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## *Metaphor as a Thought-Process*

THERE ARE AT LEAST three points of contention that regularly crop up in recent discussions of metaphor: (1) what, if anything, happens to the meaning of the constituent words when they appear in a metaphor—is there a *change* in meaning? (2) do metaphors create *new* meaning, merely draw attention to *existing* meaning in a novel way, or is their meaning wholly assimilable to literal statement? (3) do metaphors give us truth or obscure it—or is the issue of truth simply irrelevant? It is not obvious how these different issues are related, and they are often discussed separately, as if the problems in one part of the field had little bearing on conclusions reached in another part. What is needed, however, are efforts to see metaphor as a functioning whole—what particular *role* in thought it appears to fulfill. Discussion of these three issues has too often been confined to examining metaphor as a merely linguistic set of relationships, which, as I shall suggest, has tended to obscure the real nature of metaphor and what it does. I shall be claiming that metaphor must be studied as a dynamic entity, as a process of thought which is only initiated by its constituent words, rather than through the analytic and static approaches that have mainly prevailed hitherto. I shall adduce some evidence from cognitive psychology to support this view.

An adequate understanding of metaphor will probably only be obtained when we have a general theory of creativity, since metaphor can be shown to exhibit on a small scale some of the processes of thought which appear to operate on a large scale

in all creative thought. Since most explications of metaphor hitherto have been along philosophical or linguistic lines, however, psychological considerations, except of a superficial kind, have been excluded. As a result, how metaphor is grounded on innate processes of thought, what kinds of transformation it effects therein, are questions that have had little serious study from a psychological perspective. The insights that metaphor has to offer regarding the nature of thought have hardly begun to be realized—insights that would, in addition, undoubtedly enhance our understanding of the response to literature and the aesthetics of literary form.

I begin my discussion by pointing to some difficulties encountered by the predominantly verbal approach to metaphor. This will help illuminate those areas in which we must turn for help to the psychology of thought.

### *I. Change of Meaning*

A standard form in which metaphors are often discussed is derived from such simple examples as: Richard is a fox; man is a wolf; Smith is a pig. Ted Cohen, for example, begins his recent account of metaphor<sup>1</sup> with an examination of the formula "x is F," while drawing attention to the fact that this is only the simplest type of metaphor and may lead one to oversimplify matters. While bearing this caution in mind, my own discussion will be confined to this type of metaphor, since it is also the focus of the influential paper of Max Black<sup>2</sup> which I shall be looking at below.

In the metaphor "Smith is a pig" (one of Cohen's examples), the subject of the

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metaphor—*x* in the formula—is *Smith*, while the modifier is *pig*. Cohen addresses himself to the problem of whether any change of meaning takes place in such a metaphor, and while accepting that there must be some change, appears to confine his attention to the modifier. Thus he develops the formula “*x* is *F*,” stating provisionally that when we encounter this as a metaphor we “realize that ‘*F*’ is not being used with its customary meaning (call that  $F_L$ ), but with a different, metaphorical meaning ( $F_m$ ).” In the two expressions “*Porky* is a pig” and “*Smith* is a pig,” this would lead us to assign two different meanings to the word *pig*. In the metaphorical expression, in other words, *pig* has changed its meaning from what it was in the literal expression. The problem then arises of the relationship between the meanings of  $F_L$  and  $F_m$ —about which Cohen is unable to offer any definite conclusions. His difficulty arises from confining attention mainly to the assumptions underlying the belief in *F*’s change of meaning—but this is to focus on the wrong place.

It is the subject of a metaphor that undergoes the change in meaning. It is *Smith* that the metaphor asks us to see in a new way, while pigs remain what they have always been—brutish and porcine: we have borrowed these implications of the word and now attribute them to *Smith*. In this way the modifier confers a new perspective on our thought about *Smith*. To explicate metaphor it will be necessary to look beyond the words of such expressions to the concepts that they invoke: it is concepts that interact, not words, as I shall argue.

