

THE URGE TO (E)MERGE:
DIALECTICAL SYNTHESIS & THE HUMAN NEED TO CREATE

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ABSTRACT

Understanding the dialectical nature of creativity – as an emergent synthesis of antithetical components – may shed light on its binary functions and paradoxes, help us understand why efforts to study it have been antithetical themselves, and illuminate our own motives toward self-integration. Prompted by a long history of myths and misunderstanding surrounding creativity, this paper draws upon both psychological science and humanistic scholarship to explore the myriad dichotomies involved with the creative process – e.g., between divergence and convergence, incubation and insight, the default and executive attention neural networks, etc. – required for creative synthesis. The creative person is also addressed in terms of the dialectical traits and disparate impulses more typical of eminent creators, including the tensions between the individual and the sociocultural context, as one feels compelled toward self-integration and creative activity. The creative product is considered dialectically as an *emergent* synthesis of remote elements, bearing qualities that exceed the sum of its independent components. Finally, this paper proposes an emergent synthesis of its own as it tracks how a conflict as old as Plato and Aristotle has informed our current views on creativity and human psychology. It concludes with suggested applications of the dialectical theory of creativity for mental health, educational and organizational practices, and research methods.

Keywords: creativity, dialectic, Plato versus Aristotle, paradoxical thinking, antithesis and synthesis, emergence, Janusian thinking

TABLE OF CONTENTS

	Page
ABSTRACT	iii
TABLE OF CONTENTS	iv
INTRODUCTION	1
Literature Review	3
PURPOSE AND METHODS	8
Defining Dialectic	9
Defining Creativity	12
THE CREATIVE PROCESS: ANTITHETICAL MODES & OPERATIONS	18
Divergent Versus Convergent Thinking	18
Antithetical Neurological Processes	19
Conscious Versus Unconscious	21
THE CREATIVE PERSONALITY: THE DIALECTICAL SYNTHESIZER	24
Paradoxical Personalities & Mental Health	24
The Urge for Synthesis in the Dialectical Self	27
How to Create a Polymath	31
CREATIVE PRESSURE: THE PSYCHO-SOCIAL DIALECTIC	36
The Inner versus the Outer World	36
Collaborative Creativity	38
The Sociocultural Environment	41
Competitive Creativity	43
THE CREATIVE PRODUCT: THE EMERGENCE OF THE NOVEL	45

Two Boards Nailed Together	46
The Emergent Synthesis	48
THE GOLDEN MEAN: LIMITATIONS AND IMPLICATIONS	53
The Inverted-U and the Middle Way	53
A Meta-Theory for Paradox Studies	55
The Dialectics of Wellbeing	57
Educating for Dialectical Synthesis	59
CONCLUSION	60
REFERENCES	64

INTRODUCTION

One of the greatest conflicts in intellectual history is pictured on a wall in the Vatican, and it may help us understand creativity at its highest level, as well as competing notions of who we are as human beings. *The School of Athens*, painted by the Renaissance master Raphael, is filled with colorful images of philosophers from the classical Greek tradition in fervent dialogue with one another. At the focal point of it all are two figures walking and discussing something in apparent disagreement. One is the elder Plato, pointing to the heavens with his index finger, as if to say, “The eternal truth is up there, accessible only by the rational mind.” The other figure is the philosopher’s most famous pupil, Aristotle, gesturing down toward the earth with his palm to assert that universal truths are inherent within the details of *this* world, ascertained only through sensory experience. Two distinct worldviews, often at odds with one another, are brought together to form classical humanism in this image. And even in Raphael’s own time almost two millennia after the philosophers, Renaissance culture was yet another synthesis – of classical humanism and Christian spiritualism.

Raphael’s fresco is a visual expression of *dialecticism*, in which two opposing ideas engage one another and are ultimately synthesized to form a new, emergent idea – and this may be the essence of creativity at its best. This “combinatory play,” as Einstein would call it, “is the essential feature of productive thought” (quoted in Topper, 2013, p. 95). F. Scott Fitzgerald (1936/2005) touted “the ability to hold two opposing ideas in the mind at the same time and still retain the ability to function,” implying that doing so may challenge one’s mental stability and may account for the often-overestimated correlate of mental illness with certain creative fields such as his own (p. 139). In an interview with *Wired Magazine* (Wolf,

1996), Steve Jobs said about the elegance of Apple products, “Creativity is just connecting things.” Psychiatrist Albert Rothenberg (1971) developed a related concept he dubbed “Janusian thinking,” referring to the two-faced Roman god Janus, since such thinking involves two contrary ideas held simultaneously in mind. Due to these contradictions, Kaufman & Gregoire (2015) describe the creative mind as “messy,” and state, “The history of scientific thinking about creativity has been defined by polarization” (p. xvii).

Creativity is one of our most distinguishing qualities as human beings. This exceptional ability to develop something both novel and appropriate, is now deemed the highest form of learning (Anderson et al., 2001; Ayman-Nolley, 1999), essential to capitalist economies, and one of the most sought-after skills by employers today (Sawyer, 2012). “Creativity, as a term and concept,” says Rob Pope (2005), “is one of the most prized commodities of capitalism, just as...it is one of the most cherished benefits of democracy” (p. 29). However, since the time of the ancient Greeks, creativity has been shrouded in mystery and misconception – deified, romanticized, and pathologized. While more than a half-century of research has dispelled some of these misunderstandings and somewhat clarified the creative process and its personality factors, the findings have also perpetuated the mystery by revealing paradoxical tendencies (Kaufman & Gregoire, 2015; Lambert, 2020; Smith et al., 2017). The contradictory functions of creativity may have contributed to its ongoing mystique and left many people with the notion that it is an inaccessible “gift” beyond our understanding, reserved only for the rare and talented few (Karwowski, 2014; Karwowski et al., 2020; Paek & Sumners, 2019). As Rothenberg (cited in Kong, 2007) states, “The problem of creativity is beset with mysticism, confused definitions, value judgments, psychoanalytic admonitions, and the crushing weight of philosophical speculation dating

from ancient times” (p. 310). Even some of the leading empirical researchers on creativity such as Mark Runco (Richardson et al., 2016) and Keith Sawyer (Sawyer et al., 2003; Sawyer, 2012) have acknowledged shortcomings in their methods and a widening schism over how best to study this elusive phenomenon.

How can such a defining human quality be so sought after and yet so misunderstood? Is there a way of conceptualizing the paradoxes of creativity in a manner that may avoid further confusion and help improve research efforts, educational and organizational practices, and therapeutic applications? Like the old Buddhist parable of three blind men feeling various parts of an elephant and arguing over the disparate features of what stands before them, is there perhaps something about creativity’s overall nature that has not been fully elucidated? Insofar as the desire for creative expression may be an inherently motivating activity, even on the smallest scale and in varying degrees, might a deeper understanding of it offer us insight into our own paradoxical nature as human beings? The present study seeks to address these questions from a meta-theoretical point-of-view, proposing that it is paradox itself at the heart of creativity, and that a dialectical framework may be the most appropriate way to conceptualize it, with all its dichotomous operations and elements. Such a perspective may then lead to a variety of applications in clinical and positive psychology, organizational research, education, and other domains where creativity is valued.

Literature Review

Through the years research has increasingly found creativity to involve binary, and even paradoxical, forces such as: divergent and convergent thinking (Guilford, 1959), unconscious incubation and conscious insight (Wells, 1996), implicit and explicit cognitive functions (Bargh & Morsell, 2008; Chaiken & Trope, 1999; Strack & Deutsch, 2004),

ideational overproduction and evaluative pruning (Simonton, 1999), synchronized and desynchronized brain activity (Holm-Hadulla, 2013), the focused executive attention network and non-focused default network (Kaufman & Gregorie, 2015), etc. While some of these dichotomies may simply indicate different, however opposing, phases of the creative process, it is often right at the threshold between the two where more exceptional creativity emerges (graphically displayed at the peak of an inverted-U), as when one is most likely to enter a state of creative flow as surprise meets familiarity, novelty is balanced with appropriateness, or as skills are perfectly matched to the challenge (Csikszentmihalyi, 1990).

This antithetical nature is evident not only in its processes, but in creative ideas, products, and people as well, such as the fusion of remotely associated concepts (Mednick, 1962), judged to be all-the-more creative when there is greater contrast between them (Poze, 1983; Wisniewski, 1997; Wisniewski and Gentner, 1991). Experiments (Poze 1983; Wilkenfeld, 1995, unpublished; Wisniewski, 1997) that had subjects combine various concepts found that more disparate pairings such as “hatchet squirrel,” as opposed to similar pairings such as “skunk squirrel,” led to increased originality and emergent syntheses. Estes & Ward (2002) and Wilkenfeld & Ward (2001) revealed similar results. In a series of studies (see Epstein, 2019), cognitive psychologist Dedre Gentner has found that the more distant an analogy is from one’s problem of focus, the more creative the solutions that will likely emerge. And in terms of exceptionally creative people, Csikszentmihalyi (1996) has discovered that their personalities bear more paradoxical traits than the average person. Such individuals do not simply fall somewhere in the polarity between introvert and extravert, or sensitive and explorative; they exhibit *both* “tendencies of thought and action that in most people are segregated,” says Csikszentmihalyi, “contradictory extremes” such as being both

knowledgeable and naïve, playful and disciplined, mentally androgynous, etc. (p. 57). They are essentially paradoxical people. While research in psychology and cognitive neuroscience has found evidence that creativity emerges from “messy” contradictions, it is through the creative work that these intrapersonal disparities are synthesized and harmonized (Kaufman & Gregorie, 2015). As this paper will explain, these dichotomies are found in each of what Mel Rhodes (1961) calls “the four P’s of creativity” – *processes, personalities, products*, and situational *pressures*.

