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Reconciling Cognitive and Perceptual Theories of Emotion: A Representational Proposal*

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The distinction between cognitive and perceptual theories of emotion is entrenched in the literature on emotion and is openly used by individual emotion theorists when classifying their own theories and those of others. In this paper, I argue that the distinction between cognitive and perceptual *theories* of emotion is more pernicious than it is helpful, while at the same time insisting that there are nonetheless important perceptual and cognitive *factors* in emotion that need to be distinguished. A general representational metatheoretical framework for reconciling cognitive and perceptual theories is proposed. This is the Representational Theory of Emotion (RTE). A detailed case study of Antonio Damasio's important new contribution to emotion theory is presented in defense of the RTE. The paper is intended for readers interested in the foundations of emotion theory and cognitive science.

1. A Pernicious Dichotomy. Although philosophical and psychological theorists of emotion do sometimes cite and refer to one another, they seldom engage in truly interdisciplinary substantive analyses and discussion of common problems and concerns.¹ As a result, there exist

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1. The best example of the sort of dialogue I have in mind is the peer commentary and replies in Panskepp 1982. Another good example is Robert Gordon's excellent discussion of the philosophical implications of Schacter and Singer 1962 in his *The Structure of Emotions* (Gordon 1987). Finally, de Sousa's *The Rationality of Emotion* (1987) is full of interdisciplinary insights of many sorts.

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important issues that might benefit from an interdisciplinary dialogue that do not get raised or discussed in such terms. One of these is the nature of the division between cognitive and perceptual theories of emotion. In a rather striking parallel, theories of emotion in both philosophy and psychology are often classified along these lines. Here then is one area that might benefit from a more mutually informed interdisciplinary dialogue. This is one of the aims of the present paper.

Whether philosophical or psychological, cognitive theories of emotion generally assert that some kind of evaluative judgment or appraisal is required for emotion. In the perceptual case, emotion is usually held *not* to require judgment or appraisal in any such sense. Perceptual theories tend to focus more on 'feeling' and its associated neurobiological and physiological substrates. In both philosophy and psychology, the way cognitive and perceptual theories are defined usually discourages one to think that the two might be compatible and often makes it impossible to consistently embrace both. In general, it is rare to find researchers associated with this debate who openly focus on both the cognitive and perceptual information processing dimensions of emotion in a manner that integrates the two. This impasse has given rise to a situation where neither camp can sufficiently benefit from the findings and research of the other within a unified framework. In this paper, I argue that while there appear to be sound reasons for distinguishing between cognitive and perceptual *factors* in emotion, the division of emotion *theories* into these two ostensibly mutually exclusive camps is more pernicious than it is helpful. What is needed is a reconceptualization that integrates and encourages dialogue between both camps. In what follows, I argue that cognitive and perceptual theories ought to be reconciled, and I suggest a framework for doing this. This is the Representational Theory of Emotion (RTE).

There are numerous theoretical and empirical developments in emotion theory that can be marshalled in support of the RTE. Ironically, properly interpreted, much of the evidence advanced by cognitive and perceptual theorists (who usually take themselves to be at odds with one another) turns out to be evidence for the RTE. It is not possible to examine all of this material here. Accordingly, the strategy I have adopted is to try and extol the virtues of the RTE by looking at one case study in detail, with only references to other corroborating pieces of evidence as appropriate. The focus of my case study is Antonio Damasio's new and very innovative neurobiological theory of emotion (Damasio 1994). As Daniel Dennett notes in a recent review (1995), this is probably one of the most original contributions on the nature of mind and consciousness in recent years. The relationship between Damasio's theory and the RTE is twofold. First, it provides detailed

corroborating evidence for the RTE. Second, it provides an opportunity for illustrating the virtues of the RTE as a critical, exegetical tool. To start, I examine the distinction between cognitive and perceptual theories of emotion in philosophy and psychology. Then I introduce the RTE. The remainder of the paper is devoted to Damasio's theory and its relationship to the RTE. The ensuing discussion should be of interest to anyone interested in emotion theory or in the general foundations of cognitive science.

2. The Distinction Between Cognitive and Perceptual Theories. The distinction between cognitive and perceptual theories of emotion is entrenched in the literature on emotion and is openly used by individual emotion theorists when classifying their own theories and those of others. On the philosophical side, cognitivist theories include the contributions of Robert Solomon (1976), William Lyons (1980) and Robert M. Gordon (1987). Good examples of perceptual philosophical theories of emotion can be found in the work of Patricia Greenspan (1989), Ronald de Sousa (1987) and Stanley G. Clarke (1986). On the psychological side, cognitive theories include Richard Lazarus' theory of emotion as cognitive appraisal (Lazarus, 1991, Lazarus and Lazarus 1994), as well as Schacter and Singer's theory of emotion as cognitive arousal (1962). One of the most famous psychological perceptual theories of emotion is that of William James (1884, 1890), while more recent related developments can be found in the work of Robert Zajonc (1980), Jaak Panskepp (1982) and Joseph LeDoux (1989). It should be noted that not all theories of emotion fall neatly into the cognitive/perceptual divide. For example, facial-expressive theories such as Paul Ekman's (1980, 1984) are not usually referred to as 'perceptual', although they can plausibly be argued to fall in that camp (Charland 1996). There also are theories that claim to be 'cognitive' that are not cognitive in any strict sense (e.g., Oatley and Johnson-Laird 1987). In general, however, the division between cognitive and perceptual approaches to emotion is widespread enough to warrant independent discussion in its own right. Two sets of examples should help show just how polarized the two camps can get. First, we start with philosophical formulations of the distinction.

2.1 Philosophical Formulations of the Distinction. Philosophical cognitive theories of emotion normally involve some form of the claim that judgment, something *propositional*, is necessary for emotion. This general position is sometimes referred to as 'judgmentalism' (Greenspan 1989, 3). One pioneering statement of the cognitive approach to emotion is that of Robert Solomon, who argues that "an emotion is a

judgment (or a set of judgments)” (Solomon 1976, 185). His point is that “an emotion is an evaluative (or a ‘normative’) judgment, a judgment about my situation and about myself and/or about all other people” (p. 186). So, for example, “my shame *is* my judgment to the effect that I am responsible for an untoward situation or incident” (p. 186). In another important version of philosophical cognitivism, William Lyons (1980, 7) argues that “the emotions presuppose certain judgments, correct or incorrect, cursory or well-considered, irrational or irrational, as to what properties a thing possesses. On his view, “emotion is based on knowledge or belief about properties” (ibid., 138). In other words, “saying ‘I am angry at x’ or ‘I love x’ implies that at some time I have apprehended certain qualities in x” (ibid., 71). Lyons’ overall view is that “x is to be deemed an emotional state if and only if it is a physiologically abnormal state caused by the subject of that state’s evaluation of his or her situation” (ibid., 57–58).

