and reenact and also modify our relation to the environment, physical and even social, encoding them mostly unconsciously in the body through neural network-making and emotional associations. Thus our body is "neurosymbolic" (Panksepp, 2003b) and our mind self-reflexively (and often *ex post facto*) captures that ongoing enactment in overlapping mappings. Emotions are the writing into the body of some of our experience in the world. The immune system displays a different kind of embodiment of our experience in the world (as Gerald Edelman has proposed) and evolutionary change another. The self thus constantly enacts the boundary between self and other as it affects us and we respond to it — a position that I have argued is Spinoza's from his earliest philosophical outpourings (Ravven, 1998). Thus the body, as Spinoza anticipated, is as fluid as the mind is in its ongoing incorporation of external objects and states of affairs in their effects upon us and as harboring our own access to pleasure (or avoidance of pain).

The body is ever changing in its responses (but within the fixed limits set by its homeodynamic mechanisms and according to the capacity for ongoing flexibility of various neural systems) and in the embodied (and for the most part unconscious) memories of those responses. Moreover, not only does the environment write itself upon us physically and mentally in our images and in our unconscious, but we also extend beyond our bodies externally, incorporating parts of the environment into our self and then enact concurrently (and no doubt in memory as well) the emotional states of others — a process that turns out to be, as Spinoza predicted, automatic and unavoidable. So we do not just *see* others as discrete and outside of us, but we *are* others, we identify with



others, in affective contagion and enactment and also in the patterns of embodiment of our socialization — a phenomenon that no doubt is part of what underlies our basic hard-wired attachment processes.<sup>14</sup> Some additional evidence for the specifically social character of the relational self comes from a different quarter entirely, namely from primate studies. For Spinoza posits not only the fluid boundaries of the self but also the specifically social character of the emotions. I am referring to Spinoza's famous theory of the Imitation of the Affects. Spinoza regards the mechanism of emotional imitation as underlying the most basic and primitive kind of sociality. This doctrine, too, has support from the neurosciences. Affective Imitation is the third pillar of Spinoza's ethics, in addition to the homeodynamic operation of the *conatus* and the fluid boundaries of the self. The imitation of the affects is Spinoza's biological and psychological elaboration of Aristotle's claim that man is a social animal. Both Spinoza's social psychology and his political theory have as their basis the tendency of emotions to be held in common, to be contagious. This mechanism promotes a primitive form of social cohesion and ethics, one that can be transcended in favor of higher forms of sociality, in Spinoza's estimation. Much of Spinoza's depiction of ethical development in the *Ethics* delineates a process that Spinoza envisions as a transformation from the imitation of the affects of the most similar and local others to a more cognized empathic identification with others and with the larger environment through deep and rigorously developed understanding.

*Giacomo Rizzolatti, Vittorio Gallese and their colleagues*

The support for Spinoza's doctrine of the Imitation of the Affects comes largely from primate studies (and some recent human studies) performed by Giacomo Rizzolatti and his students and colleagues. The research in question concerns mirror neurons and mirror systems in primates and also in humans. These are "neurons that discharge both when [a monkey or human] performs a specific action and when it observes another individual performing a similar action" (Kohler, et. al., 2002, p.846). Hence there is "an action/observation/execution matching system" (Buccino, et. al, 2001 p.400). This "mirror system" entails that "when individuals observe an action, an internal replica of that action is automatically generated in the premotor cortex" (Buccino, et. al, 2001 p.400) but not of the type that necessarily itself induces action — although that can happen, too or instead — but as a kind of internal re-enactment that enables action recognition, and hence it is a form of immediate social cognition. And

