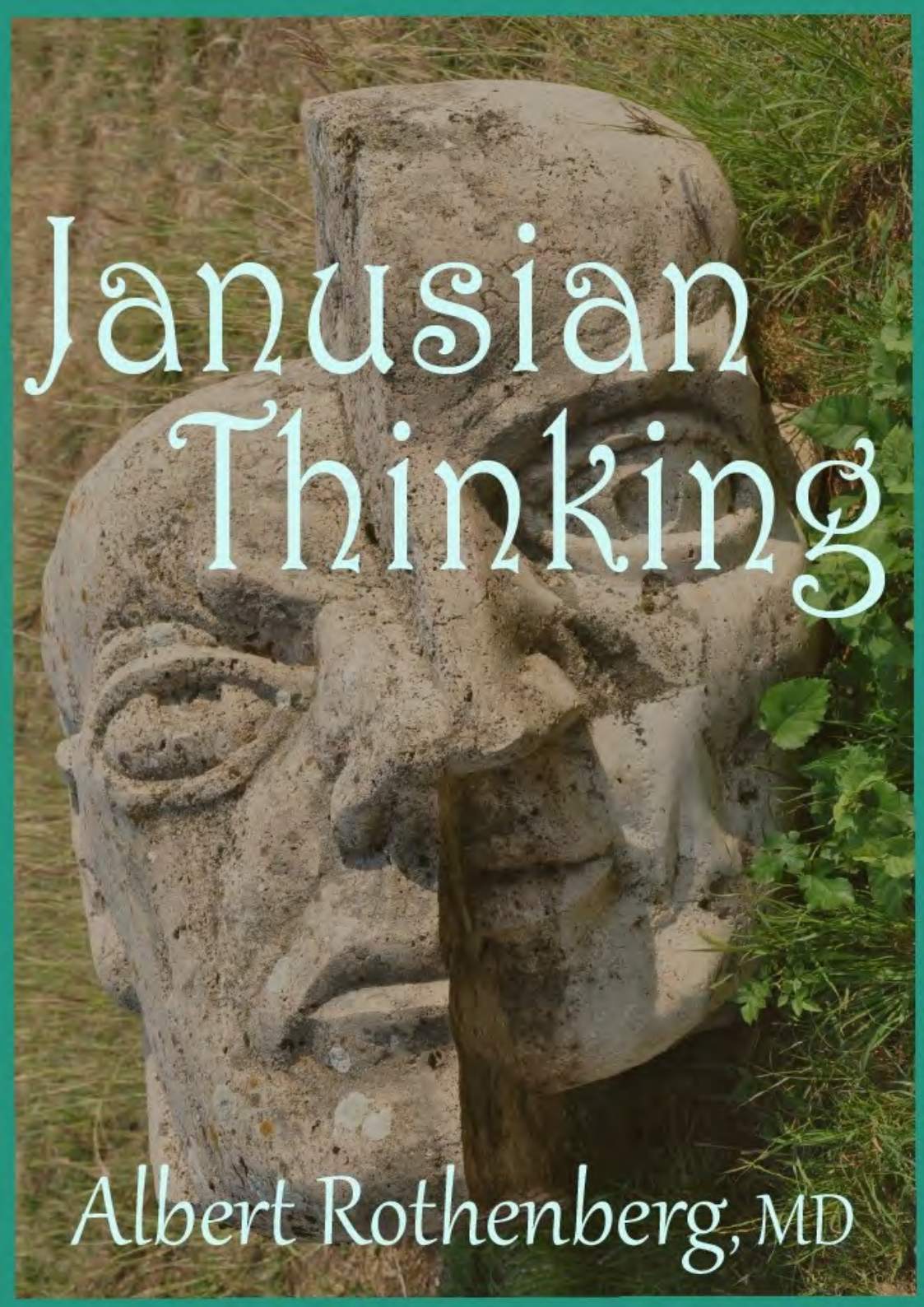
Janusian Thinking
Albert Rothenberg, MD

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Creativity is manifest in many and diverse types of human endeavor, including all varieties of art, religion, philosophy, engineering, business activities such as advertising and marketing, and, depending on the definition, in internal psychological states and in commonplace activities such as cooking, sports, and interpersonal interaction. If we keep the focus on activities leading to tangible products consensually considered to be both valuable and new, we can see that the type of thinking and activity involved in poetry and science are, in many ways, paradigms of the creative process. Poetic thinking and activity are paradigmatic of the thinking and activity in all forms of literary creation, and of creation in the other arts, in religion, and in philosophy. The type of thinking and activity involved in scientific creation is paradigmatic for a wide range of disciplines and pursuits concerned with the manipulation of physical reality and of so-called objective events. Therefore, from the evidence so far regarding janusian thinking in poetry and science, it could be assumed that this form of cognition plays a role in virtually all forms of tangible creation. Rather than let the matter rest with such a sweeping assumption, I shall now elucidate the particular operation of janusian thinking in diverse types of creations. I shall cite instances where janusian thinking is clearly manifest and instances where its presence can be strongly

inferred. I shall then present, in some detail, experimental evidence regarding janusian thinking and creativity.

Religion, Philosophy, and Social Theory

Discussing creativity in the religious domain can be a sensitive, or even a confusing, matter. From the perspective of the adherent to a particular religion, the dogma or theology of that religion is usually considered to be revealed and absolute truth. Consequently, any suggestion that a particular religious conception is a creation of the mind of man might be considered overly relativistic or even sacrilegious. Though a responsible scientist cannot be deterred by such preconceptions, there is no necessity for assuming relativism in advance in a discussion of religious creative thought. As with discovery in science, our primary concern is not with whether the final product does or does not conform to objectively verifiable reality, intrinsic reality, or to any other metaphysical criteria for truth, but with the thought processes responsible for the creation of that product. In other words, creative thinking in the religious sphere could consist of processes responsible for the discovery of intrinsic or absolute reality. Such thinking could be considered to be the means by which man participates in revelation.

From a broad perspective on religious thought, therefore, it is notable that many major religions of the world contain core concepts involving

opposing principles. In Taoism and Buddhism, the major religions of the oriental world,[1] there are the basic opposing principles of yin and yang, Nirvana and Samsara, respectively. In Zoroastrianism, the major religion of the massive Persian Empire, and a religion that still survives among the Parsees of India today, there are the opposing principles of the twin gods, Ahura Mazda (Ormuzd) and Angra Mainyu (Ahriman). According to the Zoroastrians, Ormuzd, the god of light and goodness, has continually confronted his twin, Ahriman, the god of darkness and evil, from the beginning of all things. And in the major religions of the Western world, Judaism and Christianity, there are the opposing principles of God and Satan or God and the Devil.

The mere presence of opposing principles in major religions does not, of course, indicate that janusian thinking played a role in their creation. Other types of thinking, such as the tendency to formulate two alternate principles —dualism—or the sequential consideration of a thesis and antithesis leading to a synthesis—dialectic thinking—or the attempt at reconciliation of oppositions—syncretism—certainly have been involved in much of the theological exegesis regarding these principles. The problem of good and evil has been a major concern of almost every religion, and reification or deification with respect to these factors is certainly another type of process involved. Furthermore, the conception of equal and opposite forces of good and evil, such as is contained in Zoroastrianism and its closely related

offshoot Manichaeism, has long been considered heretical by Christian theology.

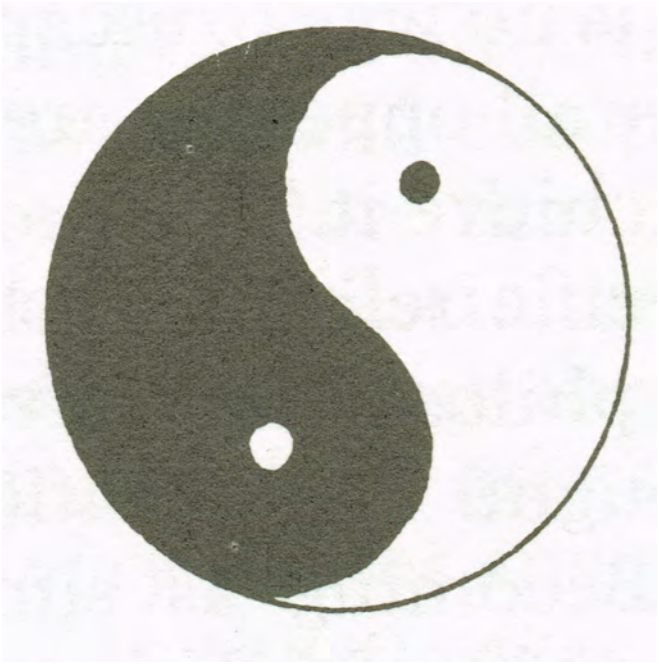
Nor would the conception of opposed but separated and sequential forces or principles be a direct manifestation of janusian thinking. In janusian thinking, opposing or antithetical ideas, images, or concepts —sometimes two, but often more than two—are conceived as existing side by side and operating simultaneously. At the moment of conception, therefore, the opposing forces or principles are not separated in a temporal sequence. For example, first formulating an idea of God and later of the Devil would not be an instance of janusian thinking. The janusian formulation with its simultaneity is a way station toward integration of oppositions and antitheses into an overall theory or other type of creation. Knowledge about original religious conceptions is necessarily so uncertain and vague, because of their historical remoteness, that it is impossible to establish anything about their nature with any real authority.

Nevertheless, the repetitive appearance of opposite principles and forces in major religious formulations is striking. As core conceptions of their respective theologies, the oppositions may very well have been thought of early, formulated as operating simultaneously, and the formulation then instigated the subsequent elaboration of a total system. Many religions and religious reformations, as has been well documented,[2] can be traced to a

single individual, a founder, prophet, or reformer. The core conceptions, therefore, may have been primarily that particular individual's creation. For instance, Zoroaster—the prophet of his religion—was unquestionably the originator of monotheism in ancient Persia and of the conceptions of the twin gods, Ormuzd and Ahriman. He may well have thought of both of these gods simultaneously, two antithetical forces within a single principle, and later elaborated them as particular gods with other characteristics. The idea of twins certainly indicates identity together with the antithesis and opposition.[3]

With a closer look at the oriental religions of Taoism and Buddhism, the inference of a janusian thought process leading to the core conceptions becomes compelling. The yin and yang conception of Taoism contains a distinctive janusian formulation. Conveyed most meaningful by a visual symbol called t'ai-chi tu rather than words (see fig. 5), yin and yang represent universal opposite forces or principles, loosely stipulated as female and male principles, respectively, functioning together as a single larger principle. As seen in the figure, the two forces of yin and yang are encompassed within the single circle— the circle denoting all of reality or all of the universe—and they are identical but opposed. As implied by their placement and interlocking or flowing form within the circle, they operate together and in dynamic accord. The single larger principle emerging from the interaction and simultaneous operation of yin and yang is, according to Taoism,

responsible for all change in the universe. Yin and yang are the regulators of the four seasons and, by extension, all moral effects. In short, they are the major factors underlying everything. The initial janusian notion of simultaneous opposition or antithesis has been further elaborated into a religious creation, a highly complex and detailed theology extending beyond the core conception. Lao-tzu, the early Chinese mystic who supposedly composed the *Tao Te Ching* or the Way of Life, the religious guide from which the name of the religion was derived, described the Tao or Way derived from these precepts as follows: "the Form of the Formless/ The Image of the Imageless" (*Tao Te Ching,* chap. 14).[4]



The Buddhist principle of Nirvana, considered to be the complete responsibility of Prince Siddhartha Gautama—the original Buddha— also contains a definite janusian construction. In the full theological formulation, Nirvana, the end of the cycle of rebirth, is opposed to the principle of Samsara, the endless series of incarnations and reincarnations to which living things are subject. As with Zoroastrianism and Judeo-Christianity, however, it is difficult to know whether these particular opposing principles were conceived simultaneously or whether each was formulated at different

periods of time. Notwithstanding, the Nirvana principle alone, a principle conceived at a particular time in history by the particular Prince Gautama himself, definitely does manifest simultaneous opposition or antithesis. The definition of Nirvana, from its first formulation to the present day, is negative. But its negativity contains the property of incorporating antithesis simultaneously that we have seen in other janusian thoughts. Nirvana is a state of total peace of soul and indifference to all pleasure and pain because it is an escape from *eternal becoming* and *passing on.* It is neither life or becoming, nor is it death or passing on; *it is both non-life and non-death simultaneously.*[5] This formulation, reputedly achieved by Prince Gautama in a state of bliss, became the basis for the fully elaborated Buddhist theology, a theology adopted by a majority of persons in the Orient and also, in fact, a majority of the religious believers in the world. D. T. Suzuki, a leading modern teacher of the precepts of the Zen school of Buddhism, explained the formulation as follows: "So long as this world, as conceived by the human mind, is a realm of opposites, there is no way to escape from it and to enter into a world of emptiness where all opposites are supposed to merge . .. yet Buddhists all attempt to achieve it."[6]

Moving away from specific religious positions into the sphere of philosophy, a plethora of philosophers have given opposition a central position in their thought. Pre-Socratic philosophers were concerned with Being and Becoming as simultaneously present but opposite principles, and

specific thinkers, such as Anaximander and Empedocles, developed complicated cosmologies concerning the creation and construction of the world based on the combination, antagonism and separation of opposites. Heraclitus postulated a unity of opposites in logus, the first principle of both knowledge and existence.[7] C. K. Ogden, in what must be considered a classic on linguistic opposition,[8] discusses other philosophers whose work focuses centrally on opposites and the relation of opposition. In addition to the philosophers named above, he includes these important ones: Aristotle, Kant, Hegel, Ludwig Fischer, and the social philosopher Tarde. To this list, Nietzsche and Sartre should surely be added, as the former formulated and focused throughout his work on the basic and opposing principles he called Dionysian and Apollonian and the latter constructed his existential philosophy on the opposition of Being and Nothingness.

Because philosophers have left little documentation regarding the thought processes and sequences of experiences and events leading to the construction of their creations, and because philosophy itself is always presented in highly elaborated logical exegesis, it is difficult to ascertain whether such emphasis on oppositions was derived from janusian thinking at an early or germinating phase. For instance, in the light of what we know about the elaborately constructed logical presentations of scientists, it could reasonably be presumed that Sartre initially conceived of Being and Nothingness operating simultaneously or existing side by side and, following

that, sat down and arduously developed his dialectical analysis and synthesis of these states or factors. But, so far, nothing from Sartre affirms or denies this.

However, documented material from at least two philosophers provides evidence that janusian thinking played an early and germinating role in their philosophical creations. In his autobiographical account, *Ecce Homo,* Nietzsche describes the sequence of events leading to the creation of *Thus Spake Zarathustra,* the work many consider his major accomplishment and the one he called "the greatest gift that has ever been bestowed upon my fellow men."[9] That there was a specific germinating idea for the book is attested by his following account:

> During the . . . winter [1882-83], I was living not far from Genoa on that pleasant peaceful Gulf of Rapallo, which cuts inland between Chiavari and Cape Porto Fino. I was not in the best of health; the winter was cold and exceptionally rainy; and my small *albergo* was so close to shore that the noise of a rough sea rendered sleep impossible. These circumstances were the very reverse of favorable; and yet, despite them, and as if in proof of my theory that everything decisive arises as the result of opposition, it was during this very winter and amid these unfavorable circumstances that my *Zarathustra* was born. In the morning I used to start out in a southerly direction on the glorious road to Zoagli, which rises up through a forest of pines and gives one a view far out to sea. In the afternoon, whenever my health permitted, I would walk around the whole bay from Saint Margherita to beyond Porto Fino.... It was on these two roads that all *Zarathustra,* and particularly *Zarathustra* himself as a type, came to me—perhaps I should rather say—*invaded me."*[10]

After this experience, Nietzsche wrote the first part of the book. In *Ecce Homo,* he explains that a key aspect of the "Zarathustra type" idea was what he called "great healthiness."[11] This "great healthiness" was intrinsic to his conception of the Superman, the conception he expounds throughout the *Zarathustra* book. But the actual germinating idea for the book was even more developed than "great healthiness"; it was a formulation of the complete "Zarathustra himself as a type." This complete "type" he presents as follows:

> The Zarathustra type ... who to an unprecedented extent says no, and *acts* no, in reference to all to which man has hitherto said yes, nevertheless remain[s] the opposite of a no-saying spirit. . . . He who bears destiny's heaviest burden, whose life-task is a fatality, yet [is] the lightest and the most transcendental of spirits —for Zarathustra is a dancer. . . . He who has the hardest and most terrible insight into reality, and who has thought the most "abysmal thoughts" nevertheless find[s] in these things no objections to existence, or to its eternal recurrence. . . . On the contrary he finds reasons for being himself the everlasting Yea to all things, "the tremendous and unlimited saying of Yea and Amen."[12]

The formulation of the complete Zarathustra type, which Nietzsche describes as having "invaded" him all at once, was replete with simultaneous opposites of yes and no saying, heaviest and lightest, abysmal insights into reality together with affirmation of existence and eternal recurrence. Moreover, as Nietzsche continued to think about the *Zarathustra* book, the second part was also germinated from a janusian thought. The basis of this second part was an internally sounding refrain having, he said, the words,

"dead through immortality."[13] After mentioning this conception, a conception of simultaneous opposition in that immortality is the antithesis of death, Nietzsche then immediately states in *Ecce Homo:* "In the summer, on my return to the sacred spot where the first thought of Zarathustra had flashed like lightning across my mind, I conceived the second part. Ten days sufficed."[14]

Another documented instance of janusian thinking as a germinating process in philosophy comes from the writings of Soren Kierkegaard. For Kierkegaard, the formulation "belief by virtue of the absurd" was central to his theological position and was developed throughout his works. As absurdity is synonymous with ridiculous, illogical, and untrue, this formulation is, on the surface, self-contradictory. The object of belief is the valid and the true, and therefore the formulation is an instance of a simultaneous antithesis. As a fully elaborated concept in Kierkegaard's work, however, we would have no definite way of knowing whether it was initially formulated as the simultaneous antithesis or whether it was developed in some other way, except that Kierkegaard himself wrote the following in his journals containing his preliminary ideas:

> Faith therefore hopes also for this life, but, be it noted, by virtue of the absurd, not by virtue of the human understanding; otherwise it is only practical wisdom, not faith. Faith is therefore what the Greeks called the divine madness. *This is not merely a witty remark but is a thought which can he clearly developed.* [Italics added][15]

This journal entry indicates that Kierkegaard conceived the simultaneous antithesis at an early phase of the creation of his philosophy. He clearly states that the particular idea would later be developed and elaborated. The entry also indicates that he was fully aware of the apparent contradiction in the formulation but saw it as germinating deeper truth and meaning.

Although primarily poets, the philosophically oriented Coleridge and Blake also formulated simultaneous antitheses as explanatory concepts. Coleridge stated that pleasure arising from art consisted of "the identity of two opposite elements, that is to say—sameness and variety."[16] Blake, in his treatise with the opposite juxtaposing title, *The Marriage of Heaven and Hell,* unequivocally asserted, "Without contraries is no progression."[17] From his further remarks, it is clear that Blake's meaning was that all factors of morality and substance spring from simultaneous opposition.

