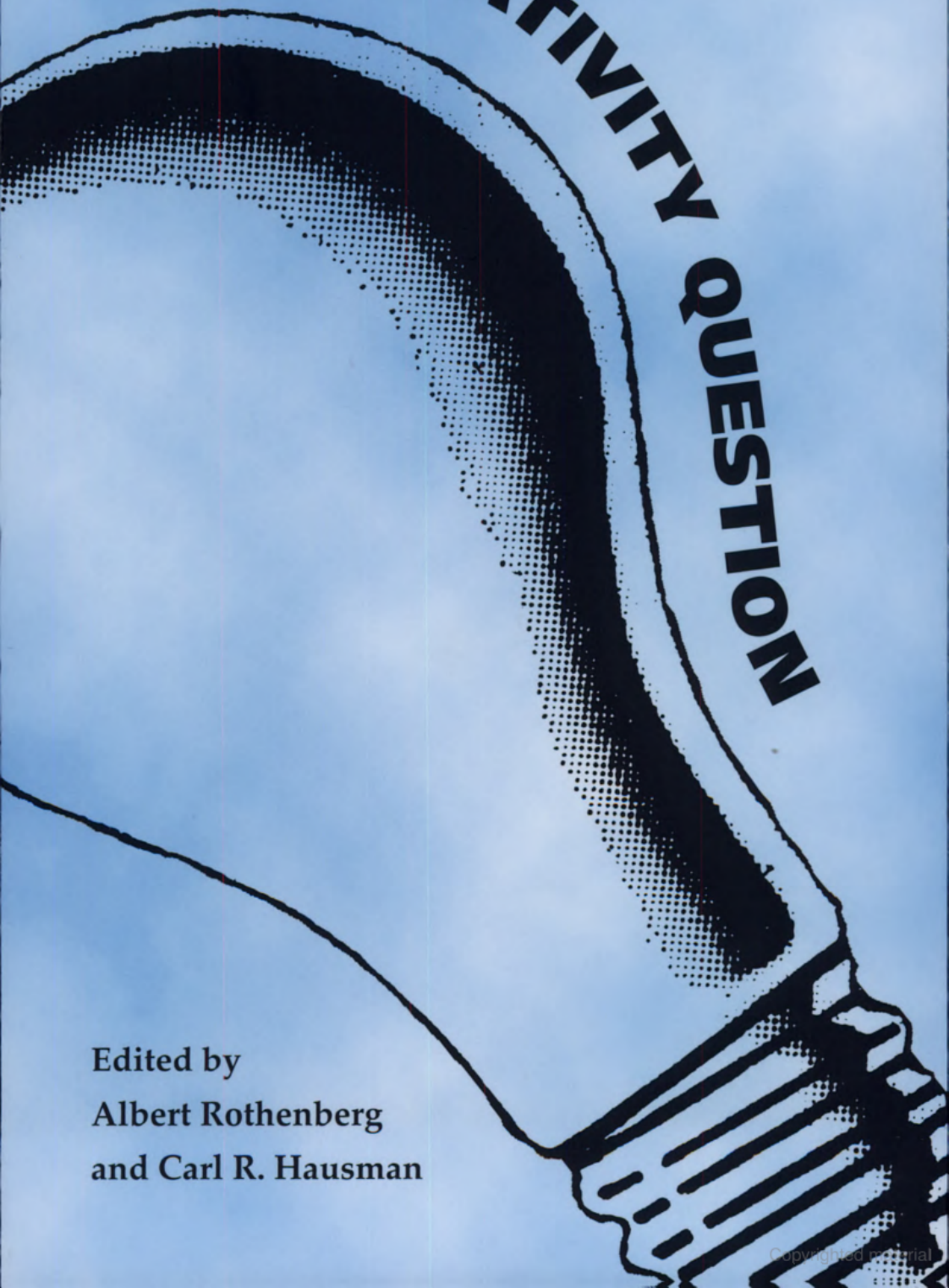
THE CREATIVITY QUESTION



Edited by
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QUESTION

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Duke University Press

Durham, N.C.

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Library of Congress Cataloging-in-Publication Data
appear on the last printed page of this book.
Eighth printing, 1996

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PREFACE

This book of readings can be traced to a twofold inception: chance and the convergence of two directed interests. Chance made possible the first meeting of the editors, a psychiatrist and a philosopher. The previous investigative interests of the editors were brought together because of this meeting. Although no claim is made that the overall result is a radical creation, both valuable and totally new, the combination of chance and directed interest does suggest two general characteristics that, to us, seem evident in creative processes: novelty or the unprecedented, and order, or control and design. A control or design present in the activity and an unexpected or unprecedented appearance of a phenomenon or an entity are two of the marks of creativity. These two features are central to the thinking that lies behind the general construction as well as the thread of discussions accompanying the selections we have included in this book.

In addition to this underlying focus on the combination of novelty and control, several other principles operated in our choices and organization of the selections. These principles are the product of the two professional or disciplinary perspectives of the editors. Although it might conceivably be of some interest to spell out our view of these perspectives in great detail, we believe that our views will be evident in what we say in the general introduction, in explanatory comments throughout the book, and in the selections from our own writings that are included. Moreover, each of us has discussed his perspective in other places.[1] We conceive philosophy in a somewhat traditional and general sense in distinction to some current and influential philosophical movements. Philosophy is a reflective, critical, and sustained development of our understanding of the widest possible range of experience into the most comprehensive and coherent view that it is possible to construct. Psychiatry, in the broadest sense, is an approach to amelioration of difficulties and discordances in human behavior and experience, an approach derived from systematic and empirically based information about both normal and abnormal psychological processes.

1. See especially Rothenberg, Albert. "The Iceman Changeth: Toward an Empirical Approach to Creativity," *Journal of the American Psychoanalytic Association*, 17:549–607, 1969; Hausman, Carl R. *A Discourse on Novelty and Creation*. The Hague: Nijhoff, 1975.

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This brief account of our general perspectives should help the reader see why we have adopted the principles that underlie the organization of the book. Although these principles will be understood better following a reading of the Introduction, we shall sketch them here in anticipation of our more thorough discussion of the complex cluster of issues and points of view associated with the study of creativity.

The main body of selections falls into three general categories: description, explanation, and alternative approaches, in Chapters Two, Three, and Five respectively. These categories illustrate the major issues involved in approaches to creativity. The selections that appear under the category of description focus primarily on identifying significant features and stages or phases of creative processes. Those that fall under explanation are attempts to determine the conditions or factors responsible for creative activity; also, they are essentially geared toward predicting creative activity and its outcome. The third category covers selections in which the authors explore the possibility of understanding creativity in ways that do not require that creative acts be predicted or that all conditions for their occurrence be named.

Basically, the inquiry into creativity has not progressed in a clear continuous line of historical development. Recognizing that some chronology and historical development exists and is therefore of some interest, however, we have presented selections chronologically when this presentation does not interfere with the conceptual principle. We have also included a special chapter, Chapter Four, containing some recent examples of attempts to explain creativity and illustrating some special types of exploratory trends: creativity of women, brain research, synectics, extrasensory perception, behaviorism and creativity, and computer programming.

Since specific orientations to creativity can be traced to particular initiating thinkers and investigators, we have included a separate chapter, Chapter One, composed of seminal accounts. This chapter should serve both to illustrate the essential types of orientations toward understanding creativity, and to provide some developmental perspective. Selections from the following are included: Plato's writing on creativity as the foundation for two traditions, supernaturalism, which finds the source of creative acts in a superhuman power, and a tradition which rejects the hope of explaining creativity rationally; Aristotle's works as the foundation for both naturalism and rationalism, orientations in which creative acts are rationally explained as natural events or as consequences of universal and ultimate principles; Freud's work as the initiator of a clear-

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cut emphasis on fantasy and unconscious processes in creation; Galton's writings as seminal to a strong emphasis on genetic explanation within the naturalist tradition; Kant's work as an initiator of the type of alternative approach that emphasizes the self-determining and unpredictable aspects of the creative act rather than those aspects that are associated with antecedent conditions and prediction.

After the presentation of seminal accounts, the sequence of chapters in the book is intended to illustrate a progression and a transition in which studies of creativity focus less on description and more on explanation, and finally to highlight the challenge to explanation presented in the chapter on alternative approaches. We do not necessarily intend these alternative approaches to be the final word on creativity; we present them last so that the thoughtful sequential reader will appreciate the full significance of their orientations. Further explanations of the sequences and organization of selections will be found in the general introduction as well as in the introductions to each chapter. References and recommendations for further reading are included for each chapter.[2]

The editors wish to acknowledge their gratitude to all those who helped make this volume possible. Albert Rothenberg's aspect of the work was supported in part by two five-year Research Scientist Career Development Program Awards from the United States Public Health Service. The Estate of Gladys B. Ficke, Ralph F. Colin Executor, and the John Simon Guggenheim Memorial Foundation also provided time and support required to complete the book as it reached its final stages. Carl Hausman's contribution was supported by resources from the Central Fund for Research, The Pennsylvania State University. Also, two summer grants from the American Philosophical Society and the award of a sabbatical leave by The Pennsylvania State University, 1974–75, were essential to providing time needed to work on the volume at various stages of its construction.

