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Epilogue

Feelings and Emotions: Where Do We Stand?

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Our main objective in organizing the symposium of which this book is the outcome was to provide an overview of current theory and findings in the study of emotion. As mentioned in the Introduction, the restrictions of our schedule meant that we could not accommodate all relevant viewpoints and findings. This resulted in our selection of twenty-four contributions, here twenty-four chapters.

Although the range and quality of the contributions are impressive, not all of the potentially relevant disciplines are represented. Missing disciplines include computer science, psychiatry, psychoanalysis, and linguistics. Nevertheless, we believe that this volume provides a good reflection of the current state of the art, partly because of the broad range of the topics addressed, but also because many of the chapters refer to important work by others than their authors, both within and outside their own discipline.

For us, the organizers, the symposium was a great pleasure. It contained much that is highly fascinating in terms of new findings and novel insights, providing us with the joys of enhanced understanding and unsuspected implications. We were impressed by the multitude of levels at which emotions can be studied, described, and analyzed. It filled us with respect for the high quality of the presentations and of the reported research.

In this epilogue, we shall try to summarize what we think is the current state of the art, focusing on what seem to us to have been the major contributions over the last three decades. Obviously, however, there is plenty of room for debate as to which have been major contributions rather than revisits to issues that have been addressed by previous thinkers.

The current state of emotion theory can be summarized in terms of several themes, around which our overview will be organized. However, one important feature cuts across them: the sheer explosion of empirical research over the past three decades. Thirty years ago empirical research on emotion had begun to extend beyond the study of autonomic arousal. At the time of Magda Arnold's 1970 Loyola Symposium, research by Lazarus,

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by Plutchik, by Schachter and Singer, and by Schlosberg was just beginning to be influential. Since then, research on facial expression, on appraisal, on social and cultural factors in emotion and, somewhat later, on the neuropsychology of emotion has blossomed. Reflecting this, no fewer than three journals (*Motivation and Emotion, Cognition and Emotion*, and *Emotion*) have been launched and a large number of monographs and edited volumes devoted specifically to emotion have appeared.

THE NATURE OF EMOTIONS

What is all that research about? What are emotions? The behavioral and experiential phenomena associated with emotion have suggested quite different conceptions of emotion. That still is so, and this variety of conceptions can be recognized in the different tones of the chapters in this volume.

In one of the major current views, emotions are regarded as rapid responses to emergency situations that have evolved in order to cope with the threats and opportunities afforded by the ancestral environment. They can occur automatically in response to rather specific stimuli that demand little in terms of information processing and conscious awareness (see the chapters by Damasio, Ekman, Öhman & Wiens, Panksepp, Zajonc). This view has gained in specificity and prominence over the last three decades. At the same time, it implicitly continues the traditional view of emotions as distinct from "reason" and as "passions," that is, reactions in which the subject is essentially passive.

However, speed does not characterize all emotions; nor do all emotions have to do with emergencies. Moreover, not all emotions are passive. Capacities for regulation and control of emotions form part and parcel of the emotion system, as well as of the phenomenology of emotional experience and behavior. For these reasons, it is argued, as Solomon and Shweder do in their chapters, that emotions cannot be regarded as a natural class. In any case, in other conceptions emotions are viewed primarily as complexes of meanings, meanings-in-action, and desires, which, jointly with the environment and the individual's history, determine a huge variety of behavioral and cognitive phenomena. Emotions are regarded as including judgments with respect to values or concerns, and their contents are seen as matching one's normative and cultural context. People are held responsible, and hold themselves responsible, thus rendering emotions morally relevant (see the chapters by de Waal, Frank, Oatley, Panksepp, Salovey et al., Scherer, Sherman, Solomon, and Thoits).

