Malfoy (Another sneer): What about Hagrid's dumb three-headed dog? If we could get . . nameless into that hallway, Hagrid could turn Fluffy loose. Your problems woul be over!

Hagrid: Oh my little puppy ain't so bad! He . . . or is it they, I never know . . . but Fluff just loves nice music—all three of him!

Hermione: I think I've got it Harry! You send an invitation to . . . you-know-who. You sai your owl could find him. So we just have to follow your owl! We'll ride in Ron' flying car—and bring along a broomstick for everyone. And when . . .

Malfoy (With coordinated sneer, laugh, and sarcastic tone): That's really great, Hermione Why don't you stick to making fudge and braiding your hair! What will you d when you find him? Drop Ron's car on him and fly back on the broomsticks?

Harry (Jumping up and dumping root beer on Malfoy's head): That's exactly wha we'll do!

Creativity is paradoxical and complex, and the most steadfast investigator is constantly beset with feelings of awe and a sense of mystery. . . . Creativity encompasses the magical incantations and drawings of primitive man, the appearance of new forms in nature, and the evil genius of Faust.

Albert Rothenberg and Carl R. Hausmar

One lesson that should be learned in reading Chapters 3 and 4 is that while we do understand much about creativity and creative processes, much also remains a mystery—even to highly creative people themselves.

THEORIES OF CREATIVITY

There are numerous ideas that are considered "theories of creativity," including all of the 4 Ps definitions in Chapter 3. This section will briefly review three classic theoretical approaches, the *psychoanalytic, behavioristic,* and *self-actualization* views. We then summarize a gaggle of seven contemporary theories plus the topics of implicit theories of creativity (what people think creativity is) and interdisciplinarity (the scientific study of aesthetic creativity).

PSYCHOANALYTIC THEORIES

Psychoanalytic Theories Differ

There is not a single, unitary, agreed-upon psychoanalytic interpretation of creativity. Rather, there are several. We already saw Otto Rank's theory in Chapter 3, which emphasized his well-adjusted and self-actualized *creative type* (artist, man of will and deed) as contrasted with his "average man" and "conflicted and neurotic man." We also saw Carl Jung's *psychological* and *visionary* types, and perhaps chuckled at his invention of primordial archetypes. Rank and Jung could have appeared in this section.

Rank and Jung in Chapter 3

Sigmund Freud. The best-known and least-liked psychoanalytic theory of creativity is that of the great man himself, Sigmund Freud. Freud was extremely intelligent and well read. As a child he topped his school class for many years. His family catered to his talent, giving him his own room and even his own

A Bright Child

"eating chamber." When his sister's piano practicing annoyed him, the piano was removed from the house (!) (Gardner, 1993, p. 52). As an adult thinker, dream analysis led him to conclude that sexual themes lay behind the unconscious, and that defense mechanisms, such as repression and sublimation (redirection), would deal with the disturbing sexual notions.

Freud: Conflict between Libido and Social Conscience

Freud's explanation of creativity focused on the motivation to create. Creative productivity is said to result from an *unconscious* conflict between the primitive sexual urges (*libido*) of the *id* and the repressive influences of our learned social conscience, the *superego*. Because one cannot freely indulge one's urges, the sexual energy is redirected (sublimated) into acceptable forms—creative fantasies and products. The id is happy, the superego is happy, and the self (ego) has fended off a big time attack of neurosis from the conflict.

Sublimation into Acceptable Outlet: Creativity

Freud concedes that everyone has the innate sexual urges that must be sublimated; but not everyone is highly or even moderately creative. The solution to this dilemma is that the creative person accepts the libido-stimulated fantasies and elaborates upon them, while the uncreative person represses them.

Uncreative Person Represses Fantasies: Freud

Freud (1976) described the special case of creative writers, at least novelists, which more-or-less fits his model of unconscious desires and conflict. He assumed first that common daydreams or fantasies arise from unsatisfied and unacceptable erotic wishes. After all, "the well-brought-up young woman is only allowed a minimum of erotic desire, and the young man [must] suppress the excess of self-regard [?] he brings . . . from childhood" (p. 50). The writer "creates a situation relating to the future which represents a fulfilment of the [erotic] wish." A fantasy thus is created, often including a heroine who, in novels, always falls in

Fantasies from Erotic and Egoistic Wishes

Psychoanalyst Ernst Kris tells us that aggressive instincts find outlets in creative productivity. "Oh, how I wish our students would have had some crayons!" laments teacher Rose Busch, left. "Maybe they'll do better in first grade," answers the student teacher. (Bette Davis and Lee Patrick in "The Sisters," 1938. Courtesy of PhotoFest.)

love with an invulnerable hero—thus satisfying female erotic fantasies and male egoistic and ambitious ones.

If you were psychoanalyst Sigmund Freud, and had read a few steamy novels, you also might arrive at this interpretation of the novelist's mental life.

Childlike Regression

Freud noted also that fantasy and creative thinking include a *regression* to more childlike modes of thought—a still-popular idea that relates creativeness to childlike thinking, humor, and a lively imagination. In fact, to Freud creativity is a continuation of and substitute for the free play of childhood.

Primary Process Thinking

Secondary Process Thinking

As a vocabulary lesson, the regression is to *primary process* thinking. Developmentally, primary process thinking occurs before *secondary process* thinking. Primary process thinking happens during relaxation and includes the chaotic realm of dreams, reveries, free associations, and fantasies—your basic stuff of creativity. Secondary process thinking is more "grown up"—more logical, analytical, and realistic.

A Negative View

The Freudian view is a negative one: Creativity is said to be the outcome of an unconscious neurotic conflict. Most of us prefer a more positive explanation of the motivation behind creativity, such as responding to the challenge of a problem; meeting our innate needs to create, construct, achieve success, or improve the lot of humanity; or wanting to make a pile of money, which continues to stimulate high levels of entrepreneurial and corporate creativity (Chapters 7, 8, and 9).

