Chapter 5
Creativity: Multidimensional Associative or Chaotic Process? Methodological Comments on Creative Processes and Metaphors in Aesthetics and Innovation

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Creativity as Mental Propulsion

Combining psychological and methodological aspects in a developmental theory of creativity, Sternberg (2003; see also Sternberg, 1988, 1999) develops a theory of types of creative processes that he calls "the propulsion theory of creative contributions" (2003, pp. 124–143). This new theory of types of creative contributions is intended to replace the investment theory of creative contributions (Sternberg & Lubart, 1995), in which he and his coauthor refer essentially to the decision of a creative person to become and stay creative, to act creatively by engendering ideas beyond or against the usual expectation ("Defy the crowd!"). The main accent of the theory is on being ready to forward, advertise, fight for, and socially innovate new exceptional ideas by which Sternberg describes the intellectual capacities, knowledge, styles of thinking, personality variables, risk acceptance, and the motivation and attitude to overcome obstacles, tolerate ambiguities, and dig into intrinsic motivation and the description of creativity-fostering facts within the social (and natural) environment. The intention is to weave all these components into an integrated set of dynamics and account for certain thresholds and interactions between them. The message sounds rather traditional, like the common theories drawing on well-known and fashionable accounts of capacities and capabilities and on intelligence and personality traits and social factors in an attempt to provide an integrative construct supported by empirical studies and accompanied by educational recommendations like "Sell your creative ideas!" Psychologists like factors that account for deferred-gratification patterns; appropriate willingness to assume risks, engage in conflicts, and save time for creative thinking; practical paragon personalities; and mutual fructification through cross-thinking (Sternberg, 2003, pp. 106–123).

Sternberg's propulsion theory facilitates a much more differentiated consideration of the structural conditions, occasions, causes of events, and stages of progress in typical creative contributions. He distinguishes between eight types of creative

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contribution. The main thesis is that "[c]reativity is by its nature *propulsion*. It moves a field from some point to another. It also always represents a decision to exercise leadership. The creator tries to bring others to a particular point in the multidimensional creative space" (Sternberg, 2003, 125–126). "Leadership, like creativity, is propulsion," too (p. 141). The eight types of contribution constitute a qualitative, nominal classification rather than an ordinal one. Yet "certain types of creative contributions probably tend, on average, to be greater in amounts of novelty than are others" (p. 126). Creativity is notably instigated and characterized by the rather fundamental novelty of what results from creative processes and work involving high-quality assessments and judgments.

Sternberg (2003) tries to group the types of creative contributions into a few major categories, such as those of accepting, perpetuating, or rejecting current paradigms and those of trying to integrate multiple current paradigms that feature a kind of combinatorial *meta*type. The whole enterprise revolves around the dynamic development that the field of creativity undergoes by virtue of the contributions the creative individual makes to bring the field closer to a kind of goal state or new direction. The first, not really genuine, type is mere *replication* that does not change the field at all. The second one, too, *redefinition* of a field or problem, is at most a new perspective but does not change the field. The third type, *forward incrementation*, is typical for what one can call "small creativity" (see also Koestler, next section). It gives rise to meaningful solutions (of a largely combinatorial kind) that fall under the current that is moving in the field anyhow.

By contrast, the fourth type of creative contribution, *advance forward incrementation* or *accelerated forward motion*, involves consciously and explicitly changing the field by transgressing the status quo: "The creator accelerates beyond where others in his or her field are ready to go—often 'skipping' a step that others will need to take" (p. 134). The fifth type, *redirection*, even changes the direction of the extant development from the given state at present. It thus includes a deviation from the past and from the actual general line and strategies. The sixth type is a combination of *reconstruction and redirection* in which the creator moves the field back to a previous point and then moves it in a different direction. "The work is judged as creative to the extent that the individual is judged as correctly recognizing that the field has gone off track and to the extent that the new direction is viewed as a useful one for the field to pursue" (p. 136).

The seventh type of creative contribution is *reinitiation*, a new direction and reorientation. It represents "a major paradigm shift" in which "the contributor suggests moving in a different direction from a different point in the multidimensional space of contributions [by a new] start-over" (p. 138) after having criticized traditional hypotheses, suppositions, premises, and so on. The last, the eighth (actually the genuine seventh), type is *integration*, in which the contributor or "creator puts together two types of ideas previously seen as unrelated or even as opposed. Formerly viewed as distinct ideas, they now are viewed as related and capable of being unified" (p. 139).

Sternberg (2003) presents case studies on all these types of creative contribution, mostly from the psychology of intelligence and capability and from social psychology, but also from music, arts, literature, and science. For instances of new

paradigmatic reinitiations, he cites Leon Festinger's theory of cognitive dissonance in psychology (see Festinger & Carlsmith, 1959, for example) as well as Marcel Duchamps's new paradigms in arts and John Cage's in music. The integration type of creative contribution may be illustrated by a new theoretical combination of quantum theory and the general theory of relativity. The types are meant to improve the explanation and representation of changes, differentiations, cultural takeovers, and social innovations without prejudging the quality or heights of creativity and without claiming that just one type is relevant and fitting for a given creative contribution or case. These analytical types overlap, a relationship emphasizing that more than one process, procedure, or encompassing type is relevant. Creativity cannot be characterized by just one trait, process type, or paradigm structure. It is a multifactor phenomenon, and "types of creative contributions do not immediately translate into levels of creative contributions" or other paradigms (Sternberg, 2003, p. 140). Thus, "the propulsion model may help explain several creativity-related phenomena, although it does not provide a unique explanation" (p. 141). Moreover, it may classify software developments and new programs in computers as a sort of replication and may lead to differentiated answers to the long-standing question "of the extent to which creativity is domain-specific or domain-general" (p. 141). Whereas "successful forward incrementations may be largely domain-general, … the ability to perform a reinitiation may be quite a bit more domain-specific, requiring a sense or even feeling for a field that goes well beyond the kinds of more generalized analytical abilities measured by conventional tests" (p. 142).

Sternberg (2003) thinks his classification of types might not be exhaustive yet, admitting it to be "unlikely that there is any one 'right' model of types of creative contributions" (p. 143). In addition, creators and even children

> will need to decide for themselves … how they wish to unlock and express their creative potential. … [T]hey will decide, because creativity is a decision. How can one encourage people to decide for creativity? According to the view of creativity as a decision, fomenting creativity is largely a matter of fomenting a certain attitude toward problem solving and even toward life. (p. 143)

His model is in fact also a bit integrationist and largely one-dimensional. One can certainly deal with more than two different creative inputs of theories, as would be the case in integration (the eighth type of creative contribution). A creatively dividing development, differentiating refinement, and parsing of factorial components as *another* model is also conceivable. A further possibility—which I think very important—is the methodological ascent to higher theoretical metalevels or even to comprehensive interdisciplinary metatheories, metalanguages, and metaperspectives leading to new higher level insights that I have called "creative ascents" (*Kreative Aufstiege*; see Lenk, 2000a, pp. 59–64, 164–165).