These differences in the conceptualization of emotions are due in part to different levels in the description of the emotional phenomena, and to different foci of interest: in behavior and neural processes (notably by Berridge, Cacioppo et al., Winston & Dolan, Öhman & Wiens, and

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Panksepp), or in feelings, subjective awareness, and how emotions function in the context of self-awareness and social interaction (notably, by Clark, Frank, Mellers, Mesquita & Markus, Oatley, Scherer, Sherman, Shweder, Solomon, and Thoits). In part, however, these differences are substantive ones, and have to do with what sets emotions apart from other psychological functions and the neural machinery responsible for them.

These different conceptions of emotions are related to divergences in views of the differences between individual emotions. In particular, there are the opposing viewpoints of basic emotions theory and multicomponential theory.

Basic emotions theory posits the existence of a restricted set of evolutionarily shaped emotions. In the present volume this point of view is to be found in the chapters by Ekman, Öhman and Wiens, and Panksepp. Each basic emotion is held to consist of a package or brain system of response components that can be traced back to a more or less unitary central disposition, and is triggered by a specific set of stimuli or contingencies. Basic emotions theory contains a hierarchical analysis of the emotion space, involving a top-down system for ordering emotions. All emotions that can be distinguished consist of variants of one or more of the basic emotions. Basic emotions theory forms a powerful force in focusing research toward the biological and possibly universal mechanisms in emotions.

Multicomponential theory (represented here in the chapters by Mesquita & Markus, Scherer, and Shweder) considers emotions as consisting of sets of response components drawn from a components reservoir and more or less freely combined. What may be innate are mechanisms for the components, such as those for appraisal processes, motivational and physiological response dispositions, and certain action programs. There presumably exist as many different emotions as there are patterns of components. Components are individually activated by the appraisal of events. Individual emotions nevertheless are coherent wholes because of interaction or synchronization between the components (see the chapter by Scherer). Componential analysis, as Shweder argues, favors bottom-up comparison of emotions in cross-cultural and developmental research. It thereby frees emotion study from the restrictions of categorical distinctions, whether those distinctions are between what are and what are not emotions, or between what is emotion X or emotion Y.

Between the fully structured conception of emotion found in basic emotions theory and the fully unstructured one of multicomponential theory, there are intermediate conceptions. Organizing principles are sought in various ways, for instance in appraisal (by Scherer), in the dimensions of pleasure and pain in dimensional theories (aspects of which can be seen in the chapter by Cacioppo et al.), or in motivation or action readiness (by Frijda). These various conceptions may not be incompatible. As Cacioppo et al. suggest, different levels of analysis may require different conceptions

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of the underlying processes. The overall system may possess a heterarchical structure, in which lower-order processes combine in various ways to shape different higher-order processes. This systems viewpoint constitutes one of the integrating perspectives in current theoretical developments. It suggests different conceptualizations when the focus is upon the functioning of emotions in social interaction and within cultural modeling and normative influences. Those influences, as well as neuropsychological findings, have suggested that emotion regulation and control are an integral part of the emotion system, and are not factors external to it merely resulting in inhibitions (see the chapters by Clark, Dunn, Frank, Salovey et al., Solomon, and Thoits; and previous work by Damasio, among others).

Component patterns, however they are interpreted, only imperfectly characterize human emotional reactions and their meaning for the individual. To get a grip on these meanings, analysis has to include the roles played by the individual's history, the narratives in which the emotions are located, their cultural contexts, and their place in social interchange (see the chapters by Clark, de Waal, Mesquita & Markus, Oatley, Sherman, and Thoits).

THE NATURE OF FEELINGS

Researchers are nearly unanimous in distinguishing emotions from feelings. This reflects the common contemporary view that emotional processes exist independently of awareness and may occur without awareness, and that feelings have a special place in emotional reactions. What that place is, and how feeling relates to the various functionally defined processes (such as cognitive and motor ones), and to neural and neurochemical ones, has emerged as a new domain of empirical and theoretical investigation (see the chapters by Cacioppo et al., Damasio, Panksepp, Scherer, and Winston & Dolan).