In what is probably one of the most innovative and sophisticated philosophical formulations of the cognitive approach to emotion, Robert Gordon proposes to analyze emotions along the lines of a general schema of the form: “‘*S* emotes (e.g., fears, is angry, is joyful) that *p*’, where *S* is a subject and *p* is a proposition” (Gordon 1987, 43–64, 65–86). According to him, emotions are a distinct propositional modality, with their own special internal “logic” and ties to action. Gordon’s special brand of cognitivism differs markedly from that of Solomon and Lyons. For example, he explicitly argues that ‘*S* fears that *p*’ does not entail that ‘*S* believes that *p*’ (ibid., 68). All that is required is that *S* believes that there is a *possibility* that *p* (ibid., 70). The difference lies in the fact that in the latter case (Gordon) you are ‘either certain that *p* nor certain that not-*p*’, while in the former (Lyons) your epistemic state is notably stronger. According to Gordon, the belief that *p* is too sophisticated to count as a condition of all our emotions. For example, in the case of fear, Gordon writes: “the belief that there is danger seems too sophisticated to be a condition of fear in general” (1987, 70). Still, in spite of this slight weakening of standard cognitivism, Gordon’s cognitivism is thoroughgoing and trenchant. On the one hand, he explicitly states that “all fears are fears *that* something is (or: was, will be) the case” (ibid., 67, my emphasis). Thus according to him all fearing is *propositional* (ibid., 67). Second, although he is willing to attribute what he calls the *state of fear* to creatures such as mice, he seems adamant that mice and other like creatures are not capable of the *emotion* of fear; namely, ‘fearing that *p*’ (ibid., 72). Therefore, according to Gordon, *emotion* is essentially a propositional matter. The desire to restrict the use of the term “emotion” to a propositional level is a common feature of just about all philosophical cognitive theories of

emotion. It is also where perceptual theorists usually choose to centre their attack.

Like their cognitive counterparts, philosophical perceptual theories of emotion come in different varieties. Generally, most argue that it is wrong to limit the extension of the term “emotion” to what is propositional alone. Perceptual theorists typically deny that propositional judgment is required for emotion. For example, Ronald de Sousa, who explicitly calls his theory a ‘perceptual’ one, proposes a definition of emotion according to which these may *or* may not involve a propositional component of the sort normally required by cognitive theories. On his view, emotions can have a variety of formal objects, not all of which need to be present in order for us to say that there is emotion. De Sousa’s model is highly flexible. He views emotions as a 7-place relation between a subject *S*, a target *t*, a focal property *f*, a motivating aspect *a*, a cause *c*, an aim *m*, and a proposition *p* (de Sousa 1987, 126). In regard to this schema, he is careful to emphasize that “not all emotions have the same number of relevant constituent factors, or polyadicity” (ibid., 158). As result, he is able to countenance cases where there is *emotion*, but no propositional object is involved.

Another example of a philosophical perceptual theory can be found in the work of Patricia Greenspan (1989). While she does not want to dismiss judgmentalism entirely, she does want to supplement its scope by paying greater attention to the affective or feeling dimension of emotion. Greenspan acknowledges that emotions may take evaluative propositions as their intentional objects. For example, she says that emotions are compounds of two elements: “affective states of comfort or discomfort and evaluative propositions spelling out their intentional content” (1989, 4). But note here that it is *affective* states which are involved. Hers then is a ‘feeling’ theory of emotion. Greenspan also argues that feeling states can occur without any corresponding belief being entertained (ibid., 21). She says emotions involve “propositional attitudes that are weaker than strict belief: states of mind, like *imagining* that danger looms, that involve entertaining a predicative thought without assent” (ibid., 3). Thus you can fear that *p* (where *p* is a proposition), without believing that *p*. This is in marked contrast to the cognitivism of Lyons, who argues that in addition to involving evaluative judgment, emotions also require belief (Lyons 1980, 71, 138). Greenspan’s focus on feeling is sufficient for classifying her theory as a perceptual one. However, her commitment to the view that feelings take evaluative *propositions* as their intentional relata betrays her cognitivist tendencies. One example of a perceptual theorist who, like de Sousa, explicitly denies that emotions require evaluative judgment in this propositional sense is Stanley G. Clarke. He argues that “feelings,

like sensations, may be conceived of as units of information which are not sufficiently complex to be evaluative judgments” (Clarke 1986, 669). This is the strongest formulation of the philosophical perceptual view of emotion. It is also the one which has the most affinity with what perceptual theorists in psychology usually maintain.

2.2 Psychological Formulations of the Distinction. Perhaps the best psychological example of the distinction between cognitive and perceptual theories of emotion is the famous debate between Robert Zajonc and Richard Lazarus (Lazarus 1984a, 1984b; Zajonc 1984a, 1984b). In a paper entitled “Feeling and Thinking: Preferences Need No Inferences” (1980), Robert Zajonc argues that feeling is an independent information processing system, defined by its own special representational kinds (‘preferanda’) and governed by its own special rules and regularities. His topic is what psychologists typically call *affect*. The substance of Zajonc’s argument is that affect is precognitive rather than postcognitive. Essentially, his point is to challenge cognitive theorists by arguing that there is convincing experimental evidence that affective information processing (‘feeling’) can take place without cognitive mediation via representational items of the order of judgment. Along these lines he argues that affect is primary with respect to cognition. In a later discussion he characterizes this view as the primacy of *emotion* (Zajonc 1984a). Note here that it is ‘cognition’ with respect to which emotion is held to be primary. On his side, Lazarus defends the view that “cognitive activity is a necessary as well as a sufficient condition of emotion” (Lazarus 1984b, 247; see also Lazarus 1991, 144–152). He denies that emotion can be primary with respect to cognition in the way that Zajonc suggests. The disagreement between the two then is sharp. Zajonc argues that emotion can take place without cognition and that emotion is precognitive, while Lazarus argues precisely the reverse and maintains that emotion is postcognitive.