Sternberg's (2003) paradigms, typological classifications, and differentiations seem meaningful, however. They allow one to characterize different forms of creative progressive developments, the movement of the fields of creative procedures or paradigms shifts, and all incremental progress in a manner even more systematic than the interrelationships Sternberg describes. (It must be considered whether, methodologically speaking, these model types are of an ideal-type character in

Max Weber's sense: conceptualizations that are to be more or less clearly separated in a reality but that are frequently overlapping and open to interpretation or to combination with one another.) They might be interesting for describing jumps and shifts across the traditional fields in arts, music, and literature and for projecting or transferring new creative or provocative paradigms from one field of human culture to another. Creative hybrids in multimedia arts; in the sciences and medical technologies; between the inorganic and organic research fields; between artificial intelligence, virtual reality, transgenic manipulation of organisms, and neuroimplantation; between social processes and mass suggestion, artificial worlds, world representations, and "Ways of World-making" (Goodman, 1978): they will also be topics of future creativity research on aesthetics and life in general (because aesthetic processes and products, too, are changing people's lives all the time). Transgressing borders, frontiers, and the restrictive fields of cultural and social life seems to be the indicative mark of progress-oriented neotenic society seeking to move beyond all the traditional boundaries between old realities and new virtual, artificial worlds and realities. This feature is bound to pose great challenges to a future philosophy of creative processes, designs, and developments. Whitehead *redivivus*? Whitehead reshifted, virtually virtualized, represented on a metalevel—Whitehead artificially refined and alienated? These are truly thrilling ontological and methodological questions. Existing psychology and philosophy of creativity seem to be a bit behind the times in dealing with such pressing and acute topics as artificial world; artificial life; artificial intelligence; and computer design in arts, science, and technology. Think only of molecular design; artificial cloning; computer-aided, fMRT-guided surgery; any multimedia technology; or any mixture of different art fields and modalities.

As yet, there is no deeply rooted philosophical anthropology of creativity and creative developments of such hybrid modes and fields of creative phenomena and boundary-crossing developments and strategies. Plessner's (1928) law of artificial naturalness of the human being is too gross and too vague, even paradoxical, to really offer explanations. It just covers deeply interacting and co-evolving factors and effects in a superficial formula, however right that formula may basically be. Postmodern aggregations and collages, quotations of old-fashioned paradigmatic or basic styles, and quasi-ironic self-disassociation from one of them by using all of them (especially by simultaneously contrasting and incorporating outdated styles) seem due to similar oversimplification, though new creative insights and types of postmodernist development do exist in arts and aesthetics.

In this chapter creativity is dealt with in general as a multidimensional process of association that carries novelty and originality for persons and creative processes profiting from ideal delineations such as Sternberg's (2003) types. The persons and creative processes meant are those that are still walking a tightrope between adopting traditional methods, developing new original approaches to fields of creative activity, and spanning different modalities and realms of cultural life and even technologies. Unquestionably, this balancing act is also characteristic of aesthetic creative processes, persons, and new perspectives. Sternberg (1988) talks about creative persons, processes, products, and places. In Lenk (2000a, pp. 91–93)

I added many other topoi (features) such as creative potentials, problem-provoking challenges, production activities, partnerships, populations, cultural preferences, and priorities of values.

Is Creativity a Pluridimensional Associative Process?

Traditionally speaking, it seems characteristic of creativity and creative persons that they tend to oscillate between originality and traditional methods, experiencing a state of suspense and/or an "optimal mix" between "iconoclasm and traditionalism" (Simonton, 1988, p. 413). This condition sounds quite paradoxical, but sustained productive tension still seems indispensable for originality that leads to creative outcomes.

Another attribute of creative innovations seems to be the cross-fertilization of different areas, disciplines, and, sometimes, diverse capacities and opportunities. This interaction, however, often eventually affords creative persons a semiexternal or marginal vantage point within their own discipline. They sometimes depend on that perspective for their creativity. Such individuals might not even be discovered as truly creative instigators, inventors, or discoverers until very late, if at all, as with Gregor Mendel (1822–1884) regarding hereditary statistics and with Julius Robert von Mayer (1814–1878) regarding the relation between heat, energy, and entropy in thermodynamics. The implication is that creative collision, the "fusion" of creativity and innovation, is often characterized by the tension between traditionalism (the established methods and common opinions within a discipline), iconoclastic radical orientation and innovation, and the possibility of transferring what is fundamentally novel from one area to quite another. Thus, it seems that confrontation and struggle between different approaches and areas are conducive to creativity, even necessary for it.

Creativity indisputably also stems from certain cultural and social conditions and from particular psychological dispositions and motivations (see Lenk, 2000a, pp. 76–173). This constellation, however, constitutes necessary, though generally insufficient, conditions for explaining outstanding accomplishments by intuitive or analytic geniuses. Simonton (1988) sees chance intervening at different points and junctures. It figures as essential to the permutation of mental elements in the inception of new innovative ideas, in the comparison of relations between configurations, and in the probabilistic interplay between quantity and quality of the output. Chance especially plays a role in the acceptance of a new idea and in historical development, as in cases of simultaneous discoveries and developments.

Simonton's (1984, 1988) theory of creativity is, however, mainly about combinatorial (normal) creativity. Granted, one must refrain from mere stereotyping by freely permutating the combinations, using them exhaustively, and linking them in new arrangements and configurations of known achievements that seem to be characteristic of what one can call the "reproductive-creative" type. Nonetheless, this theory does not account for the overwhelming creativity of geniuses. Some

elements of the personalities, products, stimulations, and inspirations of normal magnitude and of the places and the processes are describable more in historical and methodological terms than in psychological ones. The "four" theories of creativity (personalities, products, places, and processes) seem to be too down to earth to cover the eminent examples of creativity by a genius like Mozart. For lack of repetition, statistical reliability, validity, and generalizability, psychological models and tests dealing with such exceptional personalities have their limits (on Mozart, see Gardner, 1993; Hildesheimer, 1977; Küster, 1991).[1]

Methodologically speaking, the approach taken by Koestler (1966) seems more interesting than that of combinatorial psychological theories of creativity. He compares creative discoveries and developments in science, art, and other creative areas with phenomena of humor and jokes. He does so by focusing on the fusion—or, more exactly, what one can call an associative fusion—entertained in theories of the comical. He emphasizes the association ("bisociation," pp. 25, 36) of different planes, perspectives, and approaches from quite diverse areas. They might be connected in a flash of illumination or inspiration, like an "Aha!" experience—a sudden insight, impulse, or burst of ideas that potentially leads to a specific combination or conjunction of the various factors from different angles and that then culminates in a real fusion of them. This phenomenon is frequent with jokes. Interconnections that had not ordinarily been expected or suspected emerge in this kind of fusing culmination. The explosive comical effect in jokes certainly relies on a confrontation, confounding, or even "con-fusing" of the rules of the game of different realms and planes that are usually alien to one another. Bisociation unexpectedly conjoins them, leading to a collision ending in laughter, new mental or spiritual synthesis, or the differentiated confrontation of parts within an aesthetic experience. Koestler thinks that bisociations may account for all comical, tragical, or spiritually stimulating or inspiring effects (p. 36). Whether or not they are a comical, tragical, or purely intellectual experience of fusion, they illustrate the magical pattern of bisociation.

