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Metaphor and Affect: The Problem of Creative Thought

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An examination of introspective evidence of artists and scientists on their creative processes suggests that the transformation of material in thought is the key problem for understanding creativity. A similar problem underlies the transformational process of understanding a metaphor. Evidence for transformations in thought under the impact of experiential anomalies is provided by examples from scientific thought and from dreams. Such transformations are guided by or express affective states or attitudes. Evidence for the productive role of affect in thought is presented from several sources, including research on the frontal regions of the brain and on the affective correlates of response to metaphor. It is suggested that an adequate theory of creativity must await further research on the anticipatory properties of affect and that a useful place to begin such research is with the response to metaphor.

The processes of thought underlying creative behavior are still poorly understood. The experimental tradition in cognitive psychology, which has been productive of insights into other types of thought, still has almost nothing to offer here. The thought transformations that take place in creativity pose a major problem for psychological theory. I suggest that essentially the same problem is faced by those seeking to explain the thought processes involved in metaphor. One reason for this may lie in the attention given to thought per se by cognitive psychologists, to the neglect of affective matters (Zajonc, 1980). In this article, I suggest that one way of enriching cognitive theory is by studying the role of affect in thought and that a promising place to start is to look at the ways affect may facilitate the response to metaphor. I look at evidence that affect can guide thought in productive ways and suggest that creative thought of the highest order may be the result of such affective processes.

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I suggest that the value of research on metaphor lies in the fact that metaphor shows on a small scale all the principal features of the thought processes that are most significant in creativity. I argue that creative thought is analyzable as the presence of productive anomalies, the crossing of conceptual boundaries, the transformation of a subject within a given domain, and the intuition of a new order at a moment of illumination. Such features are also detectable in the response to metaphor. Therefore, to understand the thought processes involved in interpreting metaphor—a goal that is still somewhat remote—would be to travel a considerable distance toward an understanding of the mysteries of creativity itself. The key to both phenomena may be found in the creative role of affect.

The conditions under which affect might play such a role are difficult to examine directly, given that creative thought of the most productive kind is unlikely to occur under controlled investigation. However, thought transformations analogous to those in creativity can be found in one or two other domains in which it is possible to point to the productive role of affect in initiating and leading the development of thought. One of the features of such domains is the encounter with anomalies, as in the type of scientific theory formation described by Kuhn (1970); a similar thought pattern is also discernible in dreams and in comprehension of metaphor. The account of creative thought to be offered, therefore, concentrates on two key aspects: the encounter with anomalies and the productive role of affect. Besides this, I briefly mention relevant affect studies and some neurophysiological work that indicates an anticipatory function for affect. The discussion is directed toward examining the transformational processes in creative thought.

TRANSFORMATIONS

A great deal of suggestive information is to be found in the introspective comments of eminent artists and scientists speaking about what they have observed of their own thought processes during creation. On the basis of such evidence, Wallas (1926) proposed a model, now rarely discussed, that put the various elements of the creative process into sequential order. Wallas described a set of stages beginning with preparation and moving through incubation and illumination to verification. Some support for Wallas's view was obtained experimentally by researchers such as Patrick (1934) and Eindhoven and Vinacke (1952). These researchers raise many important theoretical questions, but the starting point for the present discussion is the creative thought process demonstrated by the second study.

Eindhoven and Vinacke (1952) asked a number of artists and nonartists to produce an illustration in response to a poem. Several weeks were allowed, and the participants were able to work at home and at times of their choos-

ing. All evidence on paper of the various attempts toward a final acceptable picture was collected. It was found that the artists produced more sketches at first than the nonartists, varied the nature of the activity within the sketches more, and then spent comparatively longer on the final version. The most interesting observation was that the sketches of the artists showed a connection across time lacking in those of the nonartists:

> When the sketch selected as publishable is compared with preceding sketches, it appears that artists tend to combine elements from preceding sketches – that is, the satisfactory sketch is more similar to preceding sketches than these are to each other. The publishable sketch chosen by the nonartist is no more similar or dissimilar to preceding sketches than others in the series. (p. 160)

The artists' ideas tended to elaborate into a more inclusive, organized whole, whereas the nonartist showed only variation with no integration of ideas.