An important element in the debate between Zajonc and Lazarus is their disagreement on how to define cognition. Lazarus accuses Zajonc of being a “neopositivist” who wants to limit cognition to conscious propositional judgment. Against this he argues that appraisal “can operate at all levels of complexity, from the most primitive and inborn, to the most symbolic and experience-based” (Lazarus 1984b, 254). He likens this primitive form of appraisal to *evaluative perception*. This weakening of the notion of cognition to include evaluative perception proves unacceptable to Zajonc, who argues that it blurs a distinction that needs to be respected. It also raises the question of just how exactly the notion of cognition involved in cognitive appraisal is to be understood, an issue on which Lazarus has continued to vacillate (see e.g.

Lazarus 1991, 127–129). Another difficulty in the Zajonc and Lazarus debate is Zajonc's interchangeable use of the terms 'affect' and 'emotion'. If 'affect' is what is meant by 'emotion', then he and Lazarus are not talking about the same thing when referring to 'emotion'. This is because Lazarus uses the term 'emotion' in a much wider sense; notably, as something that must involve cognitive appraisal. Given all of this, is there anything significant that can be drawn from the debate between Zajonc and Lazarus? I think so. What fundamentally seems to be at issue is the fact that Zajonc wants to say emotion is essentially a question of affect or feeling, while Lazarus wants to say it is essentially a matter of cognitive appraisal. Of course, they do disagree about the definition of cognition and other things, but what really seems to generate the controversy is the assumption that emotion must be *either* a matter of affect or feeling, which does not require full-fledged judgment (Zajonc), *or* a matter of cognitive appraisal, which normally does require full-fledged judgment (Lazarus). Neither writer appears to acknowledge the possibility that emotion might be a matter of *both*.²

There have been some suggestions about how to resolve the debate between Zajonc and Lazarus. One strategy, proposed by Howard Leventhal and Klaus Scherer, is to downplay the semantic aspects of the debate and focus instead on specific questions regarding the various mechanisms and processes that subserve emotion and cognition, respectively. They argue that "the semantics of the debate cannot be resolved and it is fruitless to attempt a definitive answer to the question 'What is an emotion?' or 'What is cognition?'" (Leventhal and Scherer 1987, 7). Their hope is that such questions will "vanish and be replaced by other, more important questions regarding the contribution of specific processing components to emotional experience and/or overt emotional behaviour" (*ibid.*). It is hard to see how this strategy can work, as some interpretation of the terms 'emotion' and 'cognition' must be presupposed in the very identification of the components that allegedly subserve them.³ A more plausible strategy can be gleaned from what Leventhal and Scherer in fact *do* in their discussion (as opposed to how they *describe* what they are doing). And what they do is to propose a multilevel hierarchical model of emotion that reconciles many of the more important differences between Zajonc and Lazarus while at the same time integrating those into a richer theoretical whole. This will

2. Zajonc and Lazarus also disagree about whether affect and cognition are independent information processing systems, but I will ignore that angle of the debate for now.

3. See the exchange between Parrott and Schulkin (1993) and LeDoux (1993) for a recent version of the sort of semantic debate that Leventhal and Scherer would like to put to rest.

be the strategy of the RTE. However, as we shall see, far from avoiding semantic issues, the RTE will actually involve several forceful semantic proposals of its own.

In conclusion, it needs to be acknowledged that the division between cognitive and perceptual theories of emotion in psychology is not always as sharp as the above debate might lead one to believe. But that division is evident in a significant enough number of cases, sometimes merely reflected in the fact that a theory that is perceptual makes no mention whatsoever of even the possibility that 'emotion' might *also* involve an additional specialized cognitive dimension. For example, sometimes physiological and neurophysiological perceptual theories of emotion discuss emotion as if this were all there were to it (James 1884, Panskepp 1982). This is even true in cases where these theories posit a special affective perceptual *representational* level of processing in emotion (LeDoux 1989; Panskepp 1982). Nevertheless, although the division between cognitive and perceptual theories may be less pronounced in psychological emotion theory than it is in philosophy, there are numerous instances where it is pivotal in dividing research projects from one another. These are the cases I am primarily concerned with.

3. The Representational Theory of Emotion (RTE). The framework I propose for reconciling cognitive and perceptual theories of emotion is the Representational Theory of Emotion (RTE). According to the RTE, emotion consists of *affective cognition* and *affective perception*, two relatively distinct representational processing systems that under some conditions operate in parallel, but under others may operate in the absence of one another. Before we can discuss the RTE in more detail, however, it is first necessary to clarify the nature of its representational commitments.

For a long time, talk of representation was tantamount to positing internal mental tokens in a computational language of thought (Fodor 1975, 1981; Pylyshyn 1984). However, the fact that the mind might be a computational representational engine of a symbol processing sort needs to be distinguished from the fact that it might be a representational system in a more general sense. For example, there is no contradiction in granting that mental states might be relational and that stating psychological generalizations requires adverting to the semantically interpreted content of mental states, while at the same time denying that representations in this sense need to be characterized computationally; notably, in a symbol processing way. Indeed, there are now a variety of senses of representation in vogue. Talk of brain representations of different sorts is quite common (Churchland 1995, Damasio 1994, LeDoux 1989). Moreover, some authors urge us to distinguish

between imagistic and non-imagistic representations, depending on how information is coded by the brain (Flanagan 1991, pp.189–193). The RTE is not meant to take an a priori stance on these proposals. The sense in which it asserts that emotion is a representational system is the weakest and most neutral interpretation of that notion. It derives from the fact that mental states are *intentional* (Flanagan 1991, 28–29, Tye 1995, 93–100). Representation in this primitive sense basically “refers to anything that can be interpreted as being about something” (Varela et al. 1991, 134; see also Dennett 1991, 191–192).

Michael Tye offers a plausible account of how to define representation in a more or less neutral sense. Taking the notion of intentionality as his base, he suggests that, “intentional mental states are states that can represent, or be about, things of a certain sort without there being any particular real things of that sort that they are about, indeed without there being any real things of that sort at all” (Tye 1995, 100). He then goes on to refine this proposal in several ways, which can be ignored for now. For our purposes what counts is Tye’s view that representational states in the above sense also have *intentional content* (ibid., 94–100). This content can plausibly be viewed as the product of the ‘symbolic’ features of those states, although Tye is also careful to note that sentences are not the only symbolic structures in terms of which intentional content can be specified. Thus there are other, non-sentential modes of ‘symbolic’ representation that are possible. The idea that there can be different orders of ‘symbolic’ representational content and sophistication is a key feature of the RTE. We will return to it shortly. In the meantime, it is important to note that the reason for all this neutrality surrounding the notion of representation is in order not to prejudge issues and debates in emotion theory which are empirical, but are easily formulated in question-begging terms. In effect, in an inquiry of the present sort it is best to treat the notion of representation as a theoretical term of art to be refined and tested in the context of specific concrete proposals. The challenge is not to exclude too many of these proposals at the outset. Finally, the RTE is not only epistemologically neutral about the nature of representation, it is also ontologically neutral. Thus no a priori stance is taken about what representations are ‘made of’, or even whether what is represented is an “objective pre-given reality.” Thus, whether emotions and their associated feelings mirror a pre-given independent, objective reality (Lyons 1980), or whether they are ‘relational’ (Lazarus 1991) or ‘enacted’ states (Varela et al. 1991) that arise as a result of interactions between an organism and its environment, is not something for this sense of representation to decide a priori.