Why should theorists be tempted to focus, nevertheless, on the modifier as the term needing examination? As a *word* it attracts attention to itself, being the term that is obviously “out of place” on a literal view. This gives a direction to analysis which may be encouraged by the form of the metaphor we have been discussing, “*x* is *F*.” Such a metaphor appears to suggest an identity between the terms, so that it is tempting to see the meaning of the subject sufficiently involved with, or caught up in, the more striking term, the modifier, as to need no separate examination. Some writers on met-

aphor are clearer than others on the necessity of resisting this implication: I. A. Richards seems to have been the first to point out the “disparity action” involved in metaphor. There are differences between the terms, he says, that “resist and control the influences of their resemblances,” so that

talk about the identification or fusion that a metaphor effects is nearly always misleading and pernicious. In general, there are very few metaphors in which disparities between tenor and vehicle are not as much operative as the similarities.<sup>3</sup>

Nelson Goodman, similarly, has spoken of the transfer in metaphor taking place “under protest”—“metaphorical application of a label to an object defies an explicit or tacit prior denial of that label to that object. Where there is metaphor there is conflict . . .”<sup>4</sup>

Such disparity should warn us that it is not the *words* that change in metaphor but the *concepts* invoked. If word meaning altered under metaphorical usage then Goodman’s observation that every metaphor fades with repetition and familiarity might be acceptable—this is so, he says, because metaphor “depends upon such transient factors as novelty and interest.”<sup>5</sup> While this may be true of metaphors in common speech (so called “dead metaphors”), it is quite clearly untrue of literary metaphors.

However many times Shakespeare’s Sonnet No. 60 is read down the centuries, or re-read by one person, “Nativity, once in the main light,/Crawls to maturity . . . ,” remains as arresting now as when it was first set down. That this is so is cause for rejoicing, but it is also rather mysterious. Why are literary metaphors exempt from a process that evidently overtakes so many metaphors in common speech? Perhaps the survival of the power of the metaphor indicates that the modifiers *main* and *crawls* undergo no change in meaning at all. If this power is to be located, by contrast, at the conceptual level, what is the mechanism by which *concepts* are changed through metaphors?

If our friend *Smith* is described as a pig, what does this metaphor do to our concept of *Smith*? A number of writers, including Max Black and Monroe Beardsley, would

argue that the connotations of *pig* transfer to *Smith*. Thus we see *Smith* as brutish, dirty, greedy, fat, or snorting, depending upon which connotations are felt to be appropriate. What is being referred to are aspects of *pig* not being a pig, in itself—*Smith* is not an actual pig. What is left behind in the transfer is the strictly verbal, or denotative, sense of *pig*. If it is connotations of *pig* that go to alter our view of *Smith*, do they bring into prominence something of what we already know of *Smith*, or do they create a new view of him?

Despite the readiness of Max Black to consider connotations, his account of metaphor suffers from a central confusion because he appears able to conceive of meaning only in terms of words. This is inherent in his description of connotations—what he calls the “system of associated common-places” attaching to a word: these are expressible in a “set of statements.” Black appeals to what we already know in explicating both connotations and their action in a metaphor. In “man is a wolf,” *wolf* acts as a filter for our ideas about *man*, Black maintains. “Any human traits that can without undue strain be talked about in ‘wolf language’ will be rendered prominent, and any that cannot be pushed into the background.”<sup>6</sup> Black goes on to compare this to looking at the night sky through a piece of smoked glass on which certain lines have been left clear: only certain stars will be seen, and they will be organized by the pattern of lines on the glass. If this analogy is intended seriously, it suggests that no new meaning is created: a metaphor’s power lies simply in reorganizing what we already know.

Once Black has elaborated this view he then has trouble explaining how the connotations of the modifier have any effect over the subject. He introduces the notion of transfer, but then finds that this requires us to see that some of the connotations themselves must “suffer metaphorical change of meaning in the process of transfer from the subsidiary to the principal subject.” Thus we would have not one metaphor but several—one for each of the connotations transferring. Black tries to reduce

the dilemma by withdrawing “transfer” and substituting “extension of meaning”; but this notion remains vague, and leaves in doubt whether Black sees any genuine connection between modifier and subject possible at all.<sup>7</sup> Black’s difficulty is inevitable if one is attempting to understand how a “set of statements” can transfer. To conceive of connotations in this way is to fail to take advantage of the distinction they open up between words and concepts, between the referential functioning of language and the activities in thought which may be initiated by it. As Black reveals in his concluding summary, he is trying to account for the power of metaphor to organize one’s view of the subject on a purely verbal level: “This involves shifts in *meaning of words* belonging to the same family or system as the metaphorical expression . . .” (my emphasis)<sup>8</sup>—a phrase which encapsulates the central problem of metaphor: *meaning* shifts, *words* do not.