As with jokes and humor, mutual association typically also characterizes new knowledge, intellectually novel insights, and innovations (Koestler, 1966, pp. 73–74, 105). In most regards these kinds of discovery, too, originate in a bisociation of different planes, dimensions, or areas from relevant perspectives that remain unconnected otherwise. The "spiritually" stimulating effects take center stage in this context. Koestler, however, does not define additional intrinsic features of the differentiation between the comical, the tragical, or the fusing new discovery. He states only that the discoverer has looked around in one or two areas for a long

[1] Weisberg (1986, 1993) denies the very existence of geniuses, the corresponding exceptional personalities, and the extraordinary visions and experiences of *heurēka*. He instead sets store in normal successive acceptance and the continuous development of "elements." He apparently acknowledges only combinatorial creativity and what be called a sort of combinatorial gymnastics (Simonton, 1988). However, he generalizes this standpoint from an insufficient number of single cases (e.g., from Charles Darwin and from the discovery of DNA structure by James Watson and Francis Crick). A mathematician like Srinivasa Ramanujan would go far beyond the scope of combinatorial gymnastics. The same is true particularly in Mozart's case.

time (i.e., the exploratory appetance behavior expounded by ethologists) before the respective bisociation will really fuse. The researcher or thinker searches for ways to state a problem clearly and precisely, to find a clear leading question, and to solve it on a specific plane E_1 (but in vain). At a critical moment a particular interpolation (unlike the merely exploratory extrapolation within E_1) coming from a given plane E_2 orthogonal to E_1 as it were (thus representing an independent dimension) triggers a fusing bisociation, suddenly opening the connection between initially quite different planes or "systems of experience." The revelation that occurs seems to be the wit of a joke, the surprise consisting in the unexpected "lightning bolt" from another plane when routine responses are expected. The comparison to lightning is common sense in humor, in the comical, in sudden novel insights called creative.

Koestler's (1966) bisociation, the fusing creative occurrence of an idea, combines hitherto two unconnected systems of experience, links their respective planes or symbols and approaches. At the intersection of those planes, it leads to what is called a novel idea or the experience of laughter and the comical epitome. (According to Koestler, tragic effect might also be entailed by such bisociation.) The subjective experience is projected onto a connection that has a corresponding objective frame of reference deviating from routine patterns of thought. If successful, that frame of reference acquires a creative combination consisting of two different kinds of dimension.

In a sense, the concept of this bisociation is quantitatively and terminologically too restricted. The model refers either to only two factors or planes of bisociation, thereby ignoring the possibility of multiassociative associations of creative derivation, or to just the "exchange of concepts," thereby merely projecting or simulating "one-track 'digital' associating" (Polet, 1993, p. 298), albeit from two different planes. As pointed out by James (1880), real processes are much more multifactorial and complex. They rely on parallel wiring and multiplex switching. He spoke of the "cauldron of bubbling ideas" in creative processes and of chaotic systems, emphasizing that a multivoiced or multilane configuration typically tends to be involved in the conjoining and associating that takes place in creative processes. These activities are bound to lead to unilateral narrowing of consciousness, but such restriction is only the tip of the iceberg. Beneath it, in the unconsious part of the mind, there is an abundance of rich structures and a chaotic profusion of close interconnections and parallel wirings. This assertion is assuredly right, but it seems to be only implied in Koestler's (1966) model. The idea of approaching bisociation from just two planes or areas is too restricted to cover processes of multiassociation, and such combinatorial approaches easily mislead one to just another "digital" or combinatorial psychological, or now rather methodological, way of dealing with the main aspects of creativity. As with Simonton's theory of creativity, Koestler's concept of bisociation, too, thus seems inadequate for thoroughly dealing with the creativity of extraordinary geniuses.

In any case, Koestler's (1966) approach should not be reduced to merely an extrapolation on one or two planes or an interpolation or a transposition between just two planes or areas, as suggested by the word "bisociation." To me, that kind of sketch oversimplifies the general phenomenon of extraordinary creativity. Instead,

it is frequently necessary to deal with multiple collisions, collusions (playing together), confounding phenomena, interconnections, and interstimulations of many kinds and planes. Extraordinary creativity is actually a rather multifarious and mostly unconscious interplay of many factors unconfined by the proverbial narrowness of the conscious mind. It might be almost infinitely many planes cross-cutting each other, flexibly intermingling in confrontation and collision zones and leading to a solution or fusion in the form of an unexpected insight.

Moreover, Koestler (1966) pays little attention to the creative building up of metalevels, which seem to be an immanent facet of theoretical and intellectually abstract insights derived from metalevel models, analyses, and schemas (see Lenk, 1993, 1995b, 2000a). Horizontal bisociations of different disciplines and perspectives are not the only highly typical features of intellectual discoveries (particularly fundamental ones) and of generalizations and overarching insights. So are, to my mind, the creation and shifting up, or raising, of metalevels. The transcending interpretation arrived at through higher levels of perspectives, analyses, interpretations, and consciousness is a decisive feature of intellectual creativity beyond Koestler's concepts of extrapolation, interpolation, transposition, and transformation (which are apparently oriented only to single-level explanations). The creative ascent means going to abstract modeling or to the abstraction of more general concepts. It also means overarching and summarizing translevel concepts on different planes and metalevels.

It seems that surveying and overarching specific levels and planes is particularly important for novel insights of an intellectual and profound kind. In this context one can speak of "transcending" instead of just "transposing" or "transforming." It is about "metatransposing," or even vaulting, to higher levels—of metainterpretations from higher level perspectives (like the approach to a higher order consciousness in the philosophy of mind). Creativity, particularly with respect to intellectual endeavors, insights, and activities, is not in fact restricted to different perspectives on the same plane or level. It is frequently the metainterpretations, the creation of new planes and levels, that are especially creative and characteristic of going beyond mere combinatorial creativity.[2] Perspectives usually do have levels, if not multileveled (i.e., level-overarching) patterns. Not only does it seem necessary to put on a new "thinking cap," (*neue Denkmütze*) as the science historian Herbert Butterfield has labeled it (as cited in Koestler, 1966, p. 255). The mental transpositions within the planes of scientists would not originate simply in new observations and additional data but also, and mainly, from rearrangement of the available data bundle into a totally new system of mutual relations upon receiving a new framework. This process would be the donning of a new thinking cap: NEW THINK!

Therefore, Koestler's (1966) key idea that two different, hitherto unconnected systems of experience are conjoined by a flash of inspiration that metaphorically

[2] According to Kant's (1790/1968, pp. 307–308) theory of creativity and originality of genius, it is characteristic that a genius not only has new insights and findings within a field but that he or she sets or changes the *rules* of new areas in the historical development of the arts (§46). The same is, *mutatis mutandis*, true also of intellectual approaches, in particular the transcending of limits and frontiers between different areas, as in science and philosophy.

combines two or three orthogonal planes in a specific line or point has to be extended or generalized. Although the basic idea of associating different experiential systems (not just through bisociation but rather through multiple sociation) is certainly valid and intriguing as a guide or model for capturing processes and ramifications of creative processes and developments, it does not go far enough. In the case of real creativity, such conjoining or crosscutting cannot be conceived of as simply an aggregating of values and magnitudes. It is about genuinely integrating and structurally establishing the internal mutual effects, interference, and fructification of perspectives, a process that cannot be understood by a model for adding up factors (p. 252).

