REVIEW ARTICLE

Damasio's Error?

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Damasio, A. (2003). *Looking for Spinoza: Joy, sorrow, and the feeling brain.* Harcourt, Orlando. 355 pages, $28.00

Is there any more important a topic in the mind sciences than coming to terms with the affective values of the human brain? In his third major contribution to the ongoing discussion of how emotional "valuing" is organized in the human brain, Antonio Damasio skates gracefully over this large intellectual pond. As discussions of our emotional nature are again penetrating deeply into the humanities (e.g., McLemee, 2003), many recognize that a common denominator for bringing clarity to this topic is a confrontation with the evolved nature of our emotional processes which does not neglect the diverse, socially constructed cultural manifestations of our feelings. In the present offering Damasio seeks to captivate those outside the mind sciences, as he continues to argue for the importance of certain brain and body processes in the generation of the many emotional feelings that characterize the pains and satisfactions of individual lives. Since this book reflects Damasio's meditation on a topic of great personal interest to him rather than a balanced account of the scientific state of the field, I would note that my applause is directed more toward the former and my criticisms at the relative paucity of the latter.

Spinoza's thoughts about human emotions and their role in his philosophy of life frame Damasio's meditations. These spiritual brothers have come to similar conclusions concerning the nature of the inner life. Thus, it is understandable that Damasio's arguments are contextualized more in personal terms than centered in a substantive history of this troubled field of inquiry. Read at this level, the book is a testament to the penetrating thoughts of an intellectual revolutionary of the 17th century as well as a modern pioneer who remains one of the few neuroscientists, in the emerging mind sciences of the 21st century, to unabashedly recognize the importance of emotional feelings in human affairs and for their role in organizing and underpinning consciousness and cognitions. In

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advancing his views, Damasio continues to share an admiration of the classic James-Lange approach, in spirit if not in terms of historical framing.

A nonevaluative synopsis of the book

The scientific impact of this seven chapter book is nested between the first and the sixth. In these four chapters, Damasio outlines his current understanding of how emotional feelings emerge in the brain. The remaining three chapters describe Damasio's personal relationship with Spinoza's life and thought, and conjectures on how an emerging understanding of emotional feelings can help flesh out the meaning of a life well lived. I found the last two chapters to be most fascinating and forward looking from a humanistic point of view, but I will restrict myself to the scientific issues summarized in the preceding two hundred pages.

In Chapter 2, Damasio outlines his hierarchical view of mental life, grounded on "automatic life regulators", the basic appetites and drives, with emotional feelings emerging at the very top of neural evolution — as he says, the "crown jewel" of an "afterthought" in brain-mind emergence. He also lays out a battle plan to segregate "emotions" from "feelings" so he can grant lower animals the former, as did Descartes, but not quite the latter. Thus, Damasio encourages us, in line with behavioristic traditions, to study the emotional actions of animals, while reserving the study of feelings to those who speak in human tongues. He offers "qualified congratulations to us humans" (p. 51) for having the good fortune to fully experience the pleasures and pains of existence. Human feelings emerge when "emotionally competent stimuli" (ECSs) from the external world create "a temporary change in the state of the body proper, and in the state of the brain structures that map the body and support thinking" (p. 53). The ECSs, because of their perceptual-cognitive nature, arise from cortical areas such as ventromedial prefrontal and other sensory association areas of the cerebral mantle. From these the ECSs cascade downward into presumably unconscious "execution processes" of amygdala, basal forebrain, hypothalamus and brainstem. Even though one can evoke depressive despair from those ancient brain areas, which we share homologously with animals, Damasio (in concert with many others) urges us to assume that those neuronal stirrings only become conscious when refracted through various higher cortical reaches of the human mind.

In Chapter 3, Damasio develops the theme that "feelings are perceptions" that occur in "the *brain's body maps*" that "refer to parts of the body and states

of the body" (p. 85). Thus emotional feelings are described as variants of other feelings — "*the perception of a certain state of the body along with the perception of a certain mode of thinking and of thoughts with certain themes*" (p. 86, italics in original, here and in all other quotes). He asserts that "feeling in essence is an idea — an idea of the body and, even more particularly, an idea of a certain aspect of the body, its interior, in certain circumstances" (p. 88). These ideas are advanced with many qualifications, which help distinguish them from those advanced by William James well over a century ago. The most striking evidence for these basic ideas is Damasio et al.'s (2000) demonstration of many regionally specific brain activations, using PET scanning, when humans experienced the basic feelings of joy, sadness, anger and fear. Thus, feelings may not "arise necessarily from the *actual body states*... but rather from the *actual* maps constructed at any given moment in the body sensing regions" (p. 112) of the brain. All this is well elaborated, along with a discussion of various social emotions, their potential chemistries, along with comments for anticipated "naysayers" who might wish to have a more penetrating discussion of how feelings could ever emerge from physiochemical processes. For them, Damasio advances the idea that positive and negative feelings may be "directly related to the fluidity or strain of the life processes" (p. 131).

In Chapter 4, Damasio discusses his view on joy and sorrow and the breakdown of social emotions following prefrontal cortical damage. We are offered clinical descriptions of such patients and a robust argument as to why "the neural machinery underlying feeling prevailed sturdily in evolution" (p. 179). Damasio proposes that as the brain areas for emotional responses, presumably all unconscious, meld with higher brain maps of the body, human social feelings — from shame to pride, from awe to indignation, from guilt to compassion — emerge in those higher regions of the brain. He suggests that other great apes such as bonobo's may "show compassion for another suffering being" but we humans "also *know that we feel compassion*" (p. 167), which presumably provides us an essential foundation for virtue.

In Chapter 5, Damasio's thinking begins to merge with Spinoza's. The mind-body problem is laid out for dissection. With the added spice of several clinical disorders, body, brain and mind are re-unified into a well-woven whole. Damasio now elaborates the novel central theme of the book, an insight akin to "Spinoza's notion of the human mind, which he defines transparently as consisting of *the idea of the human body*" (p. 211). And Damasio concurs with the controversial idea, ripe for debate, that "the body shapes the mind's contents more so than the mind shapes the body's" (p. 217).