The earlier sketches of the artists in this experiment reflect a type of thought that was both conscious and unconscious – unconscious partly because the end of the process was not yet in view and because ideas that were present in the earlier sketches disappeared from the conscious attention of the artist for a while, then reappeared integrated into the final picture. This describes the process that Wallas called incubation. What is the integrating agency in thought responsible for such transformations? I propose that it is affect that performs this function, specifically a feature of affect that I describe as predictive.

Outside creativity itself, evidence for the active transformation of material in memory has accumulated since Bartlett's (1932) research demonstrated the phenomenon, but the processes he studied tend to work toward the revision of material in thought to accommodate it to previous understanding. Bartlett's participants, for example, altered details of the strange stories that he presented them to accord with the more rational standards of story structure they were used to. In creative thought, by contrast, old material evolves toward something distinctively new. How such transformations are initiated, and what energies or motives may underlie the highly productive elaborations that result, are the key questions that face the theorist of creativity.

Wallas's notion of incubation is supported by both of the studies I have mentioned, although it is clear from the second that it is a more flexible process than the strictly consecutive set of stages envisaged by Wallas – incubation takes place on a number of ideas at various times during the course of creative work. In these studies, however, what might count as *preparation* in Wallas's terms is not discussed. Preparation is perhaps the least defined of Wallas's stages. What counts as preparation would seem to range from the conscious detailed work on a given problem, as in Poincaré's (1946) famous account of his own thought processes, to anything or everything in the creative person's previous experience. If this is so, then it also follows that it

would be impossible in most instances of creative thought to develop a conception of what may have taken place during incubation. If incubation does take place, some special characteristic regarding the thought material of preparation must be discoverable, which will cause the involuntary and unconscious transformations that follow, because it must be assumed that by no means all preparatory thought issues in a creative transformation—problems are abandoned unsolved, much experience never finds its way into a novel or poem. What is the special agency that will generate a creative idea out of one set of circumstances for an individual but not another?

One general aspect of preparation that has often been noticed is that the creative person has a wide range of interests (Harding, 1940; White, 1931). The more the creative person knows in a wide variety of fields, the better. The advantage of such versatility is that a concept developed in one field may be applied to transforming the understanding of another. As Poincaré (1946) observed, the most productive ideas in mathematics

> are those which reveal to us unsuspected kinship between other facts, long known, but wrongly supposed to be strangers to one another. Among chosen combinations the most fertile will often be those formed of elements drawn from domains which are far apart. (p. 386)

This view of creative thought is familiar from the writing of Koestler (1964), who coined the useful term *bisociation* to describe it.

Metaphor, it is noticed, is often explained in similar terms: The more interesting metaphors are often those where the contributing concepts draw on dissimilar domains (Tourangeau, 1982). It has yet to be explained how the selection of relevant ideas and their transfer across domains takes place in metaphor; specifically, it is not clear how the concepts in one domain help to structure the view in the other. Similarly, the crossing of ideas between domains in creative thought, although it appears to take place as a regular feature of such thought, is very poorly understood as a process. Why and how it happens raises essentially the same difficulty for cognitive psychology as the phenomenon of metaphor. As I mention below, a solution to the one problem would seem to imply a solution to the other.

ANOMALIES

Besides the wide knowledge spanning several domains that often seems a condition of preparation, another factor implicated in creative thought is the recognition of anomaly. Einstein's (1949) description of his thought processes in terms of curiosity or wonder shows this feature and suggests one way that domains might interact:

> For me it is not dubious that our thinking goes on for the most part without use of signs (words) and beyond that to a considerable degree unconsciously. For how, otherwise, should it happen that sometimes we "wonder" quite spontaneously about some experience? This "wondering" seems to occur when an experience comes into conflict with a world of concepts which is already sufficiently fixed in us. Whenever such a conflict is experienced hard and intensively it reacts back upon our thought world in a decisive way. The development of this thought world is in a certain sense a continuous flight from "wonder." (p. 9)

Einstein's comment shows the necessity of setting aside or going beyond established concepts. It also locates the origin of new thought in a conflict between experience and preexisting knowledge. Einstein (1949) gave a graphic account of one such moment in his experience as a young man, when he saw the contradictions between Planck's new law of radiation by discrete quanta of energy and the formulations of classical mechanics. At the time, he said,

> All my attempts . . . to adapt the theoretical foundations of physics to this new type of knowledge failed completely. It was as if the ground had been pulled out from under one with no firm foundation to be seen anywhere, upon which one could have built. (p. 45)

Under these circumstances, there may take place in the scientific field concerned what Kuhn (1970) called a *paradigm switch;* that is, a new set of symbolic formulations, theories, and exemplary experimental solutions replaces the existing set.