Albert Rothenberg warmly acknowledges the man who most encouraged his interest in creativity during his college years, Henry A. Murray. Carl Hausman is grateful to all his teachers and colleagues who have provided encouragement and friendly criticism for the writing and study associated with the topic of this book. Both editors express appre-

2. For a complete bibliography of scientific writings on creativity, we refer the reader to: Rothenberg, A., and Greenberg, B. *The Index of Scientific Writings on Creativity: Creative Men and Women*. Hamden, Conn.: Archon Books, 1974; and Rothenberg, A., and Greenberg, B. *The Index of Scientific Writings on Creativity: General, 1566–1974*. Hamden, Conn.: Archon Books, 1976. A discussion of the philosophical antecedents of the traditions and perspectives on the problems of creativity, particularly as these are found in Plato, Aristotle, and Kant, appears in Hausman, *Discourse on Novelty and Creation*, pp. 2-17.

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THE CREATIVITY QUESTION

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INTRODUCTION

THE CREATIVITY QUESTION

The search for knowledge about creativity is linked with magic, the demonic, and the divine, yet such knowledge is at the forefront of rational inquiry. Creativity is paradoxical and complex, and the most steadfast investigator is constantly beset with feelings of awe and a sense of mystery as he pursues his inquiry. Creativity encompasses the magical incantations and drawings of primitive man, the appearance of new forms in nature, and the evil genius of Faust. It is a human capacity but it seems to transcend human capacities. On the one hand, the investigator is lured and excited by a tantalizing paradox, and on the other, he is deterred by nagging doubts about whether he is naively trying to explore and rationalize an impenetrable aspect of human experience. To make matters more complicated, investigation is fraught with a host of concrete and theoretical problems. The empirical investigator constantly turns to creative persons for his data and he interrupts their work for lengthy interviews or myriad types of tests and experiments. The philosophical investigation of creativity raises issues about the creation of the world, free will versus determinism, and the basic nature of experience—issues that some consider fruitless and unanswerable. Yet there is a need for rational understanding of creativity that supersedes these doubts, irritations, and criticisms: creativity has direct pertinence to diverse types of disciplines and to the enhancement of humanistic goals in our technological and atomic age.

In psychiatry and psychology an understanding of creativity is of utmost and immediate importance. Pertaining quite directly to basic concepts of health and disease, insights into creativity would contribute significantly to the medical practice of psychiatry. Although there have been many advances in psychiatric knowledge during the past century, the basic concepts of mental health and illness are still notoriously confused and inconsistent. Certain types of behavior can be fairly readily classified as maladaptive or markedly deviant but these classifications have little

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relationship to any clear, positive concept of adaptive behavior or psychological health. Unlike those in the field of medicine, who describe health in terms of statistical norms and averages, psychiatrists have resisted equating the statistically frequent with the healthy. Although such rejection of the average as healthy or normal seems to be quite appropriate in the area of human behavior, psychiatrists have provided no alternative to the medical approach except some vague and implicit standard of ideal behavior. Consequently, by default, each psychiatric practitioner establishes his own personal, value-laden criteria of health with each of his patients. This problem is surely more than merely of theoretical significance. Without clear criteria for health as well as for disease, it is difficult to establish goals of treatment or to evaluate the effectiveness of the myriad forms of therapy that are practiced today. Since creativity is in the most definite sense a capacity of those specially talented human beings who contribute significantly to society and to life, it is an ideal form of behavior; consequently, it behooves us to try to understand creativity as specifically as possible in order to develop a clear notion of ideal, normal, and pathological. For example, is it appropriate to speak of creativity as a legitimate goal of therapy or as an aspect of health? Is the absence of creativity appropriately considered to be a manifestation of disease? Though many will rush forward with firm and ready answers, we submit that these questions can only be answered meaningfully when we know as much as possible about what creativity is.

For psychology the problem of creativity also pertains to questions about normal functioning, and it relates as well to current central concerns with motivation, cognitive functioning, psycholinguistics, and personality theory. Creativity involves unusual, seemingly deviant psychological processes that lead to highly positive outcomes. The processes of creation, particularly artistic creation, highlight issues about unconscious and conscious motivation, and creative thinking is a form of cognition with special relationships to learning, concept formation, and problem-solving. Literary creativity has much pertinence to psycholinguistics. An understanding of creativity must be incorporated in any account of motivation, cognition, linguistic functioning, or personality, and a clarification of the apparently aberrant but positive creative processes should shed light on more routine psychological functions.

In philosophy the acknowledgment of the possibility of radical creativity, i.e., creation in some sense *ex nihilo*, or out of nothing, has been central to the development of the relatively recent movement of existential philosophy. As an issue radical creativity is also important for another

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dominant contemporary movement, analytic philosophy. In opposing metaphysics, the analytic philosopher must come to grips in a critically important way with whether or not radical creation is meaningful. If it is considered meaningful, he needs to propose an appropriate analysis of the topic. If it is considered meaningless, then he should account for language referring to the appearance of new things. Anyone directing philosophical inquiry toward some form of comprehensive view must come to grips with the place of creativity in our experience.

Many other types of professionals, including educators, educational psychologists, business executives, and government personnel concerned with manpower, are interested in creativity in an immediate and pressing way, primarily in order to identify and nurture creative talent. Clearly a laudable aim, nurturing creativity could contribute greatly to the benefit of all mankind. How such a purpose could be advanced or whether it is in fact feasible to consider nurturance of creativity a realistic possibility depends entirely on an understanding of the phenomenon.

Traditionally, artists of all types have been concerned with exploring and imparting some understanding of the nature of their own creativity, both within their art and in public utterances; many artists and art critics believe that systematic exploration of creativity is crucially important to art and art criticism. And many modern artists consider the documentation of a creative process unfolding to be a central artistic goal. Artists' current special concern with creativity, we feel, lends particular support to our assertion that the investigation of creativity is at the forefront of rational inquiry. Artists are our most perceptive commentators on the human condition. The investigation of creativity is at the forefront of contemporary rational inquiry because it potentially sheds light on crucial areas in the specific fields of behavioral science and philosophy and, more deeply, because it concerns an issue related to man's survival: his understanding and improvement of himself and the world at a time when conventional means of understanding and betterment seem outmoded and ineffective.

Although highly important and pressing, the task of gaining knowledge about creativity is very difficult. In all its aspects, creativity is quite complex. Numerous and complicated methodological and conceptual problems arise. For one thing, the topic has generated a web of conflicting assumptions in which investigators all too readily become enmeshed. Empirical scientists studying creativity seem to be particularly caught in such a web. Traditionally, it has not seemed particularly necessary or fruitful for empirical scientists to concern themselves with basic assumptions

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about the scope and methodology of their particular subjects of study at every step along the way. Constantly raising such issues often serves to retard progress in inquiry. There have been times in the history of thought, however, when questioning basic assumptions has had far-reaching consequences. For instance, at one point psychologists questioned basic notions about causality and found it necessary to modify earlier assumptions. In keeping with Hume's thesis that causal connections can be understood only as invariant sequences, many psychologists substituted the notion of "correlation" for cause, believing that such a modification could avoid unfruitful speculation. Similarly, with regard to creativity, we believe it is crucially important for investigators from diverse disciplines to concern themselves with basic assumptions. This topic particularly demands that the investigator look at his presuppositions about continuities and regularities in nature, a matter to which we shall return throughout this book.

In identifying and organizing the material on this topic, we ourselves have made a basic assumption. We have taken for granted that there is some common pattern to diverse activities that are commonly and generally designated as "creative," i.e., activities that share the essential attributes of both *newness* and *value*. We have therefore included studies focusing on the genius and processes of creation in art, science, and other fields as well as those emphasizing a presumed capacity for creativity in everyone. Minimally, however, creativity consists of the capacity for, or state of, bringing something into being. And bringing something into being involves at least three separable components: an agent, a process, and a product. In surveying the literature, therefore, it will be useful to distinguish between three different foci of interest: the creative person, the creative process, and the created object. Although investigators of creativity do not always specify the particular focus or foci of their studies, it is helpful to bear these foci in mind because they influence method and conclusions. Some investigations are devoted exclusively to one of these three foci. For example, MacKinnon's, Barron's, and Helson's studies are focused on the personality attributes of architects, writers, and mathematicians, while Roe reports on the personality characteristics of scientists. Kris, Kubie, Wallas, Patrick, Crovitz, and Skinner focus almost exclusively on the creative process, and Morgan and Kant base their conclusions on the characteristics of the created object. Other investigators include more than one of these foci at the same time. For example, Lee discusses artists and the process of creating art, Ehrenzweig the work of art and the process of creating it, Rank the artist and the art product.