It must also be held against Black’s account that in “man is a wolf” I am hardly likely to bring to mind all the verbal associations of *wolf* in order to interpret the metaphor. Understanding must be more immediate than this. How do connotations present themselves in thought, and how do they organize so efficiently a new view of the subject? Perhaps an explanation in terms of *associations* is misleading. In exploring these questions, Richards’s point about disparity must also be borne in mind: if the purpose of a metaphor is not to effect a fusion or identity of subject and modifier, what does a metaphor *do*? In trying to determine the role of metaphor in thought it will be possible at the same time to make some comments on the question of truth—to point out that in relation to metaphor the question is not particularly appropriate.

## II. Connotations

It is often observed that the number of connotations attaching to a word in a metaphor cannot be exhausted in any list.<sup>9</sup> Cohen, for example, adduces “inexhaustibility” of implications as “the mark of metaphor.”<sup>10</sup> Furthermore, we cannot de-

termine in advance what connotations a metaphor will draw upon—this plays an important part in metaphor's creativity. As Beardsley has said, connotations "are never fully known, or knowable, beforehand, and very often we discover new connotations of the words when we see how they behave as modifiers in metaphorical attributions."<sup>11</sup> If the way connotations effect a change of meaning in the subject of a metaphor is to be understood as a process of thought, this indeterminacy must be further explored—we cannot, after all, set a limit on it, and to ignore it is to impoverish our view of what happens in metaphor. First, a better grasp of the depth at which connotative resources may be activated is needed; and second, it must be appreciated how such connotations are brought into play already organized—there is no such thing as random or free association.

Among experimental studies of the nature of thought, some of the most suggestive work for understanding metaphor was carried out by the so-called Würzburg school of psychologists in the first decade of this century—it is now largely forgotten except by historians of psychology. The Würzburgers were the first to claim, on the basis of introspective evidence obtained during a variety of experimental trials, that there was a kind of thought which consisted neither of words nor of mental images. While conscious thought often appeared to deal largely with words or images, surrounding and supporting these was a weight of imageless thought (as it was called), and at times, as some very revealing experiments showed, it substantially affected the course of conscious thought while the thinker himself remained largely or wholly unaware of it. This, it will be seen, is analogous to the response to some metaphors—we can verbalize readily enough about what they mean to us, or about the imagery they cause, but we continue to feel that important areas of meaning have nevertheless escaped our formulations—something consistently eludes our conscious grasp.

One experiment run by Karl Bühler will illustrate the type of cognitive function involved. Bühler was concerned to discover

the processes occurring when a subject was given a genuine intellectual task to solve. He presented the subject with a sentence expressing a complex proposition (e.g., "Thinking is so extraordinarily difficult that many prefer to judge"), with a question, such as "Do you understand?" The subject responds with a "Yes" or a "No" as the case may be, taking his time—which is measured; he then recalls as clearly as he can the thought process involved in comprehending the sentence. One protocol (that of Durr) clearly shows the invocation of the mere weight of a concept in order to reach a quick answer. To the proposition "Is this correct: 'The future is just as much a condition of the present as of the past?'" Durr took ten seconds to answer "No."

First I thought (says Durr): that sounds like something correct (without words). Then I made the attempt to represent it to myself. The thought came to me: Men are determined by thoughts of the future. Then, however, immediately the thought: that the thought of the future should not be confounded with the future itself; that such confusions, however, constitute a frequent dodge in philosophical thought. (Of words or images there was throughout no trace.) Thereupon the answer: No.<sup>12</sup>

A striking point about this example of thought is that the many possible real connections of the future with the present are not considered at all. The question becomes one of men's *thought* about the future; but against this Durr has the weight of an important philosophical concept to bring—so he answers "No" without further thought.

Perhaps, at his leisure, Durr might have considered other aspects of the question that he neglects here. But as Sir Frederic Bartlett noticed in his studies on perception,<sup>13</sup> the tendencies which the subject brings with him into the thinking situation seem to be drawn upon to make the whole process as easy and as rapid as possible. Durr's philosophical concept carries a burden of intellectual authority, as well as being an appropriate development of the notion of *thought* about the future. It seems accordingly to be applied automatically with no investigation as to whether it really fits the requirements of the problem. Thus

for the thinker it is enough merely to touch on the concept—its felt meaning is sufficient to authorize the conclusion reached; the details and relevance of the concept are neglected.

The appearance of such a concept liminally in thought suggests both the readiness of unconscious influences to direct conscious thought, and the systematic, organized nature such thought may possess. In fact, it seems from Durr's protocol that precisely because it carries a sense of order it exerts the influence it does—a potential body of philosophical argument lurks below the horizon of Durr's more manifest thought.