Having said that the RTE is a representational theory in a very

neutral sense, it must also be admitted that it is a framework with clout. As regards the nature of the representational states involved in emotion, the RTE posits a distinction between *doxastic* affective states on the one hand and *infradoxastic* states on the other. According to the RTE, affective cognition involves representational transactions defined over doxastic affective representational states, while affective perception is limited to infradoxastic modes of affective representation. There is nothing mysterious about doxastic representational states. The paradigm example of such a state is belief. Beliefs are typically attributed in third-person constructions of the form ‘*S* believes that *p*’, where *S* is a subject and *p* is a proposition. Propositions, in turn, take the standard form ‘*x* is *G*’ where *x* is a singular term and *G* a general term that is predicated of *x*. In the context of emotion theory, *judgment* involves doxastic representation in this propositional sense. This claim is usually explicit in philosophical cognitive theories, but usually implicit in psychological ones.

It is a standard assumption of much current cognitive science that what counts as cognitive is restricted to what is propositional (Fodor 1981a; Pylyshyn 1984, Ch.1). Thus it is the *propositional attitudes*, particularly belief and desire, that are held to demarcate the ‘cognitive’ domain. This premise is pivotal in defining the terms of debate between cognitive and perceptual theories, where perceptual theorists apparently feel compelled to *deny* that propositional judgment is a condition or requirement of emotion (as cognitivists insist). Instead, they argue that there is a level of representational information processing in emotion that is defined over intentional items that are somehow ‘less’ than full-fledged propositional judgment (Clarke 1986, de Sousa 1987, Johnson-Laird and Oatley 1992, LeDoux 1989, Oatley and Johnson-Laird 1987, Panskepp 1982, Tye 1995, Zajonc 1980). I have opted to call these states *infradoxastic*.⁴ What exactly counts as an infradoxastic state is hard to specify exactly and specific proposals can vary quite a bit. However, there are some interesting precedents for how such states

4. Infradoxastic states in my sense are not the same as Stich’s *subdoxastic* states (Stich 1978). For one thing, they do not have to be unconscious. Neither do they have to be “inferentially unintegrated.” Something a bit closer to what I have in mind is Michael Tye’s notion of a *nondoxastic* state (Tye 1995, 104). However, infradoxastic states in my sense do not have to be “nonconceptual,” as Tye suggests. Finally, although there are affinities between my notion of an infradoxastic state and Smolensky’s (1988) “sub-symbolic” mental states, there is a perfectly standard sense in which my infradoxastic states can be called symbolic (they can have combinatorial structure and enter into inferences in a “symbol processing” way). I first tried to set out the notion of an infradoxastic state in Charland 1989 and have since tried to refine it further in Charland 1996. Evidently, there is still a lot of work to be done in sorting out this area.

might be analyzed. For example, they might be construed along the lines of schemas such as ‘S has as fear *of* snakes’ or ‘S is angry *at* Fido’ (Kenny 1963, 52–53). What is related to here is not a full-fledged proposition, but rather various sub-propositional parts, such as nouns, names, and arguably even verbs (‘fear *of* flying’). Infradoxastic representational states may be construed as general term constructions of the form: ‘there is G-ness’ or ‘there is G-ing’, or even simply ‘G-ing’ or ‘G-ness’. Singular reference is absent here. It is a more sophisticated conceptual achievement that falls in the doxastic representational realm. David Marr’s analysis of the early stages of vision arguably involves something like this infradoxastic sense of representation (Marr 1982). Also worth noting here are connectionist arguments that there exists an important need for a ‘subsymbolic’ and nonpropositional level of analysis and explanation in cognitive science (Smolensky 1988). There is some reason for believing that the distinction between doxastic and infradoxastic representational states can be operationalized. One possibility is Quine’s concept of stimulus meaning (Quine 1960, Ch. 2). Self reports are another option, but not an unproblematic one (Frijda 1993). For the present, however, it must be admitted that from an experimental point of view the distinction remains highly inferential and conjectural.

It is important to realize that infradoxastic states can and often are *identified* sententially and verbally; for example, as in the case of the ‘fear *of* snakes’ above. However, their *representational content* does not have to be coded sententially, nor is this usually the case. Perceptual representational states of this sort might be called *prelinguistic* (Churchland 1984, 34; 1995, 21, 144, 182). Like many of the various sensory modalities in humans and animals where information is coded prelinguistically, affective perceptual representation is also mostly a nonverbal and prelinguistic affair (Churchland 1996). In a recent book, Paul Churchland notes that “our capacity for verbal description comes nowhere near our capacity for sensory discrimination” (Churchland 1995, 21). This theme can be extended to some of the perceptual dimensions of emotion, as Churchland himself notes (*ibid.*, 144). The infradoxastic nature of representation in affective perception explains why it is so hard to “put feelings into words.” It is because information on this level is not *coded* sententially. Indeed, there is an interesting sense in which the affective perceptual system may be representationally incommensurable with the affective cognitive one; just like, for example, the phenomenological color spaces of tri- and tetrachromats are radically different (Thompson 1995), or in the manner in which a dog’s capacity for olfactory discrimination cannot possibly be recreated given the olfactory neural representational resources of humans

(Churchland 1995, 26–27). In a point more directly related to emotion, Joseph LeDoux notes that “the inability to recall information acquired in early childhood, arises because the hippocampus, which is required for conscious, declarative, autobiographical memory is not fully mature at birth” (LeDoux 1989, 280). His point is that “as memories laid down prior to the maturation of the hippocampus are laid down using memory codes that are indecipherable to the hippocampus, these memories are not available to the hippocampus once it matures, some time between 18 and 36 months in humans” (ibid., 280). According to him, many of our early memories may be stored in the amygdala, a structure that is widely believed to be central to the early processing of affect and which matures considerably earlier than the hippocampus and its associated supporting neocortical structures (ibid., 281). If this is true, then there may be an affective perceptual memory system that functions prior to and sometimes independent of affective cognitive memory structures and mechanisms.