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and increase our awareness of experience, the personality qualities of spontaneity and openness to experience—potential attributes of everyone—seem related to creativity. The assumption of a potential for creativity in everyone does not necessarily refer to the creation of tangible products; the proposal that everyone is capable of producing tangible creations is highly hypothetical and difficult to prove, especially in the absence of an understanding of the means whereby tangible creations are produced. Primarily the issue turns on what we expect creativity to contribute to experience. The particular locus of inquiry—where one begins and what one expects to gain—depends upon how broadly or narrowly creativity is conceived. If creativity is conceived as equivalent to the broad and general qualities of spontaneity and openness, then we may center our inquiry on creativity in everyone. If, on the other hand, creativity is conceived as requiring radical change, productive of far-reaching new value, then we should confine our study to special talent or genius.

Scope of Research and Inquiry

In spite of the complexity of the topic, progress has been made. The selections here cover a wide range representing diverse disciplines with diverse definitions and approaches to creativity. Some approach creativity as a capacity or state qualitatively limited to the genius or persons with special talent whereas others, especially Maslow, Rogers, and Gordon, define creativity or a type of creativity as potentially present in everyone. Kant asserts that genius, or creativity, is found in the arts but not in science; Galton, Lombroso, Roe, Guilford, Barron, Helson, Wallach and Kogan, and Torrance attempt to study genius and/or creativity in diverse areas including science, mathematics, jurisprudence, and politics as well as the activities of school children. Guilford, Crovitz, and Getzels and Csikszentmihalyi define creative thinking as a form of problem-solving. Bergson finds creativity in the flux of time and Maritain traces human creativity to God. To some extent, the diversity of definition reflects the diversity of purpose of the various types of investigators. Philosophers, by and large, are interested in creativity as related to a world view or as a topic in aesthetics and their discussions of creativity either constitute part of a total philosophy or imply one. Psychologists are interested in making predictions about creativity and in developing tests which identify creative talent. Educational psychologists, represented here by E. P. Torrance, have many of the same goals as other psychologists but they are also especially interested in nurturing and developing creativity. And W. J. J. Gordon, the management consultant, strongly emphasizes

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creation. Wallas and Patrick emphasize specific phases occurring in a fairly regular sequence and include a phase of incubation where creative work occurs outside of consciousness. Blanshard and Cannon, Ehrenzweig and Jung, as well as Freud and other psychoanalysts represented here also emphasize a process occurring outside of consciousness. These formulations of nonconscious processes in creativity differ in significant ways. Blanshard's subconscious functions in accord with a system of teleological necessity and does not have the specifically defined determining effect upon consciousness of the Freudian Unconscious. Cannon's process is extraconscious rather than unconscious and also differs from the psychoanalytic Unconscious in having no necessary determining effect upon consciousness. Jung emphasizes the autonomous complexes which unearth the Collective Unconscious. Like the Freudian Unconscious, Jung's Collective Unconscious does have a determining effect on consciousness in creation. In addition, the Collective Unconscious accounts for an audience's favorable response to a creation, particularly an artistic creation. In the study presented here, Freud emphasizes the role of fantasy in the production of literary works. For Freud, such fantasy is primarily a manifestation of preconscious thoughts and feelings; in his general theory, however, he also emphasizes the role of the Unconscious in creation. Kris supplements Freud's general formulations with a specific notion of "regression in the service of the ego" or ego-controlled regression. According to Kris, "regression in the service of the ego" is the specific means whereby preconscious and unconscious material appear in the creator's consciousness. Kubie's emphasis on preconscious processes is derived from both Freud and Kris. But unlike them, Kubie insists that preconscious processes alone produce creations. Coming from another type of background, the psychoanalytically oriented art teacher, Anton Ehrenzweig, emphasizes the role of the Unconscious in artistic creation. Ehrenzweig postulates a special process previously undescribed, however, which he calls "unconscious dedifferentiation." Since this process involves a specific kind of perception allowing for unconscious scanning, it is operative both in the artistic creative process and in the audience's appreciation of art.

Among the authors who tend to emphasize and describe conscious mental attributes or, more accurately, do not emphasize any processes outside of consciousness, formulations range from general to rather specific. Kant refers to the interplay of the faculties of imagination and understanding in the production of art, Poe to logic and deliberately controlled techniques, Coleridge to an active and constructive type of imagination,

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Croce to intuition-expression, Collingwood to imagination as a synthesizing activity previous to discursive or relational thought, Beardsley to breaking old gestalts and forming new ones, Gordon to metaphorization. Schachtel formulates a specific type of perception as operative in the production of works of art, "allocentric perception." Involving an "openness to the world," this type of perception is characteristic of the most mature stage of human perceptual development. It is especially developed in the artist who uses this ability to stimulate "allocentric perception" in his audience.

Guilford, Mednick, and Getzels and Csikszentmihalyi also formulate specific attributes that operate either consciously or unconsciously and play a role in creative thinking in art and other areas. Guilford describes an intellectual factor of "divergent production," and Mednick the process of combining remote associations. "Divergent production" consists of providing alternate solutions to open-ended problems. Remotely related associations, according to Mednick, are combined to form creations through association by contiguity, serendipity, and mediation. Getzels and Csikszentmihalyi describe a "concern for discovery," a factor that dictates the artist's methods of working and contributes to the newness and value of the product.

Rothenberg defines a specific thought process operating in creation called "Janusian thinking," the capacity to conceive and utilize two or more opposite or contradictory ideas, concepts, or images *simultaneously*.[1] Although Rothenberg emphasizes that this process operates in consciousness, he also attempts to provide a link to previously mentioned formulations about nonconscious processes. Rothenberg states that "Janusian thinking" facilitates the unearthing of unconscious material through the use of the ego defense of negation. Negation takes account of what is unconscious and repressed without removing repression or necessarily promoting acceptance of the repressed material.

A wholly different type of attribute is the capacity for extrasensory perception, which is discussed by Krippner and Murphy. While formulations linking extrasensory perception, or the psi factor, to creativity have been very tentative, the phenomenon is not clearly related either to consciousness or unconscious operations. Moreover, there is little agreement among researchers in this area about whether the capacity for extrasensory perception is present in everyone or whether it is the special attribute of a particular few.

1. "Actively conceiving two or more opposite, contradictory, or antithetical ideas, concepts, or images *simultaneously*" (revised definition; see bibliography for Chapter Five).

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Other authors tend to emphasize attributes of the whole person rather than mental attributes alone, and their formulations pertain to the personality of the creator, his motivations and conflicts, and his biological makeup. Rank, Lee, MacKinnon, Barron, Maslow, and Rogers formulate extensive pictures of the creative person and the nature of the motivation to create. They also attempt to account for some aspects of the creative process as well. Rank describes an artist type who is distinct from the neurotic type and who overcomes his fear of death by an act of will directed toward immortality. This artist type, in his ideal self, is representative of the collective ideology, and his expression of this ideal self accounts for his success with his audience. Lee describes an intense conflict in the artist between his dependence on his mother and his destructive impulses toward her generative organs, a conflict producing states of temporary depression which are overcome by an act of restitution in the creation of art. This act of restitution is an attempt to restore the organs destroyed in fantasy and a restitution or self-healing of the creator's own disabled and depressed state. Both MacKinnon and Barron describe many attributes of the creative person, including autonomy, a high degree of feminine orientation in males, intuition, an orientation to perception rather than judgment, flexibility, self-acceptance, and psychological richness and complexity. Barron emphasizes the paradoxical presence of high degrees of ego strength along with psychopathologic qualities in creative people and MacKinnon believes his overall findings demonstrate Rank's formulation of an artist personality type. Maslow and Rogers, both defining creativity very broadly, emphasize the personality attributes of openness to experience and Rogers further emphasizes the importance of a locus of evaluation within the person and the ability to toy with elements and concepts. To be sure, many psychoanalysts focusing primarily on mental attributes also describe whole-person characteristics, as their formulations pertain to a total personality theory. Thus, Kubie differentiates creativity from neurosis and Kris distinguishes the regression of the creative process from the regression found in schizophrenia. Freud points to the unhappiness and conflict of the daydreamer and of the writer who fashions his art from the material of daydreams.

Galton and Lombroso assert that there is a general biological factor in genius and, by implication, in creativity. Without specifying the nature of this factor or its operation in producing creations or works of genius, Galton asserts, and tries to prove, that special talent or genius in diverse areas is inherited. Interestingly, Galton's formulation relates to a root meaning of the word "genius"—to beget. It also coincides with the tradi-

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tional and popular idea that geniuses are born, not made. Lombroso relates genius to insanity and follows the generally held psychiatric theory of his time that insanity is a form of degeneration. It has not generally been realized that Lombroso also constantly acknowledges the positive contributions of men of genius and differentiates between ordinary insanity and the insanity associated with genius. Consequently his position is in some ways in agreement with Barron's later finding of a high degree of psychopathology as well as ego strength in creative persons. Koestler is also interested in biological processes but, unlike Galton and Lombroso, he focuses on such processes as reproduction in order to derive a general formulation about creativity. His concept of bisociation—the combination of two self-consistent but habitually incompatible frames of reference—is meant to account for creations in all areas: in culture, societies, and nature as well as in individuals. Bogen and Bogen are concerned with the structure of the brain and presumably the biological factors underlying thought itself; they speculate that there is both a "propositional mind," primarily responsible for logical and linguistic functions, and an "appositional" mind, primarily responsible for nonrational and visiospatial functions. Creativity, in their view, results from the coordinated function of these two types of mind.