This criticism applies to Koestler's own approach as well. Many creative bisociations cannot be restricted to the accrual, criss-crossing, or crosscutting of different planes or to a particular way of combinatorially establishing relations. The circumstances surrounding processes of fundamental creativity are usually much more complex and more interesting than the act or fact of just conjoining two planes or factors in a kind of fusing process.

To be sure, Koestler highlights the deeper transformations of perspective and fusion of interpretations by using metaphors, analogies, analogical concepts, comparisons, transformations, cross-comparisons, cross-thinking, cross-interpretations, and certain conflicts between partial perspectives and approaches. He also emphasizes conflicts within the creative personalities themselves (as captured by psychological research and theories, see Gardner, 1993; Simonton, 1984, 1988; Weisberg, 1986, 1993). All these factors are due to exacerbated tensions that sometimes eventuate in blockage but occasionally enhance the probability that such a multiple association or collision of insights will result in a highly creative discovery or mental "strike." One could even speak of a collision of conflict-bound preliminary or initial constellations of factors, of collusion, interplay, or mutual connectedness that comprises the interaction of the different experiential systems and sometimes leads to an associative fusion. One often encounters the exchange of different codes, and at times it even becomes consciousness. Fixed strategies are rendered flexible, a result for which one typically must shift to another framework. Switching and modifying frameworks is very important in fundamental creativity processes.

However, the solution or solubility of a complex multiassociation problem is not predictable. It cannot be causally explained or deduced or combinatorially and mechanistically produced or imposed. Koestler's approach does not offer an explanatory theory but rather amounts to a kind of phenomenological attempt to describe each strike, burst, or explosive fusion. However, such mental lightning bolts or other striking events are not reducible or restrictable to combinatorial gymnastics (a statement also true of Simonton's and Koestler's theories). Bisociation or even multiple association tends to be oriented to combinatorial manipulation of approaches and the access it gives to different experiential systems in a rather systematic combination. Yet frequently, even typically, a random coincidence is triggered by external circumstances. Psychologists and sociologists of science (e.g., Merton, 1957, pp. 12, 103) talk of "serendipity" when such a stimulating experience from the environment or sociocultural vicinity has a fusing effect.

One may try to model these kinds of stimulating experiences from the environment by analyzing the factors that increase the probability of such collusion. It might also be possible to model them by conceiving of a mental strategy for scanning or sampling features in a subjective internal mental map. Koestler (1966) describes wandering around within a "virtual inner landscape" (pp. 167–168) for goal-oriented thinking, as when a person directs the focal beam of consciousness on different parts of the internal map, trying to explore it. But none of these literary devices suffices for thorough theoretical comprehension of the factors and phenomena that creativity entails, let alone for an exacting explanation of them. The metaphors are merely an attempt to circumscribe something that is actually undepictable "from outside." Koestler does, however, refer to the unconscious, to crosswise thinking and interpreting, even "thinking away" or pushing aside (p. 149), precisely what is included in indirect strategies that emerge from autobiographical accounts reported by the mathematician Poincaré (1913). These strategies are intended to induce the necessary associations for solutions to problems by extending the time and circumstances of incubation so as to increase the probability of an essential stroke of insight. As Louis Pasteur once said: "Luck would only hit the prepared mind" (as quoted in Koestler, 1966, pp. 112–113).

In brief, then, Koestler's (1966) model is too simple. It pertains to only two intersecting levels or perspectives and confines the preparation of the creativity situation to combinatorial procedures alone. In particular, it does not actually encompass higher and more abstract levels. Koestler did not see that horizontal bisociation and association are complemented by the existence of a third kind—namely, vertical association, even metalevel multiassociation from metatheoretical and metalinguistic vantage points that afford different perspectives on lower level phenomena. People may also creatively associate vertically. One could even speak of meta-associations and of methods to create them. Thus, it is necessary to generalize and elevate Koestler's methodological model to a multi- and metalevel theory of creative processes. It is about looking for variations, interpolations, extrapolations, transpositions, transformations, selections, and so on to collide within the same level or within two planes and to find overarching wider and higher "superperspectives." It is also about identifying attempts and strategies with which to ascend to higher levels of modeling, abstract structuring, and the flexible use of metaphors and meta-metaphors, even "creataphors" (see "Toward a Strategy of Creataphors," below).

What about the artist's creativity? Is it only similar to the creativity of the scientists, as proposed by Koestler (1966, pp. 366, 371)? He believes that the development of the creative process and the creative personality is very similar in science and art and that observations about the inception of new ideas are just as valid for the scientist as for the artist. According to Koestler, fundamental novelties will emerge if unforeseen transpositions of awareness occur and if a hitherto ignored part of the spectrum of human existence is emphasized (p. 371). In both science and art such novelties spring from an unexpected connection or even "conwiring" of as yet separated systems by means of bisociation (p. 443). He states that all great discoveries of both science and art stem from such bisociations and associations. It is the fate and privilege of scientists and artists to have to walk the tightrope of

these intersecting lines. One can and should extend, generalize, and modify this associative model in the direction of multiassociation and vertical leveling. But there may still be another grain of truth in this similarity between the two areas of creative activities, at least with respect to the really creative processes, developments, and personalities. I suggest that the creative phenomenon in all these areas is of the same structure, that the causes of creative processes and acts seem to be mainly of like structure, and that the motivation of the creative processes appears to be very similar in both fields.[3]

New truths and new beautiful phenomena are gained only through creative acts, and they themselves have a "creativating" effect (a psychic outcome that instigates and enhances creativity). When it comes to pioneering activities and trail-blazing or epochal new effects, perspectives, and approaches, however, it is important to describe truly fundamental creative processes. Mirroring and re-experiencing truth or beauty that is already known are not called creative acts but rather a surreptitious re-experiencing of former creative processes (though such "reliving" of creativity is motivating and important for all normal persons, even highly creative ones, outside their own fields). Originality, the element of novelty, must be added if the process is to amount to genuine creativity.

However, even such perspectives that are legitimate in principle do not suffice. Being genuinely creative also requires inclusion of at least the following four characteristics and (e)valuative perspectives:

1. The principal orientation is to configuration, wholeness, and totality, particularly with respect to especially great creativity (see Polet, 1993, p. 93, 114).
2. Novelty is an essential constituent in principle. It is certainly included in the requirement of originality. But the concept of novelty is still too general; it must contain the notion that the development of new perspectives, new modes of representations and perspectives, new rules, and new fields are indicative of genuinely high-level creativity. Originality does not consist only in elementary extending approaches on the same plane or in the establishment new combinations of already known factors and solutions. Real creativity of high standard necessitates the establishment and inception of new foundations, new fundamental perspectives, and new levels and metalevels of interpretation. In sum, it is new perspectivity and a new perspectivism that count.
3. In keeping with Kant's (1790/1968) concept of the genius (§46), corresponding insights hold for the insights of the creative individual and for the inception of new rules for the creation of interpretations and metainterpretations. These new rules constitute not only a new special or "individual rule of the game" (Koestler,

[3] To explain the scientist's motivation to seek truth and ultimate causes and the artist's experimentation with the ultimate realities of what can be experienced by producing works of art, Koestler (1966) draws on Freud's (1930) idea and critical reinterpretation of Romain Rolland's "oceanic feeling." It is the climax of satisfaction and the most sublime expression of the integrative striving of the human being. Kepler, according to Koestler (1966), also had the intoxicating feeling leading to the experience of wonderful clarity, beauty, and truth simultaneously upon discovering his second law. Similar reports are attributable to H. Poincaré (1913, p. 393).