In the remaining two chapters, Damasio shares personal resonances with Spinoza's life and thought, and conjectures on how an understanding of emotional feelings can help flesh out the meaning of a life well lived. His thoughts are framed by the belief that "knowing about emotion, feeling, and their working does matter to how we live our lives" (p. 287). Who, among the emotionally intact members of our species, would disagree? And thus, we had better get it right. For many brain scientists, who are still in denial about the nature of emotions, this is a clarion call to better conceptualize neuro-mental realities.

Early reviews: A sock in the eye and an aye to please

Within weeks of Damasio bringing these revolutionary views on emotions, consciousness and mental evolution back to the intellectual table, his book was closely reviewed in influential cultural and scientific outlets. I will comment both on the book, as well as several early reviews, partly through the anonymous comments of a friend who shared various frank sentiments in our electronic study group after reading Colin McGinn's (2003) harsh and unforgiving critique in the *NY Times Book Review*. The frank and spontaneous sentiments of our anonymous critic (who is well traveled in clinical neuroscience circles) are peppered, with permission, throughout this review. McGinn's assertion that Damasio's theory is "unoriginal, and it is false" echoed down intellectual corridors. Although McGinn's criticism may reflect a rather selective reading of *Looking for Spinoza*, our anonymous commentator, who, with apologies to Galileo, I will call "Simplicio", also noted that

> Simplicio: *Damasio has been deemed above this kind of criticism for the most part, probably because his reputation and strong empirical contributions made it difficult for anyone to challenge him. Nonetheless, just as he did not acknowledge the James-Lange tradition adequately in this book, Damasio has exhibited a "royal" tendency to weave his analysis without due consideration of the related ideas of others.*

In contrast to McGinn's peremptory dismissal, in a concurrent *Nature* review, Ray Dolan (2003), a cognitive neuroscientist from University College London who has also superbly imaged emotional arousal in the human brain, shares consistently graceful and positive sentiments about Damasio's effort to peer deeply into the Pandora's box of human passions. Dolan notes that Damasio's "suggestion that emotions and feelings are the bedrock of our ethical systems

has the wider implication that an inborn capacity to acquire ethical norms depends on certain circuitry in the human brain". I heartily agree with this exquisite sentiment, and would passingly note that Charles Darwin developed comparable ideas in considerable depth in his *Descent of Man.*

My own assessment of what Damasio has achieved in this neurophilosophical contribution lies about midway between the extremes represented by the above reviews. McGinn's charge that Damasio's adaptation of the classic James-Lange perspective on emotional feelings is "unoriginal" is substantially true, but Damasio adds a neuroscience twist to make it more interesting than it has been for a long time. Damasio originally proposed in *Descartes' Error* that the relevant body representations existed primarily in the somatosensory cortex, but now because of a flood of brain imaging evidence, he (and everyone else) have moved insular cortex and several other more primitive brain regions to center stage for certain affective experiences. The Spinozan part of the theory, which McGinn regards as "false", has more serious shortcomings than Damasio acknowledges in his effort to embed higher aspects of the mind perhaps too firmly in the peripheral organic body as well as central neurosymbolic "bodies" (a difficult subject I will touch on later). The neocortical expansions have putatively freed human thought from peripheral bodily matters (as long as one is not too hungry, thirsty, angry or lusty), and that is the gist of McGinn's complaint.

The truth may lie somewhere between Damasio's radical position that cognitions are integrally tied to emotional feelings and the traditional cognitivist notion that ideas have functional autonomy from emotion and bodily states. Whether one agrees with Damasio on these and other particulars, or not, one has to credit that his books have stimulated and challenged scholars outside brain research to think about fundamental matters in neuroscientific terms. However, Damasio's central focus, that most mental states consist of various types of bodily awareness, is bound to remain a controversial way to conceptualize the activities of the higher reaches of the human mind. I would heartily endorse a slightly less radical principle, namely that most cognitive states embed affective value(s), and that all sustained cognition is affectively directed and motivated, often invisibly in a fashion that promotes the illusion of cognitive autonomy from emotion. However, it seems to me that Damasio may have taken cognitive grounding in emotion and bodily states to an extreme. How such issues can ever be cashed out or tested empirically is the critical scientific issue, not sufficiently explored by either Damasio, or to our knowledge, Spinoza.

On the varieties of rocks on a New England field

As we look closely at Damasio's theory of emotions, there is much to admire, and much to worry about. His thoughts are at once new and traditional. In reading certain of his lengthier descriptions of feelings, one may have the disconcerting feeling of being called upon, once more, to admire the "rocks on a New England field", but in other parts of the book, especially Chapters 3 and 4, we are offered an engaging description of scientific work of foremost importance in understanding human emotions (e.g., Damasio, et al., 2000).

In order to understand the emergence of *emotional* consciousness (i.e., affects) in the course of evolution, we may have to utilize "state" concepts that are very different from those that mediate "information processing" which are essential for generating our "ideas" about the world (Panksepp, 2003a). Even as Damasio has advanced one of the most well-developed scientific hypotheses concerning the nature of certain affects, he has failed to distinguish affective and cognitive forms of consciousness as clearly as I think is essential (Panksepp, 2000a), while vigorously pursuing a seemingly over-extended distinction between emotions and feelings.

Can emotions be neatly separated from feelings?