Feeling itself has regained respectability. Efforts are being devoted to investigating its nature and content. One of the major recent gains concerns recognition of the need to distinguish among different levels of feeling. There are more diffuse or primitive and more articulate or reflexive levels. Most of the work relevant to this issue was not featured in our symposium (see Lambie & Marcel, 2002), but some of the contributions include reflections suggesting that different neural processes may be involved in different forms of feeling (see the chapters by Damasio, Panksepp, and Winston & Dolan).

In line with the classic theorizing by James, feelings are thought by many investigators to reflect feedback from bodily responses and action. However, other processes are being recognized as equally important in feeling, such as pleasure and pain, desires, intentions or goal settings, or actions-as-planned, as discussed by Berridge, Cacioppo et al., Damasio, Frijda, and

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Scherer. At more articulate levels of feeling, cognitive processes of varying degrees of complexity and reflectiveness are major constituents. Feelings are being regarded, notably by Damasio and Scherer, as integrating information from all response components, and as serving to monitor and guide emotional response. This view, as Scherer's chapter shows, poses the problem of discovering the rules of integration, including the integration of event information, body information, and person information into experiences of self (as discussed by Damasio, Panksepp, and Solomon).

COGNITIVE PROCESSES AND AUTOMATICITY

Among the major exploits over the last three decades has been the development of the cognitive approach to emotions. On the occasion of the previous Feelings and Emotions Symposium, this was evident in the landmark contributions by Arnold, by Lazarus and his colleagues, and by Schachter. Since then this approach has developed into the appraisal approach to emotion and emotional disturbances. It profoundly influences our understanding of what constitutes different emotions, or variants of the "same" emotions (see the chapters by Mesquita & Markus, Shweder, and Solomon). It also permits varied accounts of the meanings of different emotions, of the roles of emotions in social interaction, and of the content and consequences of understanding emotions in others. Moreover, it offers the promise of understanding the causal mechanisms involved in the emergence of emotions. Emotion arousal appears to depend quite generally on the context in which stimuli or events appear, rather than on the affectively potent stimuli per se. Emotional value and emotion intensity, for instance, depend on the relation of these stimuli to reference points such as expectations and norms. Examples of these dependencies can be found in the chapter by Mellers and her research on the valence effects of surprise. The cognitive approach has made emotion research relevant to understanding decision-making and economic behavior, and to the ways in which such behavior deviates from rational decision models. It also made it relevant to seeking to understand psychopathology (see the chapter by Öhman & Wiens, which criticizes this understanding).

The cognitive approach to emotion has led to a large amount of research that links self-reports on appraisal, or experimental manipulations of appraisals, to self-reports of different emotions. Such research has been, and continues to be, conducted in various cultural-comparative settings. The cognitive approach has also led to the experimental investigation of the possible causal relationships between emotion-eliciting events and aspects of emotional response such as facial and vocal expressions, changes in action readiness, or emotion self-ascriptions (see the chapters by Ekman, Frijda, and Scherer). One of the problems encountered in such research is the failure to apply anything other than simple linear models

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to analyze the relationships between these variables (see the chapter by Scherer).

Problems also arise in specifying the cognitive processes that play a role in emotions. Emotions have since ancient times been contrasted with rationality and reason. Evidence for the interaction between emotional and cognitive processes has blurred this distinction. There also are arguments to the effect that emotions enhance reason and rational decision making; Damasio and Frank have both developed such arguments. On the other hand, there remain empirical and theoretical grounds for maintaining a basic distinction between emotion and reason. Emotions and cognitive assessments may be in conflict, as Öhman and Wiens describe in connection with fear, and as Berridge shows in connection with desire. In his chapter Elster argues that emotions and reason are each to be characterized by non-overlapping, and partly incompatible, properties, to be defined in terms of system attributes rather than types of processes.