1966, p. 424). They are also a totally new direction of art (e.g., 12-tone music or the transition from painting on canvass to reliefs and collages that extend art to three-dimensional space and integrate that space with traditional pictures). All these reorientations amount to the establishment and application of new rules or new rules of evaluation, which lead, of course, to radically new styles and subsequently to new developments and offshoots. According to Kant, the genius establishes new rules for himself or herself and thereby henceforth may create new standards of valuation and evaluation in general. This kind of neoregularism or neostandardism can be analyzed and related to the metalevels of analysis and interpretations that are implied in the approach of methodological schema-interpretationism (see Lenk, 1995b, 2000a, for instance).

4. The encompassing phenomenon of creativity and the creative thus reaches across individual areas, producing something rather philosophical. This insight is expressed by the fact that all abstract models and higher levels of interpretation and their respective developments are layered one over the other. The corresponding metaperspectivism might lead to level-transcending creations, to *metacreativity*. This possibility might even result in an interdisciplinary, overarching view informing a philosophy of potential creative activities and concentrating on the quality of and similarity between phases, kinds, structures, and basic motivational factors of creativity and the creative in very different areas.

Is There What Can Be Called a Chaotic Creativity?

Cramer (1994, p. 259; see also Cramer & Kaempfer, 1992) thinks that the beautiful is to be interpreted as a kind of tightrope walk between order (or the ordered) and the chaotic (chaotic phenomena). The intriguingly ordered structures of fractal geometry are especially relevant in this context. They expose relations and correlations between the physics of complex dynamical systems with fractal (chaotic) attractors ("strange attractors") and evolutionary biology. Because all developments in living systems generally depend on the current state at the time of their respective evolving systems, there are formal identities, or at least analogies. Cramer (1989) tries to apply the theory of deterministic chaos to the transitions between order and chaos in the arts, to the reception of the beautiful, and to relevant, notably aesthetic, experiences. "Aesthetic" beauty originates wherever chaos borders on order and order on chaos. Beauty is equal to the open, irrational order of the transition and, in keeping with its own principle, is transitory, fragile, endangered, and unique—as is life itself. Beauty can exist only as "living beauty" (Cramer, 1994, p. 259). This notion is certainly remiscent of Goethe's statement in his lyric cycle "Urworte. Orphisch: Daimon" that beauty can be realized (in a double sense!) only as gestalt that lives, develops, always modifying and renewing itself (*Geprägte Form, die lebend sich entwickelt*; 1885, p. 319).

According to Cramer (1994), fractal geometry's nonlinearity and the mathematics of chaotic systems and phenomena ("procreating the beautiful form"; p. 261)

allows one to describe nature more effectively than the Newtonian approach in theoretical physics. "Reality of the cosmos" (p. 261) is nonlinear, whereas linear equations and superpositions of magnitudes and linear combinations of them are just a very simplified model. A similar phenomenon is encountered with works of art:

> Novelty originates in going through chaotic zones. Art creation is an act in the highest possible neighbourhood to 'just not yet chaos', … The work produced in an artistic tight-rope walk at the edge of chaos would in the truest sense contain the moment of the artist [a climax even conjured up by Lessing, for example], and it is exactly this fact that would render it a work of art, that this moment is fixed so that it can never deny its subtly endangered creative process any more. (p. 280)

The process also shows the orientation at the symmetric and ordinary rule-governed structures as well as the minor deviations having sometimes surprisingly new original variations. Total symmetry is, as a rule, boring (as known from psychological experiments comparing responses to images of natural human faces and responses to images in which one facial hemisphere is the mirror image of the other; see Cramer, 1994, p. 277). In other words, all that would enliven the work of art is the deviation from and modification of the symmetrical and rule-governed structure, including fractal self-similarity.

If the desire is to develop the ideas of self-similarity further toward an aesthetics of an approach based on chaos theory and fractal geometry, one must first ask what such an aesthetics would consist in. Would it depend on the fact that people's re-experiencing of structures is biologically preprogrammed? After all, human neuronal assemblies and their stabilized, though flexible, interconnection in the brain tend to follow such ramifications. A person's brain manifests oscillations and stabilizing oscillatory processes similar to such dynamical systems. Holistic interconnections and feedback processes seem to play a decisive role in both areas. Neurologists contend that brain patterns are stabilized and swung by such oscillations and the corresponding coherence of firing and spiking rates according to "a hire-and-wire" principle of a dynamical oscillatory kind. Researchers such as Freeman and Skarda (1985) try to discover and identify strange attractors that are chaotic and fractally structured attractors within the brain itself. This kind of result could at least in principle be the starting point for, say, an aesthetics based on a fractal basic model structure and on background chaos of brain processes. It could make sense of why such quasi-natural, fractal, very ramified, dynamically complex structures would be evaluated as "beautiful." Cramer (1994, also in 1989, Chapter 6) thinks that chaos research would contribute to a new understanding of the aesthetics of the beautiful and to the interpretations of the arts of different periods, cultures, and schools (see also Briggs & Peat, 1989/1993, p. 28; Cramer & Kaempfer, 1992).

As for genuine creativity, there are two rather more interesting questions: What is the difference between fractal computer-produced shapes and structures on the one hand and highly creative art on the other? What is the difference between computer-generated graphics, or a series of "pictures" drawn from the edge of the Mandelbrot set, and the spiral-shaped seahorse-like structures of some pictures by Picasso or Van Gogh? Briggs (1992/1993, p. 171) claims that a genuine work of art seems very "catching" because it corresponds to the brain's receptivity, but that

the greatness consists in resisting this customary tendency of the brain by deviating from the standard form of self-similarity and the expected level in terms of fractal structure. It is about deviating in a more surprising than systematic way. It seems that "a great work of art would provoke in every (novel) encounter in the human brain a new, very strange attractor" (p. 174). A person would therefore experience such a varying and varied creation or pattern again and again in new ways.

Reflectaphors

The exceptionality, the greatness, of a great work of art resides in this ambivalence, which borders on artificial self-similarity (understood in the sense of fractal geometry). That ambivalence is an expression or instantiation of it and its ever-reproducing or repeating patterns and structures, from which the work of art, in turn, deviates notably. In that manner the work of art typically arouses and repeatedly produces a kind of new "reflectaphoric"[4] tension, revealing and reconstituting itself at ever deeper levels with each further development or new encounter. Great works of art do use self-similar forms and colors, but they vary them, deviating from ever-relevant rhythmical regularity. They avoid strict repetition; they do not just mirror the self-same partial structure, though they might self-reflexively go back or feed back on these patterns by creatively modifying and varying the structures. They always create tensions of a new kind, providing stimulating instances of ambivalence, provoking them, alluding to them. Such a new variation of nuances is the factor also informing the new tension and deviations in the use of creative metaphors that Briggs and Peat (1989/1993) call "reflectaphors" (p. 302). These reflectaphors are metaphors or metaphor-like structures deploying a special tension in the interplay of similarity and difference in kind and structure, of harmony and dissonance: This "reflectatoric" (p. 302) or reflectaphoric tension is dynamic. It provokes and produces an ever new kind of vivacity, even in experiencing, perceiving, and sensing. One experiences astonishment or perplexity when entertaining unexpected perspectives and points of view. Therefore, according to Briggs (1992/1993):