The factors and processes in creativity specified by the authors represented in this volume do not exhaustively cover the field. Many other important findings and formulations are to be found in the references listed in our bibliographies. We have summarized some of the main factors and processes indicated by major investigators and thinkers, primarily some specific formulations that emphasize certain common features in creativity. We shall discuss these common features and their significance later. First, however, we would like to raise an underlying issue about the investigation of creativity that pertains to the formulations just presented and clarifies the perspective of authors represented in our chapter on Alternative Approaches.

The Possibility of Explaining Creativity

Regardless of differences in orientation and specific approach, there are two basic concerns that undergird most, if not all, inquiries about creativity. Investigators and thinkers are generally concerned either with describing or with explaining. Although these concerns certainly overlap, they can be distinguished as guiding purposes.

If the researcher is interested primarily in describing creativity, he tries to find special characteristics or phases within creative activities. If he is

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study of creativity. Selections in Chapters One, Three, and Four of this volume illustrate these.

Particular examples highlight some of the differences. The selections from Mednick and Guilford, for instance, bring one kind of explanation into sharp relief. Both investigators believe that it is possible to find conditions necessary for creating. Both attempt to identify specific capacities or ways of thinking that are invariably present in creative activity. They aim at determining the factors and combinations of factors that must be present before a creative act is achieved. If all such conditions could be correctly identified, we would have one kind of understanding of creativity. Somewhat different in orientation is Otto Rank. His interest in explaining creativity is directed toward finding motives that function in distinctive ways in the creative person. Hence, he explains creativity by referring to the creator's purposes. He says that the creator attempts to overcome a fear of death and achieve a kind of immortality through creativity. Blanshard's view of explanation contrasts even more sharply with Mednick's and Guilford's approach. Blanshard proposes that in order to explain creativity we need to find the general purposive complex of conditions that necessitates creative acts.

These examples suggest that the kind of understanding we seek depends upon the particular expectations we have. We may, like Guilford and Mednick, want to know about the conditions or factors leading to and responsible for the successful completion of a creative act. These factors may be causes, or necessary (and perhaps sufficient) conditions for creativity. Knowledge of these might then enable us to predict which persons will be creative. In contrast, we may, like Blanshard, want to identify a system of principles that permits us to see creative acts in a context of necessities. Knowledge of such a context would enable us to deduce the kinds of processes that are creative.

Expectations about explanation fall into two general types that may be called "genetic" and "teleological." We use the term "genetic" to suggest that, in wanting to explain, we may be searching for the genesis of an event or a thing. This type of explanation refers to antecedent conditions out of which the thing or event originates. It is important to emphasize that such antecedents must have been fully present or operative within the past time relevant to the thing to be explained. *Antecedent conditions must be present at the time they are supposed to function to produce their effect.* Guilford and Mednick set their sights on genetic explanation. Although Rank looks for purposes within the creative person's experiences,

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plained into a teleological system, he seeks an explanation with predictive power. If the explanation were fully known, it would also allow for prediction because, through deduction, one could predict the phenomena occurring within the system.

Another distinction is required. In addition to adopting either a teleological or genetic type of explanation, investigators have also espoused at least one of three broad orientations, orientations based upon fundamental assumptions about the admissible content of explanations as well as appropriate methods for obtaining information. Terms used to refer to these inevitably distort and overlap, particularly when applied broadly. However, with this caution in mind, the three views may be referred to as naturalism, rationalism, and supernaturalism.

Although the term "naturalism" has been used in many different ways, it will here be restricted to the following: any view that all events, including mental processes, occur in an entirely lawful, empirical, and scientifically knowable universe. For the naturalist, whatever cannot be understood as occurring within the lawful framework of our universe is interpreted in one or more of the following three ways: (1) as an illusion, that is, as something appearing as unlawful because of our ignorance, which may be overcome through such achievements as better technology or more comprehensive theory; (2) as an unintelligible or arbitrary and recalcitrant deviation in the universe, not amenable to scientific knowledge; or (3) as meaningless and not a proper topic for scientific inquiry. It should be evident that the genetic explanations cited above are naturalistic, according to our use of the term. A teleologist also might be inclined toward naturalism, if he restricts knowledge to what is scientific and if he sees violations of known laws as illusory, or as due to ignorance.

If naturalism is assumed by an investigator hoping to explain creativity, he also must assume that creative acts and processes are intelligible in terms of lawful behavior. Such acts and processes must be predictable by virtue of the correlations of conditions and the type of results that permit us to generalize about creativity. Creative acts, then, are natural events that are just as intelligible as are all other events in nature. They occur as instances of natural processes. The tradition of naturalism with respect to the study of creativity can be traced primarily to Aristotle. Hence Aristotle is represented in this book as a thinker who is seminal to the naturalist tradition of thought about creativity.

The term "rationalism" refers to the attempt to explain phenomena in terms of a set of principles that specify a structure of relationships necessitating these phenomena. In contrast to naturalism, the rationalist ex-

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planation may include independently known principles, i.e., those not necessarily derived from specific empirical observation. Rationalism is most clearly represented in this book by authors using teleological explanation. Such a view is broader than naturalism in its aspirations, and it is generally considered to be nonempirical, or at least less empirical.

"Supernaturalism" requires that explanation identify a source or originating principle independent of natural processes. This source may be a fundamental principle or agency related to or internal to a rationalist system. It may be divine, e.g., a muse, God. In creativity inquiry, the supernatural tradition began primarily with Plato.

In summary, then, explanations may be primarily genetic or teleological and they may adopt a viewpoint of naturalism, rationalism, or supernaturalism. We have said, however, that the most fundamental difference in general approaches to creativity lies in the contrast between those who assume that creative acts can be explained and those who challenge this assumption. What, then, can be said about the challenge? In answering this question, it will be helpful to consider an objection that can be raised to all types of explanation. Almost all investigators who try to explain creativity agree that there is some distinction between the genuinely new or novel and the merely different. But explanation, whether naturalistic, rationalistic, or supernaturalistic, must exclude genuine novelty in the product. Explanation implies that a created product is necessitated either by antecedent causes or by possibilities to be realized in the future.

This objection points to a conflict between the aims of inquiry and the character of the phenomenon in question. Most of the major investigators included in this book assume that creativity can be explained. At the same time, they either claim or imply that creative processes yield novelty. Even some of the most empirically and rigorously designed genetic and naturalistic approaches, such as Mednick's, Guilford's, and MacKinnon's (illustrated in Chapter Three), all acknowledge newness in the products they consider to be creations. Given such acknowledgments, it is incumbent on these investigators to show how their explanations take account of new aspects in the creation. As the new aspects would not be in existence before the creative process took place, they could not be accounted for by reducing or tracing them to preformed conditions.

It might be objected here that our demand on these investigators who assume a genetic explanation—that they exhaustively trace the new aspects of a creation to antecedents—is too strong. Rather, the counter-objection asserts, they need only be *correlated* with antecedents. No prediction should be expected to cover all qualities that will be present in

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the predicted phenomenon. All that is required is the identification of factors, say, divergent production abilities, or some specified critical talent, or the will to achieve certain purposes. These factors need only be correlated with creative activity in order to serve as a basis for predicting that persons who manifest them will, under proper conditions, create.

In answering this counter-objection, we emphasize the following: if one could show that such general conditions are regularly related to and correlated with created results, the success of a genetic explanation based on these correlations would be determined by the predictive power of the findings, i.e., the degree to which prediction is complete and accurate. *But the degree to which predictive power is attained is also the degree to which the products of so-called creative processes would not be unprecedented, unexpected, and therefore new.* Those who insist that creative acts can in principle be predicted must reject the widely held opinion that, for created products—artistic, scientific, or whatever—it is the specific, subtle, uncommon qualities that are crucial for considering the product to be a creation. General properties of a product anticipated in such instances as Guilford's divergent result, or the achievement of Rank's artist whose purposes are known beforehand, do not show the product to be a creation. A product is a creation insofar as it manifests unprecedented specific qualities that are integral to a new specific value. If these specific qualities are not included explicitly in the prediction, then the prediction is incomplete and perhaps meaningless with respect to what is new.