The research on creativity in recent years has shifted from turning up paradoxical findings to paradox itself, and even to exploring the advantages of having a “paradoxical mindset” (Heracleous & Robson, 2020). From a cognitive perspective, Runco (2019) has outlined the advantages of utilizing paradox for creative thought, rather than creative thought as a means of resolving conflict. Lambert (2020), and Schuldberg & Guisinger (2021), analyze creativity from the perspective of complex adaptive systems in game theory, according to self-organizing principles as it adapts through synthesis of the contradictory forces of order versus chaos. Cross-cultural studies (Leung, 2018; Paletz et al., 2015) have compared Western societies with Eastern and more traditional societies in how they deal with contradiction, and how these different approaches influence their creativity. Other research (Steele et al., 2021) has looked into the paradox between the *exploration* of ideas for producing novelty versus the *exploitation* of ideas for rendering results that are useful and appropriate to the situation. The most extensive efforts to embrace paradox as a catalyst for creativity has been in the field of organizational psychology (Miron-Spektor et al., 2011, 2017; Schad et al., 2016; Smith et al., 2017), where managers have seen increases in creativity when utilizing the inherent contradictions in organizations and work teams rather

than merely finding compromises or balancing conflicts. For example, Smith and colleagues (2017) found there are creative advantages among organizational leaders who embrace paradoxical tensions brought on by internal conflicts, production quality versus quantity, organizational stability versus change, etc.

At the theoretical level, some projects have attempted to conceptualize creativity in dialectical terms, at least peripherally. As already mentioned, Rothenberg's (1971) description of creativity as requiring *Janusian* thinking was a move in this direction and suggests that there was already a basic sense of the creative synthesis of dualities in classical antiquity. Robert Sternberg (2001) would later frame creativity as part of a larger dialectic of knowledge, "in which intelligence represents a thesis, creativity an antithesis, and wisdom a synthesis" (p. 360). In other words, a stable paradigm of knowledge (intelligence) is occasionally challenged by new information or new ways of thinking (creativity), where a synthesis (wisdom) is required to integrate these opposing needs. "The nature of the dialectic," as understood by Sternberg in his application to revolutions in thought, "is such that the synthesis becomes the next thesis, and ideas move forward to the next step" (p. 362). Holm-Hadulla (2013) has also made strides toward a dialectical theory of creativity, specifically as an order-chaos dynamic – e.g., coherence-incoherence, stability-instability, etc. – drawing upon neurobiological, psychological, and cultural research. However, he, like Sternberg, tends to view dialectic merely as antithetical forces that are brought into balance, or that are integrated without any emergent, Gestalt-like, qualities necessary. While the present paper will utilize this classic model of dialectic, later refined by the German philosopher Hegel (1807/1931) as a thesis-antithesis-synthesis sequence, it will also draw upon the more recent concept of *emergence*, borrowed from complex systems theory (see

Johnson, 2001; O'Connor, 2021) in which the creative synthesis is greater than the sum of its parts.

In summary, this project will explore the possibility that, within us, there is an inherent “urge to merge” disparate forces which potentially achieve an emergent synthesis – an urge to emerge, if you will. Understanding the dialectical nature of creativity – as an emergent synthesis of antithetical components – may shed light on its many paradoxes, help us understand why efforts to study it have been antithetical themselves, and illuminate our own motives toward integration within each of us as human beings. By drawing upon both psychological science and humanistic scholarship, this theoretical paper offers a synthesis of its own as it considers how a conflict as old as that between Plato and Aristotle has informed our current views on creativity and human psychology. It explores the myriad paradoxes involved in creative processes, personalities, products, as well as the dialectical pressure between one’s inner and outer worlds. In considering the urge toward integration within one’s psyche and through creative activity, the *emergent* synthesis is addressed which bears qualities exceeding the sum of its independent components. The paper concludes by suggesting a synthesis of research approaches for a fuller understanding of this distinctively human quality.

PURPOSE AND METHODS

The purpose of this project is to propose a meta-theoretical view of the dichotomous nature of creativity, a perspective that may have been intuited as early as the classical Greeks during their own creative highpoint, namely, as a form of *dialectic*. Like a dialogue between two minds that ultimately arrives at a philosophical truth – or in Hegelian terms, when thesis encounters antithesis to produce a synthesis (Hegel, 1807/1931) – the dialectical exchange of contrasting functions or elements may give rise to a creative result greater than the additive sum of its parts. This theory will further propose that creativity is, at its core, dialectical because we are dialectical creatures (Rychlak 1968), shaped physically and mentally by the binary forces we strive to integrate. Deci and Ryan (2004) will be examined, for example, in their conceptualization of an “organismic dialectic theory” for understanding the self-determination of personality, with one’s innate motivation toward personal growth on the one hand, versus the social environments that challenge that growth on the other, the result being a synthesis within the self. Such integration contributes to health and flourishing, and inner transformation (Piechowski, 1993), and it is through creative work that we may facilitate that function for both therapeutic and self-actualizing ends. In this regard, it will be proposed that creative activity may be especially important for the health and growth of those exceptionally creative individuals who bear more conflicting traits than the average person (Csikszentmihalyi, 1996). The constructivist theories of Piaget (Ayman-Nolley, 1999) and Vygotsky (Bidell, 1988; Lindqvist, 2010) both suggest there is a dialectical nature to our learning, as well, as we construct – that is, create – our schemas of the world through dialectical synthesis. And Basseches (1980) adds that dialectical thinking is an essential step toward adult cognition in his post-formal operational stage. An understanding of creativity as

a dialectic, in other words, may offer a deeper understanding of ourselves, with implications for education, psychotherapy, and further psychological research.

Defining Dialectic

Dialectic will be defined here as an evolutionary or emergent process that occurs when an idea, element, or force (i.e., a *thesis*) is merged with a remote – even opposing – idea, element, or force (i.e., an *antithesis*) resulting in a distinctly new idea, element, or force (i.e., a *synthesis*). While this definition was most notably conceptualized by the German philosopher G. W. F. Hegel (1807/1931) in the Nineteenth Century in his efforts to make sense of historical eras, as revolutions evolve from traditions and vice-versa, the present approach borrows from more recent theories of complex adaptive systems (see Johnson, 2001; O’Connor, 2021) to emphasize *emergence* as an essential quality of the resulting synthesis. That is, when antithetical components merge, the synthesis may not only be a sum of the two, but a product that is greater than the sum of its parts, bearing qualities lacking in the other two components. But this concept of dialectic, and the notion of emergence as well, took root in ancient wisdom long before Hegel or complexity theory, and exploring these roots will help us gain a deeper understanding.

To express his dualistic philosophy, Plato (ca. 380 B.C.E./1956) was one of the first to use dialectic as a literary device, typically as a series of dialogues in which Socrates, his own teacher, engages in a conversation with someone concerning such topics as justice, the perfect society, or artistic inspiration. The character of Socrates questions his opponent until ultimately arriving at some “higher” truth, often by leading the other character into contradiction (what has come to be known today as the Socratic method and practiced as a form of debate). The dualistic subject matter of these *Dialogues* reflects their dualistic form.

Plato's/Socrates' philosophy on metaphysics, psychology, morality, aesthetics, etc., pit transcendent ideals versus sensory reality, psyche versus soma, reason versus the passions, reality versus art, and so on, always favoring the former over the latter. At the center of Raphael's *School of Athens*, Plato's pointing to the sky, toward the transcendent truth beyond, represents this dualism, further symbolized in his being robed in the red and purple hues of the heavens.

Raphael's depiction of Aristotle, on the other hand, wrapped in the greens and blues of the earth, is with a palm-down gesture in stark disagreement with Plato. Aristotle presents a *hylomorphic* rebuttal to his teacher's dualism, a synthesis of the binary distinctions, in which the ideal is instead seen as inherent *within* reality rather than transcendent of it. Similarly, the psyche is understood to be the *essence* of the soma rather than a force beyond it. And art, in the Aristotelian view, is an expression of the universal within its details rather than some distorted imitation of shadows on Plato's proverbial cave wall. In terms of his ethics, Aristotle's hylomorphic essentialism is parallel to his notion of what is now called "the golden mean" for virtuous action, such as the balance of courage that exists between cowardice and rashness (Aristotle, 350 B.C.E./1926, 1106a26–b28). This synthesis of dichotomous elements, incidentally, is not to be confused with the sort of impossible contradictions that defy logic, which Aristotle proscribes against in his principle of non-contradiction (see Aristotle's *Metaphysics*, section IV), by which he establishes that something cannot be both true and not true at the same time. Otherwise, in terms of the *seemingly* contradictory paradoxes and dichotomies explored in this paper, it is Plato who gives us a dualistic view of the world and ourselves, and Aristotle who provides the emergent synthesis.

The image of Plato pointing to the sky and Aristotle's gesturing toward the earth in Raphael's fresco is a representation of another dialectic. Two contrasting perspectives on the world, human beings, and our creative behaviors, emerge from their philosophies. Two intellectual traditions would unfold from this ancient debate in an ongoing historical dialogue. One has descended from Platonic dualism which, given a modern spin by René Descartes (Robinson, 2016), has led to our current notions of the mind-body distinction. And the antithesis to this is a tradition based on Aristotelian essentialism, refined by Thomas Aquinas' (1266-71/1981) own synthesis of matter and spirit, and has contributed to what would become the empirical methods of our sciences centuries later. If the truth is inherent within the details of reality, in other words, it can be apprehended by the mind through sensory experience.

This ongoing dialectic is important for our present study because it has led to our current and conflicting approaches to understanding the human being, reducing the person to a material object defined by causality (such as in behavioral psychology) on the one hand, versus viewing the person as a phenomenological subject directed by her or his own agency (such as in humanist psychology) (Brennan, 1941/2016; Rychlak, 1968). While the former, reductionist approach, with its quantified objectification of human activities, has come to dominate the science, some of the leading creativity researchers such as Mark Runco (Richardson et al., 2016) and Keith Sawyer (2010; Sawyer et al., 2003) are now calling for more of the latter, phenomenological, methods to be included – an interdisciplinary synthesis. After all, creativity is perhaps the most human thing we do, and is often a deeply subjective expression of one's personal human experience. We are dialectical synthesizers,

and a synthesis of research approaches may be the most appropriate way to understand creativity and our human nature.