Many Motives to Create

Kris: Sex Plus Aggression Drives Are "Discharged"

Emphasis on Preconscious and Conscious Activity

Ernst Kris. Psychoanalyst Ernst Kris (1976) presented a slight modification of Freud's creativity theory. Creativity is said to be motivated by *two* main instincts of the id, the libido (sex drive) and aggressive instincts. Said Kris, "Fantastic, freely wandering thought processes [creativity] tend to discharge libido and aggression." Also, instead of unconscious neurotic conflicts, Kris emphasized *preconscious* and *conscious* mental activity. According to Kris, creative fantasies occur in the preconscious mind in the form of idle fantasies and daydreaming, which occur on the fringes of consciousness. The shift of (incubated) creative ideas from the preconscious to the conscious is felt as a sudden "Eureka!" or illuminating experience. As with Freud, Kris also accepts regression to more childlike thought processes—primary process thinking—as part of the preconscious activity.

Freud: Id

Kris: Ego

An important theoretical distinction between Freud and Kris is that, to Freud, creativity is said to "be in the service of the *id*," since creativity unconsciously relieves libidinal (id) energy. To Kris, however, creativity is said to "be in the service of the ego," since the ego exercises some voluntary control over regression and over the shifting of preconscious ideas to the conscious mind. It is unclear to whom this distinction is important.

Kubie: Preconscious Activity

Conscious End of Continuum: Anchored in Reality

Lawrence Kubie. While Lawrence Kubie (1958) ignores ids, egos, libidos, and superegos, he does emphasize preconscious mental activity. Imagine a continuum of consciousness. At one end is conscious mental life and conscious symbolic processes (e.g., language). With these conscious symbolic processes we communicate, think, examine our thinking, and rearrange our experiences into logical categories. Such conscious processes have their roots in learning and experience. Since these processes are anchored in reality, there is little flexibility or imaginative free play, said Kubie.

Unconscious Is Rigid, Not Creative

At the other end of the continuum are unconscious, symbolic processes. According to Kubie, in the unconscious symbolic meanings are hidden, lost, or repressed and can only be made conscious by special techniques, for example, psychoanalysis, hypnosis, or drugs. This unconscious system of symbols, meanings,

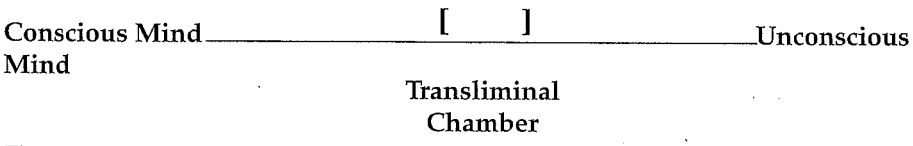

Figure 4.1. Illustration of Harold Rugg's Transliminal Chamber, an area of preconscious, fringe conscious, or off-conscious creative thinking that draws from the conscious and unconscious minds.

and relationships is said to be even more fixed and rigid than the conscious system—not flexible nor creative at all. This rigidity of the unconscious, said Kubie, leads artists, composers, and poets to repeatedly use the same recognizable style and content in their works.

Creativity Takes Place in the Preconscious, on the Fringe of Consciousness

Creative activity takes place *between* the conscious and the unconscious, that is, in the *preconscious*. The preconscious is not tied strictly to the everyday pedestrian realities of the conscious mind, nor is it anchored to the even more rigid symbolic relationships of the unconscious. Rather, the preconscious can engage in free play with ideas, meanings, and relationships, thereby producing the new and unexpected connections, metaphorical relationships, overlapping meanings, puns, and allegories that we call *creativity*.

Education: Ties Preconscious to Conscious

On education, Kubie says, "The price we pay for traditional educational methods is that they . . . tie our preconscious symbolic processes prematurely to precise [conscious] realities."

Freud/Kris Theory Misleading: Kubie

On the Freud-Kris explanation of creativity, Kubie says, "the ad hoc postulate that there is a separate and special mechanism known as the sublimation of unconscious processes may not be needed to explain creativity, and may actually be misleading . . . Neurosis corrupts, mars, distorts, and blocks creativity in every field" (Kubie, 1958).

Rugg: Similar to Kubie

Harold Rugg. Finally, Rugg's (1963) formulation of creativity is extremely similar to that of Kubie. The difference, in fact, seems semantic. Rugg emphasized "off-conscious" mental activity or thinking in the "transliminal chamber," which he located midway between the unconscious mind and conscious mental activity (Figure 4.1). The transliminal chamber was called "the center of creative energy." Here, the mind is free to draw from the vast store of experiences in the unconscious, and to creatively use these in conscious everyday living.

Transliminal Chamber: Midway between Conscious, Unconscious

Both Kubie and Rugg thus emphasize the importance of preconscious, fringe-conscious, or off-conscious thinking in creativity. Perhaps this relates to why creative people have strong needs for privacy, away from the demands of conscious realities, and why daydreaming and incubation—both of which are forms of preconscious activity—can produce creative inspirations.

Privacy, Day Dreaming: Good for Creativity

BEHAVIORISTIC AND LEARNING THEORIES

S-R and S-S Learning

Learning theorists do not agree either. To review your introductory psychology, ancient learning theory emphasized the reinforcement (reward) of correct responses plus the formation of stimulus-stimulus associations. S-R learning and S-S learning. You may recall Skinner's hungry rats who learned to press a bar to earn lunch, and Pavlov's dog who learned the association between bells and food, causing him (the dog) to salivate whenever the bell rang. The approach is called *behaviorism* because the focus is on the visible behavior itself, rather than the unseen mental events that control the behavior.