> [I]n producing works of art, artists have to find the right distance between the forms of expressions of their own reflectaphors by striving for the right balance between harmony and dissonance in order to create the tension and multifarious ambiguities that an artwork can reveal. This right balance would outstrip the processes of thinking and prevent the process of habituation. For it would improve our understanding to perceive words or forms or sequences of tones as though for the first time, that is, each time in a new way no matter how often we have perceived them before. (p. 174, author's translation)

[4] Briggs (1992/1993) uses the term "reflectaphor" (p. 174) for an artificial juxtaposition with many self-similar forms, instances of ambivalence, and dynamical tendencies—even on several levels of sensing and interpretation. Not only are forms self-similar to one another and mirrored in those as in a metaphor, there is tension between "similar *and* different forms of expressions" (p. 174, author's translation). This "reflectaphoric tension" shakes and moves human understanding with a mixture of amazement, respect, bewilderment, perplexity, and the sentiment of unexpected truth or beauty.

People do not deal only with balance at a single level; forms of tension have contrasting levels and metalevels. Harmony and dissonance at different levels and on different planes also play an overarching role, as previously mentioned with regard to the levels of creativity in intellectual, aesthetic, and humorous productions and activities. By stabilizing and interpreting metabalancing processes (as mentioned with respect to metainterpretations in transitions between levels of interpretation), one might conceive of a creative ascent overarching the single-level balance and extending to a metabalance. In the present context only this creative ascent is to be applied to the reflectaphoric tension and play between different functions of the reception—and creation—of a great work of art. According to Briggs (1992/1993), artists and poets "find the reflectaphoric harmony by trying out the distance between self-similar conditions" and the respective deviations and conscious differentiations "in their own understanding" (p. 174, author's translation). As he asks, does a metaphor lead to a surprising effect even if frequently re-read? If it does, if the metaphor is different within the overall self-similarity of the reflectaphoric tissue, and if its ambiguities do interact with other forms and gestures of the work that are slightly modifying the self-similarity at large, then a work of art is "living and dynamic" (p. 174).

Toward a Theory of Creative Metaphors

Writing about cognitive theory of metaphor, MacCormac (1985) extended metaphoric processes and operations from the linguistic and literary perspective to prelinguistic processes of imaging and thinking that seem to be of special importance for the understanding of creative activities and processes. In his approach, the creation and usage of metaphors must be conceived of as processes taking place at three related levels, not just that of language. They are the speech and "language process" as a "semantic and syntactic process" leading to a linguistic explanation and especially as "a cognitive process set in the context of a larger knowledge evolutionary process" (p. 42). Establishing metaphors is not only understood as a semantic process but also explained "as an underlying cognitive process without which new knowledge might not be possible" (p. 42). Examples he cites are metaphors such as the famous one by Charles Sherrington: "The brain is an enchanted loom where millions of flashing shuttles weave a dissolving pattern" (p. 28). The function of metaphors consists in creating tension between the two *relata* (referents) of the metaphor. That is, they display a "diaphoric quality" that may lead to a new representation, a surprising opposition, in any case to a tension in the adapted or habituated scheme, provoking at times emotional restlessness. The tension comes from "an apparent semantic anomaly rather than from emotional discomfort" (MacCormac, 1988, p. 85). "The psychological tension arises from a semantic tension" (p. 85).

Whenever a metaphor spreads within a language community, the speakers and hearers become accustomed to it. By and large, it thereby loses its semantic and

psychological tension and may eventually acquire a new meaning in the dictionary. According to MacCormac (1988) many metaphors start

> their literary lives mostly as diaphorical, that is, as productive or prolific metaphors (though they always have also epiphoric quality). Later on, they gradually become largely epiphoric ones, expressing analogies rather than suggesting potential meanings, and finally wind up as "dead metaphors" within the corpus of normal language. Metaphors die if at least one of their referents adds a new lexical meaning to a dictionary entry. (p. 86, author's translation)

MacCormac's (1985) claim amounts to the idea that metaphors as the basis for conceptual semantic anomalies are engendered by a surprising, more or less conscious opposing activity of the referents or relata whereby the identification of dissimilarity is especially conducive to their transformation. This relationship had not previously occurred to anyone. Through it, "the creation of a new meaning" is established and ensured (p. 50). Creativity lies in the selection of suitable referents that have or produce "enough similarity for recognition" and re-identification and that yield sufficient dissimilarity of "the right kind" in order to create new "hypothetical possibilities" (p. 148), say, for interpretations and research or artistic variations. This thesis applies to the establishment of new metaphors and perspectives in all creative areas of association and imaging as well as to the inception of new basic ideas in scientific research.

The crux of the matter is that the creative production of new hypotheses and comparisons—scientific or not—would be impossible without metaphors and that semantic modifications in language would therefore be drastically restricted. Without metaphors, without the intentional conceptual construction of semantic anomalies, one would hardly able to speculate about or venture into the unknown. Thus:

> [M]etaphors perform the cognitive function of creating new meanings through the juxtaposition of referents in language: Without them, humanity would find it difficult to extend its knowledge into the unknown, and language would be largely static. The diaphor offers the possibility of taking a familiar referent and transforming it by juxtaposing it with a referent or referents not normally associated with the familiar referent. The combination of referents that produces semantic anomaly forces the hearer or reader of a metaphor to locate the similarities among the attributes of the referents as well as the dissimilarities. Not only does the recognition of similarities not seen before produce new insights or new meanings, but especially the identification of dissimilarities allows for the possibility of transformation of these dissimilarities into previously unthought of similarities, thereby ensuring the creation of a new meaning. (MacCormac, 1985, p. 50)

Highly creative persons characteristically seem to fashion and frequently use metaphors in language, especially in metaphoric imagination, referring back to deeper processes. Constructing or establishing metaphors is also a process of making new cognitive associations. MacCormac (1988) stresses that the creative formulation of new metaphors expands the imagination best when the most unusual combinations are used (p. 92). How these unusual and vivid combinations of concepts are to be expressed in words remains a secret. "Were he a painter, a poet would not be compelled to dress nonverbal intuitions in words, but since language is his artistic medium he has to express all his concepts in language" (p. 93). According

to MacCormac, the poet thus strives to find "metaphors" in order to render "greater suggestive force" (p. 93) to language, probing and proving one of the

> miracles of language, namely, its plasticity and creativity, its capability to grow with, in, and through the mind of a skilled language user. The distance between the imagination of the poet replete with fantasy and the banality of normal speech would determine the battle about artistic moods and ways of expression. A poet would constantly push the limits of normal language beyond the usual framework. Whereas the gap between fantasy and usage becomes narrower whenever the poet creates new metaphors for expression, ironically victory eventually becomes a kind of defeat because the poetic language is no longer fresh and unused. (p. 93)

MacCormac (1988) stresses that poets always have to create new vivid and sparkling visions or the creations will wear out and become commonplace or even vulgar because of their success. It seems to be true dynamics of wearing off and using up the creative potential and semantic visionary content of metaphors. These dynamics have crucial influence on aspiration, fantasy, visionary force, potential, originality, and novelty. In short, new fruitful metaphors setting off creative dynamics that open up new realms and combinations of ideas eventually wear thin. That fate awaits the invention of new styles, the setting of new rules, and the wide circulation of creative productions. The dynamics reach far beyond poetry and the fine arts, affecting creative production in other realms such as the formation of new ideas and new visions in all creative fields, even in philosophy. They extend to the motivation and aspiration of the creative person, to the language, and to the poet designing and grasping new syntheses. They also act on the activities connecting representations and concepts, on the continued development of styles, and on perspectives and modes of experiencing and sensing in the interpretation of the world. These observations are notably true for philosophy, scientific discoveries, technical developments, mental imaging, and, above all, the fine arts.