Related to some of Coleridge's ideas about artistic form ("form . . . is its self-effected sphere of agency") is a striking example of a janusian formulation in the recent and popular work of the social theorist Marshall McLuhan. Though McLuhan's concepts about the intellectual impact of modern technology are not extensive enough to qualify as full-blown philosophical systems or even rigorously developed social theories, they have received a good deal of attention in recent years. His work has had an impact

on the arts and on scores of young people in the United States. McLuhan's core concept, which he elaborated into a challenge to traditional and what he called "linear" modes of art and thinking, was formulated in the phrase "the medium is the message." This phrase is a clear example of simultaneous antithesis: taking the traditionally accepted phrase, "the content is the message," McLuhan substituted the opposite-meaning word "medium" for "content." Because the structure of the phrase still invokes the traditional idea, opposites are asserted simultaneously. McLuhan has it both ways.

Visual Arts

Modern art, especially surrealism, dadaism, and many forms of expressionism, is replete with images, forms, and symbols conveying simultaneous opposition and antithesis. Some outstanding examples are seen in the accompanying figures (figs. 6-12). In the painting *Nature Morte Vivante,* 1956 (fig. 6), Salvador Dali, one of the leading surrealists, depicts both rest and motion simultaneously. The fruit dish, for instance, is represented twice, one image is in twirling motion and its twin is completely motionless. The apple is doubly represented as both plummeting and suspended totally motionless in air. Ordinary objects of a still life painting, the glass, the bottle, and the knife, are surprisingly represented as falling, while the ordinarily highly mobile meteor and even the bird are suspended in midair and motionless. The longer one looks at this painting, the more elements of

simultaneous antithesis, as designated specifically in the painting's title, moving or living still life (literally from the French: "dead nature living"), are apparent. Magritte's painting *Personal Values,* 1952 (fig. 7), and Chagall's *Bouquet of the Lovers,* 1926 (fig. 8), both show numerous reversals of size indicating another type of simultaneous opposition. The smallest object, such as a plant or comb, is depicted as the largest and the largest, a house or room, is depicted as the smallest. In the Chagall painting, people are both too large and too small and in the Magritte painting a window is seen as both inside and outside a room simultaneously. Other types of oppositions of position, sex, and purpose are presented simultaneously in Max Ernst's *Aquis Submersus,* 1919 (fig. 9), Chagall's *I and the Village,* 1911 (fig. 10) and *Homage to Apollinaire,* 1911-13 (fig. 11), and Pierre Molinier's *The Paradise Flower* (fig. 12).

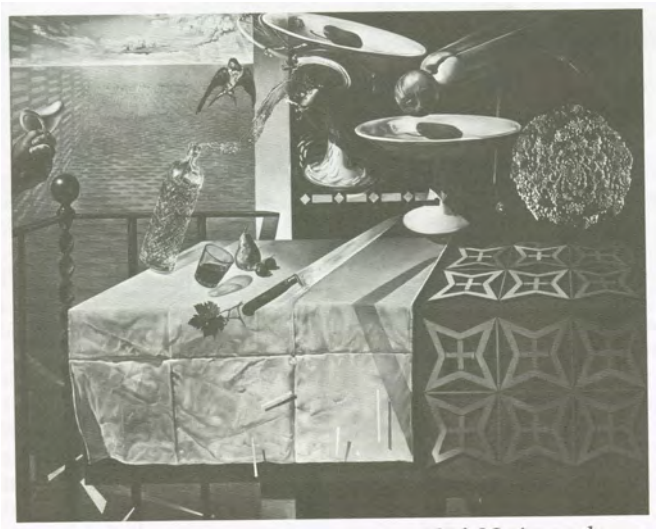


Fig. 6.
Salvador Dali. Nature Morte Vivante, 1956. Motion and rest are depicted simultaneously: the apple is still and plummeting; the bird is motionless, while the objects move. Collection of Mr. and Mrs. A. Reynolds Morse, Salvador Dali Museum, Cleveland (Beachwood), Ohio.

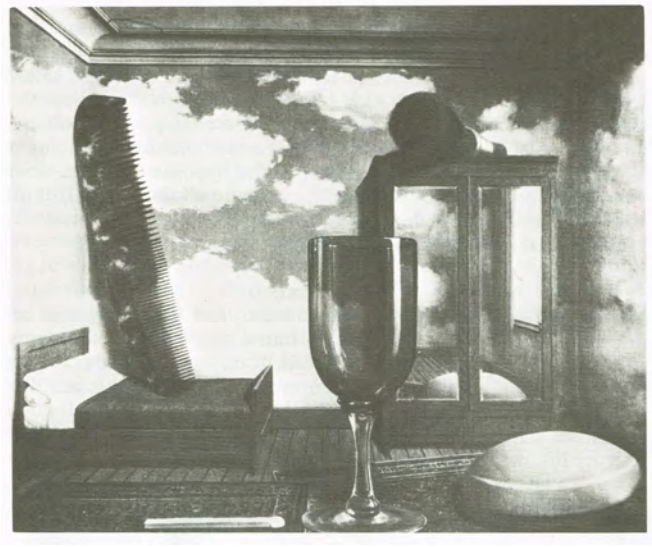


Fig. 7.
Rene Magritte. Personal Values, 1952. Numerous reversals of size are visualized simultaneously. Private collection, New York. copyright ADAGP, Paris, 1979.

Fig. 8.
Marc Chagall. Bouquet of the Lovers, 1926. Numerous size reversals: people larger than houses, flowers larger than people, violin larger than house. copyright ADAGP, Paris, 1979.

In addition to these striking examples, numerous other works of these artists and also of Marcel Duchamp, Man Ray, Yves Tanguy, Henri Rousseau, Edvard Munch, Joseph Cornell, and even Pablo Picasso show clear and frequent instances of simultaneous opposition and antithesis. Less manifest

but nonetheless distinct implications of simultaneous opposition and antithesis abound in the dreamlike images and forms produced by these artists and by other moderns, notably the abstract expressionists, as well. As janusian thinking is a mirror-image process of dreaming, and as all these tacit and explicit representations of simultaneous opposition and antithesis are surely intentionally produced, it can readily be assumed that janusian thinking plays a significant role in diverse types of modern art creation.

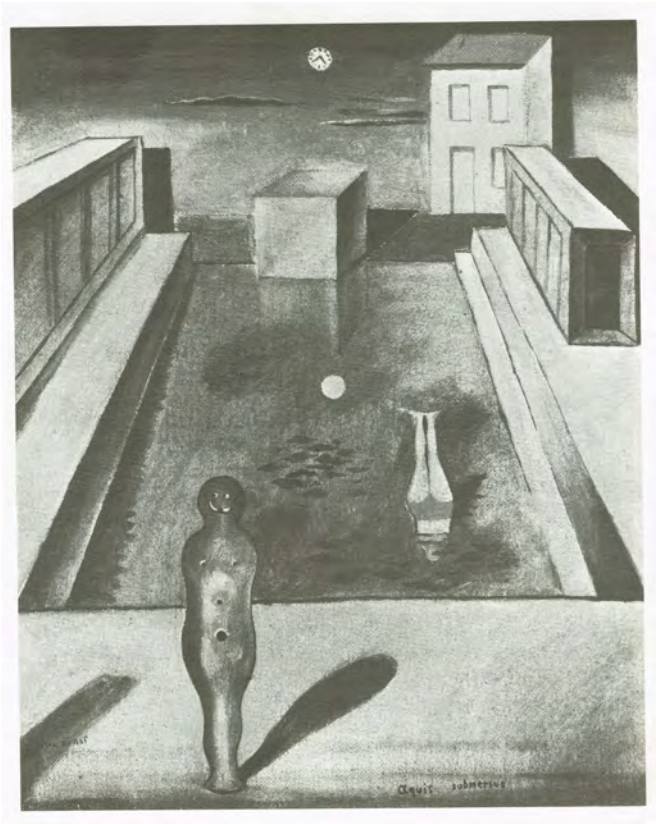


Fig. 9.
Max Ernst. Aquis Submersus, 1919. Simultaneous oppositions and reversals of content and form are depicted. The Städelsches Kunstinstituts und Städtische Galerie, Frankfurt.

Modern artists have, of course, been interested in, and directly influenced by, psychoanalysis. Modern artists have also been particularly interested in analyzing, dissecting, and depicting the creative process itself. Many dada and surrealist artists, for instance, attempted to release

themselves, to work completely spontaneously, and to capitalize on random events in order to represent unconscious life and material in their art. Others, such as Dali, have applied elements of psychoanalytic theory directly in attempting to portray and reconstruct the world of the dream. Such interests and practices do not, however, account for the effect of janusian thinking I have suggested. If merely expressing unconscious content were all there is to modern art, there would be little distinction between successful and unsuccessful art. Unconscious content always is essentially disorganized and chaotic rather than artistically formed. Because everyone shares the same general type of unconscious content, differences in different works would be based primarily on how much detail could be presented rather than on how they were done. Similarly, the simple following of a theoretical formula could not produce inventive art except for the first time it were tried; repetitiously following a theoretical formula for depicting dreams would produce uniform, uninteresting products. In short, janusian thinking is responsible for an organizing principle resulting in *successful* (new and valuable) created products from these schools of art. Regardless of whether the artist has approached his task through release or through applying a theoretical principle, the particular content and organization of a successful modern art creation results in part from janusian thinking. A brief illustration from the work of Dali should serve to clarify this point. His painting *Paranoiac Face,* 1934-35 (fig. 13), was derived from or inspired by the scene in the postcard

shown in figure 14. Because Dali has called attention to the double image in this picture by reporting that he got the idea from the postcard and from Picasso's faces, some have considered it a "trick" painting. Its artistic success, however, does not depend on its being a trick image but on its expressive qualities. If this is understood, and acceptable, we can trace the steps in the development of this effect. Seeing the postcard picture of figure 14, Dali drew the sketch of figure 15 before doing the painting in figure 13. The overall painting consists of the hut turned into a wild half face conveying fear and suspicion, a strange and moving paranoiac face. How did Dali make this transformation? The sketch in figure 15 shows that Dali was interested in, and he reproduced, the tranquil qualities of the village scene on the postcard. By softening the lines of the picture, he actually intensified the sense of peace and tranquility. In order to conceive the final painting, therefore, it was necessary for him to formulate and/or to visualize both the wild face and the tranquil scene simultaneously. He also had to be able to conceptualize the hut shape both as horizontal in the original scene and as vertical in his ultimate plan. Although the final painting has various types of dreamlike or symbolic qualities, and the simultaneous antithesis I described are not immediately apparent, they intrinsically contribute to the expressive quality of the painting.

Fig. 10.
Marc Chagall. I and the Village, 1911. Oil on canvas, 6'3 5/8" x 59 5/8". Simultaneous oppositions of position (man and woman), and size (animals and people). Collection, the Museum of Modern Art, New York. Mrs. Simon Guggenheim Fund.

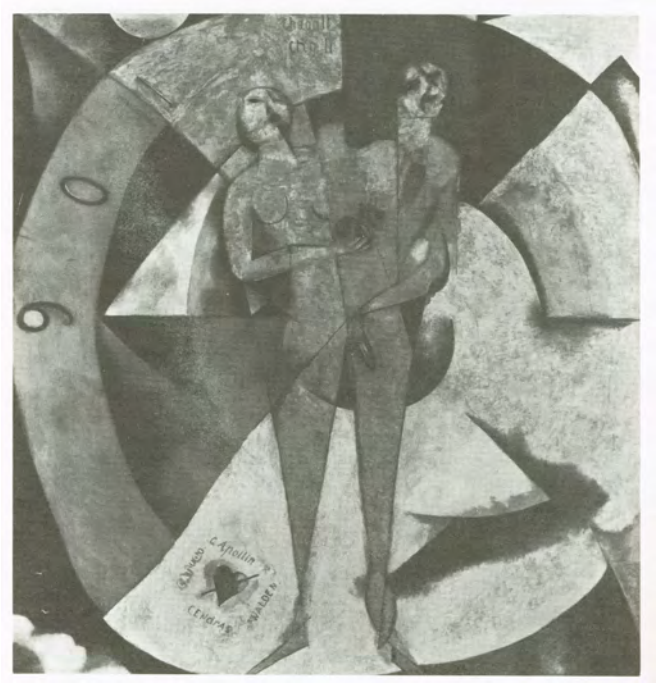


Fig. 11.
Marc Chagall. Homage to Apollinaire, 1911-13. Simultaneous sexual opposites and opposite spatial orientations. Van Abbemuseum, Eindhoven.

Fig. 12.
Pierre Molinier. The Paradise Flower. A woman's body is seen from opposite sides simultaneously. Private collection.

Fig. 13.
Salvador Dali. Paranoiac Face, 1934-35. c by ADAGP, Paris, 1979.

Fig. 14.
Postcard photograph on which Dali based his painting, Paranoiac Face. Salvador Dali, "Objets surréalistes," Le Surréalisme [no. 5].

Fig. 15.
Dali's preliminary sketch for Paranoiac Face. The drawing is almost identical to the postcard photograph, except that it is softer. Salvador Dali, "Objets surréalistes," Le Surréalisme [no. 5].

Max Ernst described his experience of using a similar organizing principle as follows:

> One day, in 1919, being in wet weather at a seaside inn, I was struck by . . . the pages of an illustrated catalogue. . . . It was a catalogue of objects for anthropological, microscopic, psychological, mineralogical and paleontological demonstration. I found here united elements such poles apart that the very incongruousness of the assembly started off a sudden intensification of my visionary faculties and a dreamlike succession of contradictory images—double, triple and multiple images coming one on top of the other with . . . persistence and rapidity. . . . These images . . . suggested new ways . . . to meet in a new unknown. . . . All I had to do was add, either by painting, or drawing, to the pages of the catalogue. And I had only to reproduce obediently what made itself visible within me, a color, a scrawl, a landscape strange to the objects gathered in it, a desert, a sky, a geological event, a floor, a single line drawn straight to represent the horizon, to get a fixed and faithful image . . . to transform what had been commonplaces of advertising into dramas revealing my most secret desires.[18]

Regardless of whether the subject matter of art is manifestly dreamlike, or focused on internal psychological states, or overtly oppositional such as in the movement known as anti-art, or more traditionally focused on naturalism, realism, and religious symbolism, there are general aspects of the creative process in the visual arts that involve janusian thinking. Throughout the ages, a major consideration for the visual artist has been the nature of what might be called "positive" and "negative" space. Whether he is drawing from nature, imagining a natural scene, or constructing a nonrepresentational work of art, this spatial factor always obtains. "Positive" space consists of the concrete tangible contents of a visual form and "negative" space consists of the undifferentiated area around it. Roughly, these types of visual phenomena correspond to what we commonly think of as "full" and "empty" spaces,

respectively. Gestalt psychologists include these two types of perceived spaces under the more general rubric of distinction between a "figure" and a "ground," a distinction applying to all types of perception. According to the gestalt formulation, all percepts are organized in terms of a primary differentiated figure and a secondary undifferentiated ground. In viewing a scene or hearing a piece of music, certain forms or patterns such as a tree or a melodic theme come sharply into focus and predominantly occupy our attention while the remainder of the sights and sounds form a relatively diffuse background. This gestalt perceptual law operates even when a percept is initially vague and undifferentiated; attempts are made to organize the percept by focusing on some particular element or structure as a figure, even a somewhat vague one, and allowing the remainder to become the ground.

I shall have more to say later about the figure-ground law of perception in connection with homospatial thinking (chap. 10). The perception of positive or filled space and negative or empty space is a specific category within this general law and, with respect to visual art, it stands as a separate and particularly important subjective experience. Creation in the visual arts is, after all, especially a matter of filling empty spaces. The painter faces his empty canvas, the sculptor and graphic artist face the empty surface of the stone, wood, or metal block, and the architect looks at empty areas and empty ground. These are figurative descriptions, of course, but they emphasize that, in the visual arts, there is subjective reality to the idea of creation as a matter

of bringing forth something out of nothing.[19] Objectively, that is, in a physical sense, none of these spaces are actually empty. Moreover, the creative artist characteristically pays attention to certain attributes of these spaces, such as the grain of the canvas or the wood, the texture of the metal or the stone, and the attributes guide him in the construction of his filled and developed creation. The creative artist does not, in other words, perceive empty space in the same way as people generally do. This, in a particular and specific way is where janusian thinking plays a wide and important role in creating in the visual arts.

In perceiving or constructing visual forms—by this I mean outline, colors, and composition as well as visual content—the creative visual artist pays special attention to negative or empty space. The attention he gives is not a matter merely of noticing this space, nor merely of bringing it into focus, nor is it only a matter of constantly comparing this empty space to spaces seen as filled or being filled, although such attention is a necessary part of ordinary construction in any of the visual art forms. In other words, a person who merely attempts to draw a tree must, in order to do so with any degree of competence, pay attention to the empty space around the tree, and to the spaces between the branches. While such visualizing is not characteristic of ordinary perception and needs to be learned, its main effect is to enhance the capacity to produce verisimilitude, thus enhancing craft rather than necessarily creative construction. A characteristic exercise in any elementary

drawing class, for instance, is to practice drawing a form without first outlining the contours, but darkening surrounding areas to produce a white contoured shape. But the creative visual artist goes beyond this type of seeing and making: when visualizing a scene or constructing a visual form, *he sees negative space as having a content and shape of its own.* He sees empty space as filled, and what is ordinarily perceived as negative space he sees as both positive and negative at the same time. When viewing a forest of trees, for example, the creative artist is aware of the trees, the details of their shape and texture, and of their placement and pattern; he *simultaneously* visualizes the spaces between the trees as independent forms-—he notices the shape and texture of these spaces as well as their patterning between the trees.

Such visualization also occurs with abstract forms or any form not directly manifest in nature. With virtually every visual image or form he constructs, and every space he fills, the creative artist gives active attention to the shape and content of the empty space around it. Does this include the modern artist who fills an entire canvas with a single unbroken color of paint? Yes. He also perceives positive and negative spaces simultaneously when, in choosing the shape and size of his canvas, he visualizes the shape of the empty space around it. Or, depending on his technique, he visualizes the highlights reflecting from his canvas as filled forms and the duller areas as unfilled forms which nevertheless have shape and texture of their own.

This visualization of positive and negative space simultaneously or, put more specifically, perceiving empty space as filled (N.B.: also filled space as homogeneous or empty of delineation) is an actively integrated aspect of visual art creation. Though we often speak of what the artist "sees" as though it were separate from what he does, such terminology does not reflect the actual psychological state of affairs. The creative artist does not merely see forms that others miss, nor does he only employ unusual perceptual modes which are then integrated conceptually and translated into tangible art through another type of mode or capacity such as manual manipulation and dexterity. Perceiving, conceiving, and executing are intricately and constantly interrelated. The janusian process of formulating, reversing, and equating positive and negative space is a continuing matter, operating during the early phases of mental conception of the work of art and guiding the creator's hand as he proceeds. In the course of producing visual forms, he produces other filled and empty spaces as he goes; these influence his perception and his perceptual formulations influence further execution. Merely to visualize differently is not sufficient.[20] Visualization, conception, and execution are integrated in an active ongoing process.