B. F. Skinner: No Such Thing as Creativity(!)

No Freedom or Dignity Either

Burrhus F. Skinner. The big gun behaviorist, of course, was B. F. Skinner—a highly creative person who creatively argued that there is no such thing as creativity. In *Beyond Freedom and Dignity* (Skinner, 1971), he argued that we have no *freedom*, since all of our behavior is controlled by those who dispense reinforcements and punishments (parents, teachers, peers, police, and others who enforce laws, traditions, customs, mores, social expectations, etc.). Nor should we accept the *dignity* which comes from personal accomplishment, since again those achievements were determined by our history of rewards and punishments.

Creativity Due to Genetics, Environment, Learning

Let's examine how he deprives us of our creativeness. Basically, the behavior of a creative person such as a poet is "merely the product of his genetic and environmental history" (Skinner, 1972).[1] The act of composing a poem out of "bits and pieces" is not an act of creativity, since in the experience of the poet he or she "had to learn how to put them together." In behavioristic terms, "the behavior [response] was . . . triggered by the environment [stimulus] . . . [and] the consequences [reward] may strengthen his tendencies to act in the same way again." While creating a poem may indeed require exploration and discovery, these are tied to the history of the poet and to trial-and-error learning activities, according to Skinner.

History Plus Trial-and-Error

Poet is Unaware of Source of Ideas: Skinner

Since the poet is not aware of all of his or her history, he or she does not know where the poetic ideas (behavior) come from. Therefore, the poet erroneously attributes his or her own creations to a creative mind, an unconscious mind, or perhaps "to a Muse, . . . whom he has invoked to come and write his poem for him." Even Shakespeare is given little credit for his own works because "Possibly all their parts could be traced by an omniscient scholar to Shakespeare's verbal and nonverbal histories." Shakespeare himself merely put the bits and pieces together in a fashion that produced rewarding consequences.

Shakespeare: No Creativity Here Either

Even Shakespeare deserves no dignity.

Maltzman: Increase Original Behavior with Reinforcement

Irving Maltzman. Moving to a second and related behavioristic theory of creativity, in a well-known article published in the high status *Psychological Review,* experimental psychologist Maltzman (1960) argued that we can increase original behavior simply by rewarding it. He reviewed his own laboratory research that proved beyond doubt that when original word associations were rewarded, the frequency of original word associations increased.

The Dead Fish Approach

Related research by Pryor, Haag, and O'Reilly (1969) showed that if porpoises were given a dead fish only when they performed a new stunt—but not when they repeated an old one—they quickly learned to put a lot of variety and creativity into their act.

Is Something Amiss?

It's comforting to scientifically confirm that creativity will increase when it is encouraged and rewarded. However, something seems amiss when porpoises are called *creative* but William Shakespeare is not.

Staats: Complex Stimulus Control

Arthur Staats. A third behavioristic analysis of creative thinking is also straightforward. Staats (1968) described how S-R psychology can explain the production of novel, creative behavior through "complex stimulus control." We begin with the existence of two unrelated stimulus-response (S-R) relationships, each established by previous reinforcement. For example, the stimulus "Berlin Wall" elicits images of the Berlin Wall guarded by East German Soldiers. The stimulus of "people leaving" can elicit the verbal direction "Turn out the

[1]This section presents many direct quotes from Skinner in order to decrease the suspicion that your author fabricated Skinner's unusual position on creativity. Skinner really said these things.

lights when you leave." In the fall of 1989, when East Germans were first allowed to leave their country, at least three cartoonists created a cartoon showing exiting East Germans telling a border guard to "Turn out the lights when you leave!"

Two Unrelated Stimuli Elicit Novel Response Combination

This approach (theory?) assumes that creative ideas are new combinations of previously unrelated ideas. The approach simply describes in stimulus-response language how two previously unrelated stimuli, when encountered together, can elicit a creative response combination. The description applies, according to Staats (1968), to any creative act from a child uttering a novel sentence to a scientist creating a theory.

Sarnoff Mednick. Finally, another learning theory explanation of creativity focuses on *mental associations*. Mental associations—for example, the word *carrot* might elicit *rabbit*—are assumed to be learned on a stimulus-stimulus contiguity basis. That is, carrots and rabbits have been experienced together and so we form a mental association between them. Just like Pavlov's dog Rin-Tin-Tinovich forming the association between the bell and Alpo.

A Creative Person Has Many Available Mental Associations: Mednick and Mednick

According to psychologist Mednick (1962; also Martha Mednick & Andrews, 1967), a highly creative person is one who possesses a large number of verbal and non-verbal mental associations that are available for recombination into creative ideas. A less creative person is one who is able to respond with just a few, highly dominant mental associations. For example, in listing unusual uses for a brick, the low creativity person, with few-but-strong associations, would quickly snap off, "Well, . . . uh . . . you might build a house or a garage with 'em . . . if you had enough. That's all I can think of.

The Mednicks' RAT

Mednick (1967) published the Remote Associates Test (RAT), which was supposed to measure differences in the availability of verbal associations; that is, differences in creative ability. The test taker would be given three words (e.g., *shopping, washer, picture*) and was asked to produce a fourth word somehow associated with all three (*window*). The two main criticisms of the test are that (1) truly imaginative answers—those not on the scoring guide—will *lower* your score (what's this?), and (2) the test correlates too highly with verbal intelligence, .40 to .60 in research by the Mednicks (Mednick, 1962, 1967; Mednick & Andrews, 1967) and .69 in a study by Davis and Belcher (1971). Other tests seem to focus more clearly upon creative potential, separate from intelligence.

Originality Lowers Your Score

High Verbal IQ Raises Your Score

Oversimplification

The traditional criticism of stimulus-response psychology is that of oversimplification or *reductionism*. Such complex human behavior as hopes, plans, aspirations, neuroses, speech, reading this book, chuckling at the jokes, or solving chemistry problems, writing poetry, or designing a marketing plan theoretically could be "reduced to" principles of Pavlovian (classical) conditioning or Skinnerian (instrumental) conditioning. But much of the beauty and complexity of learning and mental life is lost in such oversimplification.