As McGinn (2003) asserted, Damasio's potential errors are sufficiently large that they need to be extracted from his enticing and seductive prose. One must examine the more problematic assertions in the light of *all* the available evidence and alternative conceptual positions. This is difficult, for all too often, in the face of such complexity, Damasio advances several opposing positions, with the implicit hope that the readers will accept, as William James once did (1905, p. 281), that for "certain purposes it is convenient to take things in one set of relations, for other purposes in another set ... In the case of our affectional experiences we have no permanent and steadfast purpose that obliges us to be consistent, so we find it easy to let them float ambiguously, sometimes classing them with our feelings, sometimes with more physical realities, according to caprice or to the convenience of the moment." Essentially James was saying that people use the same words for different things, and sometimes even a singe individual is tempted, opportunistically or inadvertently, to slide between different meanings of a single concept.

Damasio's attempt to have it several ways at once is evident in the use of the

words *emotions* and *feelings*. Damasio has explicitly chosen to separate these into distinct categories, with emotions reflecting the objective aspects that scientists can readily measure, while feelings are the subjective aspects that scientists must infer. The same maneuver has been advanced by Dolan (2002). This is rather different from the more traditional way of handling the problem of affective feelings, where the experiential "energetic" aspects are just one of the many attributes of the overall emotional processes of the brain and body, with the other major ones being the expressive and physiological parameters that are comparatively easy to quantify, and the cognitive-appraisal ones that are not, especially in animals.

Damasio raises the distinction not only for epistemological reasons, but also because he accepts the likelihood that certain emotional behaviors (i.e., certainly reflexive approach and withdrawal responses) are not valid indicators of corresponding types of internal states. Although most would grant this likelihood, which surely take bacteria and many other "lowly bugs" out of contention for affective consciousness, this parsing of feeling from emotion seems to leave the door closed for perhaps too many other "higher" animals that don't have enough idiotypic somatosensory representation areas to construct as sophisticated a body image as humans. A few months ago (Dec. 2002) I attempted to coax Ray Dolan back to the more traditional point of view of how we should use the term *emotion*, and a relevant segment of that communication is shared in Footnote 1.

Surprisingly, Damasio's attempt to distinguish affective feelings from emotions, which are surely closely related subspecies, is accompanied by the tendency to inextricably blend emotions and cognitions, which are vastly different species of mental activity (for fuller discussion, see Panksepp, 2003a). Such feeble distinctions and courageous conflations may arise as a function of Damasio's problematic emotion taxonomy, which fails to make a principled distinction between what we might call "blue ribbon emotions" or the prototype states like fear and separation distress which are shared by all mammals, and the various highly cognized and derivative states in humans, like shame and guilt, that link separation distress (as a primitive form of anxiety) to complex internalized self-images and images of others (see next section). In highly cognitive creatures like ourselves, such primal emotions, like confrontation with a predator (fear), threats to free pursuit, territory or con-specifics (anger), loss of mates, offspring and con-specifics (separation distress), and the comforts and joys of sex, attachment, and play all become increasingly translated, activated and realized through complex cognitive operations. Those affective 'primes' thus live

increasingly in the rich sea of human symbolic operations and complex meanings. However, even highly cognized human emotions probably never lose the intrinsic grounding in affective primes, or else they would cease to exist.

On the other hand, highly interactive mental processes such as affects and cognitions, should not be excessively conflated. Indeed, since the aim of science is to carve nature at the joints, we must seriously consider whether there is a very flexible joint between neural systems that elaborate our affective feelings and those that govern our perceptions and thoughts, rather than it all being one continuous bone. From my perspective, Damasio's thesis might have been better phrased had it more explicitly addressed subcortical-limbic-affective and cortical-cognitive-thoughtful distinctions (Panksepp, 2001, 2003a). When one experiences intense emotions, there are remarkable reductions in blood flow in certain areas of the cortex, as is evident in Damasio et al's (2000) own data (for a graphic depiction of the 189 significant brain changes, see Panksepp 2003a). Indeed, many cortico-cognitive activities tend to suppress (or at least heavily modulate) subcortical emotional processes (Liotti & Panksepp, 2003). It is only at modest levels of emotional arousal that the two work synergistically and in harmony. We still need to develop a coherent "affect logic" — a description of how affective processes systematically guide thinking — to bind the two in many life circumstances. In this vein, Damasio and his colleagues have emphasized how complex social affective contingencies in orbitofrontal cortex are critical, even essential, to the sensible higher executive decision-making capacities of human beings. Suddenly stripped of such a life-time accrual of social meanings and the contingencies for affective reward and affective aversion, we become thoughtless, emotionally impulsive creatures, affectively (and emotionally) aroused all too easily, and our social sensibilities become primitive. We become like bulls in the china shops of our social attachments and contracts, shattering them irretrievably as in the tragic case of poor Phineas Gage who Damasio so eloquently re-introduced in *Descartes' Error.*

And where does this leave the other animals?

A certain conceptual slipperiness is evident in the present book in the way Damasio discusses the potential emotional feelings of animals. On one page, he advises caution in accepting that emotional behaviors, easily observed even in "simple" animals, reflect emotional feelings, while on another he seems to acknowledge the likelihood that other animals do experience emotional states at some level. This ambiguity is certainly understandable, since the existence of

animal emotional feelings remains such a contentious topic (e.g., Blumberg & Sokoloff, 2003; Panksepp, 2003b), but these issues need to be discussed in the context of the available data and possible predictions, not in the general terms that Damasio has chosen. Of course, this is the problem in painting a portrait of complexity with a broad brush. That may be the desired level of discourse for general readers, but it leaves those who wish to deal with such issues in more explicit scientific ways perplexed as to where Damasio really stands.

Regarding the basics of my own vision of neuro-affective states, I suspect that subcortical systems are intimately devoted to the visceral representations of evolved bodily urges that have an emotional feel to them. The cortico-cognitive contributions, so essential for the mental individuality of human lives, have a highly refined capacity to parse environmental events exquisitely, and therefore to embed the affectively primitive but evolutionarily essential forms of selfhood (the shared emotional and motivational capacities of humans and all other warm-blooded creatures) in a rich matrix of real-world living. In my estimation, those who would deny affectively experienced neuro-mental capacities to so many of our fellow creatures are participating in an intellectual game and potentially a moral abomination. If we leave too many other animals out of the evolutionary circle of affect, then we risk compromising our sense of empathy and compassion for the life around us, and thereby the quality of our own selves. Surely a sobering respect for our virtually unlimited capacity for hubris (writ large in our intellectual history as a species) should make us exceedingly careful about making that potential mistake over and over again. Descartes reified just that kind of error. To our knowledge, Spinoza did not (but see Note 2).