A comment by Michelangelo about the essentials of two art forms in which he excelled exemplifies a janusian formulation with respect to negative and positive space. In a letter to the consul of the Florentine Academy he discussed the relationships between painting and sculpture, and said: "By

sculpture I understand that art which operates by taking away. That art which operates by laying on is similar to painting."[21] In case the janusian formulation here is not immediately apparent or, in the event that its impact has been dulled by frequent quoting in other contexts, I will elaborate: on first consideration, it would appear that this eminent creator is merely drawing a distinction between the two artistic modes on the basis of the physical operations involved in each. Hence, working primarily in marble as he did, he characteristically cut, chiseled, and chipped away at the hard, inert stone. Contrariwise, when painting he applied material to a surface and he therefore added pigments and other elements lying near at hand. So much for a literal interpretation of Michelangelo's remark. But, considering the conceptual nature of the artist's activity, the circumstance in both cases is quite the reverse. The sculptor gives contour and form to the inert and "empty" block of stone; though physically he takes away, he surely adds and fills the space in a conceptual and psychological sense. The painter, on the other hand, does not merely add to and thereby fill up the surface of a canvas or wall; he definitely organizes the surface space. In organizing, one of the primary operations of painting is to produce surface areas that appear empty, translucent, or even transparent by means of the very device of adding pigments and other elements. Michelangelo in fact never produced sculptured or contoured paintings such as those produced in recent times. Surely, then, this Renaissance master indicated a janusian conception of the general spatial

relationships in his creative activity: taking away operated at the same time as forming in sculpture, and adding on operated while maintaining a flat surface in painting. For Michelangelo, space was both positive and negative simultaneously.

The modern painter Josef Albers described the simultaneous conception of positive and negative space even more directly in his following remarks in 1962 in an interview with Brian O'Doherty, then art critic for the *New York Times:*

> If I come to my own working . . . my sport is to see between two lines something happening. . . . There is one finger. And this is one finger. One finger and one finger are two fingers. But then I say this . . . width . . . in between is the same, and I can say [Interviewer: "Becomes a positive area."] one and one is three. And that's only permitted in art. . . . But I go further. In art, one and one is four. That's exciting.[22]

Albers's description of his visualization of the fingers themselves ("one and one . . .," etc.) and of the spaces around them leaves no doubt that he sees and conceives both positive and negative space simultaneously.

In sculpture, the man considered by many to be the outstanding contemporary sculptor, the Englishman Henry Moore, indicated a similar orientation to positive and negative space as well as other janusian conceptions intrinsic to creating in the following statement:

> When the sculptor understands his material, has a knowledge of its

> possibilities and its constructive build, it is possible to keep within its limitations and yet turn an inert block into a composition which has a full form existence, with masses of varied size and section *conceived in their air-surrounded entirety,* stressing and straining, thrusting and opposing each other in spatial relationship—being static, in the sense that the center of gravity lies within the base (and does not seem to be falling over or moving off its base)—and yet having an alert dynamic tension between its parts. [Italics added][23]

In addition to the description of the "air-surrounded entirety" as a positive space, and the emphasis on simultaneous opposition between masses, spaces, and forms, Moore specifies a guiding janusian formulation which, as I will show in a moment, has also been emphasized by other visual artists and other creators: the production of static dynamisms or entities that are both moving and stationary at the same time. That Moore actively and consistently conceives simultaneous oppositions in creating his sculptures is evident from his following response to an interviewer who noted a spatial reversal in one of Moore's works:

> Things are like something else in that they're opposite. Opposites are like each other. I mean, pain and non-pain are connected. You only know what one is like if you know the other. Happiness and unhappiness are connected; everything has its opposite. And to know one thing you must know the opposite just as well, just as much, else you don't know that one thing. So that, quite often, one does the opposite as an expression of the positive.[24]

With respect to the conception of entities that are both moving and stationary at the same time, the Bauhaus artist Paul Klee used the term

"dynamic repose" to describe an important guiding idea in his own work. Other artists, while not as explicit, often suggest that such a conception guides their work.[25] The term "dynamic repose" actually is a somewhat deceptive one. At first blush, it might not seem to convey the same degree of sharp antithesis as other janusian formulations cited here because of the ubiquitous experience of rest or repose generated by regular or constant motion. Note, however, that the form of the term does not indicate such restful motion but refers to rest as an active moving state. Moreover, as put into practice, Klee characteristically works with elements conveying a motion/rest antithesis (see fig. 16). Specific elements, such as forms, colors, and lines are, in the context of the painting, operating antithetically. As will become clearer in the next chapter of this book, such opposition or antithesis in context is characteristic of the janusian process, especially in art. Lines and forms, movement and rest, may not be oppositional or antithetical in all contexts, but they are antithetical for the artist himself and for the context in which he works. Motion can only be an abstract property of a painting on a canvas or of a fixed sculpture and therefore must always be conveyed by the context.

Another example of the operation of janusian thinking in the creative process in the visual arts also comes from Klee; he describes the interpenetration of general principles of "endotopic" and "exotopic" drawing and visual effect. Using the terms "endotopic" and "exotopic" to refer to internal and external shading as shown in the visual forms in figures 17A and

17B, Klee states: "These two principles of the positive-negative treatment of relief, applied to linear figures containing intersections. Rule: in handling boundary contrast, always stay on one side of the line."[26] In other words, these are principles of a visual antithesis. Klee's method of breaking this rule is through the janusian formulation, "interpenetration," or conceiving and visualizing both principles or forms together. Diagrammatic examples are seen in figure 18, and two of his finished paintings derived from this conception are seen in figures 19A and *B.* As general principles of forming boundary contrasts, alternative means of visualizing the endo- topic and exotopic simultaneously are possible. About *Houses at Crossroads,* Klee said, "A conflict arises between endo- and exotopic. Then we have a sort of mesh of forms." Spiller, Klee's editor, called it "the simultaneous treatment of inside and outside points to the concept of simultaneity, i.e., of contacts between many dimensions."[27]

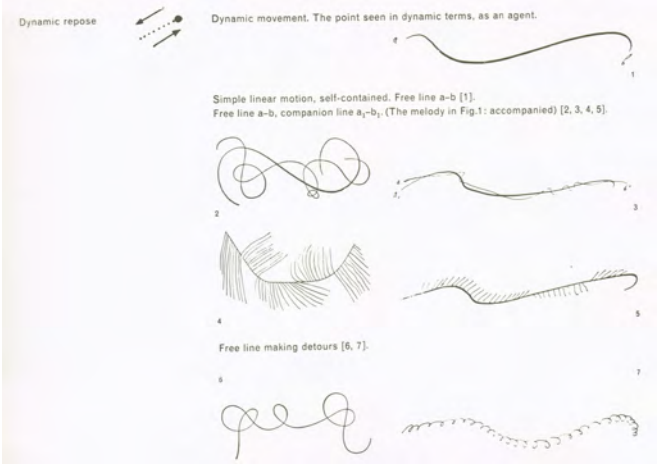


Fig. 16.
From Paul Wittenborn Art Books, Inc., 1961) illustrating his conception of "dynamic repose."

Dramatically similar to the types of visualizing so far described are the precepts and principles followed for centuries by Taoist artists. As Taoist painting and literature was always designed to express the overriding principles of t'ai-chi tu—the simultaneous operation of the opposites of yin and yang—and the effect on what was called the "life rhythm," the great Taoist artists focused on opposites such as: *hsü shih;* vacant space and solid; *kan shih,* dryness and wetness, *ming an,* darkness and light.[28] The following are taken from the commentaries of two Taoist painter-critics, one modern and one of the eighteenth century, respectively:

> . . . to draw trees or rocks the solid stroke is used; to draw clouds and mists the vacant stroke is used. Through that which is vacant the solid is moved

and that which is solid becomes vacant. Thus the entire picture will be full of the life rhythm.[29]

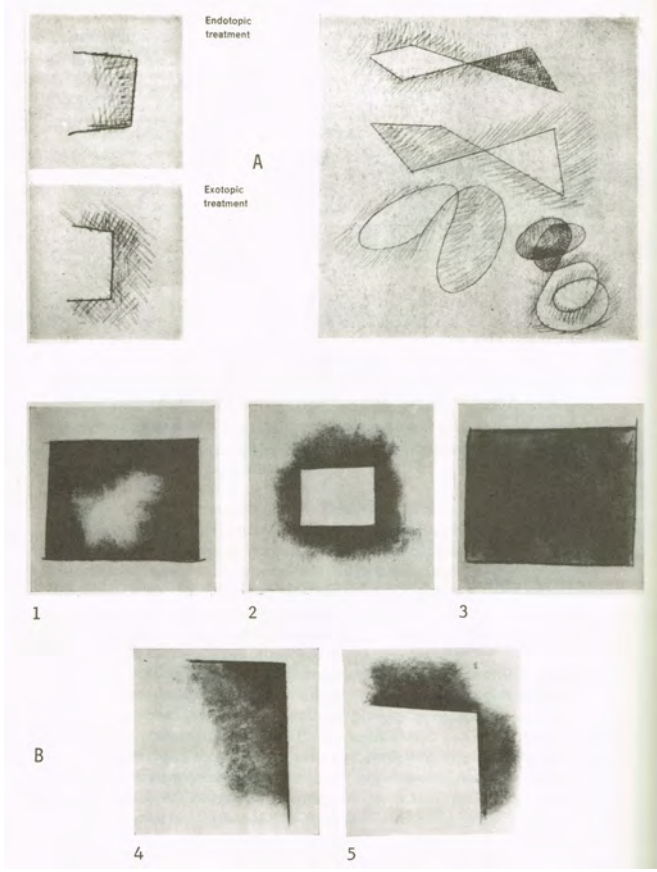


Fig. 17.
Paul Klee's principles of endotopic and exotopic drawing. A. Linear figures with intersections. B. Squares and corners. 1, Square, endotopic treatment. 2, Square, exotopic treatment. 3, Square, treated as a body without reference to inside or outside. 4, Corner, endotopic treatment. 5, Corner, exotopic treatment. Wittenborn Art Books, Inc.

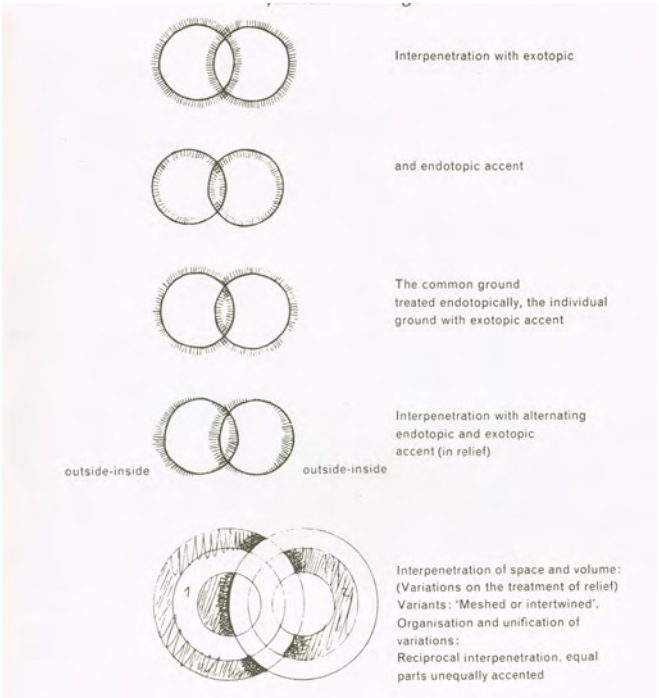


Fig. 18.
Interpenetration—simultaneous treatment of inside and outside. From Klee, The Thinking Eye (New York: Wittenborn Art Books, Inc., 1961).

> The color of a painting is not red, white, green or purple as ordinarily conceived. It is the shade seen between lightness and darkness. He who grasps this idea will reveal through his brush the Nature of things; the distance will be demarcated, the spirit will be set forth, and the scenery and the objects will be clear and beautiful. The reverberation of the life breath actually depends upon the proper manner of applying the ink-wash, which gives the picture great luminosity.[30]

Although it may be difficult to grasp the actual technical procedures indicated in both these commentaries, the conceptualization of

simultaneously operating solidity and vacancy, or lightness and darkness, is clear and definite.

Fig. 19A
Paintings derived from interpenetration. Paul Klee. Houses at Crossroads, 1929. "A conflict arises between endo- and exotopic. Then we have a sort of mesh of forms" (Klee). "The simultaneous treatment of inside and outside points to the concept of simultaneity, i.e., of contacts between many dimensions" (Spiller, ed.).

As suggested by preceding comments regarding color, other aspects of artistic visualization and conception beside spatial configuration are also subjected to janusian thinking in the process of creating. Light, color, and general and specific content are formulated in terms of simultaneous antithesis. American photographer Walker Evans described to me the operation of such a factor in the early stages of pictorial conception. His

photographs, as is well known, often depict scenes of poverty, isolation, and bleakness along with human beings somehow rising above their environment and circumstances. In choosing a particular subject to photograph, however, an early consideration was the nature of the light conditions in the scene. Acutely sensitive to the qualities of light and darkness in a locale, he photographed those images in which he saw both extreme light and extreme darkness at the same time. His visual conception blended with his orientation to the subject matter. Interested in depicting the stark and dreary but somehow vibrantly alive qualities of a bleak scene, perceiving aspects of extreme contrast or opposition of light and darkness simultaneously, he produced photographs bringing these extremes together.

Fig. 19B.
Paintings derived from interpenetration. Paul Klee. Landscapely-physiognomic, 1923. From Klee, The Thinking Eye (New York: Wittenborn Art Books, Inc., 1961).

As for color, Albers, whose major artistic focus was on color, presented the following formulation of use of color in the creative process:

> With a middle mixture [of colors] all boundaries are equally soft or hard. As a consequence, a middle mixture appears frontal, as a color by itself. This is comparable to the reading of any symmetrical order and the middle mixture will behave unspatially, unless its own shape, or surrounding shapes, decides differently.
>
> Such a study, or a similar recognition, in my opinion led Cezanne to his unique and new articulation in painting. He was the first to develop color areas which produce both distinct and indistinct endings—areas connected and unconnected—areas with and without boundaries—as a

means of plastic organization.[31]

In his own work, Albers described the process as follows in another portion of the previously cited interview:

> My associations contact me with former experiences. So I would say I start from experiences and read . . . always between polarities. It is between loud and not-loud. It is between young and old, between spring and winter or what you ever find as contrasts in life, . . . between polarities. . . . And the more tension there is between polarities—if I can make black and white behave together instead of shooting at each other only, you see, then I—I feel proud, let's say, instead of creative. I cannot say I am creative, that's others' job to say it.[32]

As a leader of the modern school of hard edge painting and the painter of an honored series of variations on the theme Homage to the Square,[33] others have certainly considered Albers highly creative indeed. There is evidence that creative artists before Albers also thought of color use in terms of simultaneous opposition, although in somewhat different terms. The postimpressionist Vincent van Gogh wrote the following to his brother Theo:

> . . . the study of color. I am always in hope of making a discovery there, to express the love of two lovers by a marriage of two complementary colors, their mingling and their opposition, the mysterious vibration of kindred tones. To express the thought of a brow by the radiance of a light tone against a somber background. [Italics added][34]

The conception of some antagonism between complementary colors, here suggested by van Gogh, pertains to another kind of visual effect. In 1839,

Michel Eugene Chevreul, a professor of organic chemistry at the Museum of Natural History in Paris, discovered a complicated principle of color effect which he called "the law of simultaneous contrast."[35] Put simply, this law consists of the following: when two contrasting colors are juxtaposed, each will exaggerate its apparent difference in the direction of the other's complementary color. Complementaries placed side by side will not change, but, for example, when a gray is placed in a field with a positive color hue such as blue, the gray will take on some qualities of the complementary of blue, orange. The same gray will take on qualities of blue within an adjacent orange field (see fig. 20). This law or principle was well known to the impressionist painters and has been of interest to modern theorists and painters as well. However, my bringing it in here has more to do with the existence of such a physical principle in nature rather than with any painter's, or group of painters' specific knowledge of it. The art theorist J. F. A. Taylor has demonstrated instances in the paintings of both the medieval and nineteenth-century masters Giotto and Goya, respectively, in which important creative color effects were derived from an effective use of simultaneous contrast.[36] This factor is in fact so important in the effective use of color, it would seem that any creative colorist throughout the history of painting would, like Giotto and Goya, have needed to master the principle. In other words, regardless of whether the early masters were intellectually aware of such a phenomenon, they would have needed somehow to be able to visualize

such simultaneously contrasting or antagonistic color effects. When thinking of placing a gray hue in a blue field, they would have needed, as creative colorists, to be able to anticipate or otherwise handle the appearance of a subtle orange cast to the gray. This is also true for modern artists who are not specifically aware of the simultaneous contrast law.

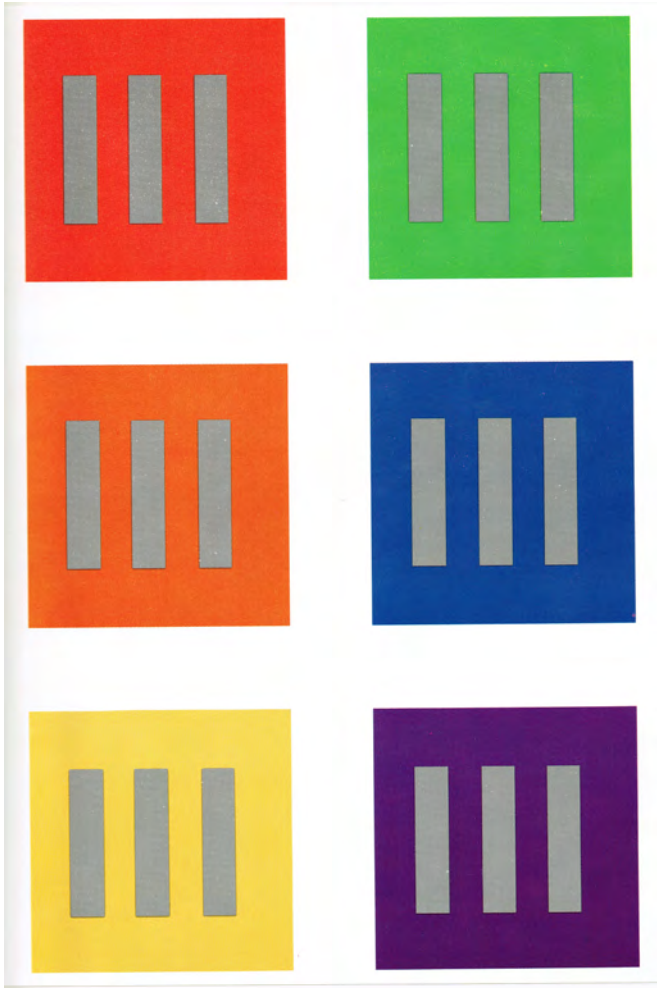


Fig. 20.
The pigment is identical for all grays, the apparent differences depend on simultaneous contrast. From John F. A. Taylor, Design and Expression in the Visual Arts (New York: Dover Publications, 1964).