SELF-ACTUALIZATION APPROACH

Self-Actualization Equals Mental Health

The essence of the *self-actualization* approach to creativity was presented in Chapter 1. The central point was that the creative person also is a self-actualized person—a fully-functioning, mentally healthy, forward-growing human being who is using his or her talents to become what he or she is capable of becoming (Maslow, 1968, 1970; Rogers, 1962). Some refer to this as a *mental health* or *psychological growth* explanation of creativity. To account for creative neurotics, the

Self-Actualized and Special Talent Creativity

reader should recall Maslows' distinction between *self-actualized* creativity, the mentally healthy tendency to approach all aspects of one's life in a creative way, and *special talent* creativity, having a strong creative talent in a particular area with or without mental health and self-actualization. The reader also should recall Maslow's fifteen characteristics of a self-actualized person summarized in Inset 1.1. (Yes, you may look again at Inset 1.1).

Carl Rogers (1962) added additional important conditions for creativity that relate to growth in self-actualization:

Rogers: Psychological Safety

1. *Psychological safety.* This is the creative atmosphere, a flexible and receptive environment. It is entirely a matter of attitudes.

Internal Locus of Evaluation

2. *Internal locus of evaluation.* This refers to personal characteristics of self confidence and independence, a tendency to make one's own judgments, and a willingness to accept responsibility for one's successes and failures.

Playfulness

3. *A willingness to toy with ideas and play with possibilities.*

Openness to Experience: External and Internal

4. *Openness to experience.* This includes a receptiveness to new ideas and an attraction to new interests and experiences. It also includes a willingness to acknowledge internal wants, needs, and habits, some of which could be of questionable social acceptability. For example, a creative male is more willing to accept traditionally feminine interests or behaviors, such as petting a cat, making baby formula, or baking a cake (Bem, 1974).

From Rogers' humanistic point of view, one stimulates creativity by creating a psychologically safe environment, modeling openness to experience and an internal locus of control, and encouraging students to play with possibilities.

MORE CONTEMPORARY THEORIES OF CREATIVITY

The following includes brief summaries of seven theoretical explanations of creativity, plus a description of our *implicit* theories. It is not an exhaustive list. The views represent some of the better-known contemporary speculations about the nature of creativity, creative processes, and creative persons.

Sternberg: Intelligence, Cognitive Style, Personality/Motivation

Robert Sternberg's (1988a) three-facet model of creativity focuses on characteristics of the creative person. In a summary statement, "creativity is . . . a peculiar intersection between three psychological attributes: intelligence, cognitive style, and personality/motivation. Taken together, these three facets of the mind help us understand what lies behind the creative individual"(p. 126).

1. Intelligence

Intelligence, from Sternberg's information processing and triarchic theory perspectives, cannot be summarized briefly. Let's just call it *intelligence,* with an emphasis on verbal ability, fluent thought, knowledge, planning, problem defining, strategy formulation, mental representation, decisional skill, and a general intellectual balance (see Sternberg, 1988a, 1997, 2003).

2. Cognitive Style

The *cognitive style* (or *intellectual style* or *mental self-government*) found in a creative person evolves around low conventionality—a preference for creating one's own rules and doing things one's own way; a liking for problems that are not prestructured; an enjoyment of writing, designing, and creating; and a preference for creative occupations, such as creative writer, scientist, artist, investment banker, or architect. Sternberg included in creative intellectual styles an *anarchic* form of

mental self-government, characterized by a potpourri of needs and goals, a random approach to problems, motivation from "muddle," frequent lack of clear goals, tendencies to simplify, an inability to set priorities, and more. Said Sternberg (1988a, pp. 140–141), "Anarchics have the ability to remove themselves from existing constraints, ways of seeing things, and ways of doing things . . . Anarchics are not to the tastes of either teachers or parents, because the anarchics go against the existing grain."

Anarchics May Not Be Popular

3. Personality and Motivation

The *personality/motivation* dimension includes creative traits that duplicate those to be described in Chapter 5, for example, tolerance for ambiguity, flexibility, drive for accomplishment, perseverance in the face of obstacles, willingness to grow in creative performance, and moderate risk-taking.

Concluded Sternberg, "People are creative by virtue of a combination of intellectual, stylistic, and personality attributes" (p. 145).

Amabile: Domain-Relevant Skills, Creativity-Relevant Skills, Task Motivation

Theresa Amabile (1983, 1988; Conti, Coon, & Amabile, 1996) proposed another three-part model of creative productivity. Her first component is *domain-relevant skills*—skills that produce competent performance within a domain, for example, writing or drawing. This part of the model includes knowledge about the domain, technical skills, and special domain-relevant talent. *Creativity-relevant skills*, the second component, contribute to one's creative performance across domains. Conti, Coon, and Amabile mentioned appropriate cognitive styles, favorable working styles, and divergent thinking abilities. The third component is *task motivation*, a common feature in descriptions of creative and eminent people. Task motivation was said to include one's attitude toward the task, motivation for the task, and ability to minimize external constraints.

You Are Talented

Creative

And Motivated

The Sternberg and Amabile models are similar in several ways. Both include motivation and thinking styles, although their precise descriptions vary. For example, Sternberg includes creative personality characteristics in his descriptions of both *cognitive style* and *personality/motivation* dimensions, and seems to assume the existence of Amabile's *domain-relevant skills*. Amabile substitutes more specific *domain-relevant skills* for Sternberg's *intelligence*.

Mihalhyi Csikszentmihalyi: Where Is Creativity? Person, Domain, and Field

Before he invented *flow*, Csikszentmihalyi (1988, 1990a; pronounced "Smith") assembled a three-part theory of creativity consisting of (1) the creative *person*, (2) the person's *domain* or discipline, and (3) the *field* (institutions, experts, or society).[5] The creative person supplies the necessary ability, talent, and affective traits. He or she receives formal training in the domain, for example, piano or mathematics, which includes exposure to rules, structures, and practices and within which the individual is expected to produce. Society, or the larger field, provides judges who, snobs that they are, pass judgment on the creativeness of the output. *All three elements must interact to produce true creativity*, defined as an innovation that—if it receives society's blessing—permanently alters the domain.