emotion recognition and imitation is due to mechanisms of this kind (Rizzolatti, G., Fogassi, L, Gallese, V., 2001, pp.662 and 667). Evidence is growing that this mirror system operates in human beings and not only in monkeys based on analogous neural substrates (Buccino, et. al, 2001 p.400; Rizzolatti, G., Fogassi, L, Gallese, V., 2001, p.664; and Gallese, 2001, p.37). The human system "includes a rich repertoire of body actions," and operates at the preverbal level (Buccino, et. al, 2001 p.403), which suggests that its operation is due to "direct matching" rather than "visual analysis of the different elements than form an action" (Rizzolatti, G., Fogassi, L, Gallese, V., 2001, p.661; see also, Kohler, et. al., 2002). Yet the purpose of this mirroring is not necessarily, or primarily, to induce imitative action in the observer, although it can. Action imitation is a very primitive response (operative, for example, in birds all taking flight in danger) and does not necessarily involve even understanding (action recognition) of what is imitated, but nevertheless "creates an interpersonal link between subjects" (Rizzolatti, G., Fogassi, L, Gallese, V., 2001, pp.667–68). More advanced forms of mirroring do not entail the actual imitation of the actions. For "in conditions in which mirror neurons become active, hardly any imitation would be useful" (Rizzolatti, G., Fogassi, L, Gallese, V., 2001, p.667).

The proposed relevance of this line of research to Spinoza's Imitation of the Affects and his conjectures about higher forms of empathic sociality emerges in Vittorio Gallese's analysis, in his article, "*The 'Shared Manifold' Hypothesis*" (Gallese, 2001), of the implications for social cognition of the discovery of mirror systems. Gallese proposes here a new answer, derived from recent discoveries in research on primate brains, to the standard philosophical problem and even conundrum of how we can know other minds and come to understand others' intentions. According to classical cognitivism, an account based on the presupposition that the mind is "a functional system whose processes can be described in terms of informational symbols according to a set of formal syntactic rules," "the understanding of other minds is conceived solely as a predictive, inferential, theory-like process" (Gallese, 2001, p.42). Recent discoveries, however, call this account of the theory of mind into question, suggesting instead that knowledge of other minds occurs at a more primitive level and as a result of automatic mechanisms of *mutual enactment in the body*. "Agency," Gallese believes, "constitutes a key issue for the understanding of intersubjectivity" (Gallese, 2001, pp.33–34). Virtual enactment in observers produces intersubjective understanding and emotion across individuals at the level of the body itself rather than primarily at higher cognitive levels and in conceptual systems that represent others to the self by inference across atomic



individuals. Gallese says that "the main aim of [his] arguments will be to show that, far from being *exclusively* dependent upon mentalistic/linguistic abilities, the capacity for understanding others as intentional agents is deeply grounded in the *relational* nature of action" (italics in original).

The evidence that Gallese cites in support of his alternative account of intersubjectivity is a series of six neuron recording experiments carried out in the 1990s, his own and those of others (Gallese, 2001, p.35), which are also consistent with both earlier discoveries and the work of a number of other neuroscientists including Damasio's work on the "as if" loop of emotions (Gallese, 2001, p.37 and Note 5). They discovered that "a particular set of neurons, activated during the execution of purposeful, goal-related hand actions, such as grasping, holding or manipulating objects, discharge also when the monkey observes similar hand actions performed by another individual" (Gallese, 2001, p.35). They called these neurons "mirror neurons." Mirror neurons require an interaction between an agent and an object to be activated, and the agent can be human or monkey (Gallese, 2001, p.36). Even more significant was the finding that one third of the mirroring was exact, but in two thirds of the mirroring there was a more general congruence instead, leading to the conclusion that "they appear to generalize across different ways of achieving the same goal, thus perhaps enabling a more abstract type of encoding" (Gallese, 2001, p.36). The motor schema of the observer enacts in an "as if" pattern the motor schema of the actor. It is the same activation pattern in the premotor cortex of both but only necessarily executed by the first. Thus it is a link embodied in the neurons of observer and observed in a goal oriented action that creates a shared physical basis for mutual understanding. Gallese proposes "that this link [between the observed agent and the observer] is constituted by the *embodiment* of the intended goal, shared by the agent and the observer." He further suggests that "the embodiment of the action goal, shared by agent and observer, depends on the motor schema of the action, and not only on a purely visual description of its agent" (Gallese, 2001, p.36). Recent, albeit preliminary, data also indicate that "an action observation/execution matching system exists also in the posterior parietal cortex, possibly constituting part of a cortical network for action recognition" more generally (Gallese, 2001, p.37). Since a number of studies have shown that human beings also have the kind of "mirror matching system" originally discovered in monkeys (Gallese, 2001, p.37), Gallese suggests that "whenever we are looking at someone performing an action, beside the activation of various visual areas, there is a concurrent activation of the motor circuits that are recruited when we ourselves perform