All creative realms and processes of the above-mentioned associations and multiassociations, the development of new perspectives on higher levels, and the phenomena of creative ascent (not only transpositions on the same plane) correspond to this pattern. This relationship might even be referred to as the interplay of different sense impressions (synaesthesia) and as imagistic or pictorial representations as studied by Kosslyn (1980).[5] Generally speaking, the idea seems very plausible that metaphoric processes are the basis of creative processes and that the conception of the metaphoric is not just restricted to external language and purely syntactic and grammatical forms. It might also be true even if one avoided identifying all metaphors with these creative processes of multiassociative and deep psychological provenance.

A new expression should be coined for this basis, however. I propose *creataphor*: a concept of creative cognitive activities that link usually unassociated concepts, representations, or imaginings through contrasts (dissimilarities) and comparisons (similarities) of characteristic features, properties, and modes of experience and that lead to a dynamic development of new perspectives in creative

[5] Kosslyn even utilizes the "mental eye" metaphorically as though it were a kind of television tube. Theories about metaphor are often themselves metaphoric and use metaphors, but this does not necessarily mean that all language use is metaphoric (MacCormac, 1985, 57–72).

activity and knowledge. Instead of the metaphorical consciousness hypostatized by Cohen (1958/1979), what one may call "creataphorical consciousness" would be more specific when one speaks of creative persons and attitudes. The term refers to the fact that consciousness and a distinct dynamical tendency are always necessary in order to use and establish new tension-generating metaphors (reflectaphors) as vehicles of the creative. The creative metaphors that truly lead to novelty are "creative reflectaphors" and, hence, creataphors—innovative creative metaphors of a dynamic provenance. It would certainly be interesting to explore and explain mental and psychical functions of the creataphors and reflectaphors within and corresponding to the creative activity of the artist, poet, scientist, or creative philosophical thinker. Very few pioneering studies in that realm exist.

To summarize in general terms, the development and use of creative metaphors sheds a sort of explanatory, at least plausibility-enhancing, illustrative light on the origin, course, and flow of creative processes and on the conceptions and interpretations entertained by creative persons. Therefore, MacCormac (1985, pp. 50–52) seems to be right when he extends the originally only language-oriented theory of metaphors into a more general theory of creativity pertaining to metaphoric imagining and thinking. However, the theory should also be extended to creative actions and activities. One could and should terminologically distinguish it from its strictly linguistic connotations, perhaps by speaking of "metaphor in the narrow sense" when meaning the linguistic realm. Referring to a general theory of creative processes involving cognitive as well as acting and creative (or, more widely, poietic) metaphors and reflectaphors, one could instead speak of creataphors (dynamic, progressive, far-reaching, far-guiding, creative reflectaphors of representations and imaginations, or even judgments in a Kantian sense).

Creative games and play, such as the playfulness expressed by the classical Latin word *creare* (creating something new in knowledge and cognition or some other area), do not appear in Caillois's (1958/2001) famous list of the kinds of play and games. In fact, Caillois makes no mention at all of what is genuinely creative (nor of the creative play inherent in the capacity of judgment, or *Einbildungskraft*, à la Kant). Creative games (*Kreativspiele*)[6] have to be characterized by another feature: *creativitas* (creativity). That term, however, is not classical Latin but rather neoclassical Latin: *creans* (the creating). *Creativitas* is distinguished from that which is or was created, the *creatum* (after Whitehead, 1978). The simile and metaphor of play and games is obviously a very encompassing phenomenon in human

[6] Are, for instance, Wittgenstein's "language games" (*Sprachspiele*) or "schema games" (*Schemaspiele*, see Lenk, 1995b), as I called them regarding the play of schematized representation and imaginations, really creative games? Or do they represent yet another extended form? They need not necessarily be creative; as a rule they can turn out to be rather conventional. Wittgenstein understood the terms "game" and "play" (The German word, *Spiel*, covers both English terms in a more general but less differentiated concept having many connotations) in a way that makes it a rather vague expression with open borders and dimming or blurred edges (PI §71). Many phenomena may be called games or play: There is no unique thoroughgoing trait of combining or covering all connotations at the same time. Nor is there one for combining or covering all the edges of chaotic phenomena of deterministic chaos theory mentioned above.

life. Even some natural scientists generalize this notion to account for some of the most encompassing phenomena of all. For example, Eigen and Winkler (1975) developed the idea that *Spiel* (play), understood in a rather extended way, is the fundamental principle informing the creation of life and dynamical shapes, almost in Goethe's previously cited sense of a poietic, living, developing form. Playful creations may be products of a quasi-Darwinistic selection principle or a dynamic of self-organization at a rather generalized level of interpretation.

One should, however, proceed by making rather differentiated distinctions. Game and play among conscious humans and rather highly developed animals (like dogs and primates) are certainly different from the "play" of physical or chemical elements in a dissipative, dynamic system of deterministic provenance. In the same vein, popular and scholarly opinion is divided about creation as selection with respect to the concept of creativity. According to Darwinism, selection is but reproduction, descent with modification by natural selection (i.e., selection in a specifically biological, hereditary sense). Valuation and modification tend to enter at random. It is not a controlled interaction and reaction but rather much more a random selection and random modification. By contrast, an intentionally productive and strategic creation much more neatly corresponds to the usual concept of creativity. In intentionally productive and strategic creation there is no selection with just random modification but rather an election with strategic modification, that is, a rather intended and purposeful, telic modification under strategic, at times conscious variations. This production of variants is indeed highly characteristic of creativity in the arts. From these strategic intentionality-guided perspectives, random creativity in a Darwinistic and neo-Darwinistic sense should therefore at least ideal-typically be distinguished from a *designer* or *design creativity*.

