What More Is There to Emotion Concepts Than Prototypes?

Gerald L. Clore
University of Illinois at Urbana-Champaign

Andrew Ortony
Northwestern University

Russell's principal claim is that a characterization of emotion concepts in terms of prototypes offers the most fruitful approach to understanding emotion. He contrasts this position with the classical view that emotion categories have necessary and sufficient conditions. The focal issue concerns whether the two views of emotion concepts that Russell contrasts really are incompatible. Reasons are offered for supposing that concepts in general embody both representations of prototypes and of theory-laden information, some of which might be compatible with a classical view. The proposal is made that the primary utility of the prototype representation is as a heuristic for the identification of instances, whereas other parts of the conceptual representation support reasoning and explanation processes, as well as providing a backup for cases in which the similarity-to-the-prototype heuristic fails.

Do people's emotion concepts embody prototypes? Russell's (1990) answer to this question is that they do, and we concur. In his interesting and provocative article, he expresses pessimism about the possibility of specifying the necessary and sufficient conditions for emotion concepts and proposes that such concepts are best thought of as prototypes. Along with his other articles on this topic (e.g., Fehr & Russell, 1984; Russell & Bullock, 1986) this article should be an important stimulus to the community of emotion investigators to think more deeply about the nature of emotion concepts. At the same time, there is much that Russell says with which we disagree. In what follows, we do not attempt to address all of the points of disagreement. Rather, we discuss briefly a few points that bring into focus what we consider to be some of the central issues.

In defending a prototype approach to emotions, what is it that Russell defends? The answer is already clear in his title. It is an account of emotion concepts. Russell champions a view of concepts that has widespread currency among cognitive psychologists, because he believes that this view can be fruitfully applied to the domain of emotion. His approach to defending the prototype view of emotion concepts is to show its superiority over a standard alternative to the nature of concepts, namely, the classical view. The central tenet of the classical view is that there are necessary and sufficient conditions by virtue of which something is a member of a category.

The claim that people have representations of prototypes is a perfectly reasonable one. It seems eminently sensible to suppose that a person might have a representation of a prototypical anger event. Similarly, few would deny that one example of anger might be judged more similar to a prototypical anger

event than another. This, in terms of prototype theory, is to say that the concept of anger events has a graded structure. In fact, a great many concepts have been shown to possess this property, including, as Russell points out, classically defined concepts such as that of "odd number" (Armstrong, Gleitman, & Gleitman, 1983). Therefore, the existence of a graded structure, although certainly consistent with the prototype view, is not relevant to the question of whether a concept can be classically defined.

If everyone agrees that people have prototypes for emotion concepts as well as for many other concepts, what is the problem? We think one problem concerns the relations between accounts of emotion concepts on the one hand and emotions proper on the other. Such considerations are especially important in this discussion, because the implications of Russell's argument depend on how one relates concepts and phenomena in the study of emotion. Russell is concerned with providing an account only of emotion concepts rather than of emotions themselves. On the other hand, we and others (e.g., Oatley & Johnson-Laird, 1987) whose views he finds problematic have generally been concerned with emotions per se. When we have addressed the question of emotion concepts, we have not denied that people have prototypes, but have maintained only that "the arguments and empirical results that have been marshalled in favor of the claim that they are not classically definable simply fail to lead to their intended conclusion" (Ortony, Clore, & Foss, 1987, pp. 345–346). Indeed, we explicitly raised the possibility that "ultimately some hybrid account of category representation will prove capable of accommodating the central aspects of both accounts" (p. 346), and this is the position that we develop in this article.

Before developing this position, however, we shall pursue a little further the issue of the relationship between emotion concepts and emotions. It is, of course, important to distinguish knowledge about concepts from knowledge about the events that they are concepts of. When psychologists discover, for example, that people think robins are better examples of birds than chickens, they have not learned anything about birds, which is why ornithologists can and do safely ignore such discov-

eries. Similarly, informing zoologists that many people believe whales to be fish would not compel them to redo their classification system. There is no guarantee, therefore, that when one learns something about people's concepts, one necessarily learns something about the things that they are concepts of.

A question thus arises about the implications of Russell's findings for the understanding of emotion. Can emotion researchers, like ornithologists and zoologists, safely ignore such findings? Some theorists, including Russell, imply that the answer is yes. He appears to agree with Shaver, Schwartz, Kirson, and O'Connor (1987, p. 3) when they state that "studies of ordinary people's cognitive representation of emotion episodes, and of the emotion domain as a whole, cannot resolve scientific debates about the nature of emotion."