Some of the writers in this volume who propose explanations acknowledge limits to explaining creativity. Freud, for example, refrains from relating psychodynamic factors to the qualitative aspects (the aesthetic form) of the work of art in the selection here, and elsewhere he emphatically states, "Before the problem of the creative artist, analysis must, alas, lay down its arms."[2] Similarly, Ehrenzweig sees a dilemma in the creative act. For him, the dilemma consists of the creator's need to select from an infinite range of alternatives without a predetermined criterion of choice. In the absence of this predetermined criterion, the result, in its created aspect, could not be predicted.

The general point we insist upon also applies to suggestions that a teleological system or formulations implying such a system explain creative activity. There, it is evident that the creative activity must, in some sense, be preformed within the system that purportedly explains creativ-

2. Freud, S. "Dostoevsky and Parricide" (1928), in Strachey, J. (ed.), *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, Vol. 21. London: Hogarth Press 1961, p. 177.

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ity. As Blanshard puts it, creative activity is controlled by an ideal order that provides fulfillment of the creative act. However, either this ideal order must be full in all its details, so that what appears as new is already necessitated within the system, or else the appearance of the new is unique with respect to the system, and thereby it eludes the system. If the teleologist is to maintain his hope of providing an explanation, he should presumably adopt the former alternative. The control of the system of creation would, therefore, be a completely detailed control. But in that case, the only way the teleologist could preserve newness or novelty in creation would be to insist that novelty is present in the finite consciousness of the creator who discovers what was already present within the ideal order. Whatever novelty there is, then, would be found within the creator's experience of discovering and in the surprise experienced by those who respond to his productions. Newness would lie in the creator's and the audience's awareness of discovering something in the product that is unprecedented in their experience. If novelty is interpreted in this manner, either of two alternatives is implied. One alternative is that the surprise of discovery is not included in the teleological system as a whole. An aspect of the experience of the creator, then, is left unexplained, because the *awareness* of novelty could not be required by the system. The other alternative is that the surprise of discovery does have its place in the system. In that case, nothing is new, not even the illusion that something is new.

To be sure, one might find the notion that nothing is new more palatable than the alternative insisting on radical newness. One may see advantages in proposing another definition of novelty in creation. For example, an investigator may insist that there is only a re-experiencing of original novelty or of diversified possibilities established in some cosmologically conceived origin. Alternatively, he might stipulate that novelty consists of elements from one context, such as an historical period or a specific culture, appearing in a different one. In other words, he might adopt the view that "there is nothing new under the sun." If he does so, however, it is necessary to be aware of the implications of his view.

Bergson, Peirce, Morgan, and Hausman in Chapter Five suggest some of the implications of the claim that "there is nothing new under the sun." Their arguments indicate that an alternative approach to understanding creative acts is necessary. All four insist that explanations cannot adequately accommodate spontaneity or newness. They share a position derived from an emphasis on the acceptance of evidence of variation and growth in the evolution of nature. In addition, each offers reasons for

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conditions for creativity but not the *sufficient* condition or conditions. When both necessary and sufficient conditions are present, we speak of a cause. Only Galton's account could clearly be construed as a formulation of cause in this sense, but even if his account were correct it leaves out any clarification of the operation of creativity in human affairs, i.e., any specification of the kinds of processes and factors inherited by men and women of genius. Furthermore, in modern times, we have come to see that an exclusively hereditarian account of any human faculty or behavior is inadequate since the interaction between heredity and environment is highly complex and incompletely understood. Crovitz's proposal for computer-produced creative solutions implies a knowledge of cause, though Crovitz himself does not insist that human creative thinking necessarily proceeds as he describes.

Why have only necessary conditions been formulated? Have the methods of investigation been inadequate or, as we have suggested, is there something about the nature of the phenomenon being studied that precludes the finding of a sufficient condition? Rather than emphasizing only the objections and limitations we have outlined so far, we would like to answer this question affirmatively: yes, it is the essence of creativity to defy prediction and, furthermore, the phenomenon of creativity affirms the presence of discontinuity and spontaneity in the world.

In saying this about investigations already carried out, we want to emphasize that we are not merely stating that many investigations have had methodological and conceptual flaws, although these certainly exist. Many psychiatric and psychological investigators have shown a confusion about the distinctions and interrelationships among the foci of interest—persons, process, or product—and they have used unclear definitions of creativity, inadequately controlled experimental designs, or inappropriate testing procedures. Most commonly, they have ignored considerations pertaining to the achievement of value in creative activity, and in their experiments or speculations have paid little attention to this criterial attribute. For example, those who tacitly or explicitly equate the unusual or different (often the term "original" is used) with the creative forget that the merely different is often without value and that consequently such experiments or speculations may not pertain at all to creativity, the state or capacity that produces the valuable as well as the new. Philosophical investigators have erred primarily in an uncritical and unsystematic use of empirical evidence to derive general principles or to support various aspects of their overall speculations. By and large, they have tended to take at face value the testimonies and descriptions of creative persons about

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of creativity. In any appropriate investigation consideration must be taken of the simultaneously determined and undetermined factors in creativity.

Concretely, this suggestion need not be as baffling as it may at first appear. Empirical investigations should preferably be focused on the creative process and adopt a phenomenological approach, i.e., using as few preconceptions or biases as possible or, more realistically, having awareness and due understanding of the effects of preconceptions and biases. While the focus is on the creative process, the nature of the resulting product must also be taken into account: if the resulting product is a creation in its clearest sense, radically new and valuable, generalities about the creative process could not completely account for the new and discontinuous although they might account for certain aspects of the value. They might, for instance, partially explain the value attributed to a work of art in terms of a concordance between the creator's unconscious processes and those of his audience. Empirical investigation might also be focused profitably on the creative person using a phenomenological type of approach, but it should be emphasized that an exclusive focus on the person or agent runs the risk of stressing only the determined aspects of creation, because such an approach necessarily overlooks the break with antecedents that occurs during the act or process of creating. Only if the creative moment or moments are considered to be primarily a matter of the self-creation of the person and, following Maslow, a form of creativity is defined as a phenomenon occurring exclusively within the person, could this methodological limitation be avoided.

Basically, all empirical approaches, including the focus on the process, are aimed at specification of the necessary factors in creativity. Theories may develop that permit prediction on the basis of these necessary factors. Such predictions would refer to the context in which a creation occurs rather than to its exact content or nature. Many such necessary conditions are very little understood and investigation of the appearance of value, in such terms as the interaction between the creator and his audience, could be very fruitfully investigated. Investigation and fuller explication of the nature of nonradical novelty, such as what Lloyd Morgan calls recurrent novelty—the repetition of novelty that has previously occurred—or else another kind of novelty associated with the appearance of something familiar in a different context, also can provide further insight into some necessary or related factors in creativity.

While the empirical investigator would do well to bear in mind the paradoxical nature of the phenomenon he is studying, the philosopher also needs to pay attention to the paradox. Particularly if he is concerned

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with a metaphysics built on spontaneity and discontinuity, he must acknowledge the determined factors in creation. For example, the metaphysician needs to examine the role of the ideal and the actual in creation and the possibility of self-determinism or autonomous cause as an intelligible notion. There seems, moreover, to be a good deal of agreement among diverse types of investigators that the process of artistic creation involves personal and often conflictual elements within the artist as well as special types of free intuitive thinking that are not characteristic of ordinary conscious thought. Generally, such factors as personal conflict and intuition have been explained through reference to concepts of preconscious, extraconscious, or unconscious functioning. This type of functioning seems to be a necessary factor in creativity. The philosopher emphasizing discontinuity should take such a determining factor into consideration in developing a metaphysics that includes human consciousness or else he should find some alternate formulation to account for the role of factors such as psychological conflict and intuition in creation.

Up until now, we have discussed the model for a revolutionary approach to the investigation of creativity in terms of tasks related to the discrete orientations of empirical and philosophical investigation. We have done this for illustrative purposes only. Basically, the approach to investigation and understanding transcends disciplinary concerns and relates to the unique nature of creativity itself. All investigation and understanding of creativity requires attention to the paradox of determined together with undetermined aspects, and the most adequate general approach would involve resolutions, syntheses, or integrations of the polarity. We are not ourselves attempting to provide such a general integration here but merely suggesting some outlines for it. Concretely, the investigator of creativity must, at the least, alternate between the determined and undetermined aspects of the phenomenon: he bears in mind that explanations involving prediction do not account for the undetermined aspect of creation and that an exclusive emphasis on the undetermined aspect can retard fruitful inquiry. In studying the determined aspect of creativity, he tries to gain knowledge that enables him to make limited predictions, or he concerns himself with viewing creativity as part of an overall conceptual framework. In focusing on the undetermined aspect, he regards the phenomenon in its autonomy, independent of antecedent causal sequences and teleological conditions. He looks for unique features in creativity. This approach has an affirmative as well as a negative purpose. Negatively, it serves to remind us not to expect too much of explanation. Affirmatively, it sus-

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tains our recognition of novelty and the integration of newness and value in creation. An investigator of the undetermined aspect, for instance, would need to be inventive in introducing us to new terms and connections, or new ways of using terms and of describing connections appropriate to spontaneity and new value. Tender-minded as this approach may appear, we believe it is required in the study of creativity; it allows us to understand much of the adaptive behavior of man without reduction of the essence of his humanity. It affirms the presence of spontaneity and freedom in the world.