Person, Domain, and Field Must Interact

Where Is Creativity?

The model evolves around the question "Where is creativity?" The obvious answers of "in the person's head" or "in the creative product" are unacceptable,

[5]It is easy to confuse the near-synonyms "domain" and "field," which is one reason to think of "the larger field" or even "society."

said Smith, because without the larger field or society passing judgment ("We hereby stamp this *creative*"), the person and the product simply are neither recognized nor accepted as "creative." Genuine creativity does not reside in the object itself, said Smith, rather "the reason we believe that Leonardo or Einstein was creative is that we have read that that is the case" (Csikszentmihalyi, 1988, p. 327). It is the more sophisticated artistic and scientific establishment in which we place great trust that make such judgments, that decide what is "an adaptive innovation" (p. 326). According to Smith, in regard to the notoriously fickle realm of the arts, the "critics and viewers who have looked . . . closely at Botticelli's work are just as indispensable to Botticelli's creativity as was the painter himself" (p. 328). In math, physics, and chemistry, the attribution of creativity again is a social process which, as in the arts, can be "relative, fallible, and sometimes reversed by posterity" (p. 328).

Poor van Gogh!

So that's why van Gogh died poor—the field had not yet made up its mind. In October, 1989, one of his paintings was offered for sale at forty million dollars, which sounds high but the frame and little light were included.

Aha! Creativity versus Creative Eminence!

What's wrong? If you have not found it, the flaw in Csikszentmihalyi's thinking is to use *creativity* synonymously with *creative eminence*. Certainly, only a handful of people are sufficiently creative and produce sufficiently creative products such that—as judged by the larger field or society—they permanently impact the domain (e.g., math, chess, art, literature, theater, business, industry, science). But are the rest of us chopped liver?

Howard Gardner: Person, Domain, and Field

Of MI Fame

You should recognize the name of Howard Gardner, who has impacted psychology and gifted education by replacing the single IQ number with his eight-part theory of multiple intelligences (Gardner, 1999, von Károlyi, Ramos-Ford, & Gardner, 2003).

Person, Domain, and Field Again

In *Creating Minds*, Gardner (1993) presents a case study of the lives of seven creatively eminent persons, Sigmund Freud, Albert Einstein, Pablo Picasso, Igor Stravinsky, T.S. Eliot, Martha Graham, and Mahatma Gandhi, "whose impact on our time has been compelling" (p. 4).[6] Gardner adopts totally the three-part Csikszentmihalyi (1988) definition of true creativity, which requires a talented *person*, who experiences a period of training, is adventurous, and perhaps even is insubordinate; a *domain* or discipline within which the individual works; and a *field* (judges, institutions) that decides the quality of the creations. All three parts of the model appear in Gardner's definition of a creative person:

> The creative individual is a person who regularly solves problems, fashions products, or defines new questions in a domain in a way that is initially considered novel but that ultimately becomes accepted in a particular cultural setting. (p. 35)

Restrictive

As with Csikszentmihalyi, Gardner's conception of creativity is highly restrictive. Perhaps more so: "Of the many individuals and works that undergo scrutiny by the field, only a few are deemed worthy of sustained attention and evaluation . . . And

[6]*Creating Minds* is highly recommend reading. It covers many important ideas and developments in the domain of creativity, creative traits of the seven persons, plus Gardner's own remarkable insights and conclusions.

of the works that are appreciated at a given historical moment, only a small subset are ever deemed to be *creative* . . . The works (and the workers) so judged actually cause a refashioning of the domain" (p. 38). In his example, he explains how, out of one thousand budding artists at work in Paris, "one or two at most will paint in a manner that becomes so highly valued that their efforts will ultimately exert some effect on the domain—on the structure of knowledge and practice to be mastered by the next generation of painters" (p. 39). The other 998½ are indistinguishable from chopped liver.

99.85 Percent = Chopped Liver

Gardner's definition and assumptions are defensible, but only if the reader accepts his eminence definition of *creativity* as obviously and extremely restrictive. To use his figures, Gardner's definition eliminates the possibility of being creative for 99.85 percent of people *who, in fact, are doing creative things,* specifically, his other 998½ Parisian artists. Gardner dismisses the possibility of self-actualized creativeness by arguing that "an individual cannot be creative in the abstract . . . but must make his or her contributions in particular domains" (p. 37). Sayonara, ciao, and auf Wiedersehen to all efforts of the Creative Education Foundation, most creativity classes and workshops, your creativity class and this text, and all supporters of the CPS model, brainstorming, Synectics, and every other effort to strengthen a general, self-actualized form of creativeness.

Many of Us Do Not Agree with Gardner's Restrictive Definition

Simonton: Chance-Configuration Theory

Fifth P = Persuasion: Simonton

In Chapter 3 we mentioned Simonton's (1988a) "fifth P," persuasion. Simonton also emphasized that *chance* plays a role in both the production of innovative ideas and in their social acceptance. Persuasion and chance fit together in his *chance-configuration theory* (Simonton, 1988). Like Gardner (1993), Simonton accepts the notion that "individuals become 'creative' only insofar as they impress [persuade] others with their creativity" (p. 386). However, Simonton's chance-configuration theory has different roots, one in his background as a social psychologist interested in personal influence, another in Campbell's (1960) Darwin-inspired *blind variation and selective retention* model of creative thought.

Variation

Campbell's three core assumptions, accepted by Simonton, appear in the label of Campbell's model. First, to solve a problem there must be some means of generating ideational variation; second, there must be criteria that select only the adaptively fit ideas; and third, selected idea variations must be preserved and reproduced.