As for janusian thinking with respect to content, artists of different

types and from different periods have indicated such a process in varying ways. John Constable, the English naturalist landscape painter of the early nineteenth century, described his orientation to painting old mills and mill dams in a letter to his closest friend, Reverend Fisher, by emphasizing the following: "the sound of water escaping from . . . old rotten planks, slimy posts, and brickwork, I love such things. . . . As long as I do paint, I shall never cease to paint such places."[37]

That Constable was thinking of simultaneously opposing qualities of lively running water and decaying materials in such scenes is indicated by his referring to the sound rather than the sight of water stimulating his painting. The sound of water escaping surely suggests life, freshness, and activity in antithesis to stationary and decaying rot and slime. It is also supported by a comment relative to his perspective that he made in another context: "It is remarkable," he said in an 1836 talk to the Royal Institution, "how nearly, in all things, opposite extremes are allied."[38]

Odilon Redon, a postimpressionist symbolist painter of the late nineteenth century, described his orientation to his subject matter as follows: "My whole originality . . . consists in having made improbable beings live humanly according to the laws of the probable, by as far as possible putting the logic of the visible at the service of the invisible."[39]

One of the leading modern abstract expressionists, Piet Mondrian, stated a general aesthetic principle regarding subject matter conveying simultaneous antithesis in his following description of the artistic enterprise: "Disequilibrium means conflict, disorder. Conflict is also a part of life and of art, but it is not the whole of life or universal beauty. Real life is the mutual interaction of two oppositions of the same value but of a different aspect and nature. Its plastic expression is universal beauty."[40]

Albers's suggestion about the essence of Cezanne's unique breakthrough is at this point worth consideration from another aspect. As an indication of Albers's own janusian thinking with respect to color, it is vivid and highly illustrative, but as a scientific assessment of the nature of Cezanne's processes of visualizing, thinking and executing, it is, as Albers himself admits, a matter of opinion and speculation. Significantly, however, some other instances of general artistic innovations comparable to Cezanne's also suggest direct operation of broad types of janusian thinking in their production. Two recent examples are the apparently short-lived but distinctly influential and original modern movements called "op art" and "pop art." For the op school of art, the modus vivendi of the artistic work is to produce an effect in the observer of moving back and forth, or from side to side, while continuing to stand still and observe. To produce such works effectively, it surely seems crucial for the creators to conceive of simultaneously opposing or antithetical visual and dynamic orientations. The pop art conception,

developed initially by Warhol, Lichtenstein, and Johns, also seems derived from a broad janusian formulation. In turning to the products of commercial art, these artists incorporated that traditional antithesis of serious art directly into the corpus of serious art itself. By focusing seriously on the modes and subject matter of popular art and experience, they juxtaposed two traditionally opposing orientations within a single frame of reference. Producing paintings of the labels on Campbell's soup cans or of scenes in comic strips, they instilled an effect of experiencing both the banal and the sublime at once. Seen as decorously and elegantly portrayed and enframed, the subject matter and the mode remained banal, but everyday experience became immortalized as art.

Modern art movements change so rapidly that shifting to extremes or conceiving simultaneous opposition could seem to be an aspect of the modern ethos. But, in addition to the already cited direct quotations and other evidence from artists in earlier historical periods, there is much in earlier masterpieces and the critical comment about them that suggests the ubiquitous operation of janusian thinking in visual art throughout history. The intense polarities of light and darkness in Rembrandt's great paintings, his extreme and virtually hallowed handling of chiaroscuro, surely suggests an operation of janusian thinking similar to that described by Walker Evans in photography. Is it not likely that Rembrandt conceived and visualized simultaneously the intensely dark browns and sharply light areas in his

paintings? Moreover, is it not likely that he also conceived and visualized the antithetical effect of vibrant, glistening dark areas full of swirling motion along with intricately detailed unglistening though intensely lighted other ones? (See fig. 21.) Do not his paintings of dead persons and animals reveal a conception juxtaposing death with vibrant living forms and images? (See fig. 22.)

I call especial attention to another old master, Leonardo da Vinci. Not only are his writings replete with references to reversals, oppositions, and antitheses, in both his artistic and scientific formulations,[41] but it is of particular note that he adopted the procedure of carrying out all his writings in mirror-image reversed script. For an interesting instance of manifest simultaneous opposition, note his drawing of pleasure and pain in figure 23 and compare it to Chagall's Homage to Apollinaire discussed earlier (fig. 11).[42] More particularly, however, I call attention to his painting Mona Lisa (fig. 24). Completed sometime between 1503 and 1505, this painting has been considered one of the great works in history. A cardinal feature of interest in it has been the enigmatic quality of the lady's smile. In a later chapter (chap. 10) I shall discuss some general features of the painting that contribute to this enigmatic quality. Here, I want to emphasize the particularly apt terms used by outstanding art critics to describe this smile: both "good and wicked," as well as both "cruel" and "compassionate;"[43] "smile of the Saints at Rheims" and "worldly, watchful and self-satisfied;"[44] showing both "modesty and a

secret sensuous joy."[45] Though there is surely disagreement about the particular attributes of the smile, there seems considerable agreement about its structural quality: simultaneous antithesis. Though enigmatic entities are often verbally described in terms emphasizing disparateness or incongruity, simultaneous antithesis is surely not their universal or intrinsic property.

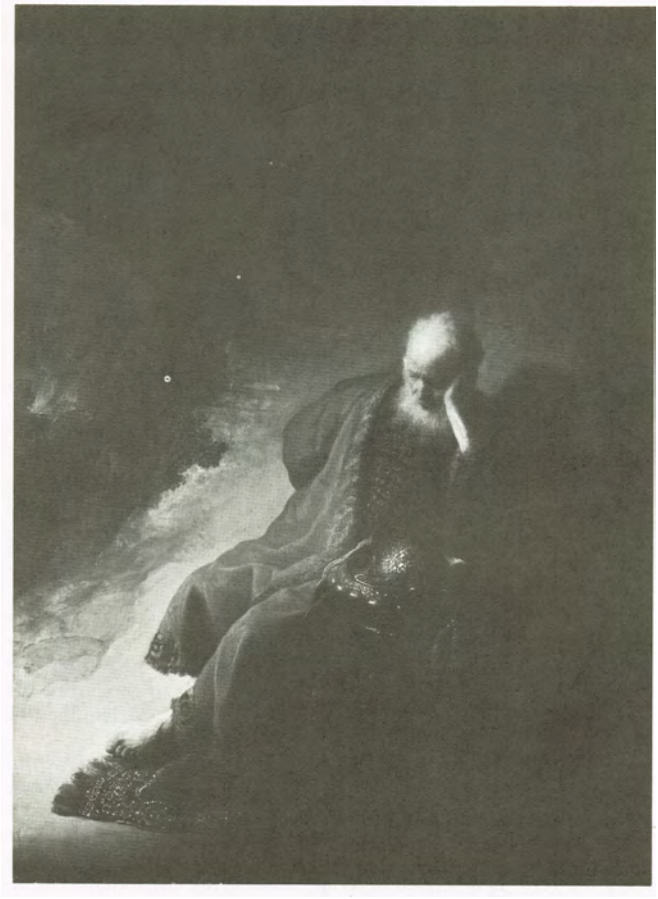


Fig. 21.
Rembrandt van Rijn's use of extremes of light and darkness is shown in these paintings. His famous Night Watch was not included here because, although it shows the same effect, some controversy exists about subsequent darkening of the oils. A. The Man with the Golden Helmet, 1652. Gemäldegalerie, Staatliche Museen Preussischer Kulturbesitz, Berlin (West). Photo Jörg P. Anders. B. Jeremiah, 1630. Rijksmuseum, Amsterdam.

Fig. 22.
This fragment from Rembrandt's The Anatomical Lesson of Doctor Joan Deyman, 1656, illustrates the simultaneous antithesis of death and life. Although Rembrandt was commissioned to do a portrait of the doctor, his graphic depiction of death was surely his own intentional conception. Rijksmuseum, Amsterdam.

As further suggestions of simultaneous antithesis operating in the conception of artistic masterpieces, there are the following commentaries about Michelangelo's painting (see fig. 25) of the prophet Jeremiah on the ceiling fresco of the Sistine Chapel (1508-10) and about Titian's painting (see fig. 26) entitled *Sacred and Profane Love* (1515-16) by the art historians and critics Hiltgart Keller and Bodo Cichy, and William Gaunt, respectively:

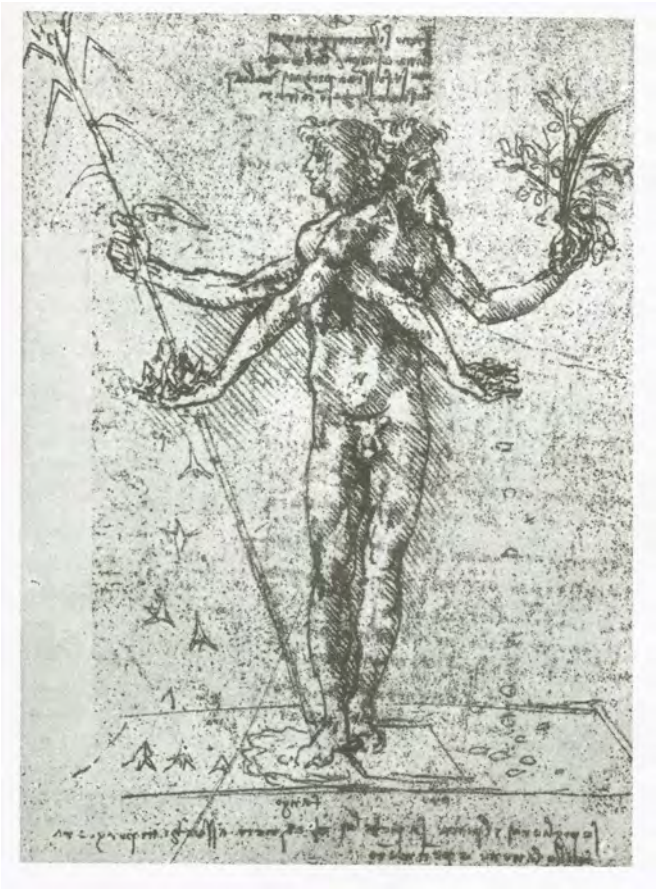


Fig. 23.
Leonardo da Vinci, Sketch. A drawing of pleasure and pain as simultaneously opposed. The intermingling and reversals of the arms emphasize the simultaneous opposition. Oxford, Collection of the Governing Body of Christ Church.

The sharpness of drawing in the architectural details, sills, pilasters, and consoles contrasts powerfully with the softness of the figures, which, in the

case of "Jeremiah" is almost pudgy and formless. But even more important than this contrast are the oppositions within the figures themselves. While head and limbs, and especially the powerful hands, suggest tremendous, superhuman energy and strength, the inward expression and deep contemplation proclaim the strength of the soul that keeps these energies from unfolding. [Italics added][46]

Fig. 24.
Leonardo da Vinci. Mona Lisa, 1503. The smile demonstrates simultaneously antithetical qualities. Louvre, Paris. Photo Giraudon.

Fig. 25.
Michelangelo Buonarroti. Jeremiah (from the ceiling fresco of the Sistine Chapel, Vatican), 1508-10. The figure shows oppositions of outer strength and inner control.

Pictorially the two figures [representing the antithesis of sacred and profane love] provide quite simply a harmony of contrast. Contrast is emphasized by the different aspects of landscape in the background, hill and

plain. . . . Light forms are cunningly opposed to dark; the dark bowl held by the nude against the sky, the rabbits behind the seated figure as a point of light against dark ground. [Italics added][47]

Fig. 26.
Titian Vecellio. Sacred and Profane Love (Villa Borghese, Rome), 1515-16.
Light forms are simultaneously opposed to dark.

And, to include a well-known effect contributing to the powerful impact of another masterpiece, El Greco's View of Toledo, ca. 1610, there is the following phenomenon of a negative together with a fully realized positive image (fig. 27):

> The shock of irreality of that landscape . . . is realized by a transposition of values, which vision at once denounces and affirms. Edges appear as lights, planes as darks . . . [having the] aspect of a photographic negative, in which all values are transposed.[48]

These descriptions of simultaneous opposition in great masterpieces of the past, established as accurate, I believe, not merely on the authority of the particular critic but on the basis of a direct study of the painting itself, do not

prove that janusian thinking operated during the creation of the particular work. However, they do suggest that diverse types of art works and artistic effects can result from this type of thinking, regardless of whether the style is naturalistic and representational, symbolic, romantic, impressionistic or expressionistic, or one of the particular modern modes. When simultaneous oppositions appear manifestly in completed works of art, they may sometimes engender a sense of balance and harmony as described in the Titian painting by Gaunt or they may engender a sense of tension and conflict, or both qualities may coexist. For the creator himself, formulating simultaneous opposition and antithesis early in the creative process, as is usually the case, there always is tension and contradiction in the initial conception.

I return now to direct examination of the creative process. A rarely obtainable complete documentation of the successive stages of development of a great masterpiece by Pablo Picasso provides a striking illustration of the significant role of janusian thinking in artistic creation. It further clarifies how janusian thinking dictates both form and content during the creative process. Although Picasso himself insisted that important insights into the creative process could be gained from studying the "metamorphoses" of a painting,[49] he apparently preserved few of his planning and compositional sketches. Fortunately, most if not all of the sketches for one of his greatest works, Guernica, are available, and my illustration comes from these.[50]

Fig. 27.
El Greco. View of Toledo, ca. 1610. Light edges and dark planes are juxtaposed and produce the effect of a negative and a positive simultaneously. The Metropolitan Museum of Art, New York. Bequest of Mrs. H. O. Havemeyer, 1929. The H. O. Havemeyer Collection.

Fig. 28.
Pablo Picasso. Guernica. 1937. Oil on canvas 11’ 5 ½” X 25’ 5 ¼”. Collection, the Museum of Modern Art, New York.

Guernica, as is generally acknowledged, is one of the great masterpieces of modern times. A large mural pertaining to Hitler's bombing of the small Basque town of Guernica on May 1, 1937, it is a powerful antiwar statement and a visual triumph. The development of the complex and intricate composition of the completed mural, shown in figure 28, cannot be exhaustively traced merely by following sketches. Nor, in fact, is it possible to know what was in Picasso's mind beyond any of the particular preliminary sketches he drew. However, from Picasso's forty-five dated sketches and studies pertaining to the painting, it is possible to follow the broad evolution of the work from its earliest simpler stages to the more complex final one. And a janusian thought process appears in the very first sketch Picasso made, a sketch he entitled Composition study (fig. 29).

Fig. 29.
Pablo Picasso. Composition study, 1937. Pencil on blue paper, 8 ¼" x 10 5/8". Picasso's first sketch for the Guernica mural. Collection, the Museum of Modern Art, New York.

Comparing this very first sketch to the completed mural produces a very dramatic impact. The sketch is starkly simple; only a few basic elements are included, in contrast to the richly diverse elements of the final product. The structure is open and loose, in contrast to the final mural's tight, intricate, and crowded effect. But the essential rectangular orientation of the final painting is already set and four basic elements, all of which are retained at the end, appear in this earliest study. Indicating four basic positions, these four elements are the upright bull, the light bearer, the sprawling victim, and the inert base of destroyed bodies. The large circular curve embodies no specific

element or position and appears designed to pull the vertical and horizontal dimensions together.[51]

In some ways, this earliest drawing appears quite conventional. At first glance, it could suggest a rather straightforward, almost realistic, scene containing animals and a single clearly drawn human being. We can discern the rather odd placement of a bird on the bull's back and, seeing the animal hoof in the air, we can sense something of the use of animals as symbols and the full-blown scene of carnage in the final painting. The human being holding the lamp is depicted with great dynamic energy even at this phase, and to a casual glance the figure seems to be in a rather conventional position of looking out of a window at the slightly unusual and slightly disturbing scene.

But now we must look closer. Careful examination of the drawing reveals an unusual disparity in the spatial configuration of this figure, and of the window, and of the wall. For one thing, the window is rather highly placed for the ground floor of the house and the positioning of the figure is almost impossible—at a minimum, excessively awkward—for standing and looking out. Furthermore, a careful examination of the lines drawn to represent the corner of the house near the figure reveals a decided duplexity in their deployment: they could either be seen as depicting an outside corner of a house or the inside corner of a room within a house, in the same location! In case these effects are thought to be accidental or unintentional, a quick

comparison with the final painting, in figure 28, reveals that this same human being (a woman) holding the lamp is not only leaning out the window to view the animals and the remaining elements in the scene, but she also appears to be coming in through the same window from outside. She is looking in at the scene from a position ordinarily associated with looking outside. Widespread carnage and chaos ordinarily associated with an outside scene such as a street or battlefield are depicted as compressed within a room, according to this conception, and the woman at the window appears to be looking both inside and outside simultaneously.

Those who have not followed my exposition up to this point—for instance, those who immediately saw the human being looking into the room —may have been influenced by strong familiarity with the final painting. In other words, remembering the timbers in the ceiling and the sense of the person looking into a room in the final painting, one may not experience surprise about the placement appearing in the sketch. Nevertheless, the simultaneously antithetical spatial positions are clearly manifest in the spare scene depicted at that initial phase. That the initial conception of simultaneous antithesis guided

Picasso's further work and elaboration is seen in his also depicting the light in the center of the room in the completed mural as both a light bulb and a blazing sun at the same time. Also, the timbered ceiling of the inside of a

room has the wide expansive quality of an outside sky. The resulting sense of massive carnage and chaos occurring inside a house or inside a room contributes to the mural's tremendous emotional power. And the simultaneous suggestion of carnage and chaos occurring in the more usual outside location under sun and sky further broadens the visual and emotional impact.

As with many other manifestations of janusian thinking described, Picasso's conception was formulated early in the creative process and was modified and elaborated in later stages. Some of his later composition sketches do not contain this figure at the window, and she appears in an altered shape in the final mural. More spiritual and ethereal there than in many of the sketches, the contradictory quality of her physical position became somewhat softened. Many other figures were also added along the way and alternative conceptions of these figures appear in several sketches. In successive formulations, overall composition and figure placement changed several times. Generally, however, the sense of chaos in a confined space was increasingly enhanced and the janusian conception was integrated in various ways into the final product. The lines changing the center light to both bulb and sun simultaneously were, interestingly, only clearly added when the mural was virtually finished.[52]

Picasso's janusian conception of a scene of destruction and chaos

occurring both inside and outside simultaneously led, in this instance, to a perfect blending of form and content. Formal aspects of this simultaneous contradiction embodied directly in the overall composition of the painting produced the type of visual tension and drama appropriate to the grand theme of the mural. The particular depiction of both inside and outside together in the same scene enhanced the quality of chaos and led to an emphasis on the universal and total destructiveness of war. Permeating all physical space, both inside and out, war also permeates our inner and outer being.