This type of event is in marked contrast to how normal science is described. In Kuhn's account, the scientist is normally concerned with the development and testing of existing theory, involving the elimination of anomalies between what theory predicts and what is observed. Only when the number of anomalies grows too great, calling into question the explanatory power of current theory (as quanta did in regard to classical mechanics for Einstein), is such a paradigm switch likely to occur. The key to a new theory often seems to come from the consideration of a concept from a different field. The blocking of the normal categorizing functions of thought brought about by insuperable anomalies may initiate a search for some way out of the impasse, widening the field of relevant considerations.

Several scientists have commented on the aesthetic character of a new theory as if this were a hallmark of its distinctive quality. Einstein (1949), for example, praised the achievement of Bohr, in developing his electron theory amidst the crisis of physics mentioned above, as "the highest form of musicality in the sphere of thought" (pp. 46–47). The sense of harmony given by a new theory, Poincaré (1946) remarked,

> is at once a satisfaction of our asethetic needs and an aid to the mind, sustaining and guiding. And at the same time, in putting under our eyes a well-ordered whole, it makes us foresee a mathematical law. . . . The useful combinations are precisely the most beautiful. (pp. 391–392)

An essential aspect of such an aesthetic sense, it would seem, is its power to guide, to confer a degree of foresight upon thought. Through its aesthetic aspects, the theory is felt to possess the power to order experience beyond the form in which it is first given. The aesthetic sense may also be supposed to operate during normal science, when prevailing theory is being consolidated and tested, but in this case it acts to keep out of play ideas in conflict with existing theory. Aesthetic foresight under normal circumstances registers the expected resolution of anomalies, not their potential as departure points for some emerging new view. The creative scientist is the one whose aesthetic sense enables him or her to detect those contradictions in the field that might lead to a better theory.

The notion of preparation can now be elaborated into three interdependent elements, which together begin to endow it with some explanatory value. Apart from (a) the existing conceptual framework in a given field, there must be (b) encounters with sufficient anomalies to call the existing framework into question, and (c) a search outside the existing framework for concepts not hitherto connected with the field. Einstein's "musicality" suggests something of the character of the search, and Poincaré's "aesthetic" entity conveys a sense of the object at the end of the search. The illumination, when it occurs, specifically resolves all three contributing aspects of the preparation stage into one whole. It reinterprets existing knowledge and shows a relationship to other areas hitherto regarded as separate, and in so doing anomalies disappear; they become one with the substance of the new theory. Because all the existing conceptual framework is reinterpreted as it enters the new theory, the theory clearly has more applications that can be verified immediately. Its potential extension to all that has been thought before must be supposed to surround the illumination with an extensive felt fringe of thoughts. Thus the "aesthetic" in scientific thought does not signify something attained, static, or finished; it is the attained together with the potential for extension into further areas of thought and meaning. A more inclusive whole, of which the thinker has some intuition, remains beyond that which has so far been realized. In its most productive form, that new whole represents an alternative reality, a different angle on the world (Pollio, 1979, p. 37).

ANOMALY AND TRANSFORMATION IN DREAMS

Few of us are creative scientists. Yet certain intuitive and transformational properties appear to be inherent in thought, despite the tendency noted by

Bartlett (1932) to accommodate new perceptions to existing concepts. Something of the meaning of these properties can be learned from the evidence of dreams. The same nexus of phenomena can be found as agents of creative thought there: the carrying forward of past experience, the need to resolve anomalies, and the bisociation between distant fields, if with less striking or immediate results. As in the preparation stage of creativity, the role and meaning of past experience in dreams (of such significance in scientific thought) are at once crucial and very problematic, but examination of dream instances helps to suggest the nature of the relationship.

The normal memory for dreams tends to be capricious and of limited help in understanding the role of dreams in the individual's thought. But the awakening of the dreamer under controlled conditions in the laboratory enables the relationship between thoughts and their development through successive dreams to be studied. An example reported by Rechtschaffen, Vogel, and Shaikun (1963) offers a striking illustration. The dreamer was an undergraduate who had just finished taking her final examinations, and the dreams of the night reported are clearly related in several ways to the implications of her recent experience. In the first, the dreamer is in a boat with friends and afraid of overturning; in the second, she has just taken an examination and is walking outside on a sunny day; in the third, she is involved in an odd game of maneuvering cars in a parking lot, in which her lab instructor is scoring her performance; in the fourth, she is again in a boat (now in a racing boat) and deciding it would be better if the boat sank; finally, she is observing a scene in a hospital where one patient is about to be substituted for another, as the first is about to die—because "he was an important person, and they couldn't let people know about it" (p. 545).