that action" (Gallese, 2001, p.37). "Our motor system becomes active *as if* we were executing that very same action that we are observing" (Gallese, 2001, p.37). That is to say, "action observation implies *action simulation*" (italics in original) (Gallese, 2001, p.37). Our motor system "resonates" with the system of an agent, engendering in us at the very least a kind of empathy and often contagious behavior (Gallese, 2001, p.38). That is to say, we reproduce the *motivation* of the acting other within ourselves.

Why do we do this? Why does our motor system produce mirroring across individuals? Gallese suggests that this mechanism is instrumental in enabling individuals to adapt to particular social environments. It is a form of social cognition — I would call it even, or perhaps even more precisely, *group motivation*: "The neuroscientific results here briefly summarized," Gallese concludes, "seem to point to a crucial role played by action, in virtue of its *relational nature*, in establishing a meaningful link between agent and observer" (italics in original; Gallese, 2001, p.39). The process is automatic, unconscious and non predicative, Gallese points out, unlike the introspection and inference model (Gallese, 2001, p.39 Note 9). Mirror neurons also seem to be involved in the linking of actions and predictive outcomes in forward models, which suggests that it originated as a mechanism to better control (and predict) one's own actions through motor equivalence in oneself. "Through a process of 'motor equivalence,'" then, we can "predict the consequences of actions performed by others" (Gallese, 2001, pp.40–41). Therefore, it would seem that "*action is the 'a priori' principle enabling social bonds* to be established" (my emphasis) and it happens without the observer theorizing about the other person or using propositional attitudes to project oneself into the other's world (Gallese, 2001, p.40). The shared action (i.e., motivation) described occurs in the body and between bodies, linking bodies, rather than in the mind considered independent of the body. The mind, on this analysis, reflects the intersubjectivity enacted in the (observer-actor) bodies rather than creates a cognitive link between atomically discrete, closed in bodies. Thus it is an embodied form of empathy (or proto-empathy) that constitutes "our felt capacity to entertain social relationships with other individuals, the ease with which we 'mirror' ourselves in the behaviour of others and recognize them as similar to us" (Gallese, 2001, p.42). Gallese proposes to extend the concept of "empathy" to explain all the behaviors that enable us to establish a meaningful link between ourselves and others (Gallese, 2001, pp.42–43). In its basic form, he suggests, empathy means that "the other is experienced as another being like oneself through an appreciation of similarity" (Gallese, 2001, p.43). Most important,

Gallese believes that this mechanism expresses itself not only in mirrored actions but in shared emotions, *body schema* (Gallese, 2001, p. 44; Spinoza #7).

To capture the range of bodily and embodied experiences we share with others, Gallese introduces the term "shared manifold of intersubjectivity" (Gallese, 2001, p. 44). Gallese cites Antonio Damasio's account of "as if body loops" to help us grasp the role of simulation mechanisms in both our own recall of emotions and, he proposes, between individuals. The shared manifold operates, he proposes, at three different levels: at the top is "the *phenomenological level* ... responsible for the sense of similarity, of being individuals within a larger social community of persons like us"; in the middle is the *functional level* consisting in the "as if" processes, the simulation routines enabling models of others to be created; and at bottom is 3. the *subpersonal level* the neural circuitry of mirroring that creates common body states (Gallese, 2001, p. 45). In conclusion, Gallese points out that "there is preliminary evidence that the same neural structures that are active during sensations and emotions are active also when the same sensations and emotions are to be detected in others." So it seems "that a whole range of different 'mirror matching mechanisms' may be present in our brain" in addition to the action simulation architecture first discovered. In fact, it "is likely a *basic* organizational feature of our brain" (Gallese, 2001, p. 46). Thus rather than representing an external world needing powerful thought processes to grasp and represent, our understanding of others begins within us, internal to our own bodies and to our experience of our own bodies, rather than outside us as mysterious ciphers never truly to be grasped but only reconstructed across an unbreachable chasm, as if we are the blind man trying in vain to describe the elephant.