The cognitive approach has encountered powerful opposition on the grounds that aspects of the emotional response can be aroused automatically. The cognitive approach makes strong claims with respect to causality, holding that appraisals trigger emotions (see Scherer's chapter). One of the major developments during the past three decades has been the emergence of extensive and varied evidence that affective responses (liking and dislike, or processes that influence the liking or dislike of subsequent stimuli) can occur rapidly, ubiquitously, and in the absence of conscious awareness as well as of nonconscious cognitive mediation. Elementary stimuli can directly evoke emotional reactions, also without cognitive mediation or awareness. Fragmentary information, presented below the threshold of awareness, may suffice for certain emotional reactions, or prepare the ground for the response to more complex information. All this is described in the chapters by Berridge, Öhman and Wiens, Panksepp, Winston and Dolan, and Zajonc. Such evidence leads to the view that much in emotional awareness, including self-reports, may be irrelevant to what actually elicited the emotion or consist of after-the-fact justifications. Many emotions, moreover, show "cognitive encapsulation," that is, an insensitivity to relevant information or an insensitivity of emotion processes to variations in attention, as illustrated in the chapters by Öhman and Wiens and Winston and Dolan.

At the same time, in many elementary and automatic reactions, information from context and from the individual's history does play a role. The automaticity research leads to questions about the relative roles of the relevant processes and cognitive variables in the general occurrence of animal and human emotions. Some of the contrast between the approach emphasizing cognitive processes and the approach emphasizing automatic processes is softened by the recognition that emotion processes may occur and even co-occur at different levels of complexity, articulation, and neural

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functioning. Such diversity of levels is generally recognized by contemporary investigators, and with respect to most relevant subdomains such as those of sensitivity to emotionally relevant information, appraisal, response construction, and regulation (see the chapters by Cacioppo et al., Damasio, de Waal, Ekman, Frijda, Öhman & Wiens, Panksepp, Scherer, and Solomon). Interactions between activity at the various levels are also generally recognized, although the details have yet to be worked out.

The automaticity of certain emotional reactions to stimuli of which the subject is unaware underscores the question of what feelings are good for. What is the functional role of feeling? Clark, Damasio, Dunn, Mesquita and Markus, and Panksepp all propose tentative answers to this question, albeit at different levels of analysis.

PLEASURE AND PAIN

Pleasure and pain are among the most distinctive aspects of feeling. For several decades they were almost absent from emotion theory. They have now returned to the forefront of empirical investigation and theoretical analysis. Pleasure and pain are regarded as fundamental. They have appeared as ubiquitous responses to information, even when nonconscious and only partly identified. They are understood not only as feeling states, but more broadly as affective processes that dictate stimulus salience and acceptance or nonacceptance, influence evaluation of subsequent neutral stimuli, and sensitize the organism to approach and avoidance, even when they are nonconscious. As feeling states, they appear to be irreducible to body sensations. They are of central concern in many different contexts: as processes that can be nonconscious, that have particular temporal dynamics, that influence cognitive and social flexibility and performance, that have signal value, and that are central in decision making (see the chapters by Berridge, Cacioppo et al., Isen, Mellers, and Zajonc). There are concentrated research efforts to elucidate the underlying psychological and neural processes (Berridge, Cacioppo et al., and Isen). One line of research seeks to elucidate the relationships between pleasure and other basic processes, finding that pleasure has functional and motivational consequences different but not always opposite from those of pain, and evidence suggestive of separate underlying neural processes. Research on pleasure allows positive emotions to receive functional interpretations that go beyond a return to homeostasis (Cacioppo et al. and Isen), and shows that pleasure processes are distinct from those governing approach or wanting (Berridge).

How pleasures and pains are evoked is still a mostly uncharted domain. Appraisal theory assumes appraisals of ultimate benefits or harms, and thus refers to these. How these elementary pleasures and pains are generated – the processes by which certain tastes or organ sensations obtain a "niceness" gloss and activate the opiate system, while others do

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not, for instance – remains unclear. There are some promising endeavors, however. An example, and a possible model for other research, is Zajonc's explanation (see his chapter) of the effects of mere exposure – the tendency to like familiar stimuli.

