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The lure of phenomenocentrism. During the past century - at least since Darwin, Marx and Freud - our concept of reality has undergone changes that have been particularly apparent in the cognitive sciences. A dominant symptom has been the sharp swing of attitudes toward the apparent and convincing reality of phenomenal experience. It is practically impossible not to be overwhelmed by the immediacy of human experience. Philosophers have tended to accept its primacy through the ages and many cognitive scientists still do. We have overcome the perils of ethnocentrism and of anthropocentrism; we believe no longer that either our social values or humankind are the touchstones of social organization or the measure of animal behavior. But we are still phenomenocentric; we accept as basic the surface experiences that we seem to share with our fellow featherless bipeds. Phenomenocentrism has been abandoned in some corners of cognitive science; but many psychologists, philosophers and AI practitioners seem to hold stoutly to the dogma that common human experience provides the basic building blocks of cognition. I want to argue that this kind of commitment to surface structure as the psychologically "real" prevents progress and, in particular, has barred us from any reasonable understanding of human emotion. Any satisfactory comprehension of the structures and processes that generate affect and emotion requires the postulation of deep structure, a willingness to go "beyond phenomenology."

It is the case, of course, that the common experience of our phenomenal world - does provide the major insights that have led us to determine the important problems and some of the answers about human cognition. Psychology has failed when it has ignored these insights. But the importance of common experience, language and understanding in the context of discovery must not color the need to go beyond phenomenology and folk experience when we try to understand the processes, structures and mechanisms that determine, generate and construct that experience.

There are two glaring examples of phenomenocentrism in the fields of affect and emotion. The first, popular through the ages and exemplified by Charles Darwin and his descendants, postulates the categories of emotion taken from the natural language as the fundamental building blocks of human (and lower) emotional life. It is a position that searches for the effects of unanalyzed emotions, posits a limited set of such fundamental emotions, and even seeks their locus in various corners of the human brain. It has variously reified such nicely vague concepts as fear, love, anxiety, joy, lust, dread, and so forth, and so forth.

The other position, beloved of poets and some social psychologists, posits the primacy and noncognitive (i.e., knowledge independent) nature of affective experience. Its advocates assert that feelings and affects occur prior to the registration and/or experience of other aspects of human experience, and particular prior to "cognitive" events.

Emotion and the categories of natural language. A concern that is related to phenomenocentrism and, like it, a hangover from the 19th century is exemplified in the penchant to take seriously the implicit claim that some natural language categories define a

well bounded, precise set of phenomena. Emotion is one of these categories. To ask "what is (an) emotion?" - as William James did and as some cognitive scientists still do - assumes that the vagueness and redundancy of natural language is suspendable. Categories like emotion (just as intelligence, justice, equity, learning, aggression, etc. etc.) have an evolutionary history and current function that do not support the weight of explanatory systems. They are useful, and have developed, as communicative devices in natural discourse. The analyses of these functions is an important enterprise (usually engaged in by our philosophical brethren). However, they fall far short of definitional devices as a first step toward satisfactory explanatory and theoretical ends. At least one can say that to date attempts to develop satisfactory, exhaustive, and scientifically useful definitions (much less explanations) of "EMOTION" have failed.

Again, having inveighed against natural language categories, I turn to them as a starting point. The categories of our common experience are, of course, collections of events (or objects) that do have a vague common core. That common core is - as in the case of the phenomenal experiences - an indispensable starting point for serious investigation. In the case of affect and emotion, there are apparently two aspects that characterize the collection. Dictionaries tell us that emotions refer to "vehement, excited mental states," that they involve "agitation, disturbance of mind, feeling, passion." Affects are mental states that involve "desires, intentions," and "inward dispositions" and "intent." During its early history, and to some extent in its modern usage, the term "affect" also invoked the same kind of physical referent that the emotions do. What the common concepts of emotion and affect seem to have in common is a state of physi(ologi)cal excitation or arousal. What apparently differentiates the various affects or emotions are desires, intentions, and values.

Looking for emotion's deep structure. If we now turn to the problem of arriving at a program of theory or research, we need to postulate a system that constructs or generates some subset of these emotional phenomena. I shall defend one version of such a theory, but the main thrust of my argument is that some kind of theory (deep structure) needs to be developed that generates so-called emotional behavior and experience. Psychologists have variously emphasized the agitation/arousal dimension or the intention/value aspect. Most of the papers at this symposium address the latter problem, i.e., the specification of the cognitive structure of emotions. I shall outline a point of view which is equally concerned with the arousal and evaluative aspects of the generative system, though I do not go into the kinds of details that the cognitive components require, and that are exemplified by the other papers of the symposium.

A point of view. My concern is specifically with the conscious experience of emotion. As a consequence, I have been concerned recently with the construction of conscious experience in general. There have been a number of recent suggestions, notably by A.J. Marcel (1981), that stress the constructive nature of consciousness, such that a particular conscious state is seen as constructed out of two or more activated schemas that produce a phenomenal unity that apparently conforms to the intentions of the individual and the requirements of the task and situation. The constructive approach to consciousness is ideally suited to accommodate the notion that conscious experience of emotion concatenates both evaluative

cognitions and autonomic arousal. Thus, the phenomenal emotional experience is not some additive result of arousal and evaluation, but rather the schemas activated by arousal and evaluation are used in constructing the phenomenally unified emotional experience. Its intensity will indeed be related to the degree of arousal and its specific quality will depend on a complex evaluative cognitive event, but the two ingredients are experienced as a single emotion, just as eggs, milk, and sugar may be experienced as custard. This approach also accommodates the fact that there exist experiences of "cold" emotions, of evaluative cognitions without arousal, and of unemotional arousal, of autonomic arousal without the cognitions that provide emotional qualities.