Plus Criteria for Selection

With a seemingly slight alteration of Campbell's basic model, Simonton emphasizes, first, the chance (but not totally random) permutations of mental elements, such as ideas, concepts, recollections, or other aspects of cognitive schemata. We now have ideas or "potential permutations." Second, only the most stable (coherent, sensible) of the permutations are retained for further processing. Stable permutations, or "configurations," take their shape because of experience, rules and conventions, and sensibility. A configuration (solution) is selected based on its apparent usefulness or suitability to the problem.

"Configuration" Selected Based on Usefulness

Following considerable "intrapsychic" development and polishing of the innovation/configuration, the third and final step is the social one. The person now must take a leadership role. He or she must persuade others of the quality—the creativeness—of the final product. The product must be accepted; it must be viewed as having value to the endeavors of sophisticated others within that domain.[7]

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[7]In one-half page I have attempted to summarize an original, thoughtful, and complicated 41-page article. The word *oversimplification* comes to mind. Apologies to Dean Keith Simonton.

For an "aha!" experience, compare Simonton's theory with that of David Perkins, Chapter 3.

Investment Theory of Creativity

For a short while, economic and investment terms seemed a profitable way to describe creativity. For example, several scholars described how an investment in the creative development of our youth (involving costs) reaps short- and long-term benefits for society (Rubenson, 1991; Rubenson & Runco, 1992; Walberg & Stariha, 1992). Also using investment terms, Sternberg and Lubart (1992) explained how "investing" in one's own creative research or theory ideas, although risky, can produce greater personal profits (professional prestige, higher visibility) than buying into well-established and popular ideas. Sternberg and Lubart (1996) titled one article "Investing in Creativity" to emphasize society's error in underinvesting in the study of creativity relative to its importance in the world.

Invest in Creativity: Concepts from Economics

Walberg's Economics

Walberg's (1988) definition of "human capital" included the motivation, skills, and creativity of the person. Said Walberg, people are "capital assets to themselves and others" (p. 342). Their time is valuable and should be allocated efficiently. Also, young people have a choice between working after high school versus investing in enhancing their "personal capital" (e.g., attending college),"which involves risky short- and long-term opportunities, costs, and benefits" (p. 343). The production of talent thus can involve costs (e.g., tuition, books, rent, low income for four years) as well as benefits (higher eventual earnings, prestige, psychological satisfaction).

Gardner (1993) found the vocabulary handy, mentioning that potentially creative children who have opportunities to discover and explore "will accumulate invaluable 'capital of creativity,' on which they can draw in later life" (p. 31).

A Capital Idea!

I have always liked analogical models. As insightfully reported in my review of the investment model (Davis, 1992), I have long felt that life is like a hamburger—the more you put into it, the better it is. Life can be a plain dry burger or loaded with cheese, tomatoes, lettuce, onions, pickles, sauer kraut, and thousand island dressing. Analogical models are marvelous theoretical and teaching devices. They simplify complex topics by summarizing large amounts of information in compact, understandable ways. They help illustrate interrelationships among parts. They provide a language and sometimes a visual illustration to aid understanding and prediction.

I'll Have a Big Mac, Please

A popular example is the information-processing model, which uses a flow chart—boxes and arrows—to summarize interactions among environmental input, attentional processes, sensory stores, short-term and long-term memories, rehearsal, response modes, and executive control processes. Peek ahead at the Interactionist Model of Creative Behavior flowchart summarized in Figure 4.2.

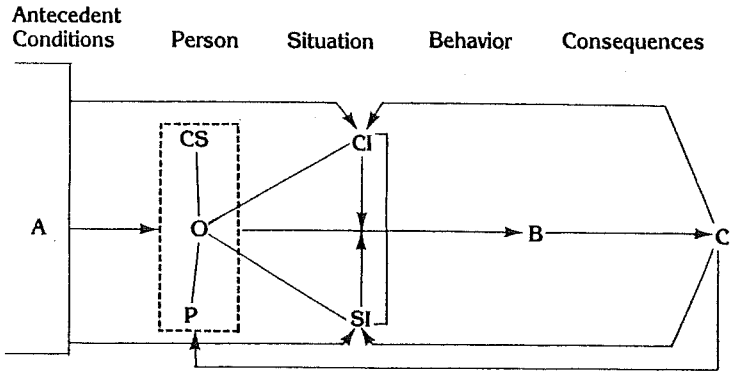
Analogical Models Summarize and Illustrate Information

Analogical models are neither right nor wrong, valid nor invalid. They either work or do not work in helping us understand point-for-point correspondences. The investment model of creativity plays its simplification and instructional roles nicely. It can even lead to new insights about creativity. For example, bad investments—perhaps in the wrong career or in a creative bank heist—can cause personal bankruptcy.

Does It Work?

Interactionist Model of Creative Behavior

This book tries to present a brief overview of most of the important topics in creativity—self-actualization, barriers, definitions and theories, personality traits, abilities and cognitive styles, stage models of the process, creativity techniques, tests, training, and more. Essentially, everything interacts with everything else.



A = Antecedent conditions to current situation. Examples: Past reinforcement history, early socialization, biographical variables—sex, family position, birth order
B = creative behavior
C = consequences
O = "organism" (person)—gestalt of attitudes, values, intentions to behave, motivational orientation, individual differences
CS = cognitive style/abilities—examples: cognitive complexity, divergent thinking, verbal/ideational fluency, problem solving styles/approaches, perceptual openness, field independence/dependence
P = personality dimensions/traits—examples: locus of control dogmatism, autonomy, self-esteem, narcissism, intuition
CI = contextual influences—examples: physical environment, culture, group/organization 'climate,' task & time constraints
SI = social influence—examples: social facilitation, evaluation expectation, rewards/punishments, role modeling

Figure 4.2. An Interactionist Model of Creative Behavior, R.W. Woodman & L.A. Schoenfeldt, *The Journal of Creative Behavior*, 1990, 24(4), pp. 270–290. Reprinted with permission from the copyright holder, the Creative Education Foundation, Buffalo, NY.