Problems with Damasio's taxonomy: Where are the evolutionarily derived emotional systems of the brain?

Damasio finds "it helpful to classify the emotions-proper in three tiers: background emotions, primary emotions, and social emotions" (p. 43). Although there is some utility to such a scheme, one wonders why Damasio seems so consistently to neglect the massive amount of work that has already been done characterizing the various primary emotions. Isn't a core neuroscientific problem a matter of clarifying what these various emotions really consist of in neural terms? A focus on the shared and distinct properties of individual emotional systems is the level of discourse that is needed to convey what we really do know about the sources of emotional behaviors and affective feelings

of humans and other animals. At this level, Damasio chooses generally to ignore the vast amount of work that has already been conducted addressing such issues. This is particularly problematic in terms of how the discussion of happiness or joy often fails to acknowledge that attachment processes underpin many positive prototype emotions, particularly play, social affection, and other positive affective states experienced in the context of attachments. This, from my point of view, moves the treatment of positive emotion off its biological moorings in social attachments, and strips the discussion of a key ethological signpost for further work. Although McGinn's criticism may reflect a rather selective reading of *Looking for Spinoza*, my anonymous commentator also noted that:

> **Simplicio:** *McGinn misses the biggest problem in simply objecting to Damasio's somatosensory reductionism. The biggest problem isn't that it is warmed over James-Lange thinking (which it is, and this has always at bottom been Damasio's take on feelings), or that it reduces cognition too much to its emotional ground (which is a much easier over-emphasis to take compared to the opposite error many cognitivists make, where cognition is detached from its emotional ground), but that his explicit treatment of emotion is fundamentally a-categorical. In other words, fear, rage, sadness, lust, and all of the social emotions related to attachment (and their manifestations in consciousness) are approached as though they all have roughly the same neural correlates, when the evidence is that 'organism defense' states like fear and rage have quite different substrates than social and attachment-related prototype states (lust, separation distress, play, other social emotions that are positively valenced).*

In contrast to his previous neglect of specific emotions, I have been especially delighted to see how Damasio et al.'s (2000) recent work has highlighted different patterns of cerebral blood flow for basic emotions, heavily weighted to arousal at subcortical loci (for a synoptic summary, see Figure 2, Panksepp, 2003a), which strongly supports data harvested from animal models. Unfortunately, his coverage in *Looking for Spinoza* does little justice to the mass of animal and human data which suggest that affective experience in both is critically dependent on those subcortical somato-visceral prototype emotional operating systems. What is even more remarkable and puzzling, in this context, is that Damasio readily accepts that the primitive interoceptive bodily processes that converge on numerous brainstem systems that regulate our internal milieu, do provide "background emotions" of well-being and bodily distress. Considering his recognition of the critical importance of such low-level processes in the construction of consciousness (Damasio, 1999), one would think that a fuller

consideration of the emotional "action apparatus" of the brain, which is so remarkably consistent with his spectacular brain-imaging findings, might also be truly critical for emotional feelings.

It thus seems to me that Damasio has missed the opportunity to discuss emotional feelings in more deeply evolutionary ways. By not at least entertaining that the various instinctual emotional operating systems of the brain may be very closely linked to affective subjective states of the brain, an empirically productive approach to understanding affective feelings has again been ignored, if not marginalized. By linking emotional feelings so heavily to re-afferent sensory processes (as if they were species of feelings very similar to taste and hunger), Damasio has failed to fully acknowledge the possibility that certain motor-action processes do have a mind — intrinsic experiential components — of their own. The prototype emotional states, expressed through distinct, genetically ingrained operating systems, generate an adaptive logic as they captivate higher cortico-cognitive functions into presumably distinct attractor patterns (characteristic "ways of being").

From the standpoint of the different subcortical trajectories of the various social emotions that relate to socio-sexual attachments and play vs. rage and fear, Damasio's somato-sensory perspective ignores much relevant material. He fails to emphasize that the executive aspects of emotional actions have a special power to "grab" the global workspaces of cognitive consciousness, through a host of reticular, thalamic and paralimbic mechanisms still poorly charted. In humans such interactions presumably help give emotions both distinctly cognitivized and differential phenomenological textures. Although the arousal of emotional states generates many sensory feedback components secondarily, the emotional feelings are likely to be as much a part and parcel of the intrinsic action apparatus of the brain as the resulting sensory reafferents.

Is action priming essential for encoding of emotional values?

I would argue that any theory of emotional valence will fail unless it centrally takes stock of how the actions primed in prototype emotional states tell an unambiguous tale about whether something is organismically positive or negative. In my estimation, the likelihood that evolved emotional systems establish an intentional stance toward the world is not sufficiently developed in Damasio's present coverage, even though it could easily have been achieved had Damasio focused more on the *active* than the *passive* aspects of emotional feelings. It would also have been good if he had entertained a more central role

in his thinking for the many ways our intrinsic but culturally molded capacities to valuate the world arise from the brain's active capacity to project diverse visceral-emotional actions and feelings onto affectively neutral world events.