Two years before beginning this mural, Picasso said, "It would be very interesting to preserve photographically, not the stages, but the metamorphoses of a picture. Possibly one might then discover the path followed by the brain in materializing a dream. But there is one very odd thing to notice that basically a picture doesn't change, that the first 'vision' remains almost intact, in spite of appearances."[53]

In view of the diverse manifestations of janusian thinking in a wide variety of visual modalities, it is reasonable to presume that it plays a role in creation of other forms of visual art beside sculpture and painting, such as graphics and weaving. A special word, however, is in order about architecture. Although many of the general principles of visual art creation apply directly to architecture; some particular considerations obtain because

usefulness and aesthetics are blended together in architecture to a greater degree than in other visual arts.

When architects design structures, they pay attention to providing useful and psychologically comfortable space. To do this, architects may need to think about antithetical spatial effects simultaneously,- janusian thinking then plays both an aesthetic and pragmatic role. When conceiving a very large building, for example, technical factors may require copious and bulky supports to be placed somewhere on the inside of the structure. Ordinarily, such supports impinge on and limit the inner contours and spaciousness of the building. The creative architect, however, is able to visualize both the inside and outside of the building simultaneously and to manipulate such spatial effects. He designs large buildings with a quality of unlimited inner space, and he may produce outer and inner convexities in the same portion of the building. Conversely, he may design sections of a building that appear concave from both these opposing spatial orientations at once. In recent times, some of our creative architects have adopted the procedure of putting enormous buildings on pedestals, an accomplishment derived from a conception of bringing the antithetical qualities of massiveness and lightness together. The famous early achievement of the Bauhaus architect Walter Gropius, "the curtain wall," was a wall allowing visualization of the area on either side. Consequently, it was both a separation and a continuity and the creator Gropius needed to conceive the effect of visualizing opposite sides of a

wall simultaneously.

That janusian thinking pervades the creativity of architecture is nowhere better indicated than in the term used to describe his work by an unquestionably creative architect, Frank Lloyd Wright. In describing the form of architecture he introduced and developed into a high art, organic architecture, he called it an "affirmative negation," a development that simultaneously negated and affirmed architectural values. "The fruitful affirmative negation," he said, "[was] made by Organic Architecture in three dimensions."[54]

Music

Speaking of the possibility of composing music on the basis of timbre rather than on the traditional basis of pitch, Arnold Schoenberg said, "All this seems a fantasy of the future, which it probably is. Yet I am firmly convinced that it can be realized. I am convinced that [it] would dramatically increase the sensual, intellectual and soul pleasures which art is capable of rendering. I also believe that [it] would bring us closer to the realm which is mirrored for us in dreams."[55]

Though Schoenberg refers to a realm mirrored in dreams with particular respect to his interest in using timbre, it is clear he is describing what is for him a general principle of musical creation. As a composer whose

influence on modern music has been wide sweeping and profound, and as a composer who has been unusually introspective about the nature of the creative process in music, Schoenberg's comment is of special interest. It leads us to expect that the mirror-image processes of dreaming might play a significant role in musical creativity. And Hans Mersmann, the German aesthetician, gives the suggestion greater weight and specificity with the following observation: "The possibility of expressing simultaneous opposition leads to the finest possibilities of expression, absolutely, leads to a place where music reaches far beyond the limits of the other arts. The significance of such tension grows when there are not only elements but formed forces which stand in opposition to each other."[56]

Mersmann's observation is not an isolated one; among others, music aestheticians Suzanne Langer and Gordon Epperson have cited it with approval and assent.[57] And Leonard Bernstein, the composer, conductor, and aesthetician, recently emphasized the importance of what he called ambiguity in music, an effect derived—according to his explanation—from simultaneous oppositions of factors such as diatonic and chromatic systems, tonality and atonality.[58]

Opposition and simultaneous opposition in music are both purer and more relative than in the other arts. As music has less definable and less referential content than literature or painting, polarities are delineated

wholly by a particular musical context. The composer delineates oppositions as he composes, a counter theme is oppositional only in relation to another theme in the same piece.[59] In this way, musical form is replete with inversions, reversals, and mirror- image constructions of scalar, melodic, and harmonic elements. While elements in opposition to each other are not necessarily formulated simultaneously, there is reason to believe that such formulating is definitely important in creative composing. A case in point is Beethoven. Though documentation of instances of the creative process in music is particularly rare—composers more than other artists seem loath to give accounts of the creation of a specific work—it is fortunate indeed that Beethoven's notebooks, especially the extensive materials pertaining to the composition of his third ("Eroica") symphony, have been preserved. Moreover, unlike other composers such as Bach, whose notes and manuscripts are also available, Beethoven wrote out a good deal of his musical thought on paper.

Careful analysis and following of sequences in the Beethoven notebooks on the Eroica have led to a clear conclusion about his procedure: "the growth of one section is directly followed by increase in an adjoining section; the changing of one part involves that of another, and the later portions of the work develop out of the earlier."[60] And, as the musicologist Schmitz has shown, such changes and developments consistently involved contrast, a guiding principle he has called "contrasting derivation."[61] Hence, during the

process of creating the Eroica, it appears that Beethoven constantly thought in terms of contrasts or oppositions.[62] As he almost invariably inserted a contrasting section somewhere in the piece whenever he made a change, it further appears that he formulated contrasts and oppositions simultaneously in reference to the entire piece.

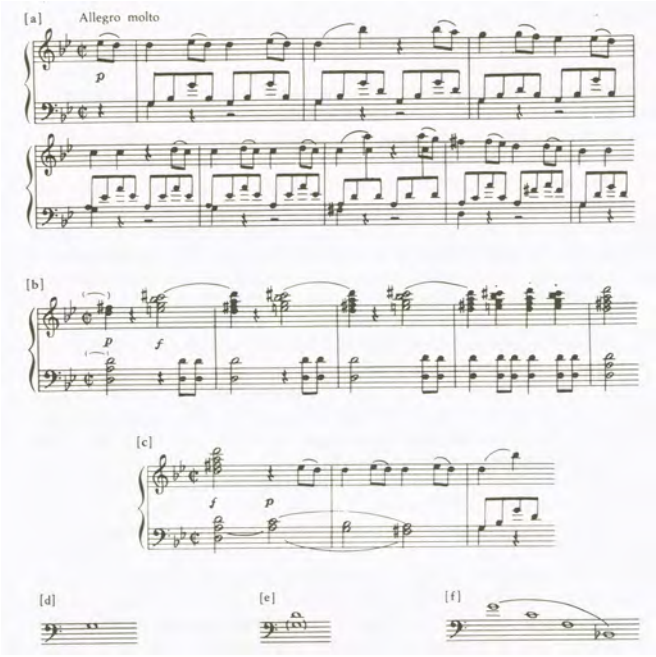


Fig. 30.
Simultaneous antithesis of chromaticism and diatonicism in Wolfgang Amadeus Mozart's G Minor Symphony (as described by Leonard Bernstein). Reprinted by permission of the author and publishers from The Unanswered Question by Leonard Bernstein (Cambridge, Mass.: Harvard University Press). Copyright c 1976 by Leonard Bernstein.

Less-direct observations suggest a similar process of janusian thinking intrinsic to Mozart's compositional work. Bernstein illustrated his assertion about the importance of the simultaneous operation of the antithesis of chromaticism (key relationship) and diatonicism (tonic- dominant relationships involving seven tones in major and minor) in music by reference to a work of Mozart's, the G Minor Symphony, as follows (bracketed references are to fig. 30):

> . . . the opening of the first movement. . . [see fig. 30a], Now this whole section moves quite easily and diatonically from its G-minor tonic to its first cadence, which is, naturally enough, on the dominant [see fig. 30b] and just as easily slips back into the tonic [see fig. 30c], (You remember that this tonic-dominant relationship arises from the adjacency of the fundamental tone, in this case G [see fig. 30d], with its first overtone [see fig. 30e], that basic interval of a fifth.) From this point the music proceeds by the circle of fifths in a downward progression [see fig. 30f], to its relative major, B flat, which is exactly where it's supposed to be (according to sonata-form principles), for the appearance of the second thematic section [see fig. 30g]. But notice that Mozart's new theme is already chromatically formed [see fig. 30h], and it gets more so as it goes on [see fig. 30i]; and even more so when it repeats [see fig. 30j]. What's this? A-flat major, a sudden new key, unrelated to either B flat or G minor. How did we get *here*? By the well-known circle of fifths [see fig. 30k; here Bernstein is referring to a diatonic principle]. Do you hear those stable consecutive fifths striding inexorably from dominant to tonic in the bass? [See fig. 30l.] And each dominant leads to a tonic which instantly becomes itself a dominant, leading in turn to its tonic. While above, the melodic line descends by chromatic half-steps into the nether regions of A-flat major! [Italics added.] There's that classical balance we were talking about—chromatic wandering on top [see fig. 30m] but firmly supported by the inverted tonic-dominant structure underneath [see fig. 30n].

Do you see now what I mean by the beauty of ambiguity? It's the

> combination of those two contradictory forces, chromaticism and diatonicism, operating at the same time, that makes this passage so expressive.[63]

Bernstein's explanation, convincing as it is, merely indicates the operation of simultaneous antitheses in the completed work of art. That such broad and extensive oppositions as the chromatic and diatonic progressions Bernstein described were conceived simultaneously by Mozart during the process of composition is supported by Mozart's own famous description of his creative process. In response to a baron who made him a present of wine and inquired about his methods of composing, Mozart wrote:

> When I am, as it were, completely myself, entirely alone, and of good cheer —say, travelling in a carriage, or walking after a good meal, or during the night when I cannot sleep,- it is on such occasions that my ideas flow best and most abundantly. . . . This fires my soul and, provided I am not disturbed, my subject enlarges itself, becomes methodized and defined, and the whole, though it be long, stands almost complete and finished in my mind, so that I can survey it, like a fine picture or a beautiful statue, at a glance. Nor do I hear in my imagination the parts successively but I hear them, as it were, all at once [*gleich alles zusammen*]. What a delight this is I cannot tell! All this inventing, this producing, takes place in a pleasing lively dream. Still the actual hearing of the *tout ensemble* is after all the best.[64]

The experience Mozart describes of "actual" hearing of the entire musical piece all together (*tout ensemble*), or all at once, indicates that extensive oppositional sequences would surely have been heard simultaneously. Mozart's description is also suggestive of another type of

janusian thinking in music creation: conceiving in opposite or antithetical temporal orientations simultaneously. Although such an experience may be difficult to imagine for someone who has never had it, it seems to be one of hearing what is to come concomitant both with what is unfolding and with what has already been heard, that is, hearing and/or conceiving in antithetical temporal progressions at the same time. And Mozart's use of the modifying phrase "as it were" indicates that he is not referring to a mystical experience, but is fully aware of the seemingly antithetical properties of the phenomenon. Coleridge gives an apt description of the successful musical effect which would result from such a type of thinking:

> . . . the present strain seems not only to recall, but almost to renew some past movement, another and yet the same! Each present movement bringing back, as it were, and embodying the spirit of some melody that has gone before, anticipates and seems to overtake something that is to come; and the musician has reached the summit of his art, when having thus modified the present by the past, he at the same time weds the past in the present to some prepared and corresponsive future. The auditor's thoughts and feelings move under the same influence, retrospection blends with anticipation, and hope, and memory, a female Janus, become one power with a double aspect. [Italics added][65]

Other composers, such as Paul Hindemith and Franz Schubert,[66] have also described similar comprehensive images of a musical composition though it is difficult to ascertain definitively whether opposing temporal orientations were involved. Yet, another type of manifestation of the creative cognition I am discussing, going back to an earlier time than Mozart,

Hindemith, and Schubert, concerns the invention of a particular rhythmic style. The style, agitato, has today become highly standard in Western music and, as here professed by the inventor himself, it was produced by a single person rather than a group or a culture. In a book published in 1638, Monteverdi described his creation of the agitato style, as follows:

> I consider the principal passions or emotions of the soul to be three, namely anger, serenity and humility. The best philosophers affirm this; the very nature of our voice, with its high, low and middle ranges, show it; and the art of music clearly manifests it in these three terms: agitated, soft and moderate. I have not been able to find an example of the agitated style in the works of past composers, but I have discovered many of the soft and moderate types. . . .
>
> Considering that all the best philosophers maintain that the pyrrhic or fast tempo was used for agitated, warlike dances, and contrariwise, the slow spondaic tempo for their opposites, I thought about the semibreve [whole note] and proposed that each semibreve correspond to a spondee [slow unit]. Reducing this to sixteen semichromes [sixteenth notes], struck one after another and joined to words expressing anger and scorn, I could hear in this short example a resemblance to the emotion I was seeking, . . . the words did not follow the rapid beat of the instrument.
>
> To arrive at a better proof, I resorted to . . . [Tasso's] description of the combat between Jancred and Clorinda as theme for my music expressing the contrary passions aroused by war, prayer and death.
>
> In the year 1624 I had this work performed. . . . It was received with much applause and was highly praised.
>
> Having met with success in my method of depicting anger, I proceeded with even greater zeal in my investigations and wrote diverse compositions, both ecclesiastical and chamber works. These found such favor with other composers that they not only spoke their praise but to my

> great joy and honor, wrote it by imitating my work. Consequently, it has seemed wise to let it be known that the investigation and the first efforts in this style—so necessary to the art of music, and without which it can rightly be said that music has been imperfect up to now, having had but two styles, soft and moderate—originated with me.[67]

Monteverdi's analytic and controlled style of presentation differs sharply from the dramatic descriptions by other creators quoted here. From our vantage point of the twentieth century, it seems remarkable that such an important and now standard style was invented by a single individual in such a deliberate way. There is no reason to doubt Monteverdi's account, however, and it is clear that the crucial steps in this creative process consisted of first a specification of opposites, fast and slow tempo, and, then, the conception of presenting or performing them *simultaneously*. Of course, fast and slow tempos are considered such relative matters nowadays that it is difficult to conceive of them as opposites when played together. But there is little doubt from the account that Monteverdi, as well as his contemporaries, considered the tempos a matter of opposites, and the formulation therefore was of simultaneous antithesis or opposition. Opposition, as I have said, can be quite relative to a context, and janusian thinking may therefore only be identified on the basis of the creator's perspective, the particular stage of development of the art form or the level of knowledge in a field or discipline. Monteverdi, at that stage of Western music's development, formulated the agitato style by bringing opposite tempos together. His subsequent attempt to "prove" or work out his initial formulation through an application to Tasso's theme is an

instance of what I have previously described as the characteristic elaborating and transforming of the janusian conception during the course of the creative process.

The type of analytic conceptualizing of opposites illustrated by Monteverdi's account is also found in the approaches of the modern masters, Schoenberg and Stravinsky. Schoenberg, throughout his writings on music,[68] is so directly concerned with inversions, reversals, retrograde inversions (his term), and mirror images that, taken in the context of his comment quoted at the beginning of this section, he almost seems manifestly aware of janusian thinking as a crucial factor in creating. Though he has left little record of the creation of specific pieces of music, his discussion of his revolutionary discovery of serial music, the twelve-tone scale, indicates a clear instance of his use of the thought process. Describing the historical evolution of the movement away from tonality in Western music during the hundred years prior to his own discoveries, Schoenberg termed the development "the emancipation of the dissonance." His use of this term, he explained, was intended to call attention to his own discovery of a factor that led to the final emancipation. He was the first, he said, to point out the essential equivalence between consonance and dissonance, specifically that dissonances were merely "more remote consonances." As he further described it: "The term emancipation of the dissonance refers to its comprehensibility; which is considered equivalent to the consonance's comprehensibility. A style based

on this premise treats dissonances like consonances and renounces a tonal center."[69]

Here is another instance of the development of a musical style based on janusian thinking. As can be recognized by now, the type of thinking indicated by Schoenberg means that the creator is having things both ways: he thinks of dissonances as being like consonances and he therefore uses dissonant elements to produce new sonorities, or sound entities, that initially retain qualities both of dissonances and consonances at once. Serial music, with its manifest atonality, was based, at least in part, on this type of thinking. Though Western music, at least from the time of Wagner, seems in retrospect to have been clearly moving toward atonality, Schoenberg's development of that particular form and style was his own individual creation.[70]

Stravinsky was influenced by Schoenberg in varying ways, but independently he had always emphasized opposition in musical form throughout his writings on music.[71] His following discussion of the compositional importance of the principle of atonality, excerpted from a longer treatise but preserving the overall conception, contains a clear emphasis on the use of a broad form of janusian thinking:

> So our chief concern is not so much what is known as tonality as what one might term the polar attraction of sound, of an interval, or even of a complex of tones. The sounding tone constitutes in a way the essential axis of music. Musical form would be unimaginable in the absence of elements

> of attraction which make up every musical organism and which are bound up with its psychology. . . .
>
> In view of the fact that our poles of attraction are no longer within the closed system which was the diatonic system, we can bring the poles together without being compelled to conform to the exigencies of tonality. For we no longer believe in the absolute value of the major-minor system based on the entity which musicologists call the c-scale. [Italics added][72]

Abstract and theoretical as the above passage seems, Stravinsky must surely have derived these formulations from his own felt experience of bringing poles or opposites together in the creative process. This experience, as Stravinsky's first paragraph here suggests, does not itself depend on overthrowing the diatonic system, as poles of attraction always exist in music. For Stravinsky, at that point at least, the overthrow of tonality was a vehicle for formulating opposites simultaneously.

An exceptionally rare discussion of specific details of the creation of a particular musical work was presented somewhat in passing by the American composer Roger Sessions in a series of lectures presented in 1949 at the Juilliard School of Music, in New York City. To illustrate growth and change in creation of music, he described the initial phases of conceiving his own First Piano Sonata. As the documentation is rare and, as it both illustrates a good deal about the musical creative process and a complicated manifestation of janusian thinking, I shall present it at some length. I shall start with a truncated version of the composer's words, omitting the musical notation to

which they refer so that the overall sequence of events and the composer's own point about the material will be easier to follow. All the omitted phrases are designated by letter in the quotation and are produced in their entirety with the corresponding letter and musical notation indicated in the accompanying figure on the facing page (fig. 31). The complete text, therefore, can be readily reconstructed by reposing the phrases into their original context.

> Let me give a brief example from my own work. The first idea that came to me for my First Piano Sonata, begun in 1927, was in the form of a complex chord . . . [fig. 31a]. This chord rang through my ear almost obsessively one day as I was walking in Pisa, Italy. The next day, or, in other words, when I sat down to work on the piece, I wrote the first phrase of the Allegro; ... [fig. 31b], Later it became clear to me that the motif must be preceded by an introduction, and the melody . . . [fig. 31c] with which the Sonata begins, immediately suggested itself, quite without conscious thought on my part. A few days later the original complex chord came back to my ear, again almost obsessively; I found myself continuing it in my mind, and only then made the discovery . . . [fig. 3Id] that the germ of the key relationship on which the first two movements of the Sonata were based were already implicit in the chordal idea with which the musical train of thought—which eventually took shape in the completed Sonata—had started.