Interaction of Person and Environment Factors

An interactionist model that attempts to tie much of this together in one picture appears in Figure 4.2 (Woodman & Schoenfeldt, 1990). The main emphases are on *person* and *environment*. (When you think about it, what else is there?) According to the authors, various theories and research focus sometimes on aspects of the person, sometimes on features of the environment, and "sometimes both plus their reciprocal influences are necessary to even begin to understand what is going on."

It will take a few minutes to puzzle out, but the Interactionist Model is summarized in Figure 4.2—a flowchart with analogical correspondences to aspects of the creative person and environment. The model includes *antecedent conditions* (A), such as one's background, socialization, gender, and other biographical variables; the *"organism"* (O) or person, which includes his or her personality traits (P) as well as abilities, thinking styles, and "openness" (CS); contextual influences (CI), such as the particular task and the organizational climate; social influences (SI), such as expectations and role models; the [solution, creative] behavior (B) itself; and the consequences (C).[8]

[8]Only experimental psychologists would refer to people as *organisms*, as though paramecia and lab rats could be included in this discussion of creativity.

Most Approaches to Creativity Can Be Found in the Model

Now the fun part. Cognitive explanations of creativity, which emphasize, for example, abilities and thinking styles, would focus on CS-O-B linkages. Social orientations might be found in SI-O-B (with some interest in CI and A). Developmentalists and gifted education folks would look at A-O-B, A-SI-O-B, and A-CI-O-B sequences. Scholars with an organizational bent would examine the CI-O-B chain. Stage models of creativity (e.g., Wallas and CPS models) focus on O-B-C-O linkages. Skinner and behaviorism fall in the [A, CI, SI]-B-C chain.

Said Woodman and Schoenfeldt (1990) "the value of the interactionist perspective is . . . to see how various components, elements, and forces come together to result in the behavior of interest, in this case, creativity" (p. 286).

Implicit Theories of Creativity

YOU Have an Implicit Theory of Creativity

The reader will be delighted to discover that what he or she already thinks about "creativity" has a name: It's an *implicit theory of creativity.* According to Runco (1990, 1999; Plucker & Runco, 1998), an implicit theory of creativity is just that—a theory or conception of creativity that exists in your mind. Such implicit theories serve as mental prototypes that we use to decide if a product, behavior, or person is creative—whether or not we can properly define *creativity* (Runco, 1999). For example, adults' implicit theories of children's creativity include the adjectives *adventurous, enthusiastic, active, curious, artistic,* and *imaginative* (Lim & Plucker, 2001; Runco, Johnson, & Bear, 1993). In Csikszentmihalyi's (1988, 1990a) and Gardner's (1993) theories, leaders in a field would use their implicit theories to evaluate the creativeness of a contribution.

Use Implicit Theories to Evaluate Creativeness

Runco's (1990) research compared implicit theories of artists and non-artists. As a sample of his results, both groups agreed that artists were *imaginative* and *expressive.* Artists added *humorous, open-minded,* and *emotional,* while non-artists endorsed *intelligent, original,* and *"draw well."* Both groups agreed that scientists were *intelligent* and *curious.* Both groups also agreed that "everyday creativity" was characterized by being *active.* But artists again added *humorous* and *open-minded.* Non-artists added *imaginative, commonsensical,* and *"cooks well."*

Artists: We're Humorous Open-Minded, Emotional

Implicit theories of creativity apparently are similar, but not identical, worldwide. A core consideration is cultural values. In Hong Kong, for example, Chan and Chan (1999) found that teachers listed *nonconformity* as a creative trait—which was cause for concern in a culture that values social responsibility.

Influenced by Cultural Values

In Korea Lim and Plucker (2001) managed to convince 478 university students—people waiting for buses or subway trains, supermarket shoppers, high school teachers, and others—to check off which of 75 descriptors were characteristic of an "ideally creative person" (p. 123). The implicit definitions mostly—not exactly—mirrored Western conceptions. Four categories (factors) of endorsed descriptions were: (1) Personality and General Creativity (e.g., "is passionate about work," "is positive and energetic," "is unique and original," "has lots of ideas"), (2) Perseverance (e.g., "tends to stick to an idea," "is very patient," "must finish if one starts something"), (3) Independence and Deviance (e.g., "is indifferent to others' opinions," "makes conflicts when working in groups," "seems to be abnormal," "is spontaneous"), and (4) Cognition and Motivation (e.g., "solves problems well," "is eager to learn everything," "thinks in a logical and scientific way").

Korea: Implicit Definitions Similar to Western Conceptions

However, the Koreans were negative toward some social behaviors associated with creativity. Especially, viewing creative people as *loners* and *nonconformists* was unattractive in a culture "with a strong sense of social responsibility [and] conformity" (p. 127).

Koreans Disliked Some Traits That Aid Creativity

Asian research by Yue and Rudowicz (2002) suggested that 489 college students in Beijing, Taipei, Hong Kong, and Guangzhou held mildly confused

Asia: Not Artists or Businesspersons, But Contributors to Society

(implicit) definitions of creativity. The researchers asked the undergraduates to nominate up to three creative people in Chinese history and modern times, and give their reasons for the nominations. Politicians received the most nominations, with scientists and inventors in second place. *They rarely nominated artists, musicians, or businessmen.* It seems the nominations reflected "social influence or contributions in society . . . [rather than] innovativeness in thinking" (p. 91).

No Humor or Aesthetic Taste

An earlier study by Rudowicz and Hui (1997) indicated that Chinese conceptions of creativity did include the Western characteristics of *imagination, innovative ideas, intelligence, independence,* and *high energy,* but not *sense of humor* or *aesthetic taste.* As in the Yue and Rudowicz study, the Chinese subjects included "contributing to the progress of society" in their implicit definitions.

China: Ethical and Moral Component

Niu and Sternberg (2002) also concluded that "Asians have similar but not identical concepts of creativity to many people in the West" (p. 269). For example, Chinese conceptions include an ethical and moral component quite missing in Western implicit definitions of creativity. (Creativity exercise: Think of possible implications of this conclusion for business, the arts, and social behavior in Western countries.)