So perhaps in the Shared Manifold of Intersubjectivity we have a hint that Spinoza might have been right after all (#9) even in what some have (mistakenly) called his rational mysticism. It is his vision that the ethical task before us begins with the Imitation of the Affects, a primitive emotional contagion across similars promoting what Spinoza calls the Group Mind. Then this most primitive level of sociality can be transformed, via self-reflection and a complex and broad understanding of our shared stake in the natural and social worlds, into a universal empathic identification. The several avenues of recent research in affective neuroscience and embodied cognitive science outlined in this paper suggest that Spinoza's ethical naturalism, rooted as it is in prescient proto-biological and psychological theories, may indeed contribute to our reconceiving of ethics on a sound neuroscientific basis.

## Notes

\* This essay, which is a condensed and revised version of a more extended analysis (Ravven, in press *STUDIA SPINOZANA*), was written before the appearance of Antonio Damasio's third book, *Looking for Spinoza* (2003) and before Panksepp's (2003) recent critical overview that appeared in the last issue of this journal. It is possible that Damasio may have revised his view from his second to his third book, toward a more dualist position than the strong Spinozist monism evident in *The Feeling of What Happens*. The author's analysis of the position taken in *Looking for Spinoza* will be available in a forthcoming review (Ravven, 2003).

1. All quotations from the *Ethics* will be based on the Shirley translation, *Baruch Spinoza: The Ethics and Selected Letter*, translated by Samuel Shirley, edited and introduced by Seymour Feldman (Indianapolis: Hackett, 1982) and will be cited in the form: E IV P3 Dem or E II P13 S, i.e., *Ethics* Part IV, Proposition 3, Demonstration or *Ethics* Part II, Proposition 13 Scholium. All editions of Spinoza use the same format and so anyone picking up any edition of the *Ethics* throughout its history from 1670 to the present and in any language from Latin to modern translations will be able to find the citation.

2. These initial paragraphs are emended from (Ravven, 2003).

3. As Lenn E Goodman succinctly puts it in his (unpublished) essay, "An Idea is not something like a picture on a pad."

4. Goodman writes tellingly on this point in "An Idea," 1–2:

"Spinoza's bold proposal that our consciousness is the idea of the body is germane to what we would call the mind-body problem ... For it does not make the mind identical to the body or require it to be a mere function of the body, whose every state is passively determined by some prior body-state. Yet neither does it sunder the mind from the body ... leaving the body in free fall or the mind to float untended."

5. My paper, (Ravven, 2002) is devoted to demonstrating the social character of the self, according to Spinoza, at both the primitive level and at the highest levels of development against the standard account of Spinoza as a philosophical atomic individualist and ethical prudentialist and egoist. It is a claim I introduced in (Ravven, 1998) and I have explored its historical philosophical roots in (Ravven, 2001).

6. For an extended treatment of Spinoza's psychology as a systems theory governed by homeostatic/homeodynamic mechanisms see (Ravven, 1989).

7. All numbered points (e.g., #2, #3, etc.), refer to this enumerated list of twelve points.

8. Damasio writes (Damasio, 1994, xiii) that "the dependence of high reason on low brain does not turn high brain into low reason."

9. Stevan Harnad (Harnad, 2001), cognitive scientist at the University of Southampton, UK, faults Damasio for not taking a reductively materialist epiphenomenalist position on emotion. Many reviews of the book presuppose either cognitivist or reductive materialist assumptions and critique it from one of those dogmatic angles.