The distinction between doxastic and infradoxastic representation is one respect in which the RTE goes beyond other proposals in emotion theory where it is argued that there are different representational levels of processing in emotion. For example, Howard Leventhal distinguishes between sensory-motor and conceptual emotive processing; a distinction that corresponds roughly to the RTE’s affective perceptual and affective cognitive levels, respectively (Leventhal 1984). However, he says very little about the kinds of representational states involved other than that they differ in ‘complexity’. This is an area where psychological emotion theory has much to gain from the tools and methods of analytic philosophy. In general the psychological literature on emotion is rather weak when it comes to distinguishing the putative constituents of cognitive states. Crucial theoretical terms such as ‘judgment’ and ‘cognitive appraisal’ are generally not sufficiently well-defined, which can lead to vagueness and confusion on both a conceptual and an experimental level (cf. Frijda 1993). Zajonc’s conception of feeling as “pure untransformed sensory input” and of cognition as requiring a “minimum” of “mental work” are other examples of crucial theoretical notions in need of qualification and refinement (Zajonc 1984b).

Cognitive and perceptual theories differ not only in the kinds of representational states they posit. In most cases they also differ on the nature of the representational *processes* involved. A helpful way to approach this additional distinguishing factor is to follow Jerry Fodor, who suggests it is theoretically productive to try and draw a line between perceptual and cognitive representational processes. According to Fodor, perceptual processes are *informationally encapsulated*, cog-

nitively impenetrable, and thus *modular*, while cognitive processes are *cognitively penetrable*, *informationally unencapsulated*, and thus *non-modular* (Fodor 1983). Informational encapsulation is a matter of what kinds of representations a computational subsystem has access to in performing its operations (*ibid.*, 71–73). Cognitive penetrability is a matter of whether or not a system's operations are susceptible to alteration in light of an organism's changing beliefs and desires (*ibid.*, 52–55, 73). Essentially, a system is modular if: (1) it operates only on certain representations and not others; (2) its operations are unlearned and innately specified; (3) its basic operations are primitive and not “assembled”; (4) its operations are neurally hardwired in identifiably circuits or locations; and (5) it does not share computational resources with other systems in doing what it does (*ibid.*, 37). There are some complications with how all of these conditions are supposed to contribute to the modularity of a perceptual system (see e.g., Charland 1996, 296, n. 5). However, the general idea of a ‘hardwired’ representational perceptual subsystem should be sufficient for the purposes at hand. The hypothesis that many perceptual processes may be modular adds another important dimension to how the distinction between cognitive and perceptual theories of emotion can be interpreted. It is also another example of where psychological emotion theory can benefit from philosophical work in related areas.

The hypothesis that affective perceptual processing in emotion is modular in Fodor's sense can be interpreted literally, that is, in symbol processing computational terms. This interpretation can be argued to have novel theoretical and experimental implications for emotion theory (Charland 1996). There are, in fact, important precedents in emotion theory where the notion of modularity is appealed to, though usually stripped of its computational symbol processing origins (Clarke 1986, de Sousa 1987, Frijda 1988, Griffiths 1990). It is in this more general sense that the RTE's claim that affective perception is modular should be understood. I should emphasize that the point here is not so much whether Fodor's model is exactly right, but rather whether it leads to interesting theoretical and empirically testable questions.

There is ample evidence in emotion theory which suggests that there may be perceptual processes that function in something close to Fodor's modular sense (Oatley and Johnson-Laird 1987, Ekman 1980, LeDoux 1989, Panskepp 1987, Zajonc 1980).⁵ On the other hand, there

5. As noted above, Howard Leventhal distinguishes between sensory and conceptual levels of processing in emotion (Leventhal 1984). These correspond roughly to the RTE's affective perception and affective cognition, respectively. However, between these is another level of processing, which Leventhal calls the schematic one. The schematic level of processing does not fit directly into the modular-nonmodular dichotomy.

is also evidence which suggests there may be affective cognitive processes that function in something very close to what he calls cognition (Gordon 1987; Lazarus 1991, esp. 127–170; Lyons 1980; Solomon 1976). In another interesting parallel, Fodor's distinction between cognitive and perceptual processes corresponds to a distinction between doxastic and infradoxastic states, respectively. Cognitive processes are typically doxastic and involve something like the fixation of *belief* (Fodor 1983, 73, 102, 112). Perceptual processes, on their side, are defined over representational items that are informationally less complex than belief (e.g., Marr 1982). The hypothesis that representational processing in emotion can be divided into cognitive processes and doxastic states on the one hand, and perceptual processes and infradoxastic states on the other, is essentially the RTE. It should be evident by now that different elements of this general hypothesis have significant corroborating instances in emotion theory.

To sum up, according to the RTE, representational information processing in emotion takes place on two levels. There is a cognitive doxastic representational level, where processes are typically conscious as well as sometimes partially subject to voluntary control and scrutiny. And there is a perceptual infradoxastic representational level, where processes are typically modular, not usually accessible to consciousness, and generally not subject to voluntary control or scrutiny. In the paradigm case of adult humans, both of these levels usually operate in parallel and, although relatively functionally independent, may interact at some points as well. In other cases, one level can operate in the absence of the other. This, for example, is the case with young infants and some animals, where there is affective perception with little or no accompanying affective cognition. Of course, in addition to their cognitive and perceptual representational processing dimensions, emotions also involve information processing on other levels as well (hormonal, neurochemical, etc.). Processes on those levels, however, are not representational. They do not require explanation in terms of representations. For this second class of processes explanation in purely physical terms suffices. Readers familiar with Jerry Fodor and Zenon Pylyshyn's case for the nomological autonomy of psychology will recognize this general line of argument (Fodor 1981a; Pylyshyn 1984, Ch. 1;

For one thing, schemas are acquired, which forms the basis of Leventhal's interpretation of Zajonc's work on the exposure effect (Leventhal and Scherer 1987, 10). Therefore, processing on that level is at some stages cognitively penetrable and hence non-modular. However, once a schema is in place, it functions modularly in something very much like Fodor's sense (minus fixed localized neurophysiological architecture). This could be interpreted as an example of what de Sousa proposes to call "moderate modularity" (de Sousa 1987, 56–67).

see also Dennett 1981a, 1987a). It serves to demarcate what requires explanation in terms of a representational, intentional characterization (what is representation or intention-governed) and what does not.