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CHAPTER ONE

SEMINAL ACCOUNTS

Each of the five selections in this chapter is seminal to a particular orientation in creativity inquiry. The works of Plato, Aristotle, Kant, and Freud, of course, have had seminal influence in the entire intellectual tradition of Western civilization. Selections by these authors are of special interest, because, along with Galton, they have each set the stage in particular ways for future descriptions and explanations of creativity. Although none of these writers except Galton was concerned with developing a comprehensive theory about creativity, each indicated for the first time a definite approach to the phenomenon and the problems it generates.

Aristotle's discussion of art as a production of what is preformed and imposed on matter is seminal to both the naturalist and rationalist assumptions about explaining creativity described in the introductory chapter of this book. Plato's discussion of divine inspiration is seminal to both the supernaturalist orientation to explanation and the type of orientation we have characterized as an alternative approach, an approach that tends to emphasize the inexplicability of creativity. Kant stands between Aristotle and Plato. His discussion is seminal to alternative approaches both affirming the human source of the creative process and insisting on a self-generating principle that is basically unexplained. Also, since Kant may be considered the originator of the field of aesthetics, his work is seminal to all modern philosophical accounts of creativity in art.

Freud and Galton both have a naturalist and rationalist orientation to explanation, but they diverge with respect to their assumptions about the type of genetic factors accounting for creativity. Galton adopts an extreme form of genetic explanation in attempting to account for creativity through the antecedent biological mechanism of heredity. His work is therefore seminal for modern investigators seeking mechanisms that fully account for creativity (so-called "mechanistic" approaches). Freud also seeks antecedent factors in creativity, but he acknowledges the possibility that these

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whose works are represented there resist being placed in a strict naturalistic category.

In the selection presented here Aristotle not only identifies and discusses natural productive processes, but he also refers to processes occurring spontaneously or by chance. Since spontaneous activities do not originate in natural conditions leading to anticipated results, it might be considered that Aristotle also stated a position relating to a nonnaturalistic alternative approach to creativity. Some readers might wonder why a selection from Aristotle's more extensive discussion of chance in the *Physics* is not included. After all, spontaneous activity leads to what is unexpected and unpredicted. If a creator produces something new and unexpected, then perhaps his creativity is a product of chance. This suggestion is provocative and important. It is not consistent, however, with the overall Aristotelian view that has been most influential on the investigation of creativity. For Aristotle, understanding concerns what occurs by nature rather than chance; he does not consider chance operative in the creation of art and could not be considered to have proposed an essentially nonnaturalistic approach.

Kant was the first writer on creativity to develop the distinction between radical creation and imitation. For Kant, creation of art is not only independent of prior procedures or rules, but it is independent of all conditions other than spontaneous activity made possible through faculties in the creator's consciousness. His position contrasts significantly with Plato's, because the latter asserts that creative activity is controlled by a source independent of the creator's consciousness. In another way, too, Kant differs from Plato, and from Aristotle as well. Both Plato and Aristotle view the art product as an imitation or a representation of a reality separate from the product. For Kant, the creator gives the rule to his work; he generates his style and the significance of the product in accordance with his freely functioning imagination. Hence the product does not imitate nature.

Although Kant does not look outside human activity for the control of the creative process, it should be emphasized that he belongs neither to the naturalist nor the rationalist tradition. He finds the locus of creativity in a unique and spontaneous act that introduces a leap in ordinary natural processes. If the genius makes the rules, then genius cannot be explained by rules (laws) that already exist.

Galton, like Kant, adopts the view that creativity is to be found in genius. However, in sharp contrast to Kant, Galton correlates genius with

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they recognize that creative processes are actually different from other kinds of processes: creative processes lead to products that do not seem directly traceable to antecedent conditions or the workings of established laws.

PLATO · Inspiration

[*This selection represents the only Platonic dialogue devoted in its entirety to the question of understanding the creative process in poetry. Other dialogues germane to creativity are* The Timaeus (*concerning the creation of the universe*), The Phaedrus, *and* The Symposium. *Passages in the latter two reinforce the suggestion in the selection here that creative ability is in some way a kind of divine madness. In addition, passages in* The Republic *and* The Laws *provide relatively extended discussions of the relation of art to knowledge and morality. Plato emphasizes the importance of inspiration from an external source and a state in which the creator is out of his senses; though he uses the term "madness," he does not seem to be describing the psychotic condition as currently defined.*]

ION: Then what can be the reason, Socrates, for my behavior? When anyone discusses any other poet, I pay no attention, and can offer no remark of any value. I frankly doze. But whenever anyone mentions Homer, immediately I am awake, attentive, and full of things to say.

SOCRATES: The riddle is not hard to solve, my friend. No, it is plain to everyone that not from art [skill] and knowledge comes your power to speak concerning Homer. If it were art that gave you power, then you could speak about all the other poets as well. There is an art of poetry as a whole? Am I not right?

. . . . . .

SOCRATES: I . . . will proceed to show you what . . . [the discussion] betokens. As I just now said, this gift you have of speaking well on Homer is not an art; it is a power divine, impelling you like the power in the

SOURCE *From Plato,* The Ion, *in Cooper, L. (trans.) and Hamilton, E., and Cairns, H. (eds.), Plato:* The Collected Dialogues, *pp. 218–221. New York: Pantheon Books (Bolligen Series), 1961. Reprinted from Lane Cooper (trans.): Plato:* Phaedrus, Ion, Gorgias *and* Symposium, *with passages from* The Republic *and* Laws. *Copyright, 1938, by Lane Cooper. Used by permission of Cornell University Press.*

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stone Euripides called the magnet, which most call 'stone of Hereclea.' This stone does not simply attract the iron rings, just by themselves; it also imparts to the rings a force enabling them to do the same thing as the stone itself, that is, to attract another ring, so that sometimes a chain is formed, quite a long one, of iron rings, suspended from one another. For all of them, however, their power depends upon that loadstone. Just so the Muse. She first makes men inspired, and then through these inspired ones others share in the enthusiasm, and a chain is formed, for the epic poets, all the good ones, have their excellence, not from art, but are inspired, possessed, and thus they utter all these admirable poems. So is it also with the good lyric poets; as the worshiping Corybantes are not in their senses when they dance, so the lyric poets are not in their senses when they make these lovely lyric poems. No, when once they launch into harmony and rhythm, they are seized with the Bacchic transport, and are possessed—as the bacchants, when possessed, draw milk and honey from the rivers, but not when in their senses. So the spirit of the lyric poet works, according to their own report. For the poets tell us, don't they, that the melodies they bring us are gathered from rills that run with honey, out of glens and gardens of the Muses, and they bring them as the bees do honey, flying like the bees? And what they say is true, for a poet is a light and winged thing, and holy, and never able to compose until he has become inspired, and is beside himself, and reason is no longer in him. So long as he has this in his possession, no man is able to make poetry or to chant in prophecy. Therefore, since their making is not by art, when they utter many things and fine about the deeds of men, just as you do about Homer, but is by lot divine—therefore each is able to do well only that to which the Muse has impelled him—one to make dithyrambs, another panegyric odes, another choral songs, another epic poems, another iambs. In all the rest, each one of them is poor, for not by art do they utter these, but by power divine, since if it were by art that they knew how to treat one subject finely, they would know how to deal with all the others too. Herein lies the reason why the deity has bereft them of their senses, and uses them as ministers, along with soothsayers and godly seers; it is in order that we listeners may know that it is not they who utter these precious revelations while their mind is not within them, but that it is god himself who speaks, and through them becomes articulate to us. The most convincing evidence of this statement is offered by Tynnichus of Chalcis. He never composed a single poem worth recalling, save the song of praise which everyone repeats, well nigh the finest of all lyrical poems, and absolutely what he called it, an 'Invention of the Muses.' By this ex-

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ample above all, it seems to me, the god would show us, lest we doubt, that these lovely poems are not of man or human workmanship, but are divine and from the gods, and that the poets are nothing but interpreters of the gods, each one possessed by the divinity to whom he is in bondage. And to prove this, the deity on purpose sang the loveliest of all lyrics through the most miserable poet. Isn't it so, Ion? Don't you think that I am right?

ION: You are indeed, I vow! Socrates, your words in some way touch my very soul, and it does seem to me that by dispensation from above good poets convey to us these utterances of the gods.

ARISTOTLE · Creation As Making

[*In this selection Aristotle proposes a general account of art as a productive activity. Despite its fame and influence, Aristotle's* The Poetics *is not relevant here because it is not primarily concerned with the problem of explaining creativity but with stating techniques and analyzing the specific art form of the drama. Although Plato argues for the inexplicable, mysterious basis of creativity, Aristotle argues here that creative processes obey fully natural laws.*]

Of things that come to be, some come to be by nature, some by art, some spontaneously. Now everything that comes to be comes to be by the agency of something and from something and comes to be something. And the something which I say it comes to be may be found in any category; it may come to be either a 'this' or of some size or of some quality or somewhere.