10. This is a position that Spinoza derived from Descartes (and aspects also from Hobbes) but transformed in terms of his own philosophical account. It is the Spinozist version of the theory that is confirmed by Damasio's research. See Ravven, 2002.
11. (Damasio, 1999) is abbreviated as FWH.
12. John Searle (Searle, 1998, p.76 and elsewhere) proposes that what we mean by an unconscious mental event, a seeming oxymoron, is that it is one that in principle can become conscious. If that were not the case, it might be below consciousness but would not be mental, like the mechanisms that regulate the levels of sodium in our blood, for example, which are below our consciousness but not capable of becoming conscious to us.
13. If so, this would bear out Hegel's understanding of the dynamic and mutually integrative relationship between subject and object in *The Phenomenology of Mind*! We even see here how Hegel's thinking on this may indeed have emerged from the deepest understanding of Spinoza! We see in both Spinoza and Hegel how philosophy can be built upon a neurobiological basis and extend its insights upon that basis into both ethics and epistemology. Spinoza's coherence theory of knowledge or understanding also seems to be based on the homeodynamic model of organic stability. The question thus arises whether this is merely a metaphor based on the body (in Lakoffian terms) or whether that account is borne out by the neurobiology of thinking. Does the survival value of thinking, for example, translate into its coherence in the way Spinoza suggests it does insofar as it is driven by the conatus of the mind? These and other similar questions await further exploration.
14. I am grateful to Douglas Watt for a helpful discussion (unpublished) of attachment processes.

## References

- Bechtel, W. (2001). Mandik, P., Mundale, J., Stufflebeam, R.S. (Eds.). *Philosophy and the neurosciences: A reader*. Malden, MA: Blackwell Publishers Inc.
- Belau, L. (2002). Reading otherwise: The hermeneutics of psychoanalysis (trauma, repetition, and the signifier). *Janus Head*, 5 (no. 1, Spring, 2002). [Http://www.janushead.org/5-1/belau.cfm](http://www.janushead.org/5-1/belau.cfm).
- Blackburn, S. (2001). To feel and feel not (review of *Upheavals of thought: The intelligence of emotions*, by Martha Nussbaum). *The New Republic*, Dec. 24.
- Blackburn, S. (2002). *An unbeautiful mind*. Washington, D.C.: The New Republic.
- Blau, J.N. (1995). Review of *Descartes' Error: Emotion, reason and the human brain*. *The Lancet*, 346 (no. 8966), 38-39.
- Buccino, G., Binkofski, F., Fink, G.R., Fadiga, L., Fogassi, L., Gallese, V., Seitz, R.J., Zilles, K., Rizzolatti, G., Freund, H.-J. (2001). Short communication: Action observation activates premotor and parietal areas in a somatotopic manner: an fMRI Study. *European Journal of Neuroscience*, 13, 400-404.
- Calvin, W.H. (1999). [Review of] *The feeling of what happens*, by Antonio Damasio. *The New York Times*. October 24, Sec. 7, p.8.