By now it should be evident that the RTE maps more or less effortlessly onto much of the data traditionally put forward in defence of cognitive and perceptual theories. This may seem suspicious, as if it were all too easy. To reconcile theories A and B by putting forward a theory A + B might understandably seem like a sleight of hand. And in some respects this is just what the RTE amounts to. This observation deserves an immediate response. Any doubts that the RTE may be a framework without clout should be appeased by noting that, if it is true, then both cognitive and perceptual theories are *wrong* in their respective defining assumptions. Cognitive theories are wrong that emotion always requires judgment or cognitive appraisal in a doxastic sense, and perceptual theories are wrong to deny or ignore the cognitive dimensions of emotion. In other words, the RTE is theoretically *incompatible* with cognitive and perceptual *theories* as these are traditionally defined (see §2). However, at the same time, this does not prevent the RTE from furthering the hypothesis that there are important cognitive and perceptual *factors* in emotion; indeed, that emotion may consist of two relatively distinct cognitive and perceptual *systems*. This is just what Damasio argues.

4. Damasio's Neurobiological Theory of Emotion. In *Descartes' Error* (Damasio 1994), Antonio Damasio claims to have been influenced by James' famous perceptual theory of emotion (James 1884, 1890). However, he is also critical of James for having ignored the cognitive dimension of emotion. Accordingly, he undertakes the task of explaining how a modified Jamesian account can be expanded to accommodate cognitive factors. Not surprisingly, his account does not fit into the traditional dichotomy between cognitive and perceptual theories of emotion, since it argues that emotion includes *both* cognitive and perceptual factors. As such, it provides an interesting piece of corroborating evidence for the RTE. However, there are some respects in which Damasio's account might benefit from clarification and refinement in RTE terms. The purpose of the following discussion then is two-fold: to provide detailed evidence for the RTE, and to extol the virtues of the RTE as a critical, exegetical tool.

The best place to begin our exposition of Damasio's theory is to consider the development of emotion ontogenetically. So imagine the case of a young human infant. What might emotion consist of here? Well, in young infants there is little neocortical sophistication, although normally the potential resources are there. Neither language nor the

higher level conceptual abilities associated with developed neocortical structures are present. Infants at this age do not ‘judge that p ’ or ‘fear that p ’ (where p is a proposition), since they do not have the requisite cortical, and hence conceptual, resources. Damasio calls this early primitive form of emotional functioning the *primary* emotion system (Damasio 1994, 131–134).

4.1 The primary emotion system. Primary emotions are intimately linked with biological regulation and survival (Damasio 1994, 116–117, 123). We share these early emotions with many species of animals. The primary emotions are processed by components of the limbic system, in particular the amygdala and anterior cingulate, as well as the early sensory cortices. Perception here is conceptually very primitive and much of it is innately programmed and preorganized (ibid., 117, 123, 133).⁶ The subcortical mechanisms of primary emotion are not only important for basic biological regulation (e.g., maintaining homeostatic equilibrium), they also help classify features in the external environment as “good” or “bad” (ibid., 117). In effect, they provide the organism with “a basic set of preferences or criteria, biases, or values” (ibid., 117).

The primary emotion system looks both inward *and* outward; it is both interoceptive and exteroceptive. It is *representational* and many of its end product states are *intentional*. Thus end product exteroceptive primary emotion states and feelings are *about* features and events in the external world, while end product interoceptive primary states and feelings are *about* features and events in the organism’s inner world. (Intermediate states in these processes do not themselves have to be fully representational or intentional.) In the former case, an organism might, say, *represent* some feature of its external environment *as* dangerous on account of its awareness *of* the presence of a harmful predator. And in the latter case, the organism might, say, become aware of its own changing configuration of bodily states *as* instances of fear or terror. Damasio suggests that typical features detected by the exteroceptive branch of the primary emotion system include “size (as in large animals); large span (as in flying eagles); type of motion (as in reptiles); certain sounds (such as growling); certain configurations of body state (as in the pain felt during heart attack)” (1994, 131). It is important to

6. However, Damasio is careful to qualify that, unlike the hypothalamus and brainstem whose circuitry is “mostly innate and stable . . . the limbic system contains both innate circuitry and circuitry modifiable by the experience of the ever-evolving organism” (Damasio 1994, 118). This may be another important variant of what de Sousa calls “moderate modularity.”

note that to generate, say, a fear response on this level, “one does not need to ‘recognize’ the bear, snake, or eagle, as such, or to know what, precisely, is causing the pain” (ibid., 131; see also Zajonc 1980, LeDoux 1989). All that is required “is that early sensory cortices detect and categorize the key feature or features of a given entity (e.g., animal or object), and that structures such as the amygdala receive signals concerning their *conjunctive* presence” (Damasio 1994, 131–132). Upon reception of these signals, other subcortical brain structures are activated, for example, the hypothalamus and basal ganglia. These are responsible for generating distinct internal bodily response states and patterns, as well as preset motor and musculoskeletal dispositions (ibid., 132, Figure 7-1). This is where the interoceptive side of the system comes in, on which more shortly. Damasio’s list of primary emotions includes happiness, sadness, anger, fear, and disgust (ibid., 149). Each of these corresponds to a particular configuration of internal bodily states and motor responses.

Damasio is not alone in his belief that there is a primitive affective perceptual *representational* system that is mostly mediated by subcortical structures (LeDoux 1989, Panskepp 1982, Zajonc 1980). It is unlikely that doxastic conceptual achievements such as belief and judgment are involved on this level. On the other hand, it seems equally true that gross features in the environment do *get represented* and that some relatively distinct representational perceptual categories are constructed on that basis. These might be categories such as ‘threat’ or ‘loss’ (Panskepp 1982, 411). Thus, through the affective perceptual system the environment gets classified and interpreted in light of the organism’s own special innate biases and preferences. Damasio’s argument that there is a primary emotion system nicely corroborates the RTE’s claim that there is an affective perceptual representational dimension in emotion. It also suggests that there is an important sense in which there can be emotion without doxastic representation and propositional judgment; hence, that cognitive theorists are wrong in their insistence that emotion requires doxastic representation of the order of propositional judgment. Note, finally, that primary emotions and their primitive perceptual level of preferences and classification remain operative during the ongoing life of the organism. The system continues to exercise its regulatory function throughout the life of the organism and it provides the basic representational scaffolding through which all transactions between the organism and the environment are filtered and evaluated (see also Charland 1995, 75–79). Primary emotions also provide the basis for what Damasio calls “secondary emotions.” These constitute an additional affective representational system in those organisms equipped with the requisite cortical capacities.