India: Encourages Obedience, Religion, Etiquette

In India Niu and Sternberg (2002) reported that Indian scientists defined creativity as requiring the abilities to *synthesize, integrate,* and *create something new.* Scientific creativity, the scientists reported, requires more rules and logic than artistic creativity. The scientists also agreed that all creative persons show *curiosity, risk-taking, open-mindedness, motivation, broad interests,* and *aesthetic taste.* But creativity generally is lower in India because "obedience, religion, superstition, and social etiquette required for diverse hierarchical relationships are encouraged more than individual development" (p. 275).

As we know, implicit theories of creativity exist. With the help of Runco, Plucker, Sternberg, Rudowicz and others, such everyday, common-sense "theories" are legitimized.

Interdisciplinarity

Scientific Approach to Understanding Art

One recent seemingly "theoretical" thrust is entitled *interdisciplinarity.* This perspective examines the ancient contrast between *art* (and the humanities generally), which focuses on subjectivity and intuition, versus *science* (especially the psychology of cognition), which is rooted in objectivity and quantification. (See, e.g., the entire 1998, Vol 11, No. 1 issue of *Creativity Research Journal.*) One example of a tie between art and science is experimental aesthetics, the effort to understand and measure human experiences elicited by graphic art, music, and literature. Another example is analyzing various relationships among the age and gender of the artist, aesthetic preferences (e.g., representational versus abstract), themes (e.g., an "old age" theme), and the quality (e.g., technical skill, creativeness) of art products (Lindauer, 1998). Interdisciplinarity also includes studies of creativity in theater performances, folklore, and ethnomusicology (Sawyer, 1998).

The interdisciplinarity approach to creativity emphasizes a broader focus and greater depth of understanding by objectively examining creativity in a variety of contexts.

Comment

The definitions and theories in this chapter and Chapter 3 help us better understand creative people and their creative processes and products. The variety of

approaches is astounding. In Chapter 3 we examined definitions and theories about the creative person, product, process, and press/environment, along with reports of mysterious mental processes that writers and artists themselves do not understand.

This chapter briefly summarized classic psychoanalytic, behavioristic, and self-actualization theories; Sternberg's and Amabile's three-part models; Csikszentmihalyi's and Gardner's person-domain-field model; Simonton's Darwin-like Chance-Configuration theory; the investment theory (model); the do-everything Interactionist Model; our implicit definitions and cross-cultural comparisons; and interdisciplinarity—scientific studies of aesthetic experiences.

Readers may be back where they started—with their own implicit definitions of creativity—but with more ideas and facts about others' conceptions of "creativity." A central message is that we all can be more creative; we all can solve problems with more imagination. A starting place is adopting creative attitudes and a more creative personality, the topic of Chapter 5.

SUMMARY

Freud's psychoanalytic theory focused on an unconscious conflict between the libido (sex drive) and the superego (social conscience), which is resolved in creative fantasies and products. Freud's theory is a negative view of the motivation to create. In the plus column, he stressed regression to childlike thinking (primary process thinking).

Ernst Kris stressed the neurosis-preventing discharge of both libidinal and aggressive energy in creative fantasies. Kris emphasized preconscious and conscious mental activity.

Kubie argued that neurotic conflict always is bad for your creative health. Like Kris, he proposed that creative thinking takes place in preconscious mental activity, between conscious and unconscious processes.

Rugg similarly located creative thinking between conscious and unconscious mental activity, in his transliminal chamber.

Learning theories focus on the reinforcement of correct responses. Skinner claimed that creative acts are explainable via genetics plus one's history of being rewarded for combining pieces into creative wholes. "We have no freedom and deserve no dignity," said Skinner.

Maltzman simply proposed that originality, like any other behavior, is strengthened through reinforcement. The view was reinforced by cooperative porpoises.

Staats argued that two stimuli, encountered together for the first time, would elicit a novel (creative) combination of responses.

Mednick suggested that creative people have larger repertoires of mental associations that are available for combination. This capability was said to be measured by their RAT (*Remote Associates Test*), which discriminates against original answers.

Learning theories are criticized for being oversimplistic and reductionistic.

As we saw in Chapter 1, Rogers and Maslow recommend a self-actualization (growth) approach to creativity. Maslow distinguished between self-actualized creativity and special talent creativity. Rogers emphasized psychological safety, internal control, playfulness, and openness to experience.

In the contemporary category, Sternberg's three-facet model includes three dimensions of the creative person—intelligence, cognitive style, and personality/motivation. He mentioned an anarchic style of mental self-government.

Amabile's three components were domain-relevant skills, creativity-relevant skills, and task motivation.

Mihalhyi asked "Where is creativity?", leading to a three-part theory including the creative person, the person's domain, and the field of experts who pass judgment.

Gardner used the person, domain, and field approach to elaborate on the highly restrictive group of persons deemed creative. The definition dismisses content-free, self-actualized forms of creativity, which are the focus of many courses, books, and programs.

Simonton combined (non-random) chance variation with his fifth P, persuasion, to produce his chance-configuration theory of creativity. The person must persuades sophisticated judges that his or her idea or product (stable permutation, configuration) is creative.

The investment theory of creativity is an analogical model of the creative process. It uses terms from economic theory to explain the value of creativity to society. The analogy seems to work. Is life like a Big Mac?

The Interactionist model uses a flowchart to illustrate the interactions among many components of creativity: Antecedent conditions (e.g., biographical variables), the person (e.g., personality), the environmental and social situation, the creative behavior, and consequences.

Like Runco, Plucker, Sternberg, and others, we all have implicit theories of creativity. The theories are similar worldwide, but in Asia and India they are influenced by cultural factors, particularly conformity and social responsibility. Chinese theories included contributions to society.

Interdisciplinarity is using scientific methods to help understand creativity in the arts and humanities.