If it is assumed that these dreams reflect the dreamer's anxiety about the outcome of her examinations, then it is fairly clear that she has progressed in her understanding of the issues involved during the night. She arrives at a set of judgments about the examination process (including comparing it to a game, and changing her view of the "boat" that she is in), which ends with a consideration of what kind of person she would be if the process she is caught in were no longer a significant one and the person she thought she was were to "die" (this potential aspect of herself is split off for contemplation). It is notable too that the literal memories of her waking life have been transformed under the impact of these judgments.

What dreams appear to register, then, are judgments: attitudes toward events, situations, people, future possibilities, and the relations of the dreamer toward these things. The chief point of dreams appears to be the exploration and development of such judgments. Memory elements, whether present as originally laid down or themselves transformed are not the judgments—they are invoked to express and clothe the judgments. If the pattern of thought in dreams is an indication, then the most fundamental level of

thought, the ground of its being, is not ideas or perceptions, but judgments. In this way, judgment can be seen as the driving power of the dream, while some felt anomaly providing the direction.

The relation of immediate to past experience, and a consequent evolution of judgments, appears to be a feature of dreams. It has also been a feature of the other types of thought so far examined. Each has allowed additional aspects of the preparation phase of creativity to be sketched in. It is now appropriate to question more closely the nature of preparation and its relation to illumination.

THE PROCESS OF CREATIVE THOUGHT

Illumination characteristically gives a sense of context. Whether faintly or vividly, there is a sense of some whole beyond the immediately present idea, and it is this sense that marks out the idea as arresting, making it distinguishable from the normal contents of thought. The description of their creative thought in aesthetic terms by scientists shows the grounds they share in this respect with artists. What is the nature of the preparation that has brought this about? There are several different forces at work.

The formative impulse to creative thought appears to be an experience that cannot be reduced to an existing category—in scientific thought, an anomaly. Whether consciously or unconsciously, sufficient anomalies in normal thought appear to cause a search among more remote and hitherto unconsidered concepts, hence setting into motion, as it were, a wider range of concepts in relation to the anomalous experience. Valery (1952), for instance, spoke of the mobility of the mind, its restlessness and diversity, which for the writer is his or her incomparable resource:

> The instability, incoherence, inconsequence . . . which trouble and limit the mind in any sustained effort of construction, are just as surely also treasures of possibility, whose riches it senses in its vicinity at the very moment when it is consulting itself. These are the mind's reserves, from which anything may come. (p. 101)

An Eindhoven and Vinacke (1952) showed, it is in his or her special ability to preconceive a solution in some way that the power of a creative thinker lies. The artist or scientist is, in a sense, eliciting something that is already there; he or she has not formed it consciously. The suddenness of illumination, however, so often reported by creative thinkers, shows that its formation precedes, or is aside from, conscious thought. This paradox, first given classical expression in Plato's *Meno* (80d), was well expressed by Kierkegaard (1843/1971) in the course of his commentary on Mozart:

> The poet wishes for his subject; but, as we say that wishing is no art, it is quite rightly and truthfully said about many impotent poetic wishes. To wish rightly, on the other hand, is a great art, or, rather it is a gift. It is the inexplicable and mysterious quality of genius that, like a divining rod, it never gets the idea of wishing except when the thing wished for is present. (p. 48)

As the outcome of an affectively motivated transformation, then, a significant new judgment proposes itself to the thinker. The material involved may express long-standing concerns: Both the childhood forms of primary process thinking and the complex of current attitudes may be equally available and active. In the unconscious, as Freud pointed out, memories themselves are timeless. A specific memory only becomes time-marked when it is consciously remembered. All affects and judgments, whether of childhood or of adult origin, are perhaps always present, and the current complex of judgments would appear to involve their continual exploration and reinterpretation. Daily conscious experience influences the underlying complex of judgments but cannot determine either its form or its development. Indeed, conscious thought on a given topic may often be at odds with the unconscious judgment that has been made. Such conflicts seem not infrequently to be the subject of dreams.