4.2 *The Secondary Emotion System.* Damasio introduces *secondary* emotions as follows:

the mechanism of primary emotions does not describe the full range of emotional behaviours. They are, to be sure, the basic mechanism. However, I believe that in terms of an individual's development they are followed by mechanisms of *secondary emotions*, which occur once we begin to experience feelings and forming *systematic connections between categories of objects and situations, on the one hand, and primary emotions, on the other.* (1994, 134)

Again, Damasio is not alone in his supposition that (in adult humans) emotion sometimes also involves a distinct secondary, cognitive level of processing. As we saw in §2, this is a theoretical position with a long tradition in philosophical and psychological emotion theory. Ontogenetically, primary emotions are the "early" emotions, while secondary emotions are the "adult" ones (ibid., 133). Damasio tells us that the limbic system and other subcortical structures are *not* sufficient to support secondary emotions. These require the prefrontal and somatosensory cortices (ibid., 134). Thus, secondary emotions are only possible in creatures equipped with neocortical resources. Examples of secondary emotions are jealousy and envy (ibid., 130).

A crucial feature of Damasio's overall hypothesis is that secondary emotions depend *on*, and are built *from*, the mechanisms of primary emotion. In other words, "secondary emotions utilize the machinery of primary emotions" (ibid., 137). Damasio's account of the complex interdependence of cortical and subcortical factors in emotion challenges the sharp division between the two that is normally presumed or implied in the distinction between cognitive and perceptual theories (see also LeDoux 1996). But note that the connection established between the two does not prevent Damasio from also maintaining that there are indeed different, relatively independent perceptual and cognitive levels of processing in emotion; in other words, that it is necessary to distinguish two different representational processing *systems*. What is especially original about his account is the manner in which he defends the suggestion that, although emotion may consist of two relatively independent systems, these employ many of the same *mechanisms*. As he puts it:

Nature, with its tinkerish knack for economy, did not select independent mechanisms for expressing primary and secondary emotions. It simply allowed secondary emotions to be expressed by the same channel already prepared to convey primary emotions. (1994, 139).

Having noted the general dependence of the secondary emotion sys-

tem on the primary one, let us look a bit closer at the secondary system. In many respects, it satisfies most of the conditions identified in the RTE's hypothesis that, in addition to affective perception, there is also an affective cognitive level of processing in emotion. The account provided is in fact very detailed, so only a brief summary will be possible. The secondary emotion system begins with the "conscious, deliberate, considerations you entertain about a person or situation" (Damasio 1994, 136). What is involved is a *cognitive evaluation* of a situation, framed in terms of *images*, which in turn may be verbal or nonverbal. Verbal images involve "words, sentences regarding attributes, activities, names, and so on" (ibid., 136). These images activate various *acquired dispositional representations* stored in the networks of the prefrontal cortex. Those prefrontal responses are then signalled to the amygdala and anterior cingulate (parts of the primary emotion system), which then trigger "a massive response" that can involve everything from visceral, endocrine, and motor factors, usually all of them in concert (ibid., 137–138). The last step in the process occurs when this myriad collection of information regarding the organism's current body state (actually, developing body state, since all of this is always in flux) is signalled back to the limbic and somatosensory systems. It is important to note that the entire process *following* the cognitive appraisal of a situation is nonconscious, involuntary, and automatic, while processes involved in the cognitive appraisal itself are conscious and deliberate. To conclude, a secondary emotion involves "the combination of a *mental evaluative process*, simple or complex, with *dispositional responses to that process*, mostly toward the body proper, resulting in an emotional body state, but also toward the brain itself (neurotransmitter nuclei in the brain stem), resulting in additional mental changes" (ibid., 139).

Contrary to James and other perceptual theorists, who argue that emotion is primarily or even sometimes solely a matter of feeling or affective perception, Damasio makes a convincing case that there is, in addition, an important cognitive processing dimension to emotion. That cognitive dimension can and sometimes does operate on the basis of verbal representations that may and probably often are propositional and doxastic in nature. Secondly, although the neurophysiological and other physiological processes that ensue following a cognitive evaluation of a situation are involuntary, automatic, and not conscious, Damasio's account also allows for the fact that the processes involved in the cognitive evaluation (and leading up to it) may be, and sometimes are, conscious and deliberate. In fact he chides James for having overlooked this cognitive dimension of emotion. James, he writes, "postulated a basic mechanism in which particular stimuli in

the environment excite, by means of an innately set and inflexible mechanism, a specific pattern of body reaction” (ibid., 130). What James failed to note is that “in many circumstances of our life as social beings . . . our emotions are triggered only after an evaluative, voluntary, non-automatic mental process” (ibid.). Thus our reactions to “a broad range of stimuli and situations can be filtered by an interposed mindful evaluation” (ibid.). As a result of our individual experiences, this range of stimuli can become associated with the innate and preorganized range of stimuli and situations that are the object of the primary emotion system and its set repertoire of visceral, endocrine, and associated motor patterns and reactions. In Damasio’s words, “because of the thoughtful, evaluative filtering process, there is room for variation in the extent and intensity of preset emotional patterns; there is, in effect, a modulation of the basic machinery of emotions gleaned by James” (ibid.).

4.3 Feeling as Interoceptive Affective Perception. In the discussion of primary emotions above, we said that there exists an interoceptive dimension to affective perception. That dimension plays a crucial part in the processing of the secondary emotion system as well. Damasio calls this the *feeling* dimension of emotion. It is significant that the concept of feeling is first introduced in the context of his discussion of primary emotions. Thus, having noted the fact that primary emotions involve the generation of distinct visceral, motor, and other somatosensory body states and patterns, all organized according to mostly innate and preset patterns, we are told that “the cycle continues, certainly in humans, and its next step is the *feeling of the emotion* in connection to the object that excited it, the realization of the nexus between object and emotional body state” (ibid., 132). In feeling, then, the organism becomes aware of its body states (internal and external) in the context of their “juxtaposition” or “superposition” with the environmental features they serve to “qualify” (ibid., 146). Feeling is the “perception” of these body changes (ibid., 139). More specifically, “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*” (ibid., 145). The routes by which information about the body’s current state is fed back to the brain are both neural and chemical (ibid., 144). The main structures in that feedback loop include the spinal cord, brain stem, reticular formation, and thalamus, eventually leading to the limbic system, hypothalamus, and multiple somatosensory cortices in the insula and parietal regions (ibid., 143–144, 151).