Defining Creativity

The notion that creativity involves a synthesis of opposing forces is not a new idea. Even cosmic Creation stories from ancient myth describe a struggle between order and chaos, where the deities of the world's construction are simultaneously the deities of its destruction, "the Alpha and Omega." Through the centuries, and later popularized by Nietzsche (1872/2008), the creative process has been expressed metaphorically as an interaction between the ancient Greek gods Apollo and Dionysus, in which the sun charioteer is the bringer of light, reason, and order, while his goat-legged brother evokes mystery, intoxication, and animal passions. Balancing the *Apollonian* with the *Dionysian* is the key to creation, since too much of the former results in stagnation while too much of the latter, in chaos. In terms of cultural creativity as well as individual acts of creation, these contending forces are used by Fichte, Marx, and most notably, Hegel, to explain the balance between tradition and revolution and other social and historical tensions, as thesis encounters antithesis, resulting in synthesis (Pinkard, 1988). Picasso (quoted in Moran, 2012) captured the idea famously in his maxim: "Every act of creation is first of all an act of destruction" (p. 295).

Historically, the very definition of creativity has challenged scholars because of its own inherent paradox. Even more complex than attempts to define intelligence, which has had its own share of conceptual challenges, defining creativity has been especially complicated by the antithetical findings previously described, resulting in equally complicated attitudes toward it. Not only have there been competing definitions of creativity

(Sawyer, 2012), it has been found (Karwowski, 2014; Paek & Sumners, 2019) that even individuals tend to hold conflicting notions of it at various times and situations. For example, unlike the more mutually exclusive fixed-versus-growth mindsets people hold for such qualities as intelligence (Dweck, 2007), one may hold both mindsets simultaneously for creativity, and view their own capabilities in a paradoxical manner, as set by some inborn nature and yet malleable. It is no wonder such confusion exists over creativity with its long history of Muse-inspiration, Romantic poets, and sublimated forces. Creativity is understood as a variety of different things to different people, including the researchers themselves (Walia, 2019). It could be that there are specific aspects of it that are seen as malleable, and others as fixed. Perhaps some properties of it are associated with *behaviors* due to the verb, “to create,” while others are associated with the adjective form as *traits*, as in “a creative person,” while yet others are viewed in terms of its noun forms, as in a “creation” or “creativity.” Another factor contributing to confusion is that, all too often, creativity is assumed to be strictly a matter of artistic endeavors.

Not surprisingly, due to its paradoxical nature, the most widely accepted definition by researchers on this topic today is itself based on a dialectic, and this is the definition utilized by the present project: the generation of something both *novel* and yet *appropriate*, both unexpected and yet familiar enough to suit its context (Amabile, 1996; Miles et al., 2021; Miron-Spektor & Erez, 2017; Sawyer, 2012). According to Runco & Jaeger (2012), “originality is not alone sufficient for creativity,” as many assume (p. 92). Weird for the sake of being weird is not enough. While diverging away from the norm may be an important first step, the novelty component is kept in check by its appropriateness or value. In dialectical terms, a synthesis must be reached between these two criteria, case by case. Too much

novelty, as with highly experimental forms of some music, may be overly Dionysian and be perceived as noise due to its utter lack of recognizability, to invoke Nietzsche once again. While too much emphasis on appropriateness, as with overly commercial forms of music, may be excessively Apollonian and undermine its novelty to the point of boring us. It seems, from the relative perspectives of both the creator and the audience, there is an optimal level of effectiveness necessary so that, when the right balance is struck, the song may meet the qualifications of both criteria and thus be considered creative. The novelty-appropriateness criteria furthermore require a dialectic between the creative person and the sociocultural context, as it is by the agency of the individual that two ideas are combined into something original, however the acceptance by one's field within the relative domain, or society in general, is necessary for appropriateness (Amabile, 1983; Csikszentmihalyi, 1988).

Dialectical synthesis is, at least implicitly, at the heart of concepts of creativity in both Western and Eastern societies, but there are some differences. While the Western worldview has inherited many of its paradigms from a mix of the Platonic and Aristotelian schools of thought described above, Eastern societies have inherited a worldview from Taoist and Buddhist traditions which emphasize a harmonious approach to paradox and the Nirvanic "Middle Way" between life's extremes. In a comparative review of decades of research on dialectical thinking between the East and West, and how each influences creativity in their respective cultures, Paletz and colleagues (2015) found that, generally, Western approaches to paradox are more likely to result in greater psychological tension, and consequently, greater creativity in their efforts to resolve this tension through synthesis. Paradoxical combinations in the East do not tend to evoke such dissonance because there is a sense that opposites may coexist in yin-yang fashion, as mentioned previously. Other factors that

contribute to this creativity-prompting tension in the West include: an inclination toward divergent thinking and problem-finding (Arlin, 1989; Arlin & Levitt, 1998), a preference for novelty versus the Eastern preference for appropriateness (Erez & Nouri, 2010; Lubart, 1999), and the linear “either-or” thinking in formal logic which triggers the tension and desire for synthesis (Nisbett et al., 2001). Some of the research, in fact, suggests that Western dialectical thinking is virtually synonymous with creativity, as conceptualized by those cultures (Yan & Arlin, 1999).

Whether Eastern or Western, traditional or modern, it is no surprise that such historical efforts to understand and define creativity in terms of dialectics have existed for so long considering simple observations of the natural and human worlds around us. For modern and pre-industrial societies alike, just attending to the dialectical forces at work in the world, one can see why such perspectives emerged – from the blooming and pruning of vegetive life between the seasons, to the procreative act between the sexes, and even more recently, the evolutionary understanding of genetic variation and natural selection (Simonton, 1999). And tracing the rise and decline of cultures through history bears the same Dionysian-versus-Apollonian dialectic, as revolutions lead to traditions, until the next revolution – that is, through thesis, antithesis, and synthesis. Creativity has a myriad of dialectical aspects to it, which, in hindsight, seems to have been apparent all along, and especially to any who repeatedly engage in creative activities. It only needed the terminology or a framework by which to conceptualize it in such a way. Perhaps this reframing of creativity as a dialectic will help elucidate it and contribute to a variety of applications, as well as provide insight into some deeper, psychological reasons creativity operates as a dialectic.

In the following sections, then, *dialectic* is understood as the emergent synthesis of antithetical components, and *creativity* is conceptualized as an emergent synthesis that is both novel and appropriate. The exploration of creativity's dialectics will focus on those forms of creativity that are combinatory, therefore, as psychologist Alexander Bain (1855/1977) first postulated long ago when he asserted that "new combinations grow out of elements already in the possession of the mind" (p. 572). Bain's pioneering definition, however, was limited in that its focus was strictly on the individual (Sawyer, 2012). Since then, decades of research on associations within the mind of the individual creator would eventually give way to a second era of creativity research – one with a sociocultural angle. This second wave of researchers would argue that the social environment is necessary for defining creativity, as it often involves others who judge the appropriateness or value of the novel combination (p. 8). In other words, the appropriateness criterion was developed, as mentioned above. In dialectical terms, the individualist definition (thesis) was confronted with the sociocultural definition (antithesis). By reconceptualizing creativity as a dialectic, though, this paper proposes a synthesis of the two perspectives. As such, the following sections will explore creativity in terms of its processes, persons, pressures (from the sociocultural context), and products – i.e., organized according to Rhodes' (1961) "four P's."

In the first section, the processes of creativity will be considered in dialectical terms, from its cognitive dichotomies such as divergent versus convergent thinking, to biological and neurological operations such as left-versus-right hemisphere activity involved in creative functions. Next, creativity is explored as it relates to the individual person. Research on eminently creative individuals is taken up, especially in terms of the dynamic, and even paradoxical, mechanisms at play within their personalities. Nature-versus-nurture is

considered in this second section as well, insofar as there may be a natural predisposition toward the trait of openness in polymaths, in addition to the potential for greater creativity through more diverse educational exposure. The third section deals with the sociocultural factors that serve as antithetical to individual impulses toward expression, as well as the dialectical aspects of group and organizational creativity. Finally, the creative product is addressed in the fourth section as a dialectic, and it is here that emergence is of greater focus.

THE CREATIVE PROCESS: ANTITHETICAL MODES & OPERATIONS

A woman conducting a survey of sexual attitudes at an airport stopped an airline pilot and asked him when he last had sexual intercourse. His reply of “1958” baffled her, so she inquired further.

“Well,” said the pilot, “It’s only 2110 now.”

John Cleese (1991), of *Monte Python* fame, delivered this joke in a talk he gave to organizational leaders about the creative process, as a demonstration that it is in the contact between two separate frames of reference that new meaning is generated – in this case between the year and the 24-hour clock used by aviators. He also described the creative process as a toggling back and forth between the “open” and “closed” modes of thinking. The open mode is playful and, other than the time and space within which it is framed, is unstructured to allow for such remote connections to occur. The closed mode, on the other hand, is focused and evaluative, analyzing the appropriateness of the connections and is necessary to see them through to completion. Furthermore, what sets apart the most creative of the comedy writers, Cleese explained, was that they do not go for the easy punch lines that first come to mind. Rather, they remain in the open mode much longer, tolerating the discomfort of ambiguity in order to extend and elaborate on as many alternative combinations as possible, before finally shifting to the closed mode to cull through and evaluate them for the best options.