- Campbell, A. (2000). Review of *The feeling of what happens: Body and emotion in the making of consciousness*, by Antonio Damasio. <http://homepage.ntlworld.com/anthony.compbell1/bookreviews/r/damasio-2.html>.
- Carlisle, M. (1999). Review of *The feeling of what happens: Body and emotion in the making of consciousness*, by Antonio Damasio. *Publishers Weekly*, 246 (no. 30), 70.
- Castro, L. & Toro, M.A. (1998). The long and winding road to the ethical capacity. *History and Philosophy of the Life Sciences*, 20, 77–92.
- Changeux, J. (1991). *Fondements naturels de l'éthique*. Paris: Elsevier Science Publishers.
- Changeux, J.P. & P. Ricoeur, (2000). *What makes us think? A neuroscientist and a philosopher argue about ethics, human nature, and the brain*. Princeton, NJ: Princeton University Press.
- Damasio, A. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York: Macmillan.
- Damasio, A. (1997). The emotional brain: The mysterious underpinnings of emotional life. *Scientific American*. New York: N.Y.: Scientific American, Inc.
- Damasio, A. (1999). *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*. New York: Harcourt Brace & Company.
- Damasio, A. (2003). *Looking for Spinoza: Joy, sorrow, and the feeling brain*. Harcourt.
- Davis, K.L., Panksepp, J., Normansell, L., (2003). The affective neuroscience personality scales: Normative data and implications. *Neuro-Psychoanalysis*, 5, 57–69.
- Deleuze G. (1970). *Spinoza: Practical philosophy*. San Francisco: City Lights Books.
- Dennett, D.C. (1995). [Review of] *Descartes' error: Emotion, reason and the human brain*. *The Times Literary Supplement*. pp.3–4.
- Ekman, P. & Davidson, R. (Eds.). (1994). *The nature of emotion: Fundamental questions*. New York: Oxford University Press.
- Friedman, R.A. (2002). Like drugs, talk therapy can change brain chemistry. (27 Aug. 2002). *The New York Times*, p. f1.
- Gallese, V. (2001). The "shared manifold" hypothesis: From mirror neurons to empathy. *Journal of Consciousness Studies*, 8, 33–50.
- Glannon, W. (1998). Moral responsibility and personal identity. *American Philosophical Quarterly*, 35, 231–250.
- Goodman, L.E. *An idea is not something mute like a picture on a pad*. Nashville, T.N.: Lenn E. Goodman.
- Greene, J. & Haidt, J. (2002). How (and where) does moral judgement work? *Trends in Cognitive Sciences* 5, 517–523.
- Griffiths, P.E. (1997). *What emotions really are: The problem of psychological categories*. Chicago, Illinois: The University of Chicago Press.
- Gross, D.M. (2001). Early modern emotion and the economy of scarcity. *Philosophy and Rhetoric*, 34, 308–321.
- Halligan, P.W. & David, A.S. (2001). Cognitive neuropsychiatry: Towards a scientific psychopathology. *Nature Reviews, Neuroscience*, 2, 209–215.
- Harnad, S. (2001). [Review of] *The feeling of what happens*, by Antonio Damasio. *The Sciences*, 41, 36.
- Held, V. (2002). Feminist moral inquiry: The role of experience. *Janus Head*, v. 5 (Spring, 2002). <http://www.janushead.org/5-1/held.cfm>.

- Hundert, E.M. (1989). *Philosophy, psychiatry and neuroscience: Three approaches to the mind*. New York: Oxford University Press.
- Hundert, E.M. (1995). *Lessons from an optical illusion: On nature and nurture, knowledge and values*. Cambridge, Massachusetts: Harvard University Press.
- Johnson, M. (1974). *The body in the mind: The bodily basis of meaning, imagination, and reason*. Chicago, IL: The University of Chicago Press.
- Johnson, M. (1993). *Moral imagination: Implications of cognitive science for ethics*. Chicago, IL: The University of Chicago Press.
- Johnson, M. (2001). [Review of] *The feeling of what happens: Body and emotion in the making of consciousness*. *The Journal of Speculative Philosophy*, 15, 323–326.
- Kevles, B. (1994). A guided trip through the human brain: [Review of] *Descartes' error: Emotion, reason and the human brain*, by Antonio Damasio. *Los Angeles Times*, Oct. 7, 1994, p.5.
- Kohler, E., Keysers, C., Umiltà, M.A., Fogassi, L., Gallese, V., Rizzolatti, G. (2002). Hearing sounds, understanding actions: Action representation in mirror neurons. *Science*, 297, 846–849.
- Kohn, M. (2002). Unity is health: An evolutionary left. *The Human Nature Review*, 2, 424–430.
- Lakoff, G. and Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. New York: Basic Books.
- LeDoux, J. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. New York: Simon & Schuster.
- Levy, N. (2003). Review of Antonio Damasio's, *Looking for Spinoza*. *Metapsychology*, Feb. 24. <http://mentalhelp.net/books/books.php?type=de&id=1577..>
- Lewontin, R. C. (1998). Survival of the nicest? Unto others: The evolution and psychology of unselfish behavior. (22 Oct. 1998) *The New York Review*, pp. 59–63.
- May, L., Friedman, M., Clark, A. (Eds.). (1996). *Mind and morals: Essays on ethics and cognitive science*. Cambridge, MA: the MIT Press.
- Miyawaki, E. Emotional Man. *The Yale Review*, 88, 143–157.
- Moody-Adams, M.M. (1997). *Fieldwork in familiar places: Morality, culture, and philosophy*. Cambridge, MA: Harvard University Press.
- Mosca, A., (2000). [Review of] *The feeling of what happens: Body and emotion in the making of consciousness*. *Psyche*, 6 (No. 10), Association for the Scientific Study of Consciousness.
- Murphy, N. (1999). Physicalism without reductionism: Toward a scientifically, philosophically, and theologically sound portrait of human nature. *Zygon*, 34, 551–571.
- Nussbaum, M.C. (2001). *Upheavals of thought: The intelligence of emotions*. Cambridge, United Kingdom: Cambridge University Press.
- Ornstein, R. & Ehrlich, P. (1989). *New world new mind: Moving toward conscious evolution*. New York, NY: Simon & Schuster Inc.
- Ornstein, R. (1991). *The evolution of consciousness, of Darwin, Freud, and cranial fire: The origins of the way we think*. New York: Prentice Hall.
- Panksepp, J. & Burgdorf, J. (2003). "Laughing" rats and the evolutionary antecedents of human joy? *Physiology & Behavior*, 6995, 1–15.
- Panksepp, J. (2001). On the subcortical sources of basic human emotions and the primacy of emotional-affective (action-perception) process in human consciousness: An introduction to the following reprinted article. *Evolution and Cognition*, 7, 134–140.