Now natural comings to be are the comings to be of those things which come to be by nature; and that out of which they come to be is what we call matter; and that by which they come to be is something which exists naturally; and the something which they come to be is a man or a plant or one of the things of this kind, which we say are substances if anything is—all things produced either by nature or by art have matter; for each of them is capable both of being and of not being, and this capacity is the

SOURCE *From Aristotle,* Metaphysics, *in Ross, W. D. (trans. and ed.),* The Oxford Translation of Aristotle, *Vol. 8, pp. 791–795. Oxford: Oxford University Press, 1928. Reprinted by permission of the Oxford University Press, Oxford.*

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matter of each—and, in general, both that from which they are produced is nature, and the type according to which they are produced is nature (for that which is produced, e.g. a plant or an animal, has a nature), and so is that by which they are produced—the so-called 'formal' nature, which is specifically the same (though this is in another individual); for man begets man.

Thus, then, are natural products produced; all other productions are called 'makings'. And all makings proceed either from art or from a faculty or from thought. [ftnt. deleted] Some of them happen also spontaneously or by luck [ftnt. deleted] just as natural products sometimes do; for there also the same things sometimes are produced without seed as well as from seed. Concerning these cases, then, we must inquire later, [ftnt. deleted] but from art proceed the things of which the form is in the soul of the artist. (By form I mean the essence of each thing and its primary substance.) For even contraries have in a sense the same form; for the substance of a privation is the opposite substance, e.g. health is the substance of disease (for disease is the absence of health); and health is the formula in the soul or the knowledge of it. The healthy subject is produced as the result of the following train of thought:—since *this* is health, if the subject is to be healthy *this* must first be present, e.g. a uniform state of body, and if this is to be present, there must be heat; and the physician goes on thinking thus until he reduces the matter to a final something which he himself can produce. Then the process from this point onward, i.e. the process towards health, is called a 'making'. Therefore it follows that in a sense health comes from health and house from house, that with matter from that without matter; for the medical art and the building art are the form of health and of the house, and when I speak of substance without matter I mean the essence.

Of the productions or processes one part is called thinking and the other making—that which proceeds from the starting-point and the form is thinking, and that which proceeds from the final step of the thinking is making. And each of the other, intermediate, things is produced in the same way. I mean, for instance, if the subject is to be healthy his bodily state must be made uniform. What then does being made uniform imply? This or that. And this depends on his being made warm. What does this imply? Something else. And this something is present potentially; and what is present potentially is already in the physician's power.

The active principle then and the starting-point for the process of becoming healthy is, if it happens by art, the form in the soul, and if spontaneously, it is that, whatever it is, which starts the making, [ftnt. deleted]

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attach to this has already [ftnt. deleted] been explained), and since something is produced (and this is either a sphere or a circle or whatever else it may chance to be), just as we do not make the substratum (the brass), so we do not make the sphere, except incidentally, because the brazen sphere is a sphere and we make the former. For to make a 'this' is to make a 'this' out of the substratum in the full sense of the word. [ftnt. deleted] (I mean that to make the brass round is not to make the round or the sphere, but something else, i.e. to produce this form in something different from itself. For if we make the form, we must make it out of something else; for this was assumed. [ftnt. deleted] E.g. we make a brazen sphere; and that in the sense that out of this, which is brass, we make this other, which is a sphere.) If, then, we also make the substratum itself, clearly we shall make it in the same way, and the processes of making will regress to infinity. Obviously then the form also, [ftnt. deleted] or whatever we ought to call the shape present in the sensible thing, is not produced, nor is there any production of it, nor is the essence produced; for this is that which is made to be in something else either by art or by nature or by some faculty. But that there is a *brazen sphere*, this we make. For we make it out of brass and the sphere; we bring the form into this particular matter, and the result is a brazen sphere. But if the essence of sphere in general is to be produced, something must be produced out of something. For the product will always have to be divisible, and one part must be this and another that; I mean the one must be matter and the other form. If, then, a sphere is 'the figure whose circumference is at all points equidistant from the centre', part of this will be the medium in which the thing made will be, and part will be in that medium, and the whole will be the thing produced, which corresponds to the brazen sphere. It is obvious, then, from what has been said, that that which is spoken of as form or substance is not produced, but the concrete thing which gets its name from this is produced, and that in everything which is generated matter is present, and one part of the thing is matter and the other form.

Is there, then, a sphere apart from the individual spheres or a house apart from the bricks? Rather we may say that no 'this' would ever have been coming to be, if this had been so, but that the 'form' means the 'such', and is not a 'this'—a definite thing; but the artist makes, or the father begets, a 'such' out of a 'this'; and when it has been begotten, it is a 'this such'. [ftnt. deleted] And the whole 'this', Callias or Socrates, is analogous to 'this brazen sphere', but man and animal to 'brazen sphere' in general. Obviously, then, the cause which consists of the Forms (taken in the sense in which some maintain the existence of the Forms, i.e. if they are some-

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imagination gives an initial unity to a field of sensation and perceptual experience. In The Critique of Practical Reason, *he proposes that reason, another function of the mind, postulates principles that are free with respect to natural process and the faculty of understanding. In* The Critique of Judgment, *he shows how the free mind is connected with understanding through imagination.*]

Genius is the talent (or natural gift) which gives the rule to Art. Since talent, as the innate productive faculty of the artist, belongs itself to Nature, we may express the matter thus: *Genius* is the innate mental disposition (*ingenium*) *through which* Nature gives the rule to Art.

Whatever may be thought of this definition, whether it is merely arbitrary or whether it is adequate to the concept that we are accustomed to combine with the word *genius* (which is to be examined in the following paragraphs), we can prove already beforehand that according to the signification of the word here adopted, beautiful arts must necessarily be considered as arts of *genius.*

For every art presupposes rules by means of which in the first instance a product, if it is to be called artistic, is represented as possible. But the concept of beautiful art does not permit the judgment upon the beauty of a product to be derived from any rule, which has a *concept* as its determining ground, and therefore has at its basis a concept of the way in which the product is possible. Therefore, beautiful art cannot itself devise the rule according to which it can bring about its product. But since at the same time a product can never be called Art without some precedent rule, Nature in the subject must (by the harmony of its faculties) give the rule to Art; *i.e.* beautiful Art is only possible as a product of Genius.

We thus see (1) that genius is a *talent* for producing that for which no definite rule can be given; it is not a mere aptitude for what can be learnt by a rule. Hence *originality* must be its first property. (2) But since it also can produce original nonsense, its products must be models, *i.e. exemplary;* and they consequently ought not to spring from imitation, but must serve as a standard or rule of judgment for others. (3) It cannot describe or indicate scientifically how it brings about its products, but it gives the rule just as nature does. Hence the author of a product for which he is indebted to his genius does not know himself how he has come by his Ideas; and he has not the power to devise the like at pleasure or in accordance with a plan, and to communicate it to others in precepts that will enable them to produce similar products. (Hence it is probable that the word genius is derived from *genius,* that peculiar guiding and guardian spirit given to a man at his birth, from whose suggestion these original

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Ideas proceed.) (4) Nature by the medium of genius does not prescribe rules to Science, but to Art; and to it only in so far as it is to be beautiful Art.

. . . . . .

Every one is agreed that genius is entirely opposed to the *spirit of imitation*. Now since learning is nothing but imitation, it follows that the greatest ability and teachableness (capacity) regarded *quâ* teachableness, cannot avail for genius. Even if a man thinks or composes for himself, and does not merely take in what others have taught, even if he discovers many things in art and science, this is not the right ground for calling such a (perhaps great) *head*, a genius (as opposed to him who because he can only learn and imitate is called a *shallow-pate*). For even these things could be learned, they lie in the natural path of him who investigates and reflects according to rules; and they do not differ specifically from what can be acquired by industry through imitation. Thus we can readily learn all that *Newton* has set forth in his immortal work on the Principles of Natural Philosophy, however great a head was required to discover it; but we cannot learn to write spirited poetry, however express may be the precepts of the art and however excellent its models. The reason is that *Newton* could make all his steps, from the first elements of geometry to his own great and profound discoveries, intuitively plain and definite as regards consequence, not only to himself but to every one else. But a *Homer* or a *Wieland* cannot show how his Ideas, so rich in fancy and yet so full of thought, come together in his head, simply because he does not know and therefore cannot teach others. . . .

If now it is a natural gift which must prescribe its rule to art (as beautiful art), of what kind is this rule? It cannot be reduced to a formula and serve as a precept, for then the judgment upon the beautiful would be determinable according to concepts; but the rule must be abstracted from the fact, *i.e.* from the product, on which others may try their own talent by using it as a model, not to be *copied* but to be *imitated*. How this is possible is hard to explain. The Ideas of the artist excite like Ideas in his pupils if nature has endowed them with a like proportion of their mental powers. Hence models of beautiful art are the only means of handing down these Ideas to posterity. . . .