Divergent Versus Convergent Thinking

Cleese’s years of creative experience and intuition about its process mesh with decades of research dating back to J. P. Guilford’s (1959) seminal work, which explored creativity’s two most basic processes: *divergent* and *convergent* thinking – a dialectic if there

ever was one. Just as the two most defining characteristics of creativity involve the contrast of novelty and appropriateness, these two processes involve the basic operations of how novel ideas are generated and then how they are evaluated and culled down for appropriate application. Sometimes this is called “the balloon model” (Sawyer, 2012, p. 88) because of its expanding and contracting functions, in terms of both quantity and degree. The individual first generates a multitude of novel combinations as judgment is suspended – the longer, the better. Once convergent thinking begins, however, it is reversed, and now the excess of alternatives is pruned away to the most appropriate combinations. As the two-time Nobel laureate Linus Pauling (Root-Bernstein et al., 1993) put it, you must “have lots of ideas and throw away the bad ones.... [Y]ou aren’t going to have good ideas unless you have lots of ideas and some sort of principle of selection” (p. 339).

The divergent-convergent processes continue throughout other phases of creativity, beyond the initial generation of ideas. Dean Keith Simonton’s (1988) historiometric analysis of prolific creators through the centuries reveals that the sheer quantity of works produced increases the likelihood of higher quality results that stand the test of time. The perfectionist who stives meticulously for the magnum opus is less likely to achieve it; rather, it is the churning out of a variety of works that statistically increases the potential for the masterpiece to emerge. Simonton (2009) notes, for instance, that Shakespeare was not just deemed to be a great writer. He was a prolific writer who, in 1603, cranked out script after script, many of which were some of his biggest failures (based upon a historical popularity rating). But among the frenzy of work in that year alone were *Hamlet*, *Othello*, *King Lear*, and *Macbeth*.

Antithetical Neurological Processes

The dialectical nature of creativity can be observed in neurological functioning as well. The divergence-convergence dichotomy is parallel to the way a young brain develops and operates. “There first occurs an undisciplined ‘blooming’ of neuronal connections—far in excess of what is required for efficient information processing,” writes Simonton (1999, p. 17). “Next, this profusion of potential neural networks is followed by a ‘pruning’ of connections that fail to prove useful according to subsequent sensory experience.” Furthermore, scans of creatively active brains reveal what Holm-Hadulla (2013) describes as a “dialectic interplay” between neural networks associated with coherence and incoherence, stability and instability. Kaufman and Gregoire (2015) refer to another neuronal interplay as a “cognitive tango” between the imaginative “default” network and the deliberate focus of the “executive attention” network:

Creative people are particularly good at exercising flexibility in activating and deactivating these brain networks that in most people tend to be at odds with each other. In doing so, they’re able to juggle seemingly contradictory modes of thought – cognitive and emotional, deliberate and spontaneous. (p. xxix)

Still, another way to understand what happens during this interplay between the open and closed modes of the creative process, as the networks shift back and forth from one state to the other, is as a formation-dissolution-reformation process (Schacter, 1999; Singer, 1990), mirroring the Hegelian dialectic of thesis-antithesis-synthesis.

One of the most recognized biological dualities involved in the creative process is its embodiment in the brain’s two hemispheres. Physically and functionally, it seems we are “wired” for dialectical thinking. Although simple reductions to “left brained” and “right brained” characteristics have become more nuanced in the decades since Sperry’s (1961)

split-brain studies, it is clear that each has dedicated functions in contrast to the opposing side, and that both are essential to creativity (Feist, 2010; Sawyer, 2012). The left hemisphere is responsible for the sort of analysis we need for making antithetical distinctions, whereas the right hemisphere (to which creativity has traditionally been overattributed) is important for the holistic perceptions where synthesis occurs. But the exchange between the two is crucial, as split-brain studies (Hoppe, 1988) reveal, when “the dialogue” is inhibited due to the severed corpus callosum connecting them. Creativity is not strictly a right-brained function, nor a left-brained function, nor is it simply the coordination of right *and* left functions, but rather, a dialectical interaction between the two in which an emergent synthesis occurs. Just as there is a shifting between networks, described above, neurological studies show that creative functions are not specifically “located” on one side or the other, or in a specific part of the brain, so much as having to do with the overall interactivity of various regions for more remote and dissimilar ideas to be combined (Feist, 2010). Furthermore, the findings (Carson et al., 2003) that creative individuals have “thinner filters” for tuning out extraneous stimuli – that is, less *latent inhibition* – suggests why their brains may allow more disparate elements to combine; extraneous stimuli, while intrusive and distracting at times, may mingle with other diverse and unrelated stimuli for creative results.

Conscious Versus Unconscious

The exchange between the unconscious and conscious processes is one of the oldest and most discussed dialectics of creativity. The Freudian (1917/1966) notion that inspiration stems largely from irrational forces in the unconscious – or, in Platonic terms, divine madness from daemonic influences (Plato, ca. 380 B.C.E./1956) – has largely been replaced by the theory of *dual-processing* (Sawyer, 2012). The conscious-unconscious dichotomy has

been reconceptualized to view implicit functioning as responsible for automatic and nonconscious activity while explicit functioning controls subjective awareness and conscious focus (Bargh & Morsella, 2008; Chaiken & Trope, 1999; Strack & Deutsch, 2004). Once the mind has been steeped in raw materials related to the creative task, it is often during the non-conscious incubation phase of creativity that random, even opposing, ideas mingle in “opportunistic assimilation” (Seifert et al., 1995). The dichotomy here, in other words, involves focusing one’s explicit attention and submerging oneself in the information, then letting go and “defocusing” to allow the implicit activity to do its part. At this point, a creative insight might occur in the threshold between the two. Attend, then ignore, and maybe an insight will emerge. Understanding this dialectic and using it deliberately may aid creative endeavors. For example, Wells (1996) finds that scholars who deliberately make this switch back and forth between explicit and implicit with occasional “forced incubation” are more likely to have increased ideation, and ultimately this results in greater productivity as indicated by a higher rate of publication. Metacognitive strategies such as this deliberate modal switching aids creativity.

In the toggling between incubation and insight, the novel idea emerges into consciousness, often giving one the sensation of an epiphany or eureka effect, and this suggests another dichotomous relationship during creativity – that between bottom-up and top-down processes. The individual has taken in various stimuli, incubated it and now becomes suddenly aware of the novel combination in a salient “*Aha!*” moment, something akin to getting the punchline of a joke. The bottom-up process occurs before recognition; that is, before the synthesis of antithetical elements. Once the synthesis occurs, there is recognition of the whole as a Gestalt, greater than the sum of its parts, which is now

perceived with emergent qualities. In John Cleese's joke about the airline pilot, one may understand that the combination of the four numbers that make up "1958" as the year or the hour, but assuming the former which still bears meaning, one does not "get" the joke. However, the moment the humor is realized, there has been a switch to a top-down process. Recent studies (Beeman & Bowden, 2000; Kotovsky, 2003; Perkins, 1981; Weisberg & Alba, 1981) suggest this so-called "burst" of insight is more of a slower dialectical exchange, mostly below conscious awareness. Rather than a sudden and singular "*Eureka!*," there is now evidence of a subtle "dialogue" unfolding between bottom-up and top-down processes with a series of mini-insights being incubated toward the more salient and recognizable "*Aha!*" moment. In other words, it may be that one gets the joke before she or he consciously recognizes the insight which invokes a humor response.

THE CREATIVE PERSONALITY: THE DIALECTICAL SYNTHESIZER

A little-known secret about the *The School of Athens* fresco, overlooked by so many tourists as they hurry by to get to the Sistine Chapel, is that the figure of Plato gesturing to the sky was painted in the likeness of Leonardo da Vinci, who was a contemporary of Raphael's (Stewart, 2018). It is meant to represent two of Raphael's heroes merged into one image. Celebrated as the archetypal "Renaissance Man," or polymath, Leonardo himself was a synthesis of diverse, even paradoxical, traits, as exhibited in his notebooks and wide-ranging works, from art to engineering. Many of his projects blend dichotomous elements and interests, and blurs distinctions, as he quite literally does with his pioneering technique of *sfumato*, or "haziness," giving the *Mona Lisa* her ambiguous smile. Leonardo was obsessively meticulous and yet irresolute and undisciplined. And the androgyny of many of his art subjects, as well as accounts of his personal life, suggest he was interested in blurring distinctions between the sexes (Saslow, 1986). Leonardo provides us with an exemplar of both the classic polymath and the creative personality.

Paradoxical Personalities & Mental Health

"If I had to express in one word what makes their personalities different from others," Csikszentmihalyi (1996) says of creative people, "it would be *complexity*" (pp. 57-73). His decades of research on eminently creative individuals reveals "tendencies of thought and action that in most people are segregated." These paradoxical traits or "contradictory extremes" may be expressed simultaneously or one after the other. They are polarities present in everyone, but the tendency is for most people to develop toward one and repress the other as they mature. In a Jungian sense, a person is a dialectical being, somewhere between extrovert and introvert, relying more on sensory experience or intuition, inclined to thought

or feeling, etc., and typically hiding one in the “shadow” while expressing the other as part of one’s persona. But creative persons exhibit both extremes in antithetical tension.

Csikszentmihalyi identified ten pairs of dialectical traits in particular among creative people: hyperactive yet idle, smart yet naïve, playful yet disciplined, imaginative yet realistic, extroverted yet introverted, self-assured yet self-doubting, psychologically masculine yet feminine, rebellious yet conservative, passionate yet objective, and having zeal yet sensitivity to life. The five-factor (OCEAN) model of personality (McCrae, 1987; Silvia et al., 2009) reveals a similar sort of dichotomy in that creative individuals tend to score high in two of the five – openness and, to some degree, conscientiousness – the former contributing to divergence and originality, while the latter contributes to convergence and appropriateness. Frank X. Barron (quoted in Kaufman & Gregoire, 2015) came to similar conclusions about the paradoxical nature of these individuals, stating, “The creative genius may be at once naïve and knowledgeable...both more primitive and more cultured, more destructive and more constructive, occasionally crazier and yet adamantly saner, than the average person” (p. xi).