What the creator senses in unconscious thought, therefore, would appear to be the development of a judgment, expressible through some unique and radical reformulation of his or her existing repertoire of concepts. Anomalies in experience have activated developments in the underlying judgments which, sooner or later, require that form of expression that involves a fundamental transformation in the individual's conceptual repertoire. If judgment is the driving power in the preparation stage, then prominence must be given to affect as the agent that reforms and connects concepts. The possession of anomalies itself is not enough to reorganize thought; the crossing of conceptual domains to form a new whole in scientific or artistic thought requires a directed search by some instrument that already "knows" what it is looking for. What evidence might suggest that affect plays this role?

AFFECTIVE FORESIGHT

Three lines of research can be mentioned: the relation of affect and memory, the function of the frontal regions of the brain, and the problem of understanding response to metaphor.

Bartlett (1932) showed how affect could lead in the recovery of a memory. One of his participants, for instance, talked of the "reinstatement of a particular 'feeling'" (p. 60). The subjective feelings that accompanied the original presentation of the stimulus became, at recall, the cue to recovering the mem-

ory. This was an incidental finding of Bartlett's work, and no attempt was made at the time to investigate directly the relation of affect to memory. The question has since been examined by a number of researchers. The issue raised by Bartlett's finding is whether affective aspects of representation are integral to the functioning of memory.

Spiro, Crismore, and Turner (1982), for example, hypothesized that two kinds of memory coding occur, discursive and experiential (the experiential consisting of attitudes and affects), and that the latter will be more important where previous knowledge provides little basis for coding new information. If memories are coded in some affective register—what Spiro et al. termed *experiential coloration*—then similarity of affect at the time of recall may aid the reconstructive processes. An experiment to test this hypothesis required participants to learn material while under the effect of a particular mood created by previous exposure to a poem. It was found that later recall of the material was improved by reinstatement of the mood, so that learning appeared to be facilitated by association with a particular affect. A comparable effect was demonstrated with young children by Bartlett, Burleson, and Santrock (1982) and by a number of other researchers interested in mood-state dependency effects in memory (e.g., Bower & Cohen, 1982; Isen, Shalker, Clark, & Karp, 1978).

These suggestive findings show that affect can direct memory processes that have traditionally been considered semantic in nature. If affect can initiate the links between concepts required at recall, then it may also play a directing role in more substantial, transformational thought processes. The "experiential coloration" described by Spiro et al. (1982) as more relevant in conditions where previous knowledge is inadequate might assume particular importance in the preparation stage of creativity where anomalies in experience have unsettled existing knowledge. But here affect must be supposed to do more than simply effect a bridge between a present and a previous concept in memory. Affective coloration of experience in itself is a necessary but not a sufficient explanation for the dynamics of the creative thought transformations involved. Affect may also have an anticipatory role to play, leading the conceptual functions of the mind toward the domain that will be the origin of the transformation.

A model of affect functioning in an anticipatory role is available in work on the frontal region of the brain. To be able to conceive solutions to complex problems, it has been shown, requires the intact functioning of this part of the brain, not for its conceptual functions but for its connections to the affective centers of the brain.

Tests on patients with frontal lesions have tended to show that the chief deficit resulting is an inability to match action as it is carried out with previously formed intentions. The patients described by Milner (1964), for example, who were asked to sort cards showing simple patterns according to

changing criteria, persevered in a course of action after it ceased to be appropriate. Milner observed that in situations requiring a constant shifting of response to meet changing demands, the frontally lesioned patient is unable to suppress immediate responses. What appears to have been lost is a modulatory function normally exercised by the frontal region.

Nauta (1971) subsequently pointed to the anatomical evidence for a close relationship between the frontal cortex and various subcortical structures containing the affective centers (the "fronto-limbic" relationship), which indicated that the frontal region combines both sensory and effector functions. The frontal lesion, he suggested, results in a perceptual and an affective deficit. Behavioral anticipation requires the comparing in thought of various alternatives; it is the comparison between the affective responses they evoke which, Nauta suggested, keeps normal strategic functioning on line. An analogy may be made with sensory mechanisms, which are made ready for impending action by a process of corollary discharge from motor mechanisms. The frontal region may exercise a comparable function, presetting the mechanisms that deal with interoceptive information. Such a presetting, in Nauta's words, "could be thought to establish a temporal sequence of affective reference points serving as 'navigational markers' and providing, by their sequential order, at once the general course and the temporal stability of complex goal-directed behavior" (p. 183).