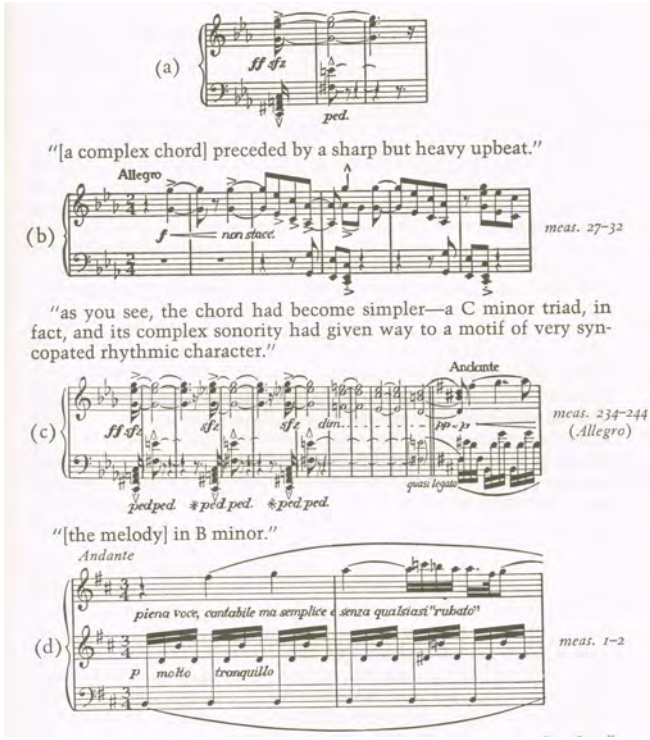


Fig. 31.
Roger Sessions's creation of his First Piano Sonata. Reprinted by permission of Princeton University Press from The Musical Experience of Composer, Performer, Listener, by Roger Sessions (copyright 1950 by Princeton University Press, Princeton Paperback, 1971). Copyright © 1931 by B. Schott's Söhne, Mainz. Copyright renewed. All rights for the U.S.A. and Mexico controlled by European American Music Distributors Corporation. Used by permission.

I point out these things in order to throw some light on some of the ways in which a composer's mind, his creative musical mind, that is, works; and more especially to illustrate the nature of the musical idea as I have defined it. Once more, I am not implying that the so-called principle "themes" of a given piece of music are not musical ideas or, in most cases, the most important formative ideas of the work. It is obvious that they

> frequently are. I have been trying to show, rather, that a composer's relation to his work is an organic one; that the conception and the composition of a piece of music are not a matter of set procedure but a living process of growth.[73]

The main reason I have truncated the quotation should now be clear. Here, in Sessions's description, is the familiar sequence of a germinal idea, followed by some elaboration, and then a return to the original idea frequently encountered in the creative process. It is also a familiar description of the creator's finding further possibilities on returning to his original idea. Illustrated again is the importance of a single idea, an idea that is not necessarily the very first one, nor is it necessarily directly manifest in the completed work. As Sessions says, the important idea may or may not be the major theme or other fully developed motif in the work.

Let us then look closely at the particular germinal musical idea described here; see fig. 31a. Carefully comparing the composer's verbal description of "a complex chord preceded by a sharp but heavy upbeat" with the actual musical notation recorded reveals an important musical discrepancy and an apparent contradiction. Although the composer verbally says that the upbeat precedes the complex chord, his notation indicates that the chord in fact sounds at the same time as the upbeat. Since the chord continues to sound in the downbeat of the next measure, the structure is of an upbeat simultaneous with a downbeat, a simultaneous opposition or antithesis. It must be emphasized that this is no typesetter's error nor a

mistake in transcription on Sessions's part. Though he does not point it out explicitly,[74] the complex sonority he had in mind contained antithetical rhythmic factors. That this self-contradictory rhythmic aspect was a known and critical aspect of the idea and that it stimulated further creation and elaboration is borne out by the composer's comment on the next phase of his work on the piece. In figure 31b he says, "its complex sonority had given way to a motif of very syncopated rhythmic character." Hence, the particular form of syncopation in this piece—that is, the complex sounding of upbeats together with downbeats—was already implicit in the original idea and it unfolded in a successive rhythmic motif as he worked the idea out.

Also included in the illustration are other factors implicit in Sessions's original idea (the tonic factors in fig. 31c and d) which, together with the rhythmic aspect of the initial thought, played a significant role in the overall sequence. Simultaneous opposition was a critical aspect of the initial idea and, I want to emphasize, the opposition or antithesis is more specific and perhaps more basic than in previous musical cases I have cited. Upbeat and downbeat are virtually irreconcilable stresses, they cannot acoustically be identified simultaneously.

Underlying musical creation, in all modes and throughout history, is an orientation to auditory phenomena and a form of janusian cognition that is similar to janusian cognition in visual art creation. Just as the creative visual

artist perceives and conceptualizes positive and negative spaces simultaneously, the creative composer has a similar cognitive orientation with respect to both sound and rhythm. Corresponding to the empty or negative space confronting the visual artist are both the noise or random sound and the random stresses and sequences confronting the composer. Noise and randomness are intrinsic components of all auditory and kinesthetic perception, the latter being the principal mode of rhythmic experience. Corresponding to the positive space of visual experience are the formed elements of sound and motion: melodic and harmonic patterns, definable qualities of timbre, repetitions of sequences, and, concretely, bird calls, voices, heart beats, or tapping feet.

Unlike negative visual space, negative sound consisting of noise or random emission is a constant constituent of auditory experience. Although voluntary elimination of visual sensations by closing the eyes is possible, analogous elimination of sound during consciousness is not possible; we cannot stop hearing or close our ears. A readily available proof of this is that in order to "shut off" hearing completely, it has always been necessary, in psychological experiments and elsewhere, to apply a constant invariant source of sound (usually called "white noise") rather than to attempt the virtually impossible task of producing a soundless environment. Because total silence is consciously unknown to us, therefore, we characteristically treat random sound or noise as though it were soundlessness; we do not attend to

the myriad unformed random sounds in our environment although they are constantly with us.

The creative composer pays significant attention to this, the "negative" aspect of auditory experience. This does not mean that he necessarily listens to or brings noise into focus during the process of composing, though many composers have been known to derive inspiration from listening to apparently random sounds in their environment. For example, Beethoven supposedly got his initial ideas for the Pastoral Symphony while listening to the sounds of a brook;[75] Weber composed music while listening to the wheels of his carriage,[76] the dadaist composers, as is well known, attempted to base their music on the sounds of cities and machines. Listening to the negative aspect specifically means that creative composers are aware, in their mental "inner ears," of the random sounds related to or accompanying the formed elements they are constructing. This is not merely an organizing of random sounds. Composers are aware of random or negative elements at the same time as they conceive and hear the formed elements. This is borne out by the presence of a constant structural element in great music demonstrated fairly conclusively by the musicologist Leonard Meyer.[77] Meyer has shown that an invariable factor in such music, in all cultures and periods in history, has been the presence of elements producing unexpected effects. These elements "weaken" the shape or expected progression of a musical sequence, and they produce a momentary sense bordering on chaos and on attendant conflict and

tension. It is not necessary to subscribe to Meyer's aesthetic position, nor even to explain this process in terms of the particular theory (information theory) he uses, in order to apply his discovery to the musical creative process as follows: In order to produce deviations of sound bordering on chaos, the composer would need to attend to the random negative qualities of the sounds at the same time as he follows principles of constructing and hearing formed qualities. Consequently, the composer conceives and formulates in positive and negative aspects of auditory experience simultaneously.

Just as random sound and noise are the negative aspect of the auditory sphere, random motion is the negative aspect of rhythm. In the deviations and weakenings of musical shape, momentary tendencies toward chaos and the appearance of unexpected elements, traditional patterns, and sequences of movement constitute the formed positive aspects of rhythm. These latter positive aspects conflict with negative aspects of random motion. In the creation of musical rhythm as well as in the creation of dance rhythms and sequences, both aspects must be attended simultaneously.[78]

A comment about the musical style called random music should help clarify this further. Though proponents of the style such as the composer John Cage may disagree, I would suggest, as others have, that the appeal of such music depends on a creative form of listening by the audience. Here, the point

I have made about the composer attending to both positive and negative—formed and random—aspects simultaneously operates in the reverse direction. Confronted with random sound from an electronic or other source, the listener brings formed patterns, timbres, etc., into mind which he conceives and hears in his mental inner ear at the same time as he hears the random sounds. Though he may at times impose a form or organization onto the random sounds, just as obversely the creative composer imposes random elements onto formed sequences, the overall sense of the experience is one of hearing random and formed elements separately and simultaneously. Sometimes a sense of unification occurs.

The listening experience is, however, not fully analogous to the experience of the creative composer. The composer both elaborates and transforms these janusian perceptions and cognitions within his musical work, but the listener to random music must, unless he has the capacity for inner elaboration (unless he is himself a creative composer), be restricted to solely having the experience of simultaneous antithesis. This type of janusian cognition is a portion but not the whole of the musical creation process.

Literature

That paradox, opposition, and antithesis are intrinsic to literary structure and to literary value and appeal has been postulated, argued, and

reemphasized by leading thinkers and critics throughout the ages. In the Poetics, Aristotle discussed both paradox and reversal as important elements in complex or high tragedy. Later, Coleridge proposed that poetry consisted of a balance or reconciliation of opposite or discordant qualities, a position that echoed the previously mentioned dictum by Blake regarding the importance of contraries. Modern literary critics such as I. A. Richards, William Empson, Allen Tate, John Crowe Ransom, Robert Penn Warren, and Cleanth Brooks have all emphasized the bipolar, ambiguous, and antithetical elements in poetry and literature, Brooks particularly arguing in a famous essay that paradox is "the language appropriate and inevitable to poetry." And Kenneth Burke, a modern critic whose general perspective differs from the ones mentioned, related incongruity and incongruous relationships to literary metaphor.[79]

Robert Graves, the English classicist poet, described one source of poetry as "the unforeseen fusion in [the poet's] . . . mind of apparently contradictory ideas." And a very suggestive and influential analysis of literary metaphor in line with the previous assertions, has been presented by the noted aesthetician, Monroe Beardsley. Following Max Black's proposition that the effect of a metaphor derives from the interaction among its elements, Beardsley proposed that a critical aspect of literary metaphor was a relationship of verbal opposition. Calling this effect, "the metaphorical twist," Beardsley insisted that contradiction, which he equated with opposition, must

be present in order for verbal elements to be recognizable as metaphors. Because of this oppositional and logically incompatible aspect, verbal metaphors always generated a quality of conflict and tension. Hausman, in a more extensive analysis of the contradictory aspects of metaphor, strongly emphasized this conflictual quality.[80]

Conflict, tragedy, and metaphor are intrinsic factors in all serious literature. As these factors are derived in large measure from relationships of opposition and antithesis, we can infer that janusian thinking plays an extensive role in literary creation. I have already documented in some detail the operation of janusian thinking in the creation of a poem and indicated widespread applications to the creation of poetry in general. Therefore, I shall shift to the genesis of novels and plays and to descriptions of the thought process in operation there.

In the preface to his novel *Nostromo*, Joseph Conrad described his interest in the story of a robbery by an "unmitigated rascal" of a large quantity of silver somewhere on the seaboard of South America during a revolution. He thought he might write about it, but hesitated as he designated in the following: "I did not see anything at first in the mere story. A rascal steals a large parcel of a valuable commodity—so people say. It's either true or untrue,- and in any case it has no value in itself. To invent a circumstantial account of the robbery did not appeal to me."

After this indecision, the key idea for the novel, as Conrad reported it, came at the following point: "when it dawned upon me that the purloiner of the treasure need not necessarily be a confirmed rogue, that he could be even a man of character." The turning point idea of the criminal as rascal or rogue and man of character together led to a specific elaboration of a "twilight" land of good and evil simultaneously and the drive to write the novel:

> . . . it was only then that I had the first vision of a twilight country which was to become the province of Sulaco, with its high, shadowy Sierra and its misty campo for mute witnesses of events flowing from the passions of men short-sighted in good and evil.
>
> Such are in very truth the obscure origins of *Nostromo*—the book. From that moment, I suppose it had to be.[81]

In his *Autobiography*, Anthony Trollope, the eminent English novelist of the nineteenth century, described the background of his novel *The Warden*, the first of a series of novels about English clergy set in the area called Barchester. Though considered a master depiction of the clergy of the time, Trollope confessed the following: "But my first idea had no reference to clergy in general. I had been struck by two opposite evils . . . and . . . I thought I might be able to expose them, or rather to describe them, both in one and the same tale." He went on to elaborate the content of his janusian conception regarding the two opposites, as follows:

> The first evil was the possession by the Church of certain funds and endowments which had been intended for charitable purposes, but which

> had been allowed to become incomes for idle Church dignitaries. . . . The second evil was its very opposite. . . . I had . . . often been angered by the undeserved severity of the newspapers toward the recipients of such incomes, who could hardly be considered to be the chief sinners in the matter.[82]

His idea, then, was to be condemnatory and noncondemnatory (or justifying) at the same time. Despite some doubts about whether this approach would be successful, he remarked, "Nevertheless, I thought much about it, and on the 29th July 1852,—having been then two years without having made any literary effort,—I began *The Warden*, at Tenbury in Herefordshire."[83]

A somewhat more complex instance of a janusian formulation germinating a novel, from a complex novelist, is the following description taken from the diary of Virginia Woolf:

> Now about this book, *The Moths*. How am I to begin it? And what is it to be? . . . a mind thinking. They might be islands of light—islands in the stream that I am trying to convey,- life itself going on. The current of moths flying strongly this way. A lamp and a flower pot in the center. . . . I shall have the two different currents—the moths flying along; the flower upright in the center; a *perpetual crumbling and renewing of the plant*. In its leaves she might see things happen. [Italics added.][84]

The novel Woolf struggled with here eventually became *The Waves*, and a central image of the simultaneous dying and renewal of the plant, reflected through and by the thinking mind and the stream of consciousness of the

leading character, was conceived at this very early stage.

In the creation of plays, the American playwright Arthur Miller told me that he developed his initial idea for the drama Incident at Vichy while he was traveling in Germany. He thought of writing a play expressing the beauty and growth of modern Germany and of Hitler's destructiveness simultaneously. This led him to think of a story he had heard about a noble sacrifice in the waiting room of a Nazi official, a sacrifice he later incorporated into the play. Also, Eugene O'Neill's writing of The Iceman Cometh developed from a conception that a friend's suicide was motivated by simultaneously antithetical feelings about a wife's infidelity. O'Neill realized that the friend had both wanted and not wanted his wife to be unfaithful and to sleep with another man.[85]

Federico Garcia Lorca, the Spanish playwright whose poetic plays are full of manifest paradoxes and ironies, stated the following about the genesis of the play, *The Shoemaker's Prodigious Wife:* "In my Shoemaker's Wife I sought to express . . . the struggle of reality with fantasy that exists within every human being. (By fantasy I mean everything that is unrealizable.)[86]

Lorca's parenthetical definition of fantasy in this context makes clear that he was thinking of a simultaneous antithesis of the unrealizable and the realized, rather than of the common comparison of fantasy and reality as two

modes of experience. And the absurdist playwright, Eugene Ionesco, whose plays are sometimes thought to be spontaneous unconscious automatisms, described the following genesis of his play, The Chairs:

> when I wrote *The Chairs,* I first had the image of chairs, then that of a person bringing chairs as fast as possible on to an empty stage. . . . The play itself consisted of empty chairs, and more chairs arriving, a whirlwind of them being brought on and taking over the whole stage as if a massive, all-invading void were settling in. . . . It was both multiplication and absence, proliferation and nothingness.[87]

Clearly, Ionesco was actively and intentionally—not unconsciously — formulating simultaneous antitheses to express the idea he thought was implicit in his image of someone bringing empty chairs onto an empty stage—the idea of filling empty space with emptiness.

Some other instances of janusian thinking in literary creation, derived from careful retracing with my own writer research subjects of the steps in producing a particular work, are the following:

> Early in the process of conceiving the plot of a novel, a novelist formulated the idea of a revolutionary hero responsible for the death of hundreds of people, who only killed one person with his own hand. The person he murdered was someone who had been kind to him and whom he had loved.
>
> A novelist conceived a phrase stating that love and hate were the same; this phrase was the initial idea and the basis for an ensuing novel.
>
> A poet, walking on a beach, picked up some rocks and thought they felt like

human skin. They were, for him, both weapons and sensual objects at the same time. This led to a conception of the simultaneous operation of sex and violence in the world, and he wrote a poem elaborating this theme.

This same poet thought of writing a poem about marathon racing; a line connoting rest simultaneous with running and with motion instigated the poem.

Experimental Studies

Shifting away from evidence derived from research interviews and published documents, I shall outline some results of controlled experimentation which I have reported in some detail elsewhere.[88] Although the following experiments were performed with creative students and businessmen, preliminary experiments with the highly creative writers and scientists in my interview studies, carried out in a manner similar to that described here, have yielded similar results.

In the following experiments I used a word association testing procedure to assess a tendency toward janusian thinking in creative subjects. Two major considerations were involved. First, as I will clarify further in the chapter to follow, verbal opposition tends to be clearer and more specific than opposition in any other mode. Opposition between or among words is easier to define and to assess than other types of oppositional relationship. On classical word association tests, opposite word responses have traditionally been recognized and have regularly been scored and calculated

as a separate category. Second, in an important word association study, focused primarily on psycholinguistic questions, the psychologists Carroll, Kjeldegaard, and Carton had developed findings that seemed to have applications to janusian thinking. By means of a systematic quantitative analysis of their own and others' word association results, these investigators definitively established a specific opposite responding tendency, a tendency among certain experimental subjects to give opposite word associations or responses to test word stimuli.[89] Unlike other subjects who responded in numerous and diverse ways to the single word stimuli on the test (when asked to give the first word that came to mind, others tended to respond more with synonyms of the test words or with other types of related and unrelated words) these subjects showed a definite and self-consistent tendency to reply with opposites.[90] The findings had important repercussions for word association research hut no conclusions could be drawn from that study about the psychological basis of this response tendency. For one thing, the researchers had made no attempt to collect any other identifying information about subjects manifesting the tendency. They were interested in explaining and clarifying some confounding and contradictory results that had been obtained in others' word association experiments and they succeeded. Assessing the study, however, I wondered whether this tendency to opposite responding on word association tests might be connected to janusian thinking and to creative capacities and interests, and I set out to

repeat their experiment with some modifications and additions, especially adding a method of collecting identifying information about experimental subjects.

Subjects for the experiment were Yale undergraduates enrolled in an introductory psychology course; a request for volunteers was posted and 115 students signed up for the experiment simply entitled, "Aesthetic Preference and Cognition." Direct reference to creativity was purposely avoided in order to reduce as much as possible preconceptions affecting response tendencies. Most people have definite preconceptions about creativity and when they believe they are being tested for creative capacity, they respond according to their preconceptions rather than in a natural spontaneous manner. All of the 115 volunteers were included in the experiment although two subjects had to be eliminated in the tabulation of results because of language difficulty in one case and because of a technical experimental error related to the other.