Although this position is appropriately cautious, some emotion theorists might maintain that lay emotion concepts are more properly a part of the understanding of emotions than are lay concepts of birds a part of ornithology. Thus, whereas a view based solely on physiological and cognitive concepts might have no place for lay concepts in a conception of emotion, a view based on a social constructivist perspective (e.g., Averill, 1980; Harré, 1986) would reserve for them a critical role. From such a perspective, the presence or absence of emotion in some situation would depend on the nature of the social context and on the conception of emotion held by that community. The social constructivist sees emotion as more than a set of physiological and cognitive events; they are also the cognitive constructions of perceivers about such events. Within that view, an understanding of lay emotion concepts would clearly be fundamental to an understanding of emotion, but this position is not one that is exploited in Russell's article. It is raised here simply as an example of a position that makes clear its assumptions about the relationship between psychological concepts and psychological events.

One cannot read Russell's article without wondering what implications the use of prototypes has for the study of emotions over and above its implications for the study of categorization. This is an important question to the extent that those who read articles on emotion prototypes conclude that they have learned something about the nature of emotions. Such conclusions may be warranted, but they can be assessed only after the assumptions that underlie them are made explicit.

In addition to establishing the need for a prototype approach, Russell also wants to point out the difficulties in what he sees as its chief competitor, the classical view. But again, insofar as that view is taken as an account of emotion concepts, the relevance of the points made to the study of emotions remains unclear. Presumably, these arguments have some relevance to the concerns of emotion theorists, but the relevance is not spelled out. We think it is possible to offer such an account (e.g., Ortony, Clore, & Collins, 1988).

A second problem concerns the dichotomy between the prototype view and the classical view. As is generally done, Russell has taken the position that one of these two views is correct and one is incorrect. Casting the alternatives as a dichotomy, however, may imply an overly simple model of concepts. As an alternative, one might assume that there are grains of truth in each view. To keep things simple, consider the prototypical great-grandmother. She probably has thin, silvery-grey hair and

is frail and small. There is nothing wrong with this prototype except that we know a lot more about great-grandmothers than this. In particular, we know *why* our prototypical great-grandmother has the properties she has. She has them because she is old, and we know why she is old; she must be old because she has lived for three or more generations, and we know that because we know that a great-grandmother is the mother of a grandparent, and so on. Notice that this last piece of knowledge is a specification of what we think it is for someone to be a great-grandmother. It is our representation of the essence of great-grandmotherhood.

We think it is necessary to view concepts (including emotion concepts) as embodying much more than prototypes; they embody theories (see Medin, 1989, for a discussion) that might even include elements of the classical view such as the assumption that things that belong together probably share deeper properties (Medin & Ortony, 1989). As an alternative to Russell's proposal that one should adopt a prototype theory, we propose that one should exploit its best aspect—namely, that category membership can often be determined by similarity to the prototype—and combine it with the best aspect of some version of the classical view—namely, that members of the same category often share properties that are not necessarily perceptually available. The result would be a much more powerful model than either alone. Our reason for thinking this is that there are two major types of information processing tasks that people accomplish through concepts: identification and classification, on the one hand, and reasoning and explanation, on the other. If people only had a representation of the prototype for their great-grandmother concepts, they would be unintelligent pattern recognition machines. They would never understand why their prototypes had the properties that they did or how a very deviant exemplar could still be a category member (on the prototype view alone, it probably could not). On the other hand, if people only had classically represented concepts, at least in the form of psychological essentialism proposed by Medin and Ortony (1989), they would be good at reasoning, but they would often have a very hard time recognizing category members. This is because even if they had a correct theory about the necessary and sufficient conditions for category membership, the real world does not always reveal these conditions as surface features. Thus, with some caveats, we would propose that similarity to the prototype provides a good, fast, and efficient heuristic for the identification, classification, and recognition of instances. But we also think that the prototype is of little value for reasoning and explanation. This is best accomplished by the theory-laden component of a concept, which, incidentally, can also be used as a backup for the similarity-to-the-prototype heuristic in cases where it fails.

Some of Russell's comments imply that the classical view requires that relevant features be available as surface features and that things possessing such features do so "by definition." Indeed, the prototype view is often seen as providing a way out of the knotty problems of definition. But consider the following analogy: A spider can presumably recognize that a fly is potential food, and it might even do this by perceiving in the fly the necessary and sufficient conditions for something to be edible. However, one would presumably not want to argue that this determination by the spider was a matter of logic. The spider does not decide that "by definition" the fly is a meal. Psycholo-

gists do not treat the classical view as committing them to the belief that a concept can only be used if the associated necessary and sufficient conditions are explicitly known or directly perceivable by the concept user.