Creataphors and the Creataphoric Being

To a large extent, philosophical reflection is a function of ever-changing and, at times, particularly new perspectives. In this sense, it is creative. Genuine philosophizing is not just mirroring (somehow passively reflecting) the given. It always amounts to interpreting, engaging in active conceptual work, or even changing

(Unfortunately, a corresponding theory of probabilistic chaotic states and systems has not yet been developed.) Chaos games might be an interesting idea regarding fractal computer-graphics and the question of whether they have aesthetic value, whether they represent art, and whether high art can be grasped from a fractal geometric and chaos-theoretical point of view. Play- and game-like phenomena regarding chaotic phenomena and processes of self-organization (*Selbstorganisationsspiele*) may and should at times be analyzed with a chaos-theoretical approach. Playful appearances on the brink of the chaotic outside and inside the respective strange attractors surely count as games of order but certainly not as games of competition, chance, mimicry, or intoxication in Caillois's (1958/2001) sense. In Caillois's theoretical vein, chaos games or games of self-organization systems could also be counted as kinds of play or games. But Caillois never touched on such alternative interpretations nor, interestingly enough, on genuine games or play of creativity.

perspectives, gaining new vantage points and delimitative experiences, making a transition between levels, or transcending them. Genuine philosophizing is creative. It creatively transcends levels and limits via and in interpretations and conceptual designs. Philosophizing as the activity of transcending interpretation should at least be creative in that sense. Philosophy at its best is a creative, transcending, interpreting activity; it is transinterpreting and metainterpreting. Like people in other creative realms, philosophers, too, are required to take risks, to develop designs, creative activities, and creative acts. They should internalize Weiss's (1992, p. 634) suggestion that every creative activity embodies a characteristic, "unique" creative impulse far beyond the usual areas of creative production like the arts. The creative basic impulse can be grasped only as a kind of theoretical construction or interpretive construct (see Lenk, 1993, 2000a, b, 2003) and need not be described as an ontological real causal entity per se. It is necessary to develop a creative philosophy of creativity itself, incorporating modern methodological insights such as those about the constructive-interpretative constitution of all knowledge, *Erkenntnisse*, and action structures, that is, all phenomena of "grasping" (in a double sense, as in "grasping reality"; see Lenk, 2003).

A useful prompt might be to use the Darwinistic metaphor of evolution and combine it with the activities of shifting and upgrading levels, of transitioning to different levels, of overcoming as well as transcending their limits, and of devising symbolic metainterpretations. Processes of self-organization in the universe obviously show the existence of a structuring tendency to build certain systems with emergent properties (see Lenk & Stephan, 2002) that are the basis of all structures, shapes, and forms stemming from processes of interaction, developments, chance encounters, and interstitions. To that extent, one may uphold Whitehead's (1978) basic pattern (a Darwinistic perspective of sorts, so to speak) without considering creativity in the narrower sense. Whitehead's (1978) principle of originality or Weiss's (1992) factors of excellence and creative ventures are certainly implied. Creativity would then be given only if (a) chance activities are not the only ones in a particular goal-oriented or teleogenic activity, (b) this goal-oriented or teleogenic activity is pursued by a creator, and (c) fundamentally new structures and phenomena are involved.

This approach goes beyond just living up to or living out a creative impulse or drive in works. Conceptual developments, such as theories, new perspectives, approaches, and—last but not least—philosophical conceptualizations and theories of design may be creative, too. Creativity is possible and especially important in transcending limits, levels, and strata of perspectives. The essential, highly creative element in philosophy consists in the activity of transcending metainterpretation, as mentioned above. The transition across levels is possible only through symbolization and the shaping and modification of metaphors. The creataphors as tension-maintaining, ever-further-stimulating dynamic metaphors are centers of creative processes and acts.

Creativity in this sense is not characterized only by novelty; possibly (but not always) by goal-orientation and conscious orientation to end states, objectives, or outputs; and by prospective excellence and originality. It is also characterized by

a continuous exploratory activity of dynamic curiosity. This added dimension of creativity applies at least to creative philosophers who continuously think ahead, who see and search for new problems, deeper questions, and more overarching perspectives in order to arrive at ever higher levels and strata of interpretations and generalizations, if not universalization. Humans as metainterpreting (see Lenk, 1995a), ever symbolically transcending beings are the creative beings *par excellence*. Human creativity is always *creans*. Expressions like "creative ventures" (Weiss, 1992) and "creative ascents" (Lenk, 2000a) intriguingly reflect this view. Accordingly, one should certainly not fail to foster high creativity in specific ways. Encouraging it is necessary in order to open new perspectives, developmental fields, scope, and alleys for potential creative capacities and people, including opportunities for creativeness. It seems crucial to open and maintain those opportunities through stimulating vantage points, affordances (in Gibson's sense), instigation, and motivation. *Homo semper interpretans, ludens, creans*: The human creature is always the interpreting, metainterpreting, playing, and creative being.

Especially creative reflectaphors consist in seeing and establishing similarities and differentiations from a variety of perspectives on diverse levels and overlapping strata. If stimulation toward new developments is based on transpositions to other perspectives and toward higher levels and strata, then one has a particularly creative (creativity-stimulating) reflectaphor. I proposed a new word for it: *creataphor*. Creataphors are also metaphors, but they are special ones that overarch perspectives, that bridge and transform as well as maintain tension within a stimulating play between similarities ("homeotaphors," "syntaphors," or both; see MacCormac, 1985, pp. 38–42) and dissimilarities ("diaphors" as well as dissonances). Creataphors constitute creative play and games and vice versa. A *creataphoric process*, or a creataphoric instead of just a metaphoric *and* reflectaphoric activity, is a rule. It seems to be a rather interesting idea relating back to the human as the creative being that has the capacity to generate not only metaphors and combinatorial creativity but also creative reflectaphors and creataphors. Humans are creative and creataphoric, particularly striking and characteristic attributes of the metainterpreting being. In other words, the constituent creative metainterpretational element of the creataphors characterizes these special capacities of a human being with respect to dynamic, creative representation and creative production (*Gestaltung*)—as opposed to mere usage of symbols or just interpretation restricted to a unique perspective. It is the capacity to transcend special perspectives; to arrive at higher perspectives, levels, and more abstract interpretive strata; and to change approaches and perspectives at the same level.

Moreover, creativity is symbolic authentic activity, *Eigen-activity*. Such a philosophy of being creative simultaneously amounts to a philosophy of an extended personal and authentic activity by human, subjective, social, or artificial interpreting systems. The capacity to design, establish, maintain, and change metaphors, reflectaphors, and creataphors is a kind of characteristic anthropological feature. Only the human being can discover analogies and think in metaphors and all their modifications such as reflectaphors and creataphors in order to develop new creative metaphors allowing human knowledge to be extended into the realm of the hitherto unknown. This creataphoric ability also pertains to higher order representations,

metasymbolizations, and abstract metalevels, which are particularly important in philosophy, epistemology, and the methodology of actions and design. Only humans are capable of transcending any position, level, stratum, or perspective to arrive at ever new viewpoints. The drive to be creative, to transcend limits and levels, even if only in a symbolic manner, is characteristic of all creative and aesthetic activity. Innovative human life turns out to be possible only if it is embedded in continually practiced creativity of at least an intermediate range.

It is indeed a kind of creative play with metaphors, namely, reflectaphoric metaphors, especially the *creative* reflectaphoric metaphors (creataphors). Humans (at least creative humans) can even be ascribed a creataphoric consciousness as a specification of metaphoric consciousness by which the human being is understood to be the potential author and agent capable of creating creataphors, of being the specifically creataphoric or "creataphorizing" being. Creativity is a permanent and continuing creative process, a kind of ongoing transformation of creataphors. It is the capacity and motivation to reach beyond old or dying metaphors and reflectaphors by engaging in genuine creativity. The metainterpreting being is the creative and creataphorizing or creataphoric being at the same time. ***Homo meta-interpretans sive homo creataphoricus***.

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