EMOTIONS AND THE BRAIN

Affective neuroscience is one of the domains that has shown impressive progress over the last thirty years. It was neither a very lively nor a coherent field then; it is a highly active and prominent field now. Both emotion and feeling have become respectable topics in neuroscience. A massive amount of novel information has been produced that not only is providing information about the neural and neurochemical processes involved in emotional phenomena but also makes important contributions to the functional understanding of emotions.

We shall limit ourselves here to the contributions from affective neuroscience discussed in the chapters in this volume. One of these concerns the wide array of areas and circuits that have been shown to play a role in emotions. These range from the lower brainstem and midbrain to the prefrontal and cingulate cortices, with the amygdala being prominent in several regards. Another major contribution concerns the central place of neuropeptides in emotional processes, with some of these being linked to functionally definable circuits (such as endogenous opiates to pleasure and separation distress).

The findings on brain circuits involved in emotional phenomena shows the relevance to them of subcortical circuits, as far down as the brainstem periaquaductal gray. One of the major findings that underlined the place of subcortical processes has been the demonstration that emotions (or certain emotional responses) can be evoked by a rapid "low road" that engages only fragmentary information from the eliciting situation or cortical circuits. Another set of findings provides evidence for the vital role played by parts of the prefrontal cortex in responses to emotionally complex stimuli, and in modifying such responses (see the chapters by Damasio, Panksepp, and Winston & Dolan).

Neuroscience research has demonstrated important functional differentiations in emotion-relevant brain processes. Evidence shows distinctions between areas more involved in triggering or organizing emotions and areas more involved in the execution of responses, and still others that are pertinent to feelings. Evidence has also been adduced to conclude that certain brain circuits fulfill a key role in more or less specific emotions, such as fear, anger, separation distress, or joy and play. Other findings suggest that much of emotion is best conceptualized in terms of more broadly defined processes such as "liking," necessitating novel conceptualizations of basic emotional processes, such as "seeking" or "wanting." Moreover,

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brain processes have been identified that are essential to social feelings, thus corroborating a biological basis for such feelings. How best to conceive of the functional nature of the various brain processes is one of the current concerns that may lead to linking brain processes more closely with behavioral, physiological, and experiential phenomena (see the chapters by Berridge, Damasio, Isen, Panksepp, and Winston & Dolan).

Fascinating research directions explore the interactions between various neural functions. Certain emotional response mechanisms appear to be context-sensitive whereas others are not; some are responsive to attention, whereas others cannot be so influenced. All this holds out the promise of an analysis of emotion mechanisms at an increasingly deep and subtle level.

Neuroscience research is extending toward the study of feeling. It supports the psychological distinction of levels of subjective experience (more immediate or diffuse, and more reflexive or articulate) and provides evidence for the role of body information and information integration in feeling (see the chapters by Damasio, Panksepp, Winston & Dolan).

EMOTIONS AND SOCIAL INTERACTION

Emotions regarded as evolutionarily shaped adaptations form one theoretical orientation; emotion as that which shapes and cements social interaction forms another, and this latter approach has also increased considerably in scope during the past three decades. The social psychology, sociology, and anthropology of emotions have become prominent subdomains of research in their respective disciplines. The same holds for emotion study in cultural psychology, and for the study of emotions in decision making and economics. The past thirty years have witnessed the emergence of systematic empirical research on emotion in each of these fields.

Emotions have come to be regarded as the major social glue, with extensive empirical research supporting that view. For instance, humans generally appear to desire to share their emotions with others and have others share their emotions with them, as the extensive work by Rimé (1995) has made evident. Emotional exchanges belong to the social fabric and regulate interpersonal relationships (see the chapters by Clark, de Waal, Frank, Mesquita & Markus, Sherman, Solomon, and Thoits). This is so by virtue of capacities for empathy, and by sensitivity to sympathy and the detection of suffering in others. The attendant emotions form an important basis of moral behavior and moral rules, and may well explain the human inclination toward cooperation that often balances that for competition (see Frank's chapter). Having emotions in itself has moral impact, which is presumably one of their functions. Forms of awareness of suffering in others, sympathy, empathy, and consolation are found among animals, notably apes (see the chapter by de Waal). These emotional propensities may well shed light on the explanation of morality and altruism.