In the experimental procedure, a word association test was administered individually to each subject.[91] Ninety-nine words from the standard Kent-Rosanoff word association list were used as test stimuli.[92] These words appear in the column labelled "Stimulus Word" on table 1. After a brief discussion with the subject about his previous experience with word association tests, a discussion serving to clear up any misconceptions he might have had about the procedure and helping to reduce pretest anxiety,

the tester instructed the subject to respond to the individually presented word stimuli with the "first word that came to mind." The importance of complying with these instructions was emphasized at the beginning and throughout the ensuing test procedure. Word stimuli were presented and the time required for each of the subject's responses was obtained. The entire procedure was tape recorded.[93] After completing all of the word association test, the subject was asked to answer a questionnaire, in the presence of the experimenter, a questionnaire designed to elicit specific types of information related to the subject's creativity.

I have presented the procedure in some detail in order to clarify the nature of the psychological process assessed. Free spontaneous responses to word stimuli are fairly good indicators of associational patterns of thought. Although early use of the word association procedure had been overly ambitious in attempting to identify "complexes," and although subsequent diagnostic uses have turned out to be overly inferential and unreliable, there is little reason to shift to the extreme limitation of restricting use to descriptive or purely linguistic analysis. Psycholinguistic analysis often approaches word association responses solely as manifestations of linguistic habits or of conscious response strategies. While such analysis has value for psycholinguistic studies, it is quite important to bear in mind that word association responses also reflect other types of cognitive processes. Under the individually administered testing conditions I have described, the subject

was actively encouraged to give the first word response that came to his mind and, by and large, all subjects did. A tendency to respond with opposite words, therefore, would directly reflect a tendency to associate opposites in thought. Moreover, precise timing of word association response provided an opportunity to compare the speed of opposite responding to other types of response. Giving opposite word responses rapidly, more rapidly than other types of responses, therefore, would reflect a tendency to rapid opposite associates in thinking.

As rapid associating of opposites would be expected to be a factor in janusian thinking, the experimental hypothesis was that subjects who were more creative would manifest a greater tendency toward rapid opposite response than less creative ones. Responses to the questionnaire served to distinguish two subject groups: one that was high in creative potential or accomplishment and another that was low. Evidence of independent initiative and early success in the creative arts or in science (included later as a criterion) classified a subject as a high creative and absence of such evidence led to classification as low creative. In previous research, this means of classifying subjects on the basis of responses to this questionnaire showed a significant correlation with independent creativity ratings by teachers and peers as well as subjects' ratings of their own creativity.[94] Specific evidence that the discriminating factor was creativity rather than scholastic aptitude was derived from assessing scores on the College Entrance Examination

Aptitude Test. The two subject groups identified as high and low creative did not differ significantly on intelligence and aptitude as measured by that test ($t = 0.34$, $df = 111$).

All word association responses of all subjects were scored according to whether they were opposites on the basis of criteria for opposite response derived by the original experimenters, Carroll et al. Using an empirical consensual approach to classification, these investigators identified a list of words classified as opposite responses by four out of five experimenters and forty-two other judges. This list of responses classified as opposites appears in the column labelled "Opposite" on table 1.

Another type of scoring of responses was also necessary because of a special type of problem with the word stimuli from the standard Kent-Rosanoff list. As might be obvious, even to someone unfamiliar with word association, Kent-Rosanoff words are simple commonly used ones and opposite responses to these word stimuli are themselves also simple common words. Subjects might respond with opposites merely because their vocabulary is limited or because the words are frequently connected in common discourse. In order, therefore, to distinguish opposite responding from a tendency to give common or popular responses, it was necessary to score, as did Carroll and his collaborators, subjects' responses that correspond to those most commonly given on standard word association

norms—that is, the "primary" or most common responses to standard word association stimuli. Word responses falling in this primary category are shown in the column labelled "Primary" on table 1. The table shows that a number of opposite responses—for example, "hot" as a response to "cold," "fast" as a response to "slow"—are also primary responses. In the calculation of final results, therefore, still another response category was separated out, primaries that were not opposites or "nonopposite primary responses," in order to compare with and assess the tendency to give popular primary responses. Word responses in this category are shown by asterisk in the "Primary" column of table l.[95]

Stimulus Word	*Opposite*	*Primary*
table	- - -	chair*
dark	light	light
music	- - -	sound*
sickness	health	health
man	woman	woman
deep	shallow	shallow
soft	hard	hard
eating	- - -	food*
mountain	valley	hill*
house	- - -	home*
black	white	white
mutton	- - -	sheep*

comfort	- - -	chair*
hand	- - -	foot*
short	/ long	tall
	\ tall	
fruit	- - -	apple*
butterfly	- - -	moth*
smooth	rough	rough
command	- - -	order*
sweet	/ sour	sour
	\ bitter	
whistle	- - -	train*
woman	man	man
cold	/ hot	hot
	\ warm	
slow	/ fast	fast
	\ rapid	
wish	- - -	want*
river	- - -	water*
white	black	black
beautiful	ugly	girl*
window	- - -	glass*
rough	smooth	smooth
citizen	- - -	man*
foot	- - -	shoe*

spider	- - -	web*
needle	- - -	thread*
red	- - -	white*
sleep	- - -	bed*
anger	- - -	mad*
carpet	- - -	rug*
girl	boy	boy
high	low	low
working	loafing	hard*
sour	sweet	sweet
earth	- - -	dirt*
trouble	- - -	bad*
soldier	- - -	man*
cabbage	- - -	vegetable*
hard	soft	soft
eagle	- - -	bird*
stomach	- - -	food*
stem	- - -	flower*
lamp	- - -	light*
dream	- - -	sleep*
yellow	- - -	color*
bread	- - -	butter*
justice	injustice	law*
boy	girl	girl

health	sickness	sickness
light	/ dark \ heavy	dark
bible	- - -	God*
memory	- - -	mind*
sheep	- - -	wool*
bath	- - -	clean*
cottage	- - -	house*
swift	slow	fast*
blue	- - -	sky*
hungry	full	food*
priest	- - -	church*
ocean	- - -	water*
head	- - -	hair*
stove	- - -	heat*
long	short	short
religion	- - -	God*
whiskey	- - -	drink*
child	- - -	baby*
bitter	sweet	sweet
hammer	- - -	nail*
thirsty	- - -	water*
city	- - -	town*
square	/ round	round

	\ circle	
butter	- - -	bread*
doctor	- - -	nurse*
loud	soft	soft
thief	- - -	steal*
lion	- - -	tiger*
joy	sorrow	happy*
bed	- - -	sleep*
heavy	light	light
tobacco	- - -	smoke*
baby	- - -	cry*
quiet	noisy	loud*
moon	- - -	star*
scissors	- - -	star*
green	- - -	grass*
salt	- - -	pepper*
street	- - -	road*
king	- - -	queen*
cheese	- - -	mouse*
blossom	- - -	flowers*
afraid	- - -	scared*

Results are shown in tables 2 and 3. The mean percentage of opposite responses (to words considered to be opposite evoking) given by high

creative subjects was considerably greater than the mean percentage of this type of responses by the low creative subjects (table 2). Statistically, this difference is significant at a probability of less than .0005 ($t = 6.46$, $df = 33$). Also, the mean percentage of opposite responses by the creative subjects was considerably greater than their mean percentage of nonopposite primary responses; they had a much greater tendency to give opposite responses than they did to give popular responses. The less-creative subjects also gave more opposite responses than nonopposite primaries, but the difference between the mean percentage of these two types of responses was considerably smaller than in the creative group. In fact, the less-creative group gave almost the same mean percentage of nonopposite primaries as the creative group. As the mean percentage of opposite responses was already significantly higher in the more creative group, the more creative subjects' tendency to respond with opposites rather than with primaries was also significantly greater than the same tendency in the less creative subjects. As there was little to no difference between the two types with respect to giving popular responses, the significant difference with respect to opposite responding shows a decisive comparison. Interestingly also, the creative subjects gave the larger percentage of opposite responses despite the fact that many opposites are very popular responses.

Table 2. Mean Percentages and Standard Deviations for Opposite and Nonopposite Primary Responses in the High-Creative and Low-Creative Groups

Type of Score	No. of Stimuli	High (n = 63) M%	High (n = 63) SD	Low (n = 50) M%	Low (n = 50) SD
Opposites	34	50.77	26.80	40.77	23.66
Nonopposite primaries	65	25.75	18.83	26.57	19.27

Note: M% = mean percentage; n = number of subjects,- SD = standard deviation.

Average time of response with respect to opposite and nonopposite primary response was also sharply different for the two types of subject as seen in table 3. More-creative subjects gave opposite responses more rapidly on the average than less-creative ones, a difference that was statistically significant at a probability of less than .0005 (t = 5.25, *df* — 33). Again, there was no significant difference between the two types of subjects in their rapidity of response with nonopposite primaries.[96] The tendency to respond faster with opposites than with nonopposite primaries was significantly greater for the more-creative subjects than for the less-creative ones. And the more-creative subjects' average time of response when giving opposites was so rapid, 1.24 seconds, it is probable that these words came generally into their minds immediately, or almost immediately, upon hearing the word stimuli.

Table 3. Means of Average Response Times and Standard Deviations for Opposite and Nonopposite Primary Responses in High-Creative and Low-Creative Groups

	High	Low

		(n = 63)	(*n* = 50)
Type of Score	No. *of Stimuli*	*M avg. Response Time (sec) SD*	M *avg. Response Time (sec) SD*
Opposites	34	1.24 .28	1.41 .37
Nonopposite primaries	65	1.53 .39	1.62 .48

Note: M avg. Response Time (sec) — mean of average times of response in seconds.

In this experiment, then, rapid opposite response was clearly a characteristic of those subjects identified as more creative. If we had not been testing the janusian thinking construct, this result would in many ways be quite surprising. Opposite responding to several word stimuli on the standard Kent-Rosanoff word list is rather common and, as will be seen in the next chapter, several psycholinguists have developed explanations for this, explanations emphasizing a presumed simplicity and ingrained nature of this type of response. As creative people put a very high premium on the uncommon and complex—at least so it generally seems—how could creativity be connected with a common and possibly simple type of response? The answer to this question is important for proper evaluation of this result. In the first place, I must emphasize a point that might have been missed in the description of the experiment. Many subjects give opposite responses to certain stimuli on the word association test, but, as Carroll and his colleagues first showed, certain subjects give opposite responses frequently and

characteristically. In the Carroll et al. experiment, this type of characteristic opposite responding—this opposite responding tendency—was also connected to a tendency to give contrast responses, a category of response related to, but not identical with, opposite response. The tendency for subjects in the more-creative group of the current experiment to give contrast responses was extremely marked. The difference with respect to this response category between the more-creative subjects and the less-creative ones was even more statistically significant than the difference in opposite responding. Thus, there is a general and consistent tendency to a certain type of responding involving opposites and the related category of contrasts among more creative subjects. Creative subjects respond with common and even, in certain instances, simple opposites because of this strong and overriding tendency.

Actually, the use of common popular words is not, in itself, surprising in connection with creativity. Creative persons, even creative literary persons with extensive vocabularies, use common ordinary words quite frequently in their works, and they use them in new ways. Poets, for example, are often interested in converting banal phrases, clichés, and dead metaphors to new uses and new meanings. Creative literature does not at all require unusual words or even unusual subject matter but it requires a special ability to mold and structure words and subject matter, whether common or extraordinary. Giving common words and responses in this experiment resulted from the

subjects' showing both the oppositional structure and the sometimes somewhat ordinary content of their thinking. Some degree of aversion to the common and popular does, of course, prevail among creative people, and these subjects were no exception. During the experiment, several subjects expressed dismay at their own tendencies to give plain and inelegant opposites as responses. Nevertheless these responses reflected the subjects' thinking tendency; every effort had been made to discourage and eliminate any distorting or biasing factors. The testers obscured the purpose of the experiment, allayed the subjects' anxieties, corrected misconceptions, and emphasized the importance of responding with the very first word that came to mind. Paper and pencil word association tests group-administered by psycholinguists do not provide for such safeguards and controls and therefore the connection between opposite responding and creativity would have been obscured with such techniques.

The result most pertinent to janusian thinking is that the findings involved not merely the tendency to respond with opposites but also the speed of opposite response. Janusian thinking is not merely a matter of conceiving opposites, opposite words, or opposite and antithetical ideas,- it is the simultaneous conception of any or all of these. The more creative subjects gave opposite responses considerably more rapidly than the less creative ones even though the two groups were equal in intelligence and aptitude, factors which might have affected speed of response. And the creative

subjects' speed of response was rapid enough to indicate the possibility of simultaneous conception of opposites in thought. Here, some obstacle or a reverse result might actually have been expected. Given a reluctance of creative people to respond in popular ways, some subjects might have hesitated before reporting some of their popular opposite responses.[97]

As some internal guarding and aversion to giving opposites must have occurred despite our safeguards and techniques, the emergence of the rapid opposite response pattern is rather influential evidence for the connection between janusian thinking and creativity. Although word association response is primarily indicative of associational rather than directed patterns of thought—word association is not a creative task and not a manifestation of the directed thought processes involved in producing a creation—the strong associational pathways, demonstrated in this experiment, very likely serve to set the stage for the active positing of simultaneous opposition or antithesis in the creative process. As the more creative subjects characteristically gave rapid opposite responses to the standard word association list, even though there may have been some aversion to do so, the association patterns would seem to be rather powerful and persistent. Rather than responding rapidly with opposites because several are simple, popular words (N.B.: all of the nonopposite primaries are simple and popular), of course, the more creative subjects respond in this fashion because of the pattern of their thought processes.

In another experiment carried out in an essentially similar manner, subjects were a group of thirty-four successful business executives. Engaged in managing two different institutions, a bank and a silver manufacturing corporation, these executives performed a wide range of functions, including designing, marketing, and sales, as well as personnel administration. Degree of creativity was again assessed on the basis of information about independent initiative and successful performance in creative areas, and a modified form of the special questionnaire used in the previous experiment was administered.

In order to carry out a more specific assessment of the relationship between rapid opposite response and creativity than in the previous experiment, results on the word association test were analyzed somewhat differently. Rather than calculating opposite, nonopposite primary response and response times for the subjects as a group, these scores were calculated for each individual. Tendency to rapid opposite response was independently defined and the presence or absence of such a tendency was determined for the individual subject. Presence of the rapid opposite response tendency was designated on the basis of two combined criteria: (1) an opposite responding score consisting of an absolute number of opposite responses larger than the absolute number of nonopposite primaries; (2) a rapid opposite measurement consisting of an average speed of opposite response at least 0.05 seconds faster than the average speed of nonopposite primary

response.[98] Any other combinations, such as a rapid opposite measurement without an opposite responding score and vice versa, were designated as an absence of the rapid opposite response tendency.

Results of this experiment were in the same direction as the previous. There was a statistically significant association (chi-square = 8.76, $p < 0.05$) between the presence of the rapid opposite response tendency and questionnaire-measured high degrees of creativity. Among successful business executives, the tendency to rapid opposite response, and assumedly therefore to janusian thinking, is associated with creativity.

A side product of these experiments was the development of a method for identifying persons with creative potential. One of the practical values of the scoring method used with business executives is that it determines a tendency in individuals to rapid opposite responding, and by extension, to janusian thinking. Applied to the easily administered Kent-Rosanoff test, the scoring method is relatively easy. Also, the widely used test can be administered along with a battery of other tests without the subject being at all aware of its function as a measure of creativity.[99] More word association experiments are required, however, in order to extend the results I have reported and to establish the best testing procedure for identifying creative potential. While the Kent-Rosanoff stimuli evoke word responses that are clearly recognized as opposites, such opposites are rather superficial and

easily conceived. Essentially, creative thinking involves complex and recondite, rather than superficial, opposition. A more clear-cut means of identifying creative potential, and a more specific experiment regarding janusian thinking, would therefore involve the use of word stimuli that evoke opposites which are not primary responses, that is, nonprimary or nonpopular opposites. With such stimuli, it would not be necessary to compute both opposite and nonopposite primary scores, but opposite scores alone would suffice. I have carried out pretesting of a list (see chap. 8) evoking such nonpopular opposites and other types of responses.

I have alluded repeatedly to the subtleties and complexities of the factor of opposition; it is now time to explore them and clarify them in greater detail. Moreover, I have said little about the nature of janusian thinking as a psychological process that is both distinct from and related to other psychological processes. Exploring these aspects—opposition, and the psychological nature of janusian thinking—will lead us through psycholinguistics, philosophy, and diverse aspects of psychological theory.

Notes

1 I am referring, of course, to Taoism and Buddhism as theological systems that have commanded the greatest number of adherents in the Orient. While adherence to specific beliefs is difficult to establish, especially in modern day China, the popular folk religion in that country has been largely based on Confucianism. Confucianism, in turn, has depended on Taoism for its theological underpinnings and exegesis.

2 Hans-Joachim Schoeps, *The Religions of Mankind,* trans. R. Winston and C. Winston (New York: Doubleday, 1966), pp. 40 ff.

3 The Judeo-Christian idea of God and Satan is generally considered to have occurred sequentially. Biblical historians often point out that the Hebrew word for the evil one, Shatan, appears late in sacred writings, long after the monotheistic conception of God was well established. But there is also evidence that an ill-defined supernatural principle of evil was contained in the earliest Judaic formulations, long before the name Shatan was actually used. If this is so, and the original Jewish conception of monotheism was really the product of a single thinker such as Abraham, or the Egyptian Ikhnaton, then the monotheistic idea itself consisted of the conception of the simultaneous presence of good and evil in a single supernatural force, and was a product of janusian thought.

4 Quoted in Chang Chung-yuan, *Creativity and Taoism: A Study of Chinese Philosophy, Art, and Poetry* (New York: Harper & Row, 1970), p. 31.

5 See Schoeps, *Religions of Mankind,* p. 178, for this formulation of Nirvana, a generally accepted one.

6 See D. T. Suzuki, *The Zen Doctrine of No-Mind,* ed. C. Humphreys (London: Rider & Co., 1969), p. 52.

7 See R. E. Allen, ed., *Greek Philosophy: Thales to Aristotle* (New York: Free Press, 1966), pp. 25-56.

8 C. K. Ogden, *Opposition* (Bloomington: Indiana University Press, 1932, 1967).

9 F. Nietzsche, *Ecce Homo* (1908), trans. C. Fadiman (New York: Modern Library, 1927), p. viii.

10 In view of Nietzsche's frequent references to his own poor health at the time he achieved these germinating ideas, there is an interesting shift to the opposite here. As Nietzsche manifestly identified himself with Zarathustra, this could have been a janusian formulation of both poor health and great healthiness simultaneously. His health was very bad throughout the period of conceiving and writing *Zarathustra.* After the event described in the quotation above, he wrote, "For a few weeks afterwards I lay ill in Genoa. Then followed a depressing spring in Rome, where I escaped with my life" (Ibid., p. 101). The conception of "great healthiness" for Zarathustra could specifically have resulted from defensive operations of reversal or turning to the opposite, overcompensation, and denial in fantasy. Such defensive operations do not preclude the possibility of a janusion formulation which, although it is a cognitive event, has a range of

defensive and emotional concomitants (as do all cognitive events). If, however, it were solely a defensive operation and Nietzsche did not consciously conceive poor health and "great healthiness" simultaneously, it would *not* be a janusian formulation. Only an emotional predisposition to thinking in opposites would be operating.

11 Ibid., p. 107. In this passage, the rhetorical interrogatory form has been converted to the indicative. As is clear from reading Nietzsche's words in context, the above construction accurately represents the essence of the "Zarathustra type" idea.