Metaphor is more difficult to explicate than the thought process shown in such a controlled and artificial situation, yet it seems likely that we should assume a similar degree of unconscious influence and ordering with its connotative resources. To some extent we can make ourselves aware of such influence, such ordering—but only to some extent—and often it is to discover the presence in us of major systems of thought, so that to try and understand the effect of a metaphor can constitute an exploration of one's own thought world and unexamined assumptions. For example, if I seek to explain the power of the Shakespeare metaphor, "main of light," I might have recourse to another poem in which birth and sea are linked in a vision of a more glorious world from which we have come. In his "Immortality Ode," Wordsworth writes,

Thought inland far we be,  
Our Souls have sight of that immortal sea  
Which brought us hither . . .

and speaks of light, as Shakespeare seems to do—"trailing clouds of glory do we come . . ." Behind the Wordsworth poem lies the sense of a prior state of existence (a belief which the Christian Wordsworth was later to play down). Thus one source for the power of Shakespeare's modifier, *main*, may be the philosophy of pre-existence—other connotations of *main*, the continuity of the sea, its (by us) inconceivable force and direction, support such an interpretation; what Wordsworth elaborates

over several stanzas, Shakespeare expresses elliptically in a single metaphor. It is the systematic nature of the thought activated by such a metaphor that must be emphasized: therein lies its power—not in the number of associations, as such, but in their ability to organize and shape (albeit unconsciously) the thought of the reader.

If this view of the nature of connotations is correct, it will help arbitrate the question whether metaphor creates new meaning or merely draws attention to existing meaning. First, regarding the organized structure of a modifier's connotations, it may be asked whether this is necessarily something that exists in *conscious* form in the reader before its use in a metaphor. The question about meaning becomes more complex—and more interesting—if we have to admit the functioning of ordered and creative thought in the unconscious.

### III. Concept formation

There is much informal evidence for the existence of unconscious creative thought—the records of inventors, scientists, and artists are full of instances of elaborate concepts emerging in a moment of inspiration with no preceding period of conscious work. It seems that rational, structured thought can take shape in the unconscious, which the thinker does not direct or influence consciously, nor is he aware of it until its results suddenly break into the conscious domain. There is little acceptable experimental evidence for the existence of creative thought at this level—it is hardly amenable to the psychologist's experimental methodology.<sup>14</sup> But a similar process at a less exalted level has been extensively studied—that of concept formation.

Lorraine Bouthilet, for example, gave her subjects what appeared to be a series of trials in learning word associations.<sup>15</sup> They were shown forty cards in succession each printed with a pair of words, with instructions to learn the association. This was followed by another set of test cards on each of which one of the words from a pair reappeared, and the task was to select the one word out of five possible choices shown

that went with it. This alternation of "training" and "test" cards was repeated up to twenty times. In fact the concept or rule running through the whole series was simply that the second word of the pair was always spelled out of some of the letters from the first. Once the subject discovered this he no longer needed to learn the association of the two words—the correct response on the test cards could be made by merely following the rule. Some of Bouthilet's subjects never grasped the rule, and labored on to the end at a low level of correct responses; others saw it suddenly at some point, and thereafter made no incorrect responses. But the most interesting results were those shown by about a third of the subjects, since without showing any conscious awareness of the rule, their responses gradually rose in a curve towards higher levels of correctness. The subject has developed "a capacity to make correct guesses without knowing why," Bouthilet observes, interpreting these results as a demonstration of intuitive thinking; he is "acting without logic, verbalization or insight." Eventually, after a number of trials that varied from one subject to another, all of this group became conscious of the rule and made wholly correct responses.

The experiment shows, albeit at a simple level, the development and use of a concept without the awareness of the thinker. In their own experiments Bruner, Goodnow, and Austin noticed a similar phenomenon. Many experiments, they observe, "have shown that subjects are able to distinguish correctly exemplars from non-exemplars of a concept before being able to name the defining features on which their judgments are based." The more imaginative problem-solver, they add, appears to be "the one whose actual performance runs well ahead of his ability to state verbal justification for it."<sup>16</sup> Perhaps we should consider explicating the response to metaphor, where we also have difficulty in verbalizing about the experience, in a way analogous to the Bouthilet experiment.