These dialectical tensions in personality may account for one of the paradoxes that has surfaced in research which suggests that creativity is linked to both mental illness and mental growth. The long-held view that there is a correlation between creativity and psychopathology – the so-called madness-genius problem, perpetuated by the Romantics and, later, dubiously legitimized by Freudian theory – has come under question. But it is a debate that dates at least as far back as Plato and Aristotle. Scott Barry Kaufman (2014, May 12) describes it this way:

Plato has Socrates say, in certain dialogues, that when poets produce truly great poetry, they do it not through knowledge or mastery, but rather by being divinely “inspired”—literally, breathed into— by the Muses, in a state of possession that exhibits a kind of madness. Aristotle, in contrast, characterized the work of the poet as a rational, goal-directed activity of making (poesis), in which the poet employs various means (such as sympathetic characters and plots involving twists of fate) to achieve an end (of eliciting various emotions in the audience).

Again, Plato’s dualistic philosophy in which the ideal is transcendent of the real, represented in his skyward gesture in *The School of Athens*, asserts that true creativity is outside and beyond the creator, whereas Aristotle, with his palm-down gesture, champions a hylomorphic merger of the ideal and the real so that creativity is within the creator’s control. Although Aristotle disputed the elder philosopher’s notion of divine madness possessing the artist, it would go untested for thousands of years and perpetuate the mental illness link. Aristotle did acknowledge some degree of eccentricity in those of exceptional creativity (apocryphally quoted by Seneca as saying, “There is no great genius without a mixture of madness”), with a “touch of melancholy,” or aided by the Muses (Weiner, 2000, p. 36). But he ultimately believed creativity involves the skills of a rational mind which may contribute to health (via catharsis) in the artist as well as the audience.

Some researchers, such as Nancy Andreasen (1987) and Kay Redfield Jamison (1993) are noted for their studies linking creativity and mental illness, particularly bipolar and cyclothymic disorders, as well as anxiety and substance abuse (Ludwig, 1995). This would perhaps account for the dissonance some may experience due to conflicting traits, in addition to the self-doubt and sensitivity, characteristic of the openness category in the five-factor

model of personality (McCrae, 1987; Silvia et al., 2009). After all, suffering through the manic and depressive episodes of affective extremes is essentially living a dialectical life in which one is most stable and productive during the equilibrium. However, other research (Barron, 1963; Barron, 1969; Piirto, 2009) has pointed to the possibility that creative types – creative writers especially – while being more prone to psychopathologies, simultaneously score higher in psychological health. And the consensus of most major researchers today is that the link with mental illness is doubtful altogether, and that such disabilities largely impede creativity (Kaufman, 2009; Runco, 2007; Sawyer, 2012; Weisberg, 2006). Some studies (Eysenck, 1995; Glazer, 2009; Kinney & Richards, 2007) suggest a more limited connection in that creative individuals have a higher risk for mood disorders and schizophrenia, but without manifesting clinical levels. Still other research (Csikszentmihalyi, 1990, 1996) finds creativity correlated with positive growth and self-actualization, as Maslow (1959) and Rogers (1959) had intuited. While much doubt has been cast upon the madness-genius connection, the matter is far from settled, and further research is called for.

The Urge for Synthesis in the Dialectical Self

The dialectical nature of creativity may offer clarity to this ancient debate and its more recent paradoxical findings, not only in terms of *what* creativity is and *how* it works as a dialectic, but in terms of *why* creative individuals are so compelled to do what they do, particularly when there are often no extrinsic rewards and so many adverse consequences involved with challenging convention and being open to antithesis. One motivational factor is explained by Csikszentmihalyi's (1990) concept of flow, or that feeling of fulfillment when one is fully engaged in some intrinsically-motivating task. Flow is triggered when a balance is struck between one's skill and the challenge (the antithesis) to that skill – not too

easy and not too difficult – induced especially by creative activity (Csikszentmihalyi, 1996). There is a loss of a sense of time and surroundings during such experiences, and a synthesis of oneself with the task. And creative individuals who regularly experience flow as part of their lifestyle may reap positive health and growth benefits that mitigate the more extreme dichotomies within their personalities. Csikszentmihalyi (1996) writes that, in addition to the contradictions within their personalities, “Perhaps the most important quality, the one that is most consistently present in all creative individuals, is the ability to enjoy the process of creation for its own sake” (p. 75). They have found within their power a means of synthesizing dialectical tensions through their work, as they themselves must do within their personalities.

The paradox of their being at higher risk for mental illness while also being prone to healthier, potentially self-actualizing, qualities, may be a function of their creative work offering both refuge and fulfilment, anxiety reduction and growth motivation. Just as studies (Poze, 1983; Wilkenfeld, 1995 unpublished; Wisniewski and Gentner, 1991; Wisniewski, 1997) have found that products made from more disparate elements are often more creative, more extreme antithetical qualities within a person may contribute to that person’s creativity. Further research may reveal a correlative effect similar to the Yerkes-Dodson phenomenon (Sodhi et al., 2016) in which creative performance increases with pressure to an optimal level, and then declines as increasing pressure begins to undermine one’s performance, graphically displayed as an inverted U-shaped curve. In the case of creativity and mental health, it could be that the more disparate the conflicting traits are within an individual, the greater the creativity to an optimal level of synthesis, until such intrapersonal tensions begin to manifest clinical symptoms that then undermine creativity, or that are no longer mitigated

by the positive benefits of the person's creative work. Although not calling it dialectic by name, *Wired to Create* authors, Kaufman and Gregoire (2015), describe the phenomenon this way:

Highly creative work blends together different elements and influences in the most novel, or unusual, way, and these wide-ranging states, traits, and behaviors frequently conflict with each other within the mind of the creative person, resulting in a great deal of internal and external tension throughout the creative process. One of the most fascinating things about creative work is that it brings together and harmonizes these conflicting elements, which exist to some extent in everyone. Creative people are hubs of diverse interests, influences, behaviors, qualities, and ideas – and through their work, they find a way to bring these many disparate elements together.” (p. xx)

Albert Rothenberg (1971; 1996) concurs with Kaufman & Gregoire (2015) and Csikszentmihalyi (1996) in terms of the paradoxical (“*Janusian*”) tensions, and the intense motivation and fulfillment that creativity affords such people. Creative types do what they do for intrinsic reasons, and many are consumed by it to an obsessive degree (Vallerand, 2015; Vallerand et al., 2003; 2007). Rothenberg (1990) writes that “Only one characteristic of personality and orientation to life and work is absolutely, *across the board*, present in *all* creative people: motivation” (p. 8).

Creativity is obviously a powerful urge for such creators as Leonardo, Mozart, Dickinson, and Edison. But it also seems to be a natural, intrinsically compelling force for anyone and may even play a role in one's innate psychological needs. Amabile (1983; 1996) has demonstrated that there is a motivation to create for its own sake rather than for some extrinsic reward such as a competitive prize, which only serves to undermine creative

quality. Ryan and Deci's (2000) extensive research on self-determination explores intrinsic needs that are natural, and that are involved in the formation of one's sense of self through personal agency and what they (1991, pp. 238-240) describe as "action and development from within" or "innate processes and motivations." Three primary motives in particular are intrinsic and inherent to self-determination: the desire for autonomy, relationality, and competence. And the urge to create may be the perfect exemplar of all three. First, creative activity involves a desire for *autonomous* control over ambiguous, often ill-defined, situations. Second, to the degree that creative activity is a social phenomenon (Amabile, 1983; Csikszentmihalyi, 1999), it involves the *relational* need in the sense that the creator must internalize the conventions in a particular domain for a novel idea or product to meet the appropriateness/value criterion. And third, creative work is motivated by the rewarding sense of *competence* over the task as one progresses toward mastery. All three intrinsic motives are satisfied by creative activity, which accounts for why it is often so fulfilling in one's development toward his or her potential.

Even the formation of one's sense of self is a dialectically creative process. The self emerges through what Deci and Ryan (1991) call a "dialectical struggle between the active self and the various forces, both within and without...toward harmonious relations within and between persons" (pp. 238-240). As personal agency motivates individuals to be autonomous, relational, and competent in various encounters with the world, they strive to integrate differentiated experiences into a coherent sense of personhood. "The process of organismic integration, operating at this [*intrapersonal*] level, entails differentiating aspects of one's interests and capacities and then working to bring them into higher-order organization with other aspects of one's self" (p. 243). At the *interpersonal* level, the

“synthetic tendency” compels one toward meaningful interactions in the dialectic between one’s self and external social forces. This intrapersonal and interpersonal synthesis is often challenged by one’s fractionation into competing, differentiated selves, and may account for Csikszentmihalyi’s (1996) findings concerning the antithetical personality factors within more creative personalities. It may be that the more diverse one’s agentic exploration of disparate interests and experiences, as creative people are prone to do (Gruber, 1981), the more that synthetic integration is required. Wider-ranging experiences, in other words, require more consolidation into a coherent identity, and this in turn contributes to a greater capacity for dialectical synthesis. This differentiation-integration process is the divergent-convergent “balloon model” all over again, only in this case it is a dialectical process of identity formation.

How to Create a Polymath

The process of divergent experiences converging within a consolidated identity is the essence of the Renaissance polymath. While Leonardo may seem to be the natural-born paragon of such with all his diverse complexities of personality, the training of many others during his time (excluding Leonardo himself due to his illegitimate birth, ironically) reveal that polymaths could be created by nurture as much as nature. In that part of Europe there was a revival of a classical Greek form of education known as *paideia*, Latinized by the Romans as *humanitas*, or a well-rounded cultivation of enlightened individuals, popularized by Raphael’s friend, Castiglione, in his *Book of the Courtier*. Young Athenian men, for example, had been steeped in philosophy, rhetoric, geometry, and the arts, as well as physical conditioning as athletes. Excellence in both mind and body was their aim, which involved nurturing the whole person, not just isolated aspects of themselves or the specialized skills

for their trade. Like their gods, who were ideals *hylomorphized* in human form, in contrast to the transcendent and abstract deities elsewhere, the classical Greeks strove for similar standards within themselves. Another, more practical, rationale behind this form of pedagogy was that the inventors of democracy wanted well-rounded citizens with diverse knowledge who could use the tools of reason to choose the best leaders for themselves. As the Enlightenment bloomed in the coming centuries, the *paideia/humanitas*-like education would produce such thinkers as the founders of American and European democracy, many of whom were as much statesmen as they were architects, scientists, poets, and soldiers.