The arousal component of emotional experience can be ascribed primarily to peripheral autonomic nervous system (ANS) activity. Whereas there is some evidence that what is most efficiently registered is some general level of ANS activity (heart rate, blood pressure, gastric motility etc), we also know that there are large individual differences in the patterning of the various autonomic indicators. It may well be the case that registration of peripheral arousal will, in the individual case, be governed by different patterns and may, in some cases, be driven by a single channel (such as heart rate activity). For the present, the sufficient and necessary conditions for the occurrence of autonomic arousal are not adequately known. To a large extent we still rely on lists of "elicitors" which are of varying degree of utility (e.g., tissue injury, stress, surprise, threat, emergency reaction, etc. etc.). I have suggested that the interruption of ongoing action, the discrepancy between expectation and evidence, and similar instances of incongruity between organisms' schemas and the evidence from the environment, are responsible for a large subset of the occurrences of ANS arousal. Such a hypothesis not only is consistent with the homeostatic view of the ANS, but also responds to adaptive, evolutionary functions of the autonomic system in general. Whenever an expectation is violated or a plan kept from being carried out (either in thought or action) an interruption (discrepancy) occurs which leads to ANS arousal. It is important to note that pleasant as well as unpleasant experiences are captured by this approach - unexpected, desirable events generate arousal just as unexpected, noxious events.

What is the nature of evaluative cognitions? In the first place, I suggest that there are three sources of value that influence the quality of an emotional experience. Our evaluations may be based on innate, prewired values - such as the preference for certain temperature ranges, the avoidance of looming objects, the preference for sweet over bitter tastes; or our values may be culturally predicated - we are "told" what is edible, lovable, drinkable, without ever having had direct interactions with the objects in question that would direct our values; and finally we may make evaluative judgments that are determined by the structure of the valued event - or rather we base our judgment on some comparison between the event and some existing schema. It is the latter which I find most challenging; what are the structures that determine judgments of beauty, ugliness, preference or rejection, and which in turn determine emotions of joy and disgust, liking and disliking? There has been some reasonable amount of work done on such staples as anxiety, fear, and grief, but much analysis is still to come - some of it presented at this symposium. I

have taken one step in that direction in trying to show how one of the more primitive evaluative judgment, that of preference arising out of the sense of familiarity, is related to the congruity between expectations (schemas) and evidence in the world.

In general, though, I would argue that much of the evaluative cognitions that contribute to emotional quality deal with the internal structure of events rather than with the presence or absence of features or attributes. Thus, the sense of loss that leads to grief deals with relationships and not with the specific characteristics of the lost person. Similarly beauty and ugliness deal with structural relationships, as do the cognitions that underlie jealousy and even fear. That practically canonic emotion - anxiety - apparently has a cognitive basis in the perceived absence of structure, not in any definable feature of the anxiety arousing situations.

Emotion and cognitive science. In contrast to certain speculations to the contrary (e.g., Zajonc, 1980), these arguments suggest that evaluative cognitions (preferences, likings, aversions etc.) are relatively complex cognitive events, certainly involving more processing than simple definitional or featural judgments. We have recently collected some data that support this argument; simple impressionistic judgments of liking (the simplest evaluative judgment) are slower than simple categorical judgments, with the effect becoming rather large for familiar objects. Thus it takes longer to process the information needed for simple valuation than for simple categorization, exactly what we would expect if the former involves processing of internal structural relationships, while categorization may proceed on more simple presence/absence judgments about features or attributes.

The argument that affect or emotion is prior to or independent of cognitions frequently appeals to the phenomenal evidence that we are often conscious of valuations before we are aware of the details of the event that is being valued. Even if this particular kind of phenomenocentric assertion is confirmed by some future analyses, it does not say anything about cognition and affect, but it does address the nature of consciousness and the kinds of conscious constructions involved in affect and in other kinds of experiences. That analysis is beyond the scope of this presentation.

Cognitive scientists have, often for good reason, been accused of being scientific imperialists. The old division of the world into cognition, conation, and will has been destroyed by raiding parties that have penetrated deep into (undefended) territory previously considered noncognitive. To the extent that such aggression has been justified, it has been based only in part on the claim that all of experience and behavior deals with knowledge. More important may have been the fact that the new theory-rich cognitive science has been willing to take on all kinds of problems in terms of an information processing organism (animate or otherwise). For the time being, I have left aside the "cognitive" nature of autonomic arousal. However, in the spirit of cognitive imperialism one should be concerned with the kind of structural representations that would be useful theoretically and that would lead to a better understanding of the initiation, perception, and conscious construction of peripheral autonomic arousal. The neurosciences are

charter members of the cognitive sciences; maybe it is time to tell the peripheral physiologists to look to their borders.

References

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