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Equally promising is the development of another perspective that takes the social-interactional origins of emotion processes into account: the dynamic perspective. This approach examines how phenomena may emerge from the interaction between individuals and the environment, and between an individual's different capabilities (Lewis & Granic, 2000). Although the dynamic approach was not directly represented at our symposium, Frank's inventive analysis of risky cooperation could be used to illustrate this perspective.

Careful analysis of the role emotions play in social interaction shows that such interaction is shaped both by one's own emotions and by how others perceive one's emotions. Social interaction depends on the manner in which and the degree to which emotions are regulated and steered by the individuals concerned, which in turn depend on their knowledge of emotions and their awareness of their own emotions. These abilities and knowledge constitute what is termed "emotional intelligence." Individuals differ in emotional intelligence, which can be regarded as a more or less stable personality trait (see the chapter by Salovey et al.). Developmental studies indicate that prior experience of social interaction, especially in the context of close relationships, contributes to the acquisition of emotion regulation and steering and emotion knowledge, which in turn contribute to the formation of close relationships such as friendships (see the chapter by Dunn).

EMOTIONS BETWEEN BIOLOGY AND CULTURE

Ever since Darwin, the functional viewpoint has had a dominant place in emotion theory. In the past three decades, evolutionary hypotheses have been extensively used to explain post hoc why the various emotions and emotion processes are as they are. It is argued that they are presumably the most adaptive solutions to ancestral environmental threats and opportunities that required rapid reactions (for examples, see the chapters by Cacioppo et al., Ekman, and Öhman & Wiens). Such functional viewpoints have generally predominated in biological approaches, but recently such ideas can also be found in social and cultural analyses. A rich and perhaps at least as fertile field of research is opening up in investigations of the functional consequences, rather than the possible functional origin, of emotions. Emotions appear to play a number of roles in addition to contributing to solving adaptive problems. For example, emotions are functional in forming social relationships and smoothing social interactions, and also in cognitive functioning, as is illustrated by research on moods (as discussed by Isen). Emotions also are found to be indispensable for goal setting and adaptive decision making, as is evident from clinical data discussed by Damasio and from experimental studies such as those

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reported by Frank and by Mellers. Emotion research is beginning to penetrate economic theory precisely because of these functional consequences.

The development of functional viewpoints in biological, cognitive, and sociocultural approaches to emotion is also illustrative of the emergence of views that acknowledge the potential compatibility of biological and sociocultural approaches to emotion, despite differences in the ways that emotions are defined and "measured." In recent theorizing, the old controversy between a biological and a cultural view is being abandoned and replaced by the idea that emotions are both biologically and culturally determined. The debate is shifting from the question of whether emotions are biological or cultural to that of the extent to which, and the ways in which, biological givens and cultural influences determine emotions. With regard to the origin of emotions and emotion component patterns, assessing the contributions made by biological dispositions and the social-cultural environment remains a major research issue. Evidence is growing that should enable more precise assessment of the biological contribution. This evidence comes from the near-universality of certain emotion classes and behavior forms, including facial expressions, from phylogenetic continuities such as those discussed in the chapter by de Waal, and from efforts to characterize more closely the functional nature of the neural emotion dispositions, as discussed in the chapters by Berridge, Damasio, and Panksepp.

The study of cultural variability has also vastly extended in scope and sophistication. There is not only research on cultural variation in emotion concepts; a further focus has emerged on variations in emotion components such as appraisal and the concerns underlying emotions, and on the meanings of emotional reactions in the specific social context. The chapters by Mesquita and Markus and by Shweder illustrate these developments. Theoretical notions are being refined that should lead to enhanced understanding of what in emotions might be acquired and what might be given, and how the acquired and the given interlock. The notion of appraisal, the distinction between emotion potential and emotion practice, and the analysis of regulation by norms appear to be promising in this enterprise (see the chapters by Mesquita & Markus, Scherer, Shweder, and Thoits).