One way that nurturing diverse exposure and exploration feeds the dialectics of creativity is by providing analogical thinking. Johannes Kepler, for example, drew upon his knowledge of magnification, lens optics and light refraction, the diffusion of odors, and water currents to develop his theory of planetary orbit (Gentner et al., 1997). “I especially love analogies,” wrote Kepler (quoted in Vickers, 1984, p. 149), “my most faithful masters, acquainted with all the secrets of nature.... One should make great use of them.” Diverse analogical thinking helps one avoid what Erik Dane (2017) calls “cognitive entrenchment,” a sort of fixated tunnel vision that inhibits the diverse exploration needed for dialectical thinking. Diverse analogical thinking helps one achieve what Daniel Kahneman (Kahneman & Lovallo, 1993) refers to as the “outside view,” and in this sense, Leonardo’s “outsider” status due to his lack of formal schooling may have compensated for any deficiency in domain knowledge by providing him with atypical analogical perspectives. And the more “outside,” the better. It is not just having more analogies to draw upon that contributes to creativity, but more diverse analogies. Just as the personalities of creative individuals tend to synthesize antithetical traits, studies (Dubin & Lovallo, 2008; Dunbar, 2001; Rottman et al.,

2012) have found that having more disparate analogies from unrelated domains increases creative thinking.

In his book, *Range: Why Generalists Triumph in a Specialized World*, David Epstein (2019) describes the advantages of diverse exposure this way: “the bigger the picture, the more unique the potential human contribution” (p. 29). What really distinguishes us as humans “is the exact opposite of narrow specialization,” he says. “It is the ability to integrate broadly.” This is most notable when comparing human cognition to computer processing. The great advantage of artificial intelligence is task specialization and algorithmic speed; but where we triumph is in our ability to combine information from diverse domains in creative – i.e., novel and *appropriate* – ways that computers simply cannot. With an impulse toward dialectical synthesis, we can expect that those who do this more effectively tend to have a wider range of diverse exposure. Drawing upon the creativity research of Rothenberg (2015) and Simonton (2017), among others, Epstein points out that “Scientists and members of the general public are about equally likely to have artistic hobbies, but scientists inducted into the highest national academies are much more likely to have avocations outside of their vocation” (pp. 32-33). Nobel Prize winners, for example, are twenty-two times more likely than their peers to be involved in aesthetic and performance activities outside their primary domain. And while educational programs that focus on early specialization may produce graduates with more success in the short run, those that emphasize a general “sampling period” produce graduates with greater “match quality” (i.e., when their interests and skills are well suited to their domain) and more success in the long run (pp. 128-131).

Creative individuals seem to be compelled by diverse and unrelated interests in spite of educational institutions that expedite specialization at the expense of cultivating diverse

interests, as exhibited by frequent “field switchers” and “late bloomers” (Epstein, 2019). Connolly (2011) finds that more successful professionals tend to have a broader array of training and shifting around in their development, as well as involvement in multiple career paths beyond what ultimately becomes their professional focus. Simonton (1999) finds similar results among scientists, stating that “cross-fertilization of scientific domains is more likely to emerge from those who have switched fields” (p. 123). He goes on to cite numerous breakthroughs in astronomy, geology, paleontology, as well as the arts, by those who toggled between diverse fields. Simonton (1988) has also found that eminently creative people tend to pursue multiple interests and various projects, not one at-a-time, but simultaneously. Often, they are working on several works-in-progress that are at various points in the creative process. A study (Gruber & Davis, 1988) of Darwin’s journals, for example, reveals that he typically engaged in what Howard Gruber calls a “network of enterprises,” juggling several different projects concurrently, allowing one to incubate while focusing on another, exposing him to the diverse elements associated with each, and helping him avoid cognitive entrenchment. It is possible that when Shakespeare was writing in his golden year of 1603, he was not writing *Hamlet*, *Othello*, *King Lear*, and *Macbeth* consecutively, but rather, several of them simultaneously, while switching back and forth.

This slew of research (see Epstein, 2019) showing generalists have creative advantages over specialists reveals yet another paradox to creativity, however, as it has also been found (Ericsson et al., 1993; Gardner, 1993; Sawyer, 2012) that knowledge and expertise in a particular domain are essential to greater creativity, inspiring what has come to be called the *ten-thousand-hour rule*. Such thinking is that approximately a decade of deliberate practice is needed before creators begin to reach their peaks, and this has spurred

on the “cult of early specialization” (Epstein, 2019). “No one can be creative without first internalizing the domain,” says Sawyer (2012), “and this is why scientists now believe that formal schooling is essential to creativity” (p. 94). After all, one must learn the conventions in order to break them. But just as there may be an inverted-U relationship to the degree of dialectical tension and creativity, as suggested above, Sawyer explains that there is an inverted-U relationship between knowledge and creativity, stating that “after a certain point, additional formal education begins to interfere with creativity.” With deep focus in a siloed domain, cognitive entrenchment ensues (Dane, 2017). So, there is both a breadth and depth to the polymath’s development and, at least for the latter, there is an optimal balance between too much and not enough.

In a world of dualistic forces, both internal and external, the human being has evolved to become a dialectical creature compelled toward synthesis. And whether naturally open to more diverse experiences or nurtured through a variety of exploratory opportunities, the individual gains the raw materials that feed creativity’s dialectic. These same polar experiences may contribute to tensions that both undermine and facilitate mental health, as they also contribute to the differentiation and integration of one’s sense of identity. The greater the tensions, the greater the risk of pathology, but also the potential for self-actualization, which is aided by the synthesis achieved through creative work. In other words, as humans, our ability to synthesize disparate elements into something with emergent properties comes from a natural psychological need to synthesize binary forces within us. But mostly neglected until recent decades, there is inevitably a sociocultural aspect to creativity. Leonardo, in a manner of speaking, is himself an emergent synthesis in a dialectic between his inner and outer worlds, as are we all.

CREATIVE PRESSURE: THE PSYCHO-SOCIAL DIALECTIC

When it comes down to it, no matter how personal a creative act may be for someone, creativity is a sort of conversation, a dialogue between the inner and outer worlds as the individual engages her or his sociocultural context in a back-and-forth exchange. The creator is shaped by this social environment, and perhaps in turn, shapes it to some degree, depending on the level of creative impact. The dialectics of creativity are perhaps most pronounced here, in this psychosocial exchange. After all, dialectic is modelled upon a dialogue between two or more people, and in a Vygotskian sense (Bidell, 1988; Lindqvist, 2010), such may be the very essence of what structures our thoughts. It emerges only when the social has been internalized by the individual, “and even if its action is performed by a single individual,” says Vygotsky (1924/1971, p. 249), “it does not mean that its essence is individual.” Because the first criterion of creativity is novelty, there is necessarily an antithetical relationship with society, as the creative act diverges from the social conventions of a domain. And yet, because of its second criterion, appropriateness, there must be some convergence with the environment, whether it is solving a personal problem or revolutionizing a domain. The outer world and sociocultural context are the external pressures influencing creativity, and this “press” upon the individual is considered the next of Mel Rhodes’ (1961) “four P’s,” which is here explored in dialectical terms.

The Inner versus the Outer World

Sawyer (2012) distinguishes between two definitions of creativity among researchers, the individualistic and sociocultural definitions. Individualists understand creativity as “*a new mental combination that is expressed in the world*” (p. 7). Those who hold this perspective solely are most interested in understanding the personality factors as well as

distinct mental processes and brain regions involved in creativity, as explored above. It helps us understand the novelty criterion of creativity, or the new “combination of two or more thoughts or concepts that have never been combined before by that individual.” As long as the combination is new to that individual, it is considered creative – i.e., what is sometimes called “little c” creativity. However, in the late twentieth century, a sociocultural definition emerged, spearheaded by the works of Amabile (1983) and Csikszentmihalyi (1988) that addresses our second criterion of creativity. The novel combination is “*judged to be novel and also to be appropriate, useful, or valuable by a suitably knowledgeable social group*” (Sawyer, 2012, p. 8). At this level of analysis, considerations of “big C” Creativity become clearer, as culturally significant creations are viewed in terms of how they are received by society and whether they stand the test of time.

The scope of creativity changed immensely with the introduction of the sociocultural perspective, allowing for a more systematic framework for understanding it with the interactions between the individual creator (e.g., Shakespeare) who internalizes the social conventions of a domain (e.g., the sixteenth-century standards for English drama) and then puts forth new combinations for the field of “gate-keepers” (e.g., for contemporary literary critics of Shakespeare’s work) to determine whether such is worthy to enter the domain (Feldman et al., 1994). Variations on this model (Moran, 2010) further consider the social roles of benefactors, regulators, and consumers of creative works. Now even whole societies could be analyzed in terms of their creativity-enhancing environments, such as classical Greece and Renaissance Italy, to creativity-thwarting environments such as medieval Europe and Stalinist Russia (Csikszentmihalyi, 1996; Gardner, 1993; Simonton 2003). An approach to creativity long held by literary theorists, art historians, and philosophers of aesthetics had

finally been adopted by psychological scientists, an approach which is inherently dialectical itself. Without saying as much, the sociocultural wave of creativity researchers' addition of this second definition implies that there is a psycho-social dialectic to creativity in which a synthesis between the two must be found.