> **Simplicio:** *The problem is that there may be similar mechanisms for how 'feelings', the ripples of emotion in consciousness, are manifest in Damasio's judgment (largely through somatosensory readouts), that he glosses over the differential and categorical nature of the prototype states. This, ironically, leaves the treatment of emotion without depth, 'gutting it' in a curiously paradoxical way for someone so keen on visceral perspectives. Additionally and closely related to this, there is the general neglect in his thinking of the intrinsic tie of prototype emotions to action priming and to (urgently) motivated behavior. This is reflected in the passive voice in his second book, which is still 'sensory-centric' in its take on consciousness. Emotions are NOT just the 'feeling of what happens', but more "by God, I am going to make this happen!!!" and experiencing such action urges are at least as important to the core of feeling as the sensory feedback about autonomic and visceral changes.*

Damasio may be on the right track in the importance of somatosensory readouts in terms of an internal bodily sense of how certain emotions contribute to our overall background feeling of existence, but he grossly underestimates the motor and executive dimensions of various prototype emotions to the dynamically felt urgencies that accompany emotional actions. There is much more to emotional feelings than sensory feedback, and it remains possible that sensory influences are the minor rather than the major chords. In any case, it is hard to imagine someone ever feeling truly angry, despite their face turning red, and feeling lots of sympathetic arousal, if there was no internal impetus to verbally or physically strike out. I doubt that anyone would feel great sadness without longing or reaching out towards the lost person or loved one, or desiring to see them. Tears can be induced by many things, but surely without being accompanied by serious internal distress over the absence of the other and wishes for re-connection (even if the impossibility of that lies at the heart of our grief), those tears would not be accompanied by real sadness. Without an impulse to act in a certain way towards another, to secure more or less of something, I cannot imagine that emotion would feel much like emotion, but only sympathetic or parasympathetic somatosensory shadows of emotions, and pale ones at that. Emotions *move* us first and foremost, and the root of the word (e-motion) doesn't reflect some semantic coincidence, cuteness, or sophistry. Without ancient emotional action urges, I doubt if there would be much in the way of truly emotional feelings, just a passive background feeling of the body.

Simplicio: *One could readily argue that a real theory of valence is not even possible without some version of action priming, as these action primes 'encode' how a certain kind of stimulus is unconditionally positive or negative for an organism, telling the organism unambiguously whether certain kinds of stimulation are biologically desirable or not. For example, running away in fear states, the passive receptivity of infant mammals in receiving nurturance, or fighting against another organism in rage all provide unambiguous motor "commentary", evolutionarily conserved across many lines and through phylogenesis, about the positive or negative nature of the stimulation. In other words, put bluntly, nature tells us in these prototype states to 'get the hell out of there', 'terminate the source of the bad stuff with prejudice', or 'stick around', and get some more of the good stuff. There is simply no other way to understand what emotion really does for us and to us, no other way to see it except as the primal signature of value in the brain/mind. Again, Damasio probably wouldn't disagree, it is just that he is repetitively drawn to this sensory-centric James-Lange version of events, and can't seem to see the problems with just stopping there. It is not so much that this is wrong (there I would disagree with McGinn), it is just seriously incomplete. Of course, one can argue, depending on one's preference, whether it is so incomplete as to be virtually wrong. I wouldn't go that far, but McGinn does.*

Can a cortico- and sensory-centric view ever be a sufficient framework for understanding emotional feelings?

By remaining so sensory-centric, Damasio may be advancing an incomplete and potentially incorrect theoretical view of *emotional* feelings. Although emotional arousal obviously generates feedbacks that arise from peripheral autonomic and somatic changes, to see these as the major causal components of *emotional* feelings may be the smaller, and perhaps more obvious, part of the mystery that needs to be revealed. The major alternative — a subcortically focused, action-centric viewpoint that would give emotion intrinsic resonances in the higher portions of the mammalian and primate brain (and thereby strong influences on cognitive consciousness) — is largely ignored. Of course, to sustain his James-Langian view of emotions, first introduced in *Descartes' Error*, Damasio must remain cortico- and sensory-centric, even though in *The Feeling of What Happens*, he seemed to be gracefully distancing himself from such an incomplete viewpoint. Curiously, in the early part of the present book Damasio does identify *emotions* with action. He states (Chapter two) "in the beginning, there was emotion, and the essence of emotion is action". But when he gets to "*feelings*", the executive-action mandates of emotion appear to vanish, and we

are left with a bunch of concatenated body maps revealing states of the body in various axes, but the view of the emotional pain and pleasure in all that body mapping is unconvincing, relating it globally to states of "ease and strain of the life process". While this notion of valence might have reasonable correlations with states of hunger, fatigue and other fairly direct homeostatic imbalances, this doesn't go far enough in seeking to explain the valence of prototype emotional states. The intrinsic tie between emotional valence and "evolutionarily conserved commentary" of emotional action is lost in Damasio's perspective. I just don't understand how emotions could feel like emotions if we had no internal sense that we were driven to act a certain way, and for this reason, I doubt that emotional valence can be meaningfully explained by reflections on 'life ease vs strain' however appealing and poetic those might be. Admittedly, this sense of being driven to act might have important support in sensory regions, probably stemming from how motor and sensory maps correlate. I would put action and executive activity back into the equation. At least as far as feelings are concerned, Damasio seems to have left them out.

His own brain imaging data is viewed through this sensory-centric lens. He notes all the functioning imaging work (including from his own group) that highlights insula and cingulate activations in the experience of emotion ("feeling feelings"), terming these paleocortical structures "*body sensing regions*", But he does not mention *at any point* that they are in fact also executive regions devoted to the initiation and organization of complex behavior. The insula has both anterior, more executive, portions and posterior, more poly-sensory, zones. And the cingulate is perhaps the most critical and ancient executive cortical structure, required for all kinds of motivated (affectively driven) behaviors. Extensive lesions of the cingulate create akinetic mutism (AKM). So at this juncture, Damasio's own work ironically makes his position open to challenge. These regions certainly are "body sensing regions" but they are executive regions also ("body sensing" obviously is critical to figuring what the body needs and requires!). Thus, the anterior insula and much of the cingulate are presumably critically involved in much if not all motivated action. This suggests the possibility of a quite different casting of Damasio's excellent functional imaging data: that these regional activations point to how "feelings" have critical executive/drive aspects widely represented in broad swaths of brainstem, hypothalamic, insular and cingulate activations.