CONTROVERSIES AND UNRESOLVED ISSUES

The preceding chapters provide evidence, as did the symposium on which they are based, of the many controversies and unresolved issues in the study of emotion. Such issues spur on research and inject liveliness into academic debate. They go deeply into how one views emotions. One such issue concerns the structure of emotion space. Is it built around basic, innate, neurally given, and evolutionarily shaped emotion dispositions? Or is it built out of emotion processes and components, some of which

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may be innate but the assembly of which is created by circumstance and modeling?

Another such issue is the role of information or cognition in generating and structuring emotions; phrased differently, what is the role of automatic processes in emotional responding? The issue is distinct from, but related to, that of assessing the role of feeling. Our symposium had the title "Feelings and Emotions," as does the present volume. Although, as we noted above, the distinction between feelings and emotions is commonly accepted, the way in which the phenomena concerned are related is not. Are feelings mere reflections of essentially nonconscious processes? Are they without a functional role in the processes and responses of emotion, or do they influence or even generate some of these processes? Attributing a causal role to feelings not only clashes with the evidence on automatic emotion processes, but also with philosophical considerations of causal determination. Yet common sense and scientific observation suggest that feelings are essential to the conduct of life.

Perhaps the most general unresolved issue concerns the relationship between elementary processes of emotion and everyday emotional responding. The various levels of description of emotional phenomena – say, those of reflex-like evocation of fear reactions, and of emotions as described in narratives – do not easily match. Nor do the analyses of automatic response evocations fit easily with the understanding of more complex events such as frustrations or personal loss. These different levels of analysis are not easy to translate into each other's terms. This is due in part to the absence of satisfactory models of how information from diverse sources is integrated, and in part to the lack of specification of the processes actually involved, even at the level of elementary processes.

Indeed, when surveying current work in emotion, one can argue that research on basic processes is relatively scarce – research at the level, for example, used by Zajonc to account for the mere exposure effect, or by Berridge to distinguish the phenomena of liking and wanting. These are not the only efforts to understand basic processes. Other examples in the present volume are Cacioppo et al.'s work on affective processes, Frijda's chapter on motivational mechanisms, Mesquita and Markus's analysis of the relations between emotion components and culture, Öhman and Wiens's analysis of emotion modules, Scherer's detailing of appraisal, and Thoits's analysis of the operation of emotion norms. However, most of these examples are as yet some way from the level of specification one would ideally like to see. How, precisely, should one conceive of appraisal processes at their various different levels? How do elementary stimuli like certain smells and innately preferred sights evoke positive or negative affect? What is evoked in elementary fear responses: a pattern of action programs, or a modification in motivational state? What process is involved in a motivational state like that of fear or anger? What precisely connects an emotion

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of awe to culturally shaped beliefs, on the one hand, and elementary fear mechanisms, on the other? What precisely does the amygdala do?

Between the level of behavioral and experiential analysis and that of neural and neurochemical processes – between Dennett's intentional and physical levels of description – there is the functional or psychological level of explanation. In emotion theory, one often leaps directly from the first level to the third; as if the emergence of a pleasure response were truly explained by noting that a smell or sight triggers opiate response in the nucleus accumbens. It may well be that developing the second level of analysis and explanation is one of the major tasks confronting emotion research in the coming period.

In order to accomplish that task, we believe a greater interaction and exchange than is now current among the various disciplines engaged in emotion research is essential. It was one of our impressions during the Amsterdam Symposium that the investigators from one discipline were not always well informed about the ideas and findings current in other relevant disciplines. It is sometimes the case that the problems posed in one's own discipline have been analyzed in detail in another discipline; or that findings in one's own discipline could illuminate the findings in a neighboring discipline. Facilitating closer interaction and greater exchange is of course one of the primary objectives of such symposia. However, this goal can only be truly achieved if the symposium results in an appreciation that other disciplines have data, views, and experiences to offer from which one can profit, and also present challenges to theory and theory formation in one's own discipline.

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