The connotative resources implicated in metaphor almost certainly draw upon concepts in thought which have taken shape

without our conscious awareness. These structures of thought pre-exist the encounter with the metaphor that activates them, certainly, but they cannot be described in advance, nor can their role in a metaphor be calculated or delimited. This consideration renders naive any attempt to explicate metaphor in terms of existing conscious meaning, listed in advance in some lexicon of connotations. Even Cohen's cautious acceptance of creativity in metaphor misses the mark, when he acknowledges "the experience of finding that one's words say more than one meant and being willing to mean the rest."<sup>17</sup> We always "mean" a great deal more than our words in their conscious, public aspect do. What Cohen is recording is the experience of realizing one's intuitions.

The connotative resources activated by a good metaphor are more organized, much richer, and draw upon deeper levels of an individual's thought than most metaphor theorists have been prepared to consider. In this respect metaphor offers an interesting paradigm for the study of creativity in thought. But in another respect, also, metaphor is creative—not merely in eliciting our existing intuitions, but in transforming what we know. This is the effect of the connotations of the modifier on the subject of a metaphor.

#### IV. *Metaphor as a thought-process*

The transfer of connotations to the subject defamiliarizes it, bestows a different or unusual view on it. In the Shakespeare metaphor, for example, "Nativity, once in the main of light. . . ," the subject *light* has lost its normal meaning. It is no longer the light of everyday experience—sunlight, or candlelight. The connotations of pre-existence (if that is an acceptable reading) brought to bear by *main* confer on *light* the sense of some transcendent state, a mode of being. The loss of the familiar sense of *light* in this way, under the effect of *main*, raises questions about Shakespeare's intended meaning rather than answering them, and the metaphor accordingly produces a certain tension (as some writers have termed

it) as well as the defamiliarization.<sup>18</sup> The original, familiar sense of light is not, of course, entirely dismissed—it remains in the foreground of the picture, as it were, giving perspective to the distant vistas that have suddenly opened up beyond it. At the moment of the metaphor's apprehension both the old, and the strange and new, are simultaneously present—what we see is thought in the process of transformation.

Perhaps the best way of capturing the process involved would be to compare it to Thomas Kuhn's concept of paradigm-switch in scientific thought. A paradigm-switch, says Kuhn, takes place in a moment of crisis in a given scientific field, when existing theory and method (that is, the prevailing "paradigm") no longer seems adequate for the variety of conflicting observations, and ad hoc extensions of the theory seem increasingly arbitrary. An example of such disarray is to be found in Ptolemaic astronomy in the years before the revolution of Copernicus. Yet no theory is simply abandoned. Kuhn emphasizes that only the appearance of a new theory, promising to make better sense of the observations and experimental findings, allows the previous inadequate theory to be relinquished. Herein lies the interest of Kuhn's discussions for the understanding of thought in metaphor: the "revolution" that takes place does so entirely within thought, and it extends in its implications down to the basic conceptual elements. Comparison with nature acts as a test of the theory, but cannot determine it—as Einstein said, "A theory can be tested by experience, but there is no way from experience to the setting up of a theory."<sup>19</sup> Transition to a new paradigm, Kuhn observes,

is a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalizations as well as many of its paradigm methods and applications . . . . When the transition is complete, the profession will have changed its view of the field, its methods, and its goals.<sup>20</sup>

Such a total reorganization does not arise gradually or logically out of a process of interpreting the data afresh. The new paradigm, or a glimpse of it, instead emerges

all at once, "sometimes in the middle of the night, in the mind of a man deeply immersed in crisis."<sup>21</sup>

The connotations of the modifier in a metaphor effect a similar cognitive switch in our view of the subject. The analogy is drawn upon here to illuminate the nature of the psychological process that takes place. It also underlies the necessity of separating the verbal element of a metaphor from its effects in thought—like the new theory in science, the unfamiliar view of the subject may effect a permanent change in the thought of the reader; the meaning of the contributing words, however, surely remains stable and unchanged. In the Shakespeare sonnet, the meaning of *light* and *main* is not permanently altered for me—if it were, the sonnet would cease to astonish me at each reading; it would stale with increasing familiarity. On the other hand, my intuitions about a glorious state of pre-existence lost at birth may be strengthened, or realized consciously for the first time. Poetry does not primarily alter the language<sup>22</sup>—but it may very well revolutionize thought.