Lacking the cortical connections to set up such affective markers, the frontally lesioned patient suffers from an impairment in strategic decision making, and "a tendency of projected or current action programs to 'fade out' or become over-ridden by interfering influences" (Nauta, 1971, p. 184).

Such an affective registry does not in itself explain creative thought, but it suggests how the coloration of concepts in memory has not only a connective, but more significantly, an anticipatory role, given the appropriate conditions. This predictive valency of affect, as I argue in a moment, may also be relevant to the process of metaphor. In the studies on frontal patients, the problems are set by the neurophysiologist. In creative thought, however, the problems are the outcome of anomalies in experience; they are set by the thought patterns of the creator, and the affects preset the directions in which a solution may be found. Because affects, according to Spiro et al. (1982), tend to link concepts that have been stored with the same experiential coloration, the concepts elicited by affect might come from domains far apart as well as from within the same domain, so that a new combination results. This requires us to conceive of a much finer grained affective repertoire than is often held to be the case—Zajonc (1980), for example, claimed that there are only a "handful" of emotions that can be felt. The selection by affect would have to be highly specific as well as being influenced by the prevailing context, the particular problem on which the creative thinker was engaged.

The preparation stage, I suggested, is initiated under the influence of

anomalies in experience. The new judgment forming under the impact of such anomalies comprises and reforms previous judgments and sets in motion affects connected with the anomalous experience. Those affects constitute a bridge between concepts normally not considered to be connected, and in so doing act as predictive markers offering directions in which to seek a solution to the anomalies. There is a congruence of emotional sets with an intuited goal, as Bastick (1982) tried to show. Creative thought might thus be conceived as being under the influence of a series of alternative possibilities for reaching the expected solution, kept on hand in a guiding set of affective reference points. The sense of the solution, it is recalled, is typically given at the moment of illumination in affective form, suggesting that it is in its predictive power, its felt connections to a range of other concepts as yet beyond consciousness, that the productivity of affect lies. Poincaré (1946), for one, it is recalled, spoke of the anticipatory affective power of the moment of illumination and its sense of harmony. If affect is the agent for crossing conceptual domains and initiating transformations in thought at the preparation stage, then it is to be expected that the moment of illumination would be signaled in this way by a strong and predictive affective charge.

Although indirect evidence for the anticipatory role of affect in thought is given by research on the brain, more direct evidence may eventually be obtained from studies of the response to metaphor. Miall and Vondruska (1983) examined the incidence of affective ideas in response to metaphor. In line with previous theoretical arguments (Miall, 1977, 1979), it was hypothesized that metaphor involves a more radical transformation of its topic under the influence of the vehicle than simile. Responses were obtained from children (third and fourth grades) and adults (college freshmen) to a set of unfinished stories about different characters, each containing either a metaphor or a simile. Participants wrote freely about what they thought was happening in each story at the point where it broke off, and these responses were then coded according to different categories, including references to affective states. In the case of the children, a significant difference between the conditions was obtained, in which the main variable was the much greater number of affective descriptions produced in the metaphor condition. In this way, metaphor was shown to have a more powerful affective potential than simile, a potential that might have predictive properties under appropriate conditions. (The results from the adults, however, were inconclusive, and a study is now in hand to obtain a different measure of adults' affective responses to metaphor.)

Affective conflict between vehicle and topic terms, in addition to the domain difference, may signal an anomaly to the hearer of a metaphor. If the metaphor is a sufficiently powerful or unusual one, it may also tap existing anomalies in the individual's judgments and play a formative role in transforming some part of his or her thought world. It may be argued that this is

the primary function of literary metaphor, because it can tap extensive regions of thought and draw them into new combinations (Miall, 1979).

Our study offers evidence that affect may be a significant variable in response to metaphor. If this is correct, it may also indicate that affect plays a constructive role in the process of comprehending metaphor. In examining the comprehension of metaphor it has not been easy to understand how vehicle and topic interact to transform the topic. The cognitive approaches involving similarity or domain mapping have not so far proved able to resolve all the problems associated with comprehending novel metaphors. One alternative is to postulate the affective cuing of salient concepts as the key to comprehension.