Moran (2010) distinguishes between the individualistic and sociocultural perspectives in terms of contrasting purposes they serve for society – namely, for the improvement of society or for personal expression. While these two purposes may not be mutually exclusive, they are often at odds with one another, stimulating a dialectical tension within the individual, who may create as a means in itself or as a means to some prosocial end. “I explore these two perspectives as dichotomous influences on creativity’s role in society,” she states (p. 79). “From the societal perspective, creativity’s role is improvement; from the individual perspective, creativity’s role is expression.” But in this dichotomy, she argues that it is in the interaction *between* the two where real creativity emerges, in “a confluence of both individual and societal forces” (p. 84). Too much divergence in the pursuit of personal expression may lead to chaos while too much social convergence may lead to stagnation (i.e., the Dionysian and Apollonian dichotomy described previously). Drawing upon Vygotsky’s constructivist theory of cognitive development, Moran explains that “creativity is a temporary misalignment of society and individual as they learn from and develop each other...into a new alignment with the world.” Creativity, in other words, is a dialectical synthesis of dichotomous purposes, where the personal and social come together.

Collaborative Creativity

Considering our topic more literally in a dialogic form – in the verbal exchange of two or more individuals – may elucidate the dialectics involved between the individual and

the social. Sawyer (2010) explores the *collaborative emergence* of creativity among improvisational theater groups, as well as organizational teams and jazz ensembles, whose performances often unfold in an unplanned manner. Sawyer (2007), for example, finds that collaborative teams may enter a state of *group flow* similar to Csikszentmihalyi's (1990) more *intrapersonal* state, during which they potentially achieve an emergent level of creativity that surpasses the additive value of their collective talents and contributions. One paradox of group flow involves improvisation, such as with jazz ensembles in which there must be an optimal balance of structure and flexibility, planning and spontaneity, control and freedom. If there is a lack of structure, Dionysus steps in and chaos ensues. Of course, there needs to be some degree of familiarity with the structural conventions, but too much, and Apollo robs the process of surprise. "The key to improvised innovation," says Sawyer (2007, p. 45), is managing this paradox between the closedness and the openness of the structure. This applies to work groups in organizations as well, where moderately integrated networks – not too dense and not too loose – are more likely to achieve emergent innovation (Sawyer, 2012).

To study group creativity of this sort, Sawyer (2010) argues that a psychological analysis of a single actor is insufficient for a full understanding. Just as it may be argued that "the mind is emergent from, but not reducible to, the biological brain," he states, creativity *emerges* from the interactions of the actors insofar as "collectives possess emergent properties that are irreducibly complex and thus cannot be reduced to individual properties" (p. 372). Sawyer acknowledges that this *emergentist* explanation, as opposed to the *reductionist* understanding, "veers dangerously close to *dualist ontology*," evoking once again the image of Plato gesturing to the heavens. After all, "if you claim that an emergent

group creation has an ontological status distinct from the ideas of the members of the group, then you seem to be claiming that there is some entity or substance in addition to the material world” (p. 375). But Sawyer is quick to point out that there is a “middle ground between reductionist individualism and reifying group properties,” because the creativity of improvisational groups is primarily an emergent *process* rather than a *product* independent from its creators (p. 376). Without explicitly stating so, Sawyer’s emergentist angle, which he says takes a “middle ground,” is an Aristotelian one that advocates synthesis. He also adds that, because creativity of this kind is not attributable to any single individual, but emerges in the dialectical interaction of the group, “Creativity research should be an interdisciplinary endeavor, bringing together scientists who are experts in multiple levels of analysis – neurons, mental states, groups, and organizations” (p. 378). Just as group creativity emerges in a dialectic synthesis, research on it calls for the same.

Understanding creativity as a collaborative emergence has more macroscopic implications when considering the cultural and historical processes of how economies and cultures evolve, which also cannot be reduced to individualistic explanations (Sawyer, 2010). The Renaissance, in which Raphael was working and of which he was inextricably a part, is a case in point. Much of the humanistic thinking of his day emphasized (and glorified) individual creativity. Artists had begun signing their work for the first time and were elevated from mere artisan-laborers to celebrity status, and seen as active participants in divine Creation, in a biblical sense. And if claiming solitary ownership of one’s handiwork were not enough to express the individualism of the time, among the world-shaking intellectuals peopling Raphael’s *School of Athens* fresco, the one that stares directly at us from the paint, as if aware of our presence, is believed to be the artist’s own self-portrait (Stewart, 2018).

But Raphael's placing himself among the greatest minds stretching back through the ages to the ancient Greeks and Romans is as much an acknowledgment of his standing on the shoulders of giants as it is a form of individual hubris. Raphael and contemporaries such as Michelangelo, who was down the hall painting the Sistine Chapel at the same time, viewed themselves as a cultural resurrection of the classical Greco-Roman spirit. The term "Renaissance," or "rebirth," would later be applied to this era for that reason. *The School of Athens*, then, is both a personal expression and a manifestation of the sociocultural spirit of the times.

The Sociocultural Environment

The anachronistic conversations Raphael displays in the fresco are a powerful visual for the importance of social settings where creativity emerges. The individual is inextricably a part of an ongoing dialogue, whether in a specific time and place, or across history. From schools and libraries to more informal locations such as coffeehouses and taverns, such social spaces are where diverse ideas come together in literal dialogue, akin to what Malcolm Gladwell (2000) calls "connectors" – those socialites who bring together acquaintances from all walks of life who might never before have crossed paths. Renaissance figures such as Pope Julius II and the wealthy Medici Family were instrumental in financing and facilitating such connections. Just as the polymath described in the previous section is a confluence of paradoxical traits and diverse exposure, sociocultural environments are hubs for foreign ideas that merge in dialectical exchange, and the more open to diversity these environments are, the greater the creative synthesis is likely to be (Burns & Stalker, 1961). Multilingual and multicultural exposure is found to correlate with creativity on both the individual and societal levels (Leung et al., 2008; Lubart, 2010). Studies (Chua, 2015; Lubart, 2010; Simonton,

1984) show that societies such as 5th-century Athens, and 15th-century Florence, with democratized or decentralized political power, were open and welcoming to the diversity that provides dialectical raw material, in contrast to the closed and oppressive systems that typified cultural centers in medieval Europe between these eras, which thwarted such diversity, and thus creativity. English coffeehouses and early French salons (before they became institutionalized) would later seed revolutions in the science and politics of the Enlightenment (Johnson, 2010).

By contrast, economist Michael Andrews (2019) reveals what happens when these hubs of heterogenous collaboration are disrupted, as seen in the decline of American patents shortly after the passing of the alcohol prohibition laws that closed bars in the late 19th and early 20th centuries. A more significant disruption had occurred in China. During the same century Raphael was painting the Pope's library, the Ming Dynasty was in a Renaissance of its own, boasting the largest navy the world had ever known, exploring the coastlines of India, east Africa, and the Pacific islands, and welcoming foreign goods and ideas. However, it was soon decided from their explorations that the Han Chinese were the most advanced civilization there was, and so the navy was ordered to dismantle its fleet of 3,500 ships and China closed itself off, just as the European world was opening up and soon to circumnavigate the globe (Edwards, 2017). At the organizational level, such disruption occurs more frequently. Epstein (2019) describes an organic chemist at Eli Lilly who guessed that a closed policy was responsible for inhibiting the pharmaceutical company's ability to make breakthroughs on newer problems. The company's expert chemists, although leading specialists in their field, were perplexed by these challenges and the company was growing stagnant. So, he convinced the board to open up the problems to the public for what he called

“outsider-in” thinking. Challenges that had stymied the specialists were suddenly cracked open by strangers from unrelated domains, inspiring him to start a company called InnoCentive which operates on the openness principle, and has even helped NASA solve thirty-year old problems.

Competitive Creativity

Incentivizing creativity with a competitive prize, as the InnoCentive platform does when an organization posts a challenge to the public, raises the question of whether competition or cooperation leads to more and better creativity. Another antithesis. While there are advantages to both approaches, a synthesis between the two is found (Zhou et al., 2017) to be optimal – what some organizational psychologists are now calling *coopetition*. Similarly, while Teresa Amabile’s (1982) early work found that competitive rewards may undermine creativity, she has more recently (Amabile, 1993) revised those findings with the discovery that extrinsic motives may both enhance and undermine creativity, and that there is an optimal balance needed. In exploring such topics as the competitive versus cooperative environment, organizational psychologists have long looked at creativity as a social phenomenon and have sought ways to cultivate innovation. Woodman, Sawyer, & Griffin (1993), in fact, define organizational creativity as “the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system” (quoted in Puccio & Cabra, 2010, p. 145). The dialectic between the individual and the social, the inner and the outer, as part of a system, has been built into this subfield for some time, and so it is no surprise that it is organizational researchers who have made the greatest headway toward embracing paradox rather than avoiding it (Miron-Spektor

et al., 2011; 2017; Schad et al., 2016), with Smith and colleagues (2017) even tracing its dialectical roots to Aristotle and Hegel in the West and Lao Tzu and Confucius in the East.

To consider Raphael, Leonardo, or Michelangelo each in isolation as solitary geniuses is to miss the much larger picture of what contributes to creativity. Such Renaissance giants were mutually influential upon one another, both competing and collaborating. The glorification of the individual artist that became fashionable should not distract us from the fact that creativity is a social phenomenon due largely to its dialectical nature. And competition may serve as a sort of antithetical function to the dialectic, as many artists of the time rivaled not only for their own hubris, but for patronage and commissions. One notable case involved the intense rivalry between Raphael and Michelangelo, who even exchanged insults at times as they happened upon each other while working on their Vatican projects. Art historian Giorgio Vasari's (Vasari et al., 1550/1998) account tells of a furious Michelangelo who had learned of Raphael spying on his progress in the Sistine Chapel. Accusations were made of Raphael stealing ideas (Liebert, 1984). Soon after, Raphael would finish his own project with one last figure in *The School of Athens* – a brooding man sitting in the path of Plato and Aristotle, who speaks to none of the other twenty figures so fervently engaged in dialogue. Art historians generally claim this lone figure to be the ancient philosopher Heraclitus, who was known to have such a temperament. But careful analysis shows the face to be that of Michelangelo's (Neuendorf, 2017, July). Perhaps as an afterthought, Raphael had included his biggest rival in his finished product. Whether it was to honor or insult Michelangelo is still up for debate.