In real life, people, like spiders, often use perceived superficial properties as evidence for (the probable existence of) deeper properties, even when they do not know what these deeper properties are. When we see something that looks like a $5 bill, we normally take what we see as sufficient evidence that the bill actually has whatever properties it needs to render it legal tender. This is a functional arrangement, because usually the superficial properties are causally related to the deeper (less easily detected) ones, so that reliance on surface properties for the purposes of identification is an efficient heuristic. In fact, thinking of prototypes as the representational basis for identification procedures (Miller & Johnson-Laird, 1976; Smith & Medin, 1981) seems entirely appropriate in view of Russell's characterization of a prototype approach: "Particular objects or events are said to be members of a category by sufficient resemblance to what I shall call prototypical exemplars (p. 38)." This certainly sounds like the specification of a procedure for determining whether a "particular object or event" belongs to some category. Indeed, Russell goes on to elaborate the identification procedure by explaining that this is achieved by "the mental representation of an actual object [being] compared with the mental representation of exemplars prototypical of the category (p. 38)." Prototypes seem, therefore, not to be concerned with the function of "defining the concept" but with the function of identifying instances.

The final issue we want to raise concerns the criteria for evaluating the adequacy of the two approaches to emotion concepts that Russell contrasts. In questioning the adequacy of the classical view, Russell objects that there is no consensus about the definitions of the various concepts (terms?) in question. The accounts that Russell finds defective are presented by him to illustrate the lack of agreement among those he considers to be unsympathetic to a prototype account.

But can this criterion of widespread agreement be applied to the view of emotion concepts that Russell espouses? We think not. Consider, for example, his proposal for the prototypical anger script. He suggests that it involves various elements, including an intentional and harmful offense followed by scowling, feeling internal tension, heart pounding, muscles tightening, desire for retribution, loss of control, striking out, and harming the offender. We would argue that the perception of some kind of injustice or blameworthy act is not only a typical feature of anger, it is a necessary feature of anger. The glaring and scowling and feelings of tension and so on that Russell identifies as typical might well be typical for relatively intense cases of anger, but they certainly are not for mild irritations. Nor is the desire for retribution typical, except in intense cases. Finally, Russell proposes that the anger script includes loss of control and aggressive actions. Large-scale empirical research conducted on anger shows that aggressive actions are actually quite uncommon (e.g., Averill; 1980, Scherer, Wallbott, & Summerfield, 1986). Conclusion: There is no widespread agreement about the anger script.

It is possible that, at least in principle, one could specify the

script in such a way that everyone would agree. However, it is also possible that one could not. Would one expect, for example, to find one particular prototypical anger script to be applicable across all cultures? The work of Briggs (1970) and of Lutz (1982) suggests not. Would a particular script have generality across subgroups within a culture? Indeed, even individuals within a culture or a subgroup might be expected to differ in their prototypical script of anger. The more one thinks about it, the less clear it is that we are likely to find strong agreement about any particular prototypical anger script. Because an event must resemble an anger prototype to be an instance of anger, the prototype view would also seem vulnerable to a lack of consensus about an acceptable prototype. Thus, insofar as the lack of widespread agreement about the features of a concept is a problem for the classical view, there is no reason to believe it is any less of a problem for the prototype view.

References

Armstrong, S. L., Gleitman, H., & Gleitman, L. R. (1983). What some concepts might not be. *Cognition, 13,* 263–308.

Averill, J. R. (1980). A constructivist view of emotion. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research, and experience: Vol. 1. Theories of emotion* (pp. 305–340). San Diego, CA: Academic Press.

Briggs, J. L. (1970). *Never in anger.* Cambridge, England: Cambridge University Press.

Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General, 113,* 464–486.

Harré, R. (1986). *The social construction of emotions.* Oxford, England: Basil Blackwell.

Lutz, C. (1982). The domain of emotion words in Ifaluk. *American Ethnologist, 9,* 113–128.

Medin, D. L. (1989). Concepts and conceptual structure. *American Psychologist, 44,* 1469–1481.

Medin, D. L., & Ortony, A. (1989). Psychological essentialism. In S. Vosniadou & A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 179–195). New York: Cambridge University Press.

Miller, G. A., & Johnson-Laird, P. N. (1976). *Language and perception.* Cambridge, MA: Harvard University Press.

Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theory of the emotions. *Cognition and Emotion, 1,* 29–50.

Ortony, A., Clore, G. L., & Collins, A. (1988). *The cognitive structure of emotions.* New York: Cambridge University Press.

Ortony, A., Clore, G. L., & Foss, M. (1987). The referential structure of the affective lexicon. *Cognitive Science, 11,* 361–384.

Russell, J. A. (1990). In defense of a prototype approach to emotion concepts. *Journal of Personality and Social Psychology, 60,* 37–47.

Russell, J. A., & Bullock, M. (1986). Fuzzy concepts and the perception of emotion in facial expressions. *Social Cognition, 4,* 309–341.

Scherer, K. R., Wallbott, H. G., & Summerfield, A. B. (Eds.) (1986). *Experiencing emotions: A cross-cultural study.* New York: Cambridge University Press.

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology, 52,* 1–11.

Smith, E. E., & Medin, D. L. (1981). *Categories and concepts.* Cambridge, MA: Harvard University Press.