The defamiliarization of the subject in a metaphor unsettles existing conscious knowledge, even if the new connotations that offer to reorganize our understanding of it promise intuitions of *future* knowledge. Metaphor embodies a transformation in thought, and the truth tests applicable to settled or established knowledge are not appropriate to it. The models of scientific thought presented by modern philosophy once more seem to provide a better analogy than logical or linguistic analysis: in pointing out the fundamental role of theory in scientific thought, as Kuhn or Karl Popper have done, the conclusion is forced upon us that we cannot go beyond theory to some ultimate, theory-free realm of truth. The criterion for a theory becomes not, whether it is true, but how powerful is it—how well able to withstand our attempts at refutation, how many fields of observation can be structured and given meaning by it. Just as, with a theory, a tension in thought is set up which invites further exploration and experimental testing, so with metaphor the new perspective opened up invites us to

explore our own experience and thought. Metaphor does not undertake to establish a truth, but it suggests where we may begin to seek one in thought.

I have tried to show how, if metaphor is understood as a process or transformation in thought, rather than as a static and isolated linguistic entity, some of the old questions about metaphor—change of meaning, creativity, truth—come to seem rather too naive in the form in which they are generally posed. All these questions take on a new dimension, and can be seen to be vitally connected, when metaphor is integrated into a larger view of thought as an ongoing, dynamic process, able to reformulate itself and originate new concepts beyond the awareness of the thinker. In this respect metaphor is much more interesting and more important than many, even of those who have advocated its study, have been able to acknowledge. It will prove, I think, to facilitate vitally explorations of the nature of thought itself.

<sup>1</sup> Ted Cohen, "Notes on Metaphor," *Journal of Aesthetics and Art Criticism*, XXXIV (1976), 249.

<sup>2</sup> Max Black, "Metaphor," *Proceedings of the Aristotelian Society*, 15 (1954-55), 273-94.

<sup>3</sup> I. A. Richards, *Philosophy of Rhetoric* (New York, 1950), p. 127.

<sup>4</sup> Nelson Goodman, *Languages of Art* (London, 1967), p. 69.

<sup>5</sup> *Ibid.*, 80.

<sup>6</sup> Black, loc. cit., 287-88.

<sup>7</sup> *Ibid.*, 289.

<sup>8</sup> *Ibid.*, 292. Black's recent paper, "More about Metaphor," *Dialectica*, 31 (1977), does little to

answer the problems of his original paper that I have identified, except for granting that concepts can change under the influence of metaphor: see section 8.

<sup>9</sup> This is made the grounds for objecting to connotation theories of metaphor, such as Beardsley's, by J. J. A. Mooij, *A Study of Metaphor* (New York, 1976) pp., 98-99. My discussion is in part designed to rebut such criticisms.

<sup>10</sup> Cohen, loc. cit., 250.

<sup>11</sup> Monroe Beardsley, *Aesthetics: Problems in the Philosophy of Criticism* (New York, 1958), p. 143.

<sup>12</sup> Cited in George Humphrey, *Thinking* (New York, 1963), p. 58. Italics omitted. Chapters I-IV of Humphrey's book provide the best account of the Würzburg experiments for the English reader.

<sup>13</sup> F. C. Bartlett, *Remembering* (Cambridge, 1932), p. 44.

<sup>14</sup> See nevertheless a persuasive attempt to demonstrate experimentally unconscious processes of thought in creative artists: Jacob W. Getzels and Mihaly Csikszentmihalyi, *The Creative Vision* (New York, 1976), esp. pp., 176-77.

<sup>15</sup> Lorraine Bouthilet, *The Measurement of Intuitive Thinking*, unpublished doctoral dissertation (University of Chicago, 1948).

<sup>16</sup> Jerome S. Bruner, Jacqueline J. Goodnow, and George A. Austin, *A Study of Thinking* (New York, 1956) p. 60.

<sup>17</sup> Cohen, loc. cit., 251.

<sup>18</sup> For a fuller account of these processes in metaphor and their relation to meaning, see my article "Metaphor and literary meaning," *British Journal of Aesthetics*, 17 (1977), 49-59.

<sup>19</sup> Albert Einstein, "Autobiographical Notes," in P. A. Schlipp (ed.), *Albert Einstein: Philosopher-Scientist* (Evanston, Illinois, 1947), p. 89.

<sup>20</sup> Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago, 1970), p. 85.

<sup>21</sup> *Ibid.*, 90.

<sup>22</sup> The historical evidence is rather the reverse. The influence of the King James Bible (which is incidentally full of metaphors) is said to be one reason why English has kept almost unchanged since the seventeenth century.