One is forced to the curious conclusion that Damasio has for the most part a wonderful sense of the phenomenology of emotion in consciousness, and correctly paints emotion as a driving and active process in the first two chapters,

but subsequently turns feelings into a more passive multiaxial somatosensory read out. In simplest terms, *Looking for Spinoza* presents an active image of emotion (that I also endorse), and an akinetic and politely over-cognitivized image of emotional feelings (that I do not). Having such radically opposed textures for two such intrinsically and closely related processes just doesn't fit.

Where is the core mistake in all this? Where is "Damasio's Error"? I would argue that it comes from "too principled" a distinction between emotions and feelings, where feelings appear to be part of "extended consciousness" and not more primary or "core" consciousness. Damasio's reversion to a more cortico-centric view of experienced emotions left me a bit saddened, for I had found his impressive second book (*The Feeling of What Happens*) to be a badly needed tonic and valuable corrective to the prevailing cortico-centric bias in many treatments of emotion and consciousness (see Panksepp, 2000a; and Watt, 2000b). I agreed with Damasio that consciousness must be built, in part, upon ancient higher brainstem processes (distributed from pons to hypothalamus) evolutionarily designed to encode value within the nervous system, and that those mechanisms underpin the brain's ability to have any version of salience in any sensory field, or any active selectivity to attentional, executive and motivational processes. In that book Damasio suggested the possibility that emotions were integrally based on those ancient brain mechanisms. It is deeply puzzling that his current emphasis appears to break with those formulations, rather than supplementing and forwarding them with the types of important cognitive issues that characterize this book. Why Damasio would accept the role of primitive visceral inputs as the background condition for human consciousness, but so uniformly ignore closely evolved subcortical emotional action systems in helping create distinct emotional feelings, is perplexing.

> **Simplicio:** *Somehow lost is the badly needed emphasis (or even just explicit acknowledgment) that emotion contains an evolutionarily conserved 'motor commentary' on the homeostatic desirability or undesirability of certain kinds of events, again a curious lacunae in someone emphasizing visceral and homeostatic issues. The tip-off in many ways is contained in Damasio's slightly passive framing of what the various brainstem regions do re: homeostasis. They 'monitor' and 'map' the state of the body. True, but only to act on it, not out of some kind of passing (passive) interest. He might readily agree, if asked or challenged, that the monitoring is only there to generate actions, but this half of the equation rather too consistently slips to the back of the bus.*

In *Looking for Spinoza*, Damasio appears to have been drawn back to a much more questionable cortico-centric perspective on these basic emotional

processes that he developed in *The Feeling of What Happens*. The *correlative* evidence for the cortical locus of control for certain perceptual aspects of emotions is substantial (Adolphs, et al., 2000), but in the absence of compelling *causal* evidence, this should not be generalized wholesale to the affective potency of such states. Aside from my own disenchantment with the influential quarter-truths of James-Lange type theories of emotions, I do not understand how Damasio can disregard the large variety of prototype emotional systems embedded within the extended limbic system (MacLean, 1990; Panksepp, 1998a). Although it may be that feelings partly reflect the neocortical "readouts" of these subcortical brain system activities (whether they be somatosensory, working memory or language mediating ones), the most parsimonious view, namely that emotional feelings directly reflect the neurodynamic envelopes of these affective systems in action (e.g., the forceful pounding dynamic of anger, the languid grieving in sadness, the dynamic projectile jumping of joy, etc), cannot be easily dismissed. These very action dynamics probably centrally inform the "cognitive tuning" and "quality of thought" issues for major emotions that Damasio references over and over as a critical component of the "feelings package", and yet leaves quite unexplained (for an overview of the minimal neuronal complexities that must be dealt with, see Table 1 in Panksepp, 2000a or Watt, 2000a). Damasio also makes no note of how the very executive systems in PAG and hypothalamus that he clumps with the "unconscious executors" of emotion are primarily responsible for the multi-axial somatic tunings that we are conscious of when we feel the breathlessness of fear, and our faces turn white and drain of color, or the flushness of the face and our dramatically increased cardiac output in rage states. It is worth emphasizing that affective states are next to impossible to evoke by activating these higher cortical systems using electrical stimulation of the normal human brain. Conversely, as one activates these subcortical emotional action systems, human minds are immediately filled with relevant, affectively loaded thoughts (for examples, see Heath 1996; Panksepp, 1985).

How minds might be grounded in bodies, real or virtual

The most radical assertion of this book is that one can justifiably extend the Spinozan concept that "the idea constituting the human Mind is the Body" rather broadly into the domain of cognitive science and philosophy of mind. This radical perspective deserves to be debated widely, and surely can be

assessed empirically with clever methods that generate testable hypotheses. Regrettably, none were suggested. In the absence of those, the idea becomes just another neurophilosophical abstraction to argue about. I have trouble with the notion that emotional feelings are fully conceptualized as "ideas" rather than evolutionarily stabilized dynamic network "states" of the nervous system. I would agree with some variant of the proposition that "all thought is grounded in the body", but I would favor more emphasis on a *variety* of neurosymbolic "bodies", including those deeply visceral representations concentrated much lower in the neuroaxis (see Panksepp, 1998a,b). One might conceptualize such a virtual body as grounded in cross-talk between primitive motor-executive and sensory regions. I have previously emphasized emotional motor-action coordinates in mesencephalic/pontine brainstem viscero-somatomotor-action regions, such as periaqueductal gray (PAG) and surrounding attentional circuits that are in close communication with the polymodal somato-sensory mappings of the superior colliculi. These are essential considerations for how certain emotional feelings might be created in the brain (Panksepp, 1998a,b; Watt, 2000a).