According to Damasio, there are also primary and secondary emotion *feelings* (ibid., 149–150). The former are associated with the mechanisms of primary emotion, while the latter are associated with the secondary emotion system. Primary feelings include happiness, sadness, anger, fear, and disgust (ibid., 149). Each of these corresponds to a distinct, largely innate and preorganized body profile generated by the primary emotion system. In the case of humans, the development of the secondary emotion system permits the extension of this basic early feeling vocabulary into a more conceptually sophisticated one: “euphoria and ecstasy are variations of happiness; melancholy and wistfulness are variations of sadness” (ibid., 149). Feelings of this second variety arise when “subtler shades of cognitive state are connected to subtler variations of emotional body state” (ibid., 150). Thus “it is the connection between an intricate cognitive content and a variation on a preorganized body-state profile that allows us to experience shades of remorse, embarrassment, *Schadenfreude*, vindication, and so on” (ibid., 150). Damasio’s extremely detailed account of the neurophysiology of feeling is one of his major contributions to emotion theory. It marks an important advance beyond James’ original but far too narrow visceral account of the origins of feeling (James, 1884).⁷ Unfortunately, in one important respect Damasio’s account is problematic and maybe here the RTE can help.

The problem arises as a result of Damasio’s unqualified assertion that “contrary to traditional scientific opinion, feelings are just as *cognitive* as other percepts” (ibid., xv, 159, emphasis added). This claim is problematic, since on his account it should be possible to attribute feelings to at least young infants beyond a certain age, as well as some animals. However, if feelings are “cognitive” in any strong sense, then this is not possible. Certainly, it is unlikely that primary feelings in a young human infant could be cognitive in the RTE doxastic sense; that is, require propositional belief or judgment. Thus the unqualified claim that feelings in general are cognitive appears to be too strong for Damasio’s own purposes, since it would preclude attributing more primitive forms of feeling to organisms that merit this. A compromise solution would be to say that feelings in more primitive organisms are representational, but on an infradoxastic level only (Charland 1996; see also Tye 1995, 125–131).⁸ One obstacle to this suggestion, however,

7. An important respect in which Damasio’s account goes beyond James’ is his postulation of a mechanism whereby feeling can be generated without direct feedback from the body. This is the ‘As-If Loop’ (Damasio 1984, 155–158). Although it is a crucial part of his account, I ignore it for now as it is not central to the discussion at hand.

8. Tye describes Damasio’s account of feeling as involving a “cognitive monitoring” of

is Damasio's claim that representational feedback from the body-profile is not sufficient for the experience of feeling. He believes that "a further condition for the experience is a correlation of the ongoing representation of the body with the neural representations constituting the self" (Damasio 1994, 147). The suggestion that primitive organisms can experience feelings, then, would appear to depend on whether or not they might be capable of a corresponding primitive sense of self. I do not see why this should be impossible on his view.

4.4 Damasio's Theory and the RTE. Damasio's claim that feelings are just as cognitive as other percepts is one example where his theory might benefit from refinement in RTE terms. On this interpretation some feelings, namely those associated with primary emotions, are not "cognitive," although they are still representational, albeit in an infradoxastic sense. On the other hand, in the case of full-fledged (adult) feelings associated with secondary emotions, the claim that feelings are cognitive in a doxastic representational sense is far more likely and plausible. However, the key insight here is not that feelings are cognitive, but rather that, whether primary *or* secondary, they are *representational*. It is hard to see how to state this distinction without something like the RTE.

Another respect in which Damasio's theory might benefit from re-interpretation in RTE terms has to do with the demarcation between primary and secondary processes in emotion. Here, particularly in the case of primary "innate" and "preset" processes, the RTE has the notion of modularity and its associated notions of cognitive penetrability and informational encapsulation to offer. These theoretical refinements of what might be involved in the processing of primary emotions can be argued to lead to interesting experimental implications (Charland 1996; see also fn. 4 and 5). Notions such as whether a process is cognitively penetrable or not, or whether it requires explanation in terms of representations or not, are also RTE theoretical notions that could be used to clarify and explore the status of many of Damasio's claims. Finally, one area where Damasio's theory could use considerable clar-

internal bodily states (Tye 1995, 225, n. 41). He contrasts this with his view, according to which "nonconceptual sensing" is what is involved. This differs from the RTE, which allows that infradoxastic modes of interoceptive representation can have a conceptual, and indeed a "symbolic" dimension. I should point out that in discussions where something like the above notion of infradoxasticity is involved (see e.g., n.4) those states are almost invariably held to be representational in some weak intentional sense. This is why they are called *infra-doxastic*, *non-doxastic*, or *sub-doxastic* and not simply physical or neural. It would be interesting to look closer at what kinds of empirical evidence could be brought to bear in attempting to decide between these three options.

ification and refinement is in his use of the notion of mental imagery. Although the version of the RTE I have proposed is not specifically a symbol processing one, there is much that symbol processing theorists have written about the representational status of imagery that could be helpful here (e.g., Pylyshyn 1984, Ch. 8).

5. Conclusion. This discussion started with the thesis that cognitive and perceptual theories of emotion ought to be reconciled. I have argued that Damasio's theory provides a good case study of why this is so and how it might be done. The RTE provides a more general metatheoretical framework that also shows how it might be done. Although it is not possible to demonstrate this here, the RTE is in fact compatible with other attempts to reconcile cognitive and perceptual theories of emotion (e.g., Leventhal 1984, Leventhal and Scherer 1987). These initiatives could equally benefit from reinterpretation in RTE terms.

Cognitive and perceptual theories of emotion, then, both can and ought to be reconciled. This, however, does not mean abandoning the idea that there may be independent, but also sometimes related, cognitive and perceptual *factors* in emotion. Damasio's theory reflects this view. The RTE is even more explicit about the matter with its hypothesis that representational processing in emotion is sharply divided between cognitive and perceptual factors. In closing, it needs to be emphasized that the RTE is by no means a finished product. The attempt to deploy it in the reinterpretation of emotion theory also requires far more work. Consider this a first, tentative step that still has to prove its worth before one can decide to embark on the suggested project in a full-fledged way. In this first step I have tried to show that the RTE is helpful in resolving a longstanding impasse in emotion theory, and that it is helpful in interpreting and furthering Damasio's innovative neurobiological theory. I have also tried to show how issues in emotion theory can be integrated with wider discussions in the foundations of cognitive science where they are not often raised or discussed. Among the main suggestions explored here is whether something like the present (somewhat neutral) RTE version of Fodor's (1983) cognitive/perceptual model of psychological organization can be mapped onto current work in emotion theory. I have argued that there are good reasons for being optimistic about this.

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