12 Ibid., p. 102.

13 Ibid.

14 S. Kierkegaard, Journal IV, A108, 1843, quoted and translated by W. Lowrie in Editor's Introduction of S. Kierkegaard, *Fear and Trembling* (Princeton: Princeton University Press, 1941), pp. xii-xiii. Of interest is Kierkegaard's reference to "divine madness," the term Plato used to describe creativity. In his linking of a simultaneous antithesis to a concept applying to creativity, Kierkegaard seems intuitively to be following the same line I have formulated here.

15 Coleridge, *Biographia Literaria,* 2:262.

16 W. Blake, *The Marriage of Heaven and Hell* (ca. 1790), p. 3, reproduced in facsimile, with an introduction by Clark Emery (Coral Gables, Fla.: University of Miami Press, 1971).

17 M. Ernst, "Inspiration to Order," in *The Painter's Object,* ed. and trans. M. Evans (London: G. Howe, 1937), p. 79.

18 This, I believe, is a factor in a widespread tendency of philosophers and psychologists to study and discuss creativity through a focus on visual art. Writers, of course, face an "empty" or blank page when they start to write and composers face silence, but both the connection between emptiness and definite spatial factors is lacking and the contrast between absence (no words, no sounds) and presence (literature, music) is less marked and is experienced less.

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20 Even the dramatic visual effects produced by the psychedelic drugs, if they were to be structurally useful in the way described, would not be sufficient to produce art. Conception *and* execution are requisite.

21 Quoted in E. Protter, ed., *Painters on Painting* (New York: Grosset & Dunlap, 1971), p. 41.

22 J. Albers, interview by Brian O'Doherty on National Educational Television, 1962; Center for Cassette Studies Tape no. 27605, Audio Text Cassettes, 8110 Webb Avenue, North Hollywood, California 91605.

23 H. Moore [Untitled], in *Unit 1,* ed. H. Read (London: Cassell & Co., 1934), p. 29.

24 H. Moore, interview by Donald Carroll, England; Center for Cassette Studies Tape no. 29818, Audio Text Cassettes, 8110 Webb Avenue, North Hollywood, California 91605.

25 As music involves motion and rest in a prominent way, it should be no surprise that composers often allude to such ideas.

26 P. Klee, *The Thinking Eye: The Notebooks of Paul Klee,* ed. J. Spiller (New York: G. Wittenborn, 1961), p. 51.

27 Ibid., p. 50.

28 Chang Chung-yuan, *Creativity and Taoism,* see esp. pp. 199-238.

29 K'ung Yen-shih, in *The Secret of Painting,* quoted in ibid., p. 212.

30 Shen Tsung-ch'ein, in *The Study of the Painting of Chieh Chou,* quoted in ibid., p. 218.

31 J. Albers, *Interaction of Color* (New Haven: Yale University Press, 1963), p. 32.

32 Albers, "Interview by O'Doherty."

33 Focused on a single geometric shape as they were, the *Homage to the Square* paintings as a group also emphasized and enhanced diversity of color and of color effect.

34 Vincent van Gogh, *Further Letters of Vincent van Gogh to His Brother* (London: Constable, 1929), p. 166.

35 Michel E. Chevreul, De la Loi du contraste simultane des couleurs et de Vassortiment des objets colories (1839); trans. by C. Martel as The Principle of Harmony and Contrast of Colors, and Their Application to the Arts (London: Bohn, 1860).

36 See John F. A. Taylor, *Design and Expression in the Visual Arts* (New York: Dover, 1964), pp. 177 ff.

37 Quoted in C. R. Leslie, *Memoirs of the Life of John Constable,* ed. A. Shirley (London: Medici Society, 1937), p. 118.

38 Ibid., p. 394.

39 Quoted in English translation from Redon's journal and letters in R. Goldwater and M. Treves, *Artists on Art* (New York: Pantheon, 1945), p. 361.

40 P. Mondrian, "Plastic Art and Pure Plastic Art," in *Circle,* ed. J. L. Martin, B. Nicholson, and N. Gabo (London: Faber & Faber, 1937), p. 46. Note that Mondrian's designation "same value but of a different aspect and nature" corresponds to the definition of opposition presented here in chapter 8.

41 See K. Clark, *Leonardo da Vinci* (Cambridge: University Press, 1939); see also P. Taylor, ed., *The Notebooks of Leonardo da Vinci* (New York: New American Library, 1960). An example of Leonardo's janusian thinking is the following: "The motions of a dead thing will make many living ones flee with pain and lamentation and cries—*of a stick, which is dead"* (from Taylor, p. 180).

42 Richter described this drawing as follows: "they are back to back because they are opposed to each other; and they exist as contraries in the same body, because they have the same basis, inasmuch as the origin of pleasure is labour and pain, and the various forms of evil

pleasure are the origin of pain" |f. P. Richter, ed., *The Notebooks of Leonardo da Vinci* [New York: Dover, 1970], 1:353).

43 A. Conti, "Leonardo pittore," *Conferenze Fiorentine* (Milan: 1910), pp. 108-9.

44 Clark, *Leonardo da Vinci,* p. 118.

45 Attributed by Eugene Muntz to an important nineteenth-century critic whose nom-de-plume was Pierre de Corlay (E. Muntz, *Leonardo da Vinci: Artist, Thinker, and Man of Science* [London: William Fleinemann, 1898], 2: 155-56).

46 H. Keller and B. Cichy, *Twenty Centuries of Great European Painting* (New York: Sterling, 1958), p. 103.

47 W. Gaunt, *A Guide to the Understanding of Painting* (New York: Harry N. Abrams, 1968), pp. 246-47. Gaunt uses the term "contrast" as synonymous with "opposite," not in the broader sense discussed here in chapter 8 below.

48 Taylor, Design and Expression, p. 95.

49 See A. H. Barr, Jr., *Picasso: Fifty Years of* His *Art* (New York: Museum of Modern Art, distrib. by Simon &. Schuster, 1946), p. 272.

50 I am grateful to Rudolf Arnheim for his scholarship and his penetrating work, *Picasso's Guernica: The Genesis of a Painting* (Berkeley: University of California Press, 1962). This book first brought these sketches to my attention and it contains many valuable insights, although Arnheim's analysis is not the same as the one I am presenting here.

51 Up to this point, my description follows that of Arnheim. The material following is my own.

52 An unintentional but striking affirmation of the presence of a simultaneously opposed spatial orientation is provided by the content of a controversy between two leading interpreters of the painting, Anthony Blunt and Rudolf Arnheim. In his book on the painting (*Picasso's Guernica* [New York: Oxford University Press, 1969]), Blunt takes issue with Arnheim as follows: "Some writers, e.g. Rudolf Arnheim, *Picasso's 'Guernica,'* Berkeley, California, 1962, p. 19, identify the setting of the painting as the interior of a room, but, summary

though the drawing of the buildings is, there is no question they are intended to show exterior walls, and the electric light could be a street lamp just as well as a hanging light in a room" (p. 59, note). Rather than taking sides and opting for a street lamp or a hanging light, we must surely consider that both of these trained and perceptive observers are correct in part: the scene is both an interior and an exterior. Despite their training and perceptiveness, neither Arnheim nor Blunt would necessarily notice this simultaneous opposition unless prepared to see it.

53 Quoted in Barr, *Picasso* (italics in the original).

54 Frank L. Wright, "Organic Architecture Looks at Modern Architecture," in *Seven Aits,* ed. F. Puma (New York: Doubleday, 1953), p. 68.

55 Quoted in R. Erickson, *Sound and Structure in Music* (Berkeley: University of California Press, 1975), p. 105.

56 Hans Mersmann, "Versuch einer musikalischen Wert asthetik," Zeit- *schrift fur Musikwissenschaft,* 17 (1935) :40 (passage translated by Meredith Nunes).

57 Langer reinterprets Mersmann's assertion, substituting the term "ambivalence" for expression of opposites, and Epperson endorses her term rather than Mersmann's; see S. Langer, *Philosophy in a New Key* (Cambridge, Mass.: Harvard University Press, 1942), pp. 243-45; G. Epperson, *The Musical Symbol* (Ames: Iowa State University Press, 1967), pp. 73 ff. It is not clear whether these later authors merely prefer the term "ambivalence" because of its psychological connotations. Epperson emphasizes conflict in the ambivalence, "the simultaneous push-pull of conflicting forces" (p. 307) and therefore continues to suggest polarity. Neither of the two later authors take any issue whatsoever with the idea of simultaneity, however,- "ambivalence" therefore refers, at the very least, to expression of a simultaneously double or multiple entity. I was not aware of Mersmann's formulation when I first discovered janusian thinking and was therefore quite interested to find such a specification and an indirect support for its operation in music from an independent and sophisticated source.

58 L. Bernstein, *The Unanswered Question* (Cambridge, Mass.: Harvard University Press, 1976).

59 In its initial and still essential meaning, counterpoint, that major musical mode of Western music in the sixteenth and seventeenth centuries surviving into modern times, is considered to be

the sounding of two or more opposite voices simultaneously. Sometimes used interchangeably with the term "polyphony" to refer merely to multiple different voices together, true counterpoint seems to consist of the construction of simultaneous opposition. Many rules for constructing counterpoint in musical composition have, of course, been formulated, but the creative composer has usually been distinguished by his own special contrapuntal effects. Although it is often difficult to ascertain whether clear-cut opposition or antithesis is involved because the form has become so elaborated and familiar, the creative composer's capacity to contruct effective contrapuntal themes within the context of an entire piece may require janusian thinking, and the specification and bringing together of opposites.

60 M. Graf, *Die innere Werkstatt des Musikers* (Stuttgart: Verlag von Ferdinand Enke, 1910), p. 206.

61 A. Schmitz, *Beethovens zwei Prinzipe: Ihre Bedeutung fur Themen und Satzbau* (Berlin: Ferd. Dummlers Verlagsbuchhandlung, 1923), pp. 3—11.

62 In the next chapter, I draw a distinction between, contrast and opposition. However, in the case of music, where opposition is totally based on context, it is justifiable to equate contrast and opposition.

63 Bernstein, *Unanswered Question,* pp. 41-42, figs. 112-25.

64 W. A. Mozart, a letter, quoted in E. Holmes, *The Life of Mozart* (London: Dent, 1912), p. 256. This statement is taken from Mozart's only extant reference to his processes of creating. Although Holmes indicates he has seen the letter, first published by the critic Rochlitz in vol. 17 of the *Allgemeine Musikalische Zeitung,* and therefore vouches for its authenticity, some experts have raised questions about Mozart's authorship; see ibid., p. x; see also H. Mersmann, ed., *Letters of Wolfgang Amadeus Mozart,* trans. M. M. Bozman (London: Dent, 1928). Mersmann states the letter is a *bona fide* Mozart (p. vii).

65 S. T. Coleridge, *The Friend: A Series of Essays* (London: William Pickering, 1850), 1:166. Coleridge is specifically referring to a work of Cimarosa, a composer he calls "Mozartish." I was unaware of this passage and Coleridge's use of the Janus metaphor at the time I discovered the janusian process, and again it seems a type of independent support from a major creator. Coleridge's use of the phrase "a female Janus" is of double interest because, in posing the opposite sex designation for the traditionally male god Janus, he enriches the metaphor by means of his, the poet's, own janusian thinking.

66 See Hindemith's description quoted in chap. 10 below. Schubert indicated he composed a complete song in a single flash; quoted in Harding, *Anatomy of Inspiration,* p. 71.

67 Claudio Monteverdi, Preface, *Eighth Book of Madrigals:* Madrigali guerreri ed amorosi, 1638; quoted in S. Morgenstern, ed., *Composers on Music* (New York: Pantheon, 1956), p. 22. In addition to other deletions for the sake of readability and clarity, I have deleted the translated word "although" in the sentence describing the agitato style as sixteenth notes sounding together with the voice in slow tempo; otherwise this statement, put in a negative way, might be confusing for those not familiar either with the musical issues involved, or with Monteverdi's music.

68 See A. Schoenberg, *Style and Idea* (New York: Philosophical Library, 1950).

69 Ibid., p. 105.

70 Interestingly, Bernstein maintains that Schoenberg's actual musical pieces were not as successful and, by implication, not as creative as was Schoenberg's theoretical impact. Alban Berg, Schoenberg's disciple, wrote more pleasing music than Schoenberg, according to Bernstein, because he composed pieces that were both nontonal and tonal at once; see Bernstein, *Unanswered Question,* pp. 301 If.

71 I. Stravinsky and R. Craft, *Conversations with Igor Stravinsky* (Garden City, N.Y.: Doubleday, 1959), *Memories and Commentaries* (Garden City, N.Y.: Doubleday, 1960), *Expositions and Developments* (Garden City, N.Y.: Doubleday, 1962), *Dialogues and a Diary* (London: Faber St Faber, 1968), *Themes and Episodes* (New York: Knopf, 1966); I. Stravinsky, *Stravinsky: An Autobiography* (New York: Simon & Schuster, 1936), *Poetics of Music,* trans. A. Knodel and I. Dahl (Cambridge, Mass.: Harvard University Press, 1947).

72 Stravinsky, *Poetics of Music,* pp. 36-37.

73 R. Sessions, *The Musical Experience of Composer, Performer, Listener* (Princeton: Princeton University Press, 1950), pp. 50, 52-54.

74 It seems likely that he did not want to be confusing or digressionary by mentioning this; or else he considered it unimportant.

75 See J. L. Mursell, *The Psychology of Music* (New York: Norton, 1937), p. 274.

76 See Harding, *Anatomy of Inspiration,* p. 76.

77 L. B. Meyer, *Emotion and Meaning in Music* (Chicago: University of Chicago Press, 1956, 1961).

78 It might be considered that kinesthetic experience is closer to visual experience than it is to auditory in that one can "shut off" motion, i.e., stand still. However, the experience of continued internal motion, heartbeat, etc., subjectively disrupts such a state.

79 Aristotle, *The Poetics,* trans. W. H. Fyfe (Cambridge, Mass.: Harvard University Press, 1932); Coleridge, *Biographia Literaria,* 2:12; C. Brooks, "The Language of Paradox," in *The Language of Poetry,* ed. A. Tate (Princeton, N.J.: Princeton University Press, 1942), p. 37; Burke, *Permanence and Change,* pp. 71-168.

80 R. Graves, *On English Poetry* (London: William Heinemann, 1922), p. 13; M. Beardsley, "The Metaphorical Twist," *Philosophy and Phenomenological Research* 22 (1962) :293-307; M. Black, "Metaphor," *Proceedings of the Aristotelian Society* 55 (1955) :273-94; Hausman, *Discourse on Novelty and Creation,* esp. pp. 85-123.

81 Joseph Conrad, Preface to *Nostromo, Nostromo* (London: Dent, 1918), p. ix.

82 These passages are from Anthony Trollope, *Autobiography* (New York: George Munro, 1883), pp. 75 and 77. In the account here, Trollope's ironic comments about the poor wisdom of his intentions have been deleted, as they clearly refer to his disappointment about the extent of the book's sales. *The Warden* was, nevertheless, his first popularly successful novel.

83 "Herefordshire" is emended from the 1883 edition, according to *The Oxford Trollope* (1950). The 1883 edition has "Worcestershire."

84 V. Woolf, *A Writer's Diary,* ed. L. Woolf (New York: Harcourt, Brace, 1954), pp. 139-40.

85 Rothenberg, "The Iceman Changeth."

86 Quoted in T. Cole, *Playwrights on Playwrighting* (New York: Hill & Wang, 1960), p. 232, from an interview in the newspaper *La Nacion,* Buenos Aires,'November 30, 1933, translated by Joseph M. Bernstein.

87 C. Bonnefroy, ed., *Conversations with Eugene Ionesco* (London: Faber &. Faber, 1970), pp. 72-73.

88 A. Rothenberg, "Word Association and Creativity," *Psychological Reports* 33 (1973) :3-12, and "Opposite Responding as a Measure of Creativity," *Psychological Reports* 33 (1973) :15-18.

89 J. B. Carroll, P. M. Kjeldegaard, and A. S. Carton, "Opposites vs. Primaries in Free Association," *Journal of Verbal Learning and Verbal Behavior* 1 (1962): 22-30.

90 Numerous ways of categorizing word association responses are possible. Classification schemes have ranged from the highly complex and intricate one developed by Gardner Murphy ("An Experimental Study of Literary vs. Scientific Types," *American Journal of Psychology* 28 [1917] :238—62), which includes categories such as contiguity, similarity, opposites, subordination, supraordination, and cause and effect, to the relatively simple differentiation of paradigmatic and syntagmatic used by modern psycholinguists (see n. 24, chap. 8; below). For further information about the types of schemes and the difficulties of establishing satisfactory categories, I refer the interested reader to Phebe Cramer, Word *Association* (New York: Academic Press, 1968). In spite of the diversity of possible classifications and the difficulty in designing any one scheme that is generally suitable, opposite responding is relatively easy to identify empirically and, in all word association research, opposite responding is scored either as a separate category or is subsumed under a more general one. For example, the paradigmatic classification mentioned, which is based on substitutability, subsumes both synonym and antonym (or opposite) responses.

91 Two testers, Judith G. Scott and the late Jane Glassman, administered the tests for the entire group. Subjects were randomly assigned to each of the testers in order to control for possible influence of the testers' personality or technique on results obtained. Statistical assessment indicated insignificant overall difference between the results obtained by the two testers.

92 The usual list contains 100 words for statistical convenience. The standard Kent-Rosanoff word "chair" was replaced by the word "fair" for this test, so 100 words actually were presented, but ninety-nine were scored. The word "fair" was used because it had an unequivocal opposite, "unfair." Because it was not a standard stimulus word, however, responses to this word were scored separately and results reported here do not include these scores.

93 Measurement of the time from the presentation of the stimulus to the beginning of each response was obtained both by a stopwatch carried by the tester and by electronic measuring of response times directly from the tape recording. Only electronic time measures are reported in the results; the stopwatch was held by the tester during the experiment primarily to keep the subject aware that responses were being timed.

94 Previous classification study described in Rothenberg, "Word Association and Creativity"; this article also gives further description of the characteristics of the creative group.

95 Responses that were neither opposites nor primaries were classified as "others," but these scores are of little pertinence here and will not be reported.

96 That rapidity of opposite response is not a function of Marbe's Law, i.e., common responses are given more rapidly than uncommon ones on word association tests, is demonstrated by the time difference between all opposite responses here and the highly common nonopposite primaries.

97 Should the question arise of whether the testers implicitly encouraged or willingly stimulated opposite responding, let me add and emphasize that neither of the two testers were informed of the experimental hypothesis.

98 See Rothenberg, "Opposite Responding," for specification of empirical criteria on which these calculations are based and for further information about procedure.

99 As a test for creative potential, cautions pertaining to this procedure must be emphasized. It is extremely important that the subject be put at ease and that every effort be made to encourage his reporting his first association. Excessively delayed responses to the word stimuli should he discarded, and retesting of these words or of the entire list should be done. Only then can the aversion to giving popular responses be minimized.

Nonopposite primaries.