In short, Damasio's unified mind-body hypothesis is surely less "false" than McGinn asserts, but the problem is that Damasio's coverage of embodiment (there are many other versions, not discussed) is probably not sufficiently well-resolved to dissuade readers from worrying that there has been a lopsided conclusion and some excessive, albeit velvet-gloved, reductionism. On the one hand, Damasio's assertion is sensible from the perspective that the major aim of brain evolution has been bodily survival and propagation. On the other it seems misguided, for our thoughts and ideas are as much about events in the world as states of our body (as emphasized by McGinn). Or perhaps more properly and subtly these thoughts, feelings and ideas embed (often invisibly) deep and quite idiosyncratic relations between our affective states and the particular configurations of the world that we encounter. Neither side of that critical partnership and deep dialogue can claim hegemony with respect to the genesis of personal meaning.

The role of affect in the circle of life

Although most cognitive activity is directed and motivated by some version of an underlying emotional feeling (or else thought simply does not flow, as in AKM), Damasio remains one of the few who insists that cognition be "re-moored" to affective foundations. That is a far cry from suggesting that all higher cognitive activity is simply foam over a bodily state. However, we must also consider the

dilemma of how sensory-centric views of emotional experience could ever exert the power to guide and mold cognitive activities. One has to look for a complex and intrinsic infrastructure for emotions that makes affects fundamentally more executive, and Damasio is not yet quite ready to do that.

In other words, there needs to be a more balanced consideration of *all* the evidence to advance a lasting understanding of emotional feelings. If animal research were considered in a more comprehensive manner, then hopefully Damasio would be tempted to consider that the sounds of "joy" (i.e., play vocalizations) and "sorrow" (e.g., separation distress calls), so extensively studied in animal models (Panksepp, 1998a, 2003b), may tell us as much about the "feeling brain" as a study of the blood flow changes in human PET studies and the physiologies and psychologies of his brain damaged patients. It might also coax him to widen the cross-species "circle of affect" more graciously than is evident in his current equivocations about the existence of affective states in other animals. He has done so in the past by simply puzzling over "neurosciences's reluctance to accept that complex nonhuman creatures have feelings — an attitude that goes beyond the necessary prudence over the fact that such creatures may or may not know they have such feelings" (Damasio, 1999b, p. 39). To understand the nature of emotional feelings, there should be a closer integration of animal and human research, given the evidence that those primitive prototype mammalian states are still there in each of us, and all our cognitive pride to the contrary, are only carefully modulated by all that dorsal brain architecture rather than somehow re-written or in any way truly extinguished, by our vast cortico-cognitive capacities. Underneath our cultural aspirations and achievements, we are fundamentally another species of mammal.

Damasio's thinking is linked firmly to his human clinical work, largely correlative, with no more than a passing whisper about the mountain of *causal* findings from other animals. It is understandable that each investigator will always lead with their strong suit, but in Damasio's coverage, this may have already lead to the excessive mixing of causes and correlates. The human brain imaging typically provides only emotional correlates. Causes are hard to extract from human data, except through psychopharmacological studies (a vast arena of research not adequately covered in Damasio's contributions), and a few exciting deep brain stimulation studies, as well as surface Transcranial Magnetic Stimulation (TMS) ones (Nahas, et al., 2003). In the personal existential experience of the present author, TMS induced cortical activation of my somatosensory zones, and other cortical areas, failed to generate any surges of obvious emotional feelings.

The animal data thrives on the study of causal manipulations, which gives it a special strength that functional imaging certainly cannot claim in adjudicating key issues, such as whether the basic midbrain, diencephalic and subcortical circuitry we share with the other animals is the more essential substrate for human emotional feelings vs. the higher neocortical regions (Panksepp, 1998a; 1999). Although it is harder to see into animals' cognitive apparatus than their affective ones (e.g., Knutson, Panksepp & Burgdorf, 2002), I would argue that we shall never have a detailed science of affective processes until we begin to utilize animal models more widely to work out the underlying neuronal details (Panksepp, 2003a,b). The conceptual divide between the mass of existing animal neurobehavioristic data and the human cognitive data remains so large that few either see the need or have the will to build the trans-species bridges. I am surprised that Damasio does not explicitly subscribe to that kind of intellectual mandate.

A meditation on emotional qualia

The James-Lange view leads, all too easily, to the notion that emotional feelings are just another qualia among many — just another variation on sensory experience. With this, I strongly disagree. Emotional arousal, particularly strong emotions that by definition involve subjective states, most certainly are *not* just another type of qualia on the same footing as the redness of red. Emotional feelings have an organic intensity that speaks of vast and primitive layers of neuronal state processes that were created in deeptime, embodying unmistakable and truly ancient messages about how things are good or bad for the life processes. There is nothing, even in the most elaborately dressed up James-Lange view, that would explain that or help one to understand how the primal intensity of affective states is actually created in the brain. Indeed the most insidious mistake of over-cognitivized James-Lange types of views may be to sustain the hegemony of outdated cogno-centric viewpoints on emotion that have yielded little progress towards unraveling these deep questions about the ultimate neurobiological nature of value.

As a meditation, many of the above problems could be overlooked, but there is a level of personalization here that is uncommon in books that aspire to advance substantive new levels of understanding about the natural world. Damasio portrays Spinoza as an individual who had achieved a certain equanimity with existence in his search for the very depth of truth that his socially

and religiously rigid times barely permitted anyone to contemplate outside the privacy of their own minds. Damasio has now aspired for an even greater depth of understanding whereby our scientific inquiries "can be combined with the best of a humanistic tradition to permit a new approach to human affairs and lead to human flourishing" (p. 283). This is a sentiment with which I deeply resonate, and am happy to see him place such precious ideas so forthrightly on the intellectual table. I would also very much hope that a study of emotions should place the deep social attachments that undergird our existence, and that of so many other creatures on the earth as well, more on center-stage. Indeed, our early dependence on such attachments, long before our cortex is fully functional, appears so profound, so written into our genome and our brains, that fatal homeostatic derailments are common in infants cared for physically but seriously neglected emotionally.