- Panksepp, J. (2002). Commentary. In D. Watt, *Emotion and consciousness: Implications of affective neuroscience for extended reticular thalamic activity system theories of consciousness*. Association for the Scientific Study of Consciousness Electronic Seminar. <http://www.phil.vt.edu/ASSC/watt/panksepp1.html>.
- Panksepp, J. (2003a). At the interface of the affective, behavioral, and cognitive neurosciences; Decoding the emotional feelings of the brain. *Brain and Cognition*, 52, 4–14.
- Panksepp, J. (2003b). (Review Article). Damasio's error. Review of Damasio, *Looking for Spinoza. Consciousness & Emotion*, 4, 111–134.
- Pinker, S. (1997). *How the mind works*. New York: W. W. Norton & Co.
- Pope S. J. (2001). Engaging E. O. Wilson: Twenty-five years of sociobiology. *Zygon*, 36, 233–238.
- Pour-El, I. (2001). [Review of] *The feeling of what happens: Body and emotion in the making of consciousness*, by Antonio Damasio. *Library Journal*, 126, 183.
- Ravven, H. M. (1989). Notes on Spinoza's Critique of Aristotle's Ethics: From Teleology to Process Theory. *Philosophy and Theology*, 4, 3–32.
- Ravven, H. M. (1990). Spinoza's materialist ethics: The education of desire. *International Studies in Philosophy XXII*, No. 3. (Reprinted 2001) *Routledge Critical Assessments of Leading Philosophers: Spinoza*, Vol. 2, (Genevieve Lloyd, Ed.). New York: Routledge.
- Ravven, H. M. (1998) Spinoza's individualism reconsidered: Some lessons from the *Short treatise on God, man, and his well-being*," in Iyyun: *Jerusalem Philosophical Quarterly*, No. 47, 265–292. (Reprinted 2000) *Spinoza*. (Yirmiyahu Yovel and Gideon Segal, Eds.), Ashgate: Aldershot. And in (2001) *Routledge Critical Assessments of Leading Philosophers: Spinoza*, Volume I. (Genevieve Lloyd, Ed.) New York: Routledge.
- Ravven, H. M. (2001). Some thoughts on what Spinoza learned from Maimonides about the prophetic imagination. *The Journal of the History of Philosophy*, Volume XXIX, nos. 3 & 4.
- Ravven, H. M. (2002). Spinoza's rupture with tradition and his hints at a Jewish modernity," in Heidi M. Ravven and Lenn E. Goodman (Eds.), *Jewish themes in Spinoza's philosophy: A collection of essays*. State University of New York Press.
- Ravven, H. M. (2003). Spinoza and the education of desire: A review of Antonio Damasio's (2003) *Looking for Spinoza: Joy, sorrow, and the feeling brain*. *Neuro-Psychoanalysis*, forthcoming.
- Ravven, H. M. (forthcoming). Did Spinoza get ethics right? Some insights from recent neuroscience. *Studia Spinozana*.
- Reiser, J. The autobiography of consciousness and the new cognitive existentialism. *Janus Head*, vol. 5, Spring, 2002. <http://www.janushead.org/5-1/reiser.cfm>.
- Riker, J. H. (1997). *Ethics and the discovery of the unconscious*. Albany, N. Y.: State University of New York.
- Rizzolatti, G., Fogassi, L., Gallese, V. (2001). Neurophysiological mechanisms underlying the understanding and imitation of action. *Nature Reviews, Neuroscience*, 2, 661–670.
- Roberts J. R. (2001). Mental illness, motivation, and moral commitment. *The Philosophical Quarterly*, 51, 41–59.
- Rose, H. & Rose, S. (Eds.) (2000). *Alas, poor Darwin: Arguments against evolutionary psychology*. New York: Harmony Books.
- Scaruffi, P. (1995). Review of *Descartes' error: Emotion, reason and the human brain*, by Antonio Damasio. New York: G. P. Putnam's Sons.
- Scaruffi, P. (1998) *Thinking about thought*. New York: Piero Scaruffi.