Affects of the same coloration may be attached to concepts in widely divergent domains. Affects induced by a given metaphor may therefore be the prime agents for linking the different domains of vehicle and topic. Under the impact of metaphoric dissonance, the inadequacy of concepts directly associated with the topic causes a search among more distant concepts that resonate with an affective coloration similar to the vehicle. This view, it will be recalled, assumes that affect offers a fine-grained set of discriminations between an otherwise potentially large set of concepts. Through the affect attaching to it, therefore, the vehicle of the metaphor initiates and guides the search for meaning, but does not determine its results. Those concepts that form an affective match to the vehicle are then applied to transforming the topic. As in the various mood-state studies, such as that of Spiro et al. (1982), the affect currently in consciousness provides the link to other concepts that are "primed" by it, or activated at a subthreshold level of excitement. In metaphor the vehicle is the affective prime, because this is the "out of place" concept: The vehicle draws attention to itself affectively.

If metaphor has this affective power, it may also "prime" concepts beyond those immediately relevant to its own interpretation, in the sense that a strong and specific affect may continue to determine the process of text comprehension following the metaphor. Thus metaphor may make for greater textual cohesiveness—an idea that has often been discussed by literary theorists. Further studies are now underway to test empirically the hypothesis that the affective power of metaphors has a predictive valence that would account for the developing sense of cohesiveness in texts where they occur.

CONCLUSION

The main lines of the present discussion have now been presented, but there remain several issues that should be mentioned briefly. The relation of affect to judgment forms one issue that has not yet been sufficiently clarified. Although judgment, I have suggested, is at the basis of all thought and is in a

continual process of revision and renewal, I have assumed that it contains only evolutionary, not transformational potential and that it is the more fluent work of affect that brings about transformations at the creative level. If this is the case (and it is only an assumption), then it might be expected that it would be possible to discern a relation between affect and judgment from the introspective evidence of artists.

An interesting, if obscure, distinction of this kind does appear to be made by several poets. Wordsworth (1800/1965), for example, spoke of the poet as possessing

> an ability of conjuring up in himself passions, which are indeed far from being the same as those produced by real events, yet (especially in those parts of the general sympathy which are pleasing and delightful) do more nearly resemble the passions produced by real events, than anything which, from the motions of their own minds merely, other men are accustomed to feel in themselves. (p. 453)

This distinction between two sorts of "passions," one of which is a special resource of the poet, might suggest that Wordsworth is speaking of judgments and affects, respectively. The chief ability of the poet, therefore, lies in an ability to arouse an active sense of judgment through poetry. Another poet who mentions a type of feeling in poetry below ordinary feelings is Coleridge (1962). In a notebook entry (No. 2086) he remarked that

> Poetry [is] a rationalized dream dealing . . . to manifold Forms our own Feelings, that never perhaps were attached by us consciously to our own personal Selves . . . O there are Truths below the Surface in the subject of Sympathy, & how we *become* that which we understandly [sic] behold & hear, having how much God perhaps only knows, created part even of the Form.

A similar distinction can be found in Eliot's (1932/1963) cautious insistence that "the business of the poet is not to find new emotions, but to use the ordinary ones and, in working them up into poetry, to express feelings which are not in actual emotions at all" (p. 10).

The consideration of creative thought also carries implications for the creativity of metaphor response. If the open-ended, affective connections of concepts at illumination link consciousness to an as yet unseen new whole in unconsciousness, metaphor at its best, as I have argued elsewhere (Miall, 1979), also requires the support of unconscious complexes of thought and judgment for its initial interpretation. Metaphor can be a key to far-reaching transformations in individual thought, the bringing into play of the "whole soul" of man (Coleridge, 1817/1954, p. 12). Such wholeness of creative thought is well captured in a letter of the poet Keats (1958), where he observed that

> every point of thought is the center of an intellectual world – the two uppermost thoughts in a Man's mind are the two poles of his World he revolves on them [sic] and everything is southward or northward to him through their means. (p. 277)

"Everything" is no exaggeration here, if it is a transformation in the pattern of judgments involving the whole personality that is characteristic of creative thought.

This, finally, is the main implication of the view of creativity presented here. Creative thought is a continual process within the creative person, not confined to the periods during which actual creative work is taking place. It involves the creator in a continual effort to understand and, in a sense, to make himself. Creative thought not only expresses the repertoire of judgments, it helps to clarify and redirect it; it reacts back on the creator in incalculable ways. As Jung (1930/1966) wrote, "The work in process becomes the poet's fate and determines his psychic development. It is not Goethe who creates *Faust,* but *Faust* which creates Goethe" (p. 103).

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