Spinoza's concept of *conatus* (of "striving, endeavor and tendency" (p. 36)) appears to open up a new and essential dimension of human emotional life to Damasio that he regards as absent in modern theories of emotion. I am puzzled that Damasio does not see the strong corollary in modern emotion theory to "conatus" provided by the concept of a generalized appetitive motivational SEEKING system that helps organisms harvest everything from nuts to social relationships, running from VTA up through the hypothalamus and onto many distributed mesolimbic and mesocortical targets. Such a conceptualization of 'conatus' is heuristic, emphasizing the general organizing and life affirming role of emotion, but I would humbly suggest that such principles already exist in the affective neuroscience literature (Panksepp, 1998a). I am delighted that Damasio has found this old gem of an idea in Spinoza's work and is poised to polish it for our times.

A major service that this book provides is to introduce readers to the remarkable ideas of a philosopher who has not received the attention he deserves. Of course, every generation during the past three centuries has had admirers of Spinoza's work, and we must leave it to scholars who have read Spinoza very closely (e.g., Curley & Moreau, 1997; Lloyd, 2002) to determine to what extent Damasio's introduction does justice to the profoundly naturalistic view of human life that Spinoza advanced against the growing and eventually centuries-long "victorious" tide of Cartesian dualism that still prevents so many neuroscientists from coming to terms with the subtle affective texture of mental life, in humans and so many other animals. As a result of Damasio's efforts, hopefully growing ranks of brain-mind scientists and other scholars will begin to recognize that without a full confrontation with the nature of emotional feelings

and other affects, we will never understand how brains create mental lives.

And where does Damasio aspire to go with his emerging ideas? As Ray Dolan (2003) put it, Damasio "dares to ask how our accumulating knowledge of the human brain should inform the way we live our lives and organize our social world". Although I would hesitate to suggest that neuroscience, which can tell us so much about our basic nature, should influence how we design our social structures, *Looking for Spinoza* is a precious contribution to the discussion of this important, difficult, and timely topic. I do have some substantive disagreements with Damasio's views, but I trust that he will confront substantive challenges to his seminal ideas with as much positive *conatus* as is required to move this important and shared project forward toward a fuller and more universally accepted synthesis.

Notes

1. From e-letter from JP to Ray Dolan (Dec, 2002): "I would like to raise several issues, in the hope of jogging you slightly in my direction. I find the emotion-affect distinction you and others (e.g., Damasio) have been making, coming perhaps too much from the cognitive neuroscience side, conceptually troublesome (i.e., will cause trouble in clear traditional communication). I think most, down through the years, have deemed emotions to be the superordinate category, that includes lots of dimensions, including the all important affective ones. This allows some of the other components under that umbrella to be unconscious, without denying that one of the most interesting aspects (felt values) is often consciously experience by humans, and probably other animals.

Thus, I would tend to go with the most deeply-considered psychological definition, stated so well by Kleinginna and Kleinginna (1981, p. 355), where they argued that:

> "a formal definition of emotion should be broad enough to include all traditionally significant aspects of emotion, while attempting to differentiate it from other psychological processes". After an extensive discussion of past definitions and controversies in the literature, they suggest the following working definition "Emotion is a complex set of interactions among subjective and objective factors, mediated by neural/hormonal systems, which can (a) give rise to affective experiences such as feelings of arousal, pleasure/displeasure; (b) generate cognitive processes such as emotionally relevant perceptual effects, appraisals, labeling processes; (c) activate widespread physiological adjustments to the arousing conditions; and (d) lead to behavior that is often, but not always, expressive, goal-directed, and adaptive."

From a very similar perspective, a provisional list of brain-aspects criteria has been offered for the types of neural systems that can be found in my 1982 *Behavioral and Brain Sciences* article (leading up to *Affective Neuroscience*, 1998, p. 48–49). The resulting 7-aspect brain-based definition is quite similar to the psychological definition described above, and unlike

many previous definitions, it emphasizes the essential importance of the internally felt — the subjectively experienced — aspects of emotional arousal, even in other animals. Without the criterion of emotional feelings, I think the concept of emotions makes practically no sense at all, at least philosophically and humanistically…

This leads me to plead that investigators put affect as one of the attributes of emotions (as I believe is both reasonable and traditional), rather than making them such distinctly separate categories that most people outside our field will wonder what the heck we are talking about. If more investigators of emotions took affect seriously, then we would not have such a spate of studies indicating that certain emotions are unconscious when, in fact, they have not done a proper job in evaluating affective changes."

2. I inquired about such issues from a Spinoza scholar, Professor Heidi Ravven of Hamilton College, and she indicated that "the striving for survival and stability is common to animals and humans. Spinoza is considered in philosophy to be a 'panpsychist', which means that all things have a striving for stability and self-perpetuation and self-determination (in varying degrees). But he thinks that the nature of the pattern of stability for each kind (species) of being differs as it also does between individuals." She continues that "Human psychology, Spinoza tells us (in Ethics III Proposition 57), allows for both the infinite variety of human beings (i.e., human essences) and of human experience but also for scientific laws and explanations. For while "the desire of each individual differs from the desire of another to the extent that the nature or essence of the one differs from the essence of the other", at the same time, there are substantive commonalities (or similarities) that account for common principles of behavior across all human beings. In fact, it is in the Scholium to this very proposition (P57), in which he argues for the infinite variations of human psychology, that Spinoza argues for the even greater difference between the emotions, the psychology, of human beings and of animals. "Hence if follows", he writes, "that the emotions of animals that are called irrational … differ from the emotions of men as much as their nature differs from human nature." In sum, it would seem that Spinoza at the same time recognized and failed to emphasize the level of evolutionary continuity in human and animal emotions that we believe can currently be defended empirically.

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