- Schroeder, T. (2001). Pleasure, displeasure, and representation. *Canadian Journal of Philosophy*, 31, 507–530.
- Sciolla, A. (2002). (Book Review) The feeling of what happens: Body and emotion in the making of consciousness. *Quarterly Review of Biology*, 77, 103–104.
- Searle, John. (1998). *Mind, Language and Society*. New York: Basic Books.
- Simpson, E. (1999). Between internalism and externalism in ethics. *The Philosophical Quarterly*, 49, 201–214.
- Sober, E. & Wilson, D.S. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, Mass.: Harvard University Press.
- Sweeney, E.C. (1998). *Restructuring desire: Aquinas, Hobbes, and Descartes on the passions. Meeting of the minds: The relations between Medieval and classical modern European philosophy*. Belgium: Brepols.
- Teske, J. A. (2001). Cognitive neuroscience, temporal ordering, and the human spirit. *Zygon*, 36, 667–678.
- Theodoloulou, M.S. [Review of] *Descartes' error: Emotion, reason and the human brain*, by Antonio Damasio. *ETC.: Review of General Semantics*, 52, 350–352.
- Thompson, E. (2001). Empathy and consciousness. *Journal of Consciousness Studies*, 8, 1–32.
- Thompson, E., Varela, F.J., Rosch, E. (1996). *The embodied mind: Cognitive science and human experience*. Cambridge, Massachusetts: The MIT Press.
- Tibbetts, P. (1996). [Review of] *Descartes' error: Emotion, reason, and the human brain*, by Antonio Damasio. *American Scientist*, 84, 91.
- Turner, J.H. (2000). *On the origins of human emotions: A sociological inquiry into the evolution of human affect*. Stanford, California: Stanford University Press.
- Turner, M.A. (2003). Psychiatry and the human sciences. *British Journal of Psychiatry*, 182, 472–474.
- Umiltà, M.A., Kohler, E., Gallese, V., Fogassi, L., Fadiga, L., Keysers, C., Rizzolatti, G. (2001). I know what you are doing: A neurophysiological study. *Neuron*, 31, 155–165.
- Walmsley, J. (2003). There's room in the lab for an armchair: Report on the 'Philosophy and Neuroscience' Conference, Carleton University, Ottawa, Canada, 17–20, October 2002. *Journal of Consciousness Studies*, 10, 89–93.
- Watt, D.F. (2000). Emotion and consciousness: Part II: A review of Antonio Damasio's 'The Feeling of What Happens: Body and Emotion in the Making of Consciousness'. *Journal of Consciousness Studies*, 7, 72–84.
- Wertenbaker, C. (1998). Awakening the emotions: The transformation of the emotional life. *Parabola*, 23,, 79–87.
- Winnicott, D.W., (1954). Mind and its relation to the psyche-soma. *British Journal of Medical Psychology*, 27, 201–209.



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