THE CREATIVE PRODUCT: THE EMERGENCE OF THE NOVEL

As the Renaissance was waning in Spain, Miguel de Cervantes invented one of the greatest combinations of dichotomous components in modern literature while in prison for mismanagement of government funds. *Don Quixote* would become the first novel in modernity, about a man who, having read too many chivalric romances, begins to think himself a medieval knight and takes a commoner named Sancho Panza as his squire. The two set off on a series of misadventures, the most famous of which is when Quixote mistakes windmills for giants and attempts to joust them. Sancho picks up his fallen knight and tries to explain the situation, but Quixote's fantasy persists, and he justifies his mistake as due to malicious sorcery. We have since inherited the word "quixotic" as an adjective to mean overly idealistic and detached from reality, impractical. Sancho Panza, on the other hand, being a working-class man who is squat and literally closer to the earth than his tall and gaunt companion, has more immediate concerns with harsh reality, and where his next meal is coming from; "la panza," in fact, means "belly" in Spanish. The altercation with the windmills is typical of many of the other scenes as the idealistic Quixote lectures the hungry realist Sancho on the virtues of knighthood while Sancho mends his wounds. Think, Quixote tall on his steed and lance held high as Plato gesturing to the heavens in Raphael's *School of Athens*, and Sancho's hobbling along beside him on his donkey as Aristotle's palm-down gesture to the ground.

While many, including some in the psychological field, have viewed Quixote as merely a comical example of a not-so-comical problem of psychosis, there is something much deeper to what Cervantes does to revolutionize literature (Egginton, 2016). Just as he merges an idealist and a realist, the author blends two disparate genres popular during the late

Renaissance to create the new genre – chivalric romances, so full of virtuous knights-errant on their holy quests, is merged with the picaresque, serendipitous tales in common prose about anti-heroic rogues with dirt under their fingernails and questionable morals. Fact and fantasy are also blended as the novel is framed as a “history” based on Arabic translations when clearly it is fictional (a playful synthesis of Aristotle’s distinction between history and poetry, further discussed below). Later in the novel, there are tales within tales within tales to the point the reader may be just as confused between fantasy and reality as Quixote himself. In the second part of the novel, Quixote and Sancho are surprised to encounter characters who have read Part One of the novel and discuss its fictional nature. And in the end, the antithesis between idealist and realist is dissolved when Quixote, on his deathbed, acknowledges his madness and Sancho, in tears, attempts to persuade him of the veracity of their adventures.

Two Boards Nailed Together

Comedian George Carlin used to say, “If you nail two pieces of wood together in some way they've never been nailed together before, some schmuck will buy it” (quoted in O’Neill, 2009). Cervantes’ creative product (both the novel and the novel genre) is the epitome of nailing together disparate components that achieves emergent results. Having considered the process of nailing, the person doing the nailing, and the “schmuck” who deems it valuable, the thing itself that has been nailed together for the first time will now be considered. Although the dialectical nature of the creative product was already described in the opening definition of creativity, as a product both novel and appropriate, it should not be taken for granted, and there are some important aspects of it not covered in the scope of the previous sections. Of Mel Rhodes (1961) “four P’s of creativity” which include the process,

the person, and the creative press, the product is often “the neglected P,” with so much of the past century of research focused on the other three, according to Cropley & Cropley (2010). Yet, the creative product exists in the liminal space *between* the others, as the ultimate creative synthesis. That is, the product may not only emerge through the efforts of a single creative person, but between individuals, witnessed by the fact that almost all new patents are simply improvements upon already-existing patents, as Cropley & Cropley point out. One’s product becomes the inspiration and raw material for another’s product. And the product does not so much emerge fully formed at the end of a linear procession of stages as it slowly unfolds in the dialectical back-and-forth between the divergent and convergent processes (Lubart, 2000-2001). According to Cropley and Cropley (2010):

The crucial point is that apparently contradictory aspects of the other Ps (Process, Person, Press) are needed for generation of functionally creative products... As creative people move through the phases on their way to a validated product, they alternate between poles such as divergent versus convergent thinking, or openness versus a drive for closure.... back and forth between apparently conflicting cognitive and noncognitive processes.... from one pole of a paradox to the other in the course of generation and exploitation of effective novelty. (p. 313)

The antithetical nature of the other three P’s comes together in the synthesis of the final product. And the more contradictory and paradoxical these persons, processes, and social pressures are, the more creative the product possibly is that emerges between them.

The combination of remotely associated, and even contradictory, elements is at the core of some of the greatest creations in history – Gutenberg’s merging the fixed mechanization of a wine press with the flexible interchange of a coin punch to produce the

printing press, Einstein's deriving his general theory of relativity from the paradoxical image of a falling man who is both in motion and in a relative state of rest, and of course Cervantes' penning the first modern novel by pairing the idealism of Don Quixote with the gritty realism of Sancho Panza – to name just a few. As described in the sections above, ever since Mednick's (1962) findings on the remote association of disparate concepts contributing to creativity, dichotomous elements have long been considered important to creativity, and studies since (Poze, 1983; Wilkenfeld, 1995 unpublished; Wisniewski and Gentner, 1991) have shown that the more contrasting the two elements are from one another, the more creative (or at least novel) the outcome, similar to the antithetical traits of personality Csikszentmihalyi (1996) found among eminent creators. In fact, paradoxical combinations have been found (Wisniewski, 1997) to result in something greater than the mere additive effect basic combinations might produce – what we here have dubbed *emergence*. The synthesis of more diametrically contrasting ideas is more likely to lead to emergent, Gestalt-like, products, in which the combination is greater than the sum of its parts.

The Emergent Synthesis

Consider again Aristotle's palm-down gesture in Raphael's *School of Athens*, as an expression of hylomorphic synthesis, or the belief that universal form is inherent *within* matter, rather than transcendent of it, as Plato argues. Because of his metaphysical philosophy, Aristotle has been (somewhat mistakenly) credited with the phrase, "The whole is greater than the sum of its parts," oft quoted by Gestalt psychologists to express their understanding of how incomplete figures may still be perceived entirely in the mind. The Aristotelian notion of synthesis is not merely the blending of independent elements, but such that results in a product bearing novel features exceeding the sum of the features of its

individual parts. And this *emergent* synthesis is what sets dialectic apart from the mere blending of concepts, compromise, or balance. In the examples from Guttenberg, Cervantes, and Einstein, above, the products of their creativity achieve such emergence.

To test the emergence of creative synthesis, Estes & Ward (2002) and Wilkenfeld & Ward (2001) presented participants with adjective-noun pairs such as “harmful illness,” or with more contrasting pairs such as “healthy illness,” and asked them to speculate on their definitions or list features they imagine for the combination. The results of these studies found increased emergence in the participants’ answers, with more elaborate interpretations and longer lists of features resulting from the more dissimilar pairs than the mundane ones, features that exceeded the mere sum of features of the two elements. The more dissimilarity, the more emergence. While further research is needed to test the emergent effect on the second creativity criterion, appropriateness or meaning, these studies did show increased originality (Mobley et al., 1992). Similar results were found (Rothenberg & Sobel, 1980) for superimposed visual elements as well, stimulating ideas for novel inventions.

Creative work of the highest kind – products of “big C” Creativity, as with exceptional works of art – may bear another sort of emergent synthesis, according to Aristotle’s hylomorphic understanding. In the *Poetics* (350 B.C.E./1895), he argues that the best results are those in which the universal is expressed in the particulars, where the ideal is inherent in the details of the real (Heath, 1991). By capturing the general in the specific this way, a poet may reach the audience psychologically for a transformative effect. That is, the observer or reader relates to the protagonist, and through empathy may, in a sense, *become* the protagonist. Just as one may lose oneself in an engaging activity through flow, the audience members project themselves into the characters of the plot. The mimetic function of

art involves imitating familiar experiences, and yet, paradoxically, presenting such in a novel and surprising way. In *The Poetics*, Aristotle elaborates on this by distinguishing histories from poetry – that is, what has happened to someone else in the past versus what occurs for each of us in general:

It is, moreover, evident from what has been said, that it is not the function of the poet to relate what has happened, but what may happen, what is possible according to the law of probability or necessity. The poet and the historian differ not by writing in verse or in prose. The work of Herodotus might be put into verse, and it would still be a species of history, with metre no less than without it. The true difference is that one relates what has happened, the other what may happen. Poetry, therefore, is a more philosophical and a higher thing than history: for poetry tends to express the universal, history the particular. (Chapter IX, 1451b6-15)

This “higher,” more philosophical, aspect of poetry, however, is not to be mistaken as a state of mystical transcendence in some Platonic sense. Whereas Plato, gesturing to the sky in the *School of Athens*, views art in dualistic terms (i.e., a shadow-like imitation of reality which is itself a mere shadow of transcendent, universal forms), Aristotle holds that the universal is inherent *within* the creative work, just as the universal is inherent within observable reality. In other words, for both philosophers, their metaphysical perspectives are parallel to their aesthetic ideas. Consequently, Plato views the artist with suspicion (see Plato’s *Ion* and *Phaedrus*), as one whose reason is compromised by forces outside the rational mind, such as the Muses, which of course gave rise to later Romantic and pathologized notions of creative inspiration. The artist therefore must be censored or even banished due to his creation of false realities, or shadows of shadows (See Plato’s *Republic*,

II, III, & X). For Aristotle, however, because there is a synthesis of the ideal and the real, the artist may develop skills for conveying the ideal through the mimetic work of art.

While the origin of the