. . . . . .

We say of certain products of which we expect that they should at least in part appear as beautiful art, they are without *spirit*[1]; although we find

1. [In English we would rather say "without *soul*"; but I prefer to translate *Geist* consistently by *spirit*, to avoid the confusion of it with *Seele*.]

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nothing to blame in them on the score of taste. A poem may be very neat and elegant, but without spirit. A history may be exact and well arranged, but without spirit. A festal discourse may be solid and at the same time elaborate, but without spirit. Conversation is often not devoid of entertainment, but it is without spirit: even of a woman we say that she is pretty, an agreeable talker, and courteous, but without spirit. What then do we mean by spirit?

Spirit, in an æsthetical sense, is the name given to the animating principle of the mind. But that by means of which this principle animates the soul, the material which it applies to that [purpose], is what puts the mental powers purposively into swing, *i.e.* into such a play as maintains itself and strengthens the mental powers in their exercise.

Now I maintain that this principle is no other than the faculty of presenting *æsthetical Ideas*. And by an æsthetical Idea I understand that representation of the Imagination which occasions much thought, without, however, any definite thought, *i.e.* any *concept*, being capable of being adequate to it; it consequently cannot be completely compassed and made intelligible by language.— We easily see that it is the counterpart (pendant) of a *rational Idea*; which conversely is a concept to which no *intuition* (or representation of the Imagination) can be adequate.

The Imagination (as a productive faculty of cognition) is very powerful in creating another nature, as it were, out of the material that actual nature gives it. We entertain ourselves with it when experience becomes too commonplace, and by it we remould experience, always indeed in accordance with analogical laws, but yet also in accordance with principles which occupy a higher place in Reason (laws too which are just as natural to us as those by which Understanding comprehends empirical nature). Thus we feel our freedom from the law of association (which attaches to the empirical employment of Imagination), so that the material supplied to us by nature in accordance with this law can be worked up into something different which surpasses nature.

Such representations of the Imagination we may call *Ideas*, partly because they at least strive after something which lies beyond the bounds of experience, and so seek to approximate to a presentation of concepts of Reason (intellectual Ideas), thus giving to the latter the appearance of objective reality,—but especially because no concept can be fully adequate to them as internal intuitions. The poet ventures to realise to sense, rational Ideas of invisible beings, the kingdom of the blessed, hell, eternity, creation, etc.; or even if he deals with things of which there are examples in experience,—*e.g.* death, envy and all vices, also love, fame,

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and the like,—he tries, by means of Imagination, which emulates the play of Reason in its quest after a maximum, to go beyond the limits of experience and to present them to Sense with a completeness of which there is no example in nature. This is properly speaking the art of the poet, in which the faculty of æsthetical Ideas can manifest itself in its entire strength. But this faculty, considered in itself, is properly only a talent (of the Imagination).

If now we place under a concept a representation of the Imagination belonging to its presentation, but which occasions in itself more thought than can ever be comprehended in a definite concept, and which consequently æsthetically enlarges the concept itself in an unbounded fashion, the Imagination is here creative, and it brings the faculty of intellectual Ideas (the Reason) into movement; *i.e.* by a representation more thought (which indeed belongs to the concept of the object) is occasioned than can in it be grasped or made clear.

Those forms which do not constitute the presentation of a given concept itself but only, as approximate representations of the Imagination, express the consequences bound up with it and its relationship to other concepts, are called (æsthetical) *attributes* of an object, whose concept as a rational Idea cannot be adequately presented. Thus Jupiter's eagle with the lightning in its claws is an attribute of the mighty king of heaven, as the peacock is of his magnificent queen. They do not, like *logical attributes*, represent what lies in our concepts of the sublimity and majesty of creation, but something different, which gives occasion to the Imagination to spread itself over a number of kindred representations, that arouse more thought than can be expressed in a concept determined by words. They furnish as *æsthetical Idea*, which for that rational Idea takes the place of logical presentation; and thus as their proper office they enliven the mind by opening out to it the prospect into an illimitable field of kindred representations. But beautiful art does this not only in the case of painting or sculpture (in which the term "attribute" is commonly employed): poetry and rhetoric also get the spirit that animates their works simply from the æsthetical attributes of the object, which accompany the logical and stimulate the Imagination, so that it thinks more by their aid, although in an undeveloped way, than could be comprehended in a concept and therefore in a definite form of words. . . .

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In accordance with these suppositions genius is the exemplary originality of the natural gifts of a subject in the *free* employment of his cognitive faculties. In this way the product of a genius (as regards what is to be

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whose influences are little suspected, are at this moment working towards the degradation of human nature, and that others are working towards its improvement. I conclude that each generation has enormous power over the natural gifts of those that follow, and maintain that it is a duty we owe to humanity to investigate the range of that power, and to exercise it in a way that, without being unwise towards ourselves, shall be most advantageous to future inhabitants of the earth.

I am aware that my views, which were first published four years ago in *Macmillan's Magazine* (in June and August 1865), are in contradiction to general opinion; but the arguments I then used have been since accepted, to my great gratification, by many of the highest authorities on heredity. In reproducing them, as I now do, in a much more elaborate form, and on a greatly enlarged basis of induction, I feel assured that, inasmuch as what I then wrote was sufficient to earn the acceptance of Mr. Darwin ("Domestication of Plants and Animals," ii. 7), the increased amount of evidence submitted in the present volume is not likely to be gainsaid.

The general plan of my argument is to show that high reputation is a pretty accurate test of high ability; next, to discuss the relationships of a large body of fairly eminent men—namely, the Judges of England from 1660 to 1868, the Statesmen of the time of George III., and the Premiers during the last 100 years—and to obtain from these a general survey of the laws of heredity in respect to genius. Then I shall examine, in order, the kindred of the most illustrious Commanders, men of Literature and of Science, Poets, Painters, and Musicians, of whom history speaks. I shall also discuss the kindred of a certain selection of Divines and of modern Scholars. Then will follow a short chapter, by way of comparison, on the hereditary transmission of physical gifts, as deduced from the relationships of certain classes of Oarsmen and Wrestlers. Lastly, I shall collate my results, and draw conclusions.

It will be observed that I deal with more than one grade of ability. Those upon whom the greater part of my volume is occupied, and on whose kinships my argument is most securely based, have been generally reputed as endowed by nature with extraordinary genius. There are so few of these men that, although they are scattered throughout the whole historical period of human existence, their number does not amount to more than 400, and yet a considerable proportion of them will be found to be interrelated.

Another grade of ability with which I deal is that which includes numerous highly eminent, and all the illustrious names of modern English history, whose immediate descendants are living among us, whose

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Schiller; Shakespeare; Shelley; Sophocles; Southey; Spenser; *Tasso;* Terence; *Vega;* Virgil; Wieland; *Wordsworth.*

Æschylus, great Greek tragedian; also highly renowned as a warrior, and all his family were distinguished for bravery. He began early to write, but was æt. 41 before he gained his first prize for a drama. He afterwards gained sixteen; *d.* æt. 69.

B. Cynægeirus distinguished himself so highly at Marathon, together with Æschylus, that their feats were commemorated by a descriptive painting.

B. Ameinas was noted as having commenced the attack on the Persian ships at Salamis.

[n.] Philocles was victorious over the "King of Œdipus" by Sophocles, but probably with a posthumous tragedy of Æschylus.

[a S.] Euphorion and Bion were said to have gained four victories with posthumous pieces of Æschylus. What may have been their share and that of Philocles in the completion of these plays is unknown; but at all events, from and by means of these persons arose what was called the tragic school of Æschylus, which continued for the space of 125 years.

Ariosto, Ludovico; author of the epic "Orlando Furioso," and of many excellent satires. He wrote dramas as a boy, and showed an early disposition for poetry, but was educated for the law, which he abandoned under an overpowering impulse towards literature. Never married; had two illegitimate sons.

B. Gabriel; a poet of some distinction. He finished the comedy of "La Scholastica," which his brother had left uncompleted at his death. He wrote several poems, and left a MS. volume of Latin verses, which were published posthumously.

N. Orazio was an intimate friend of Tasso. He wrote the "Argomenti," and other works.

Aristophanes, Greek comedian of the highest order; author of fifty-four comedies, of which only eleven have reached us. His genius showed itself so early, that his first play—and it won the second prize—was written when he was under the age prescribed by law for competitors. It was therefore submitted under a borrowed name.

3 S. His three sons—Philippus, Araros, and Nicostratus—were all poets of the middle comedy.

Byron, Lord. Very ill-educated at home; did not show genius when at Harrow; his "Hours of Idleness" were published æt. 19, and the

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DUKE UNIVERSITY PRESS
Box 90660
Durham, North Carolina 27708-0660

ISBN 0-8223-0354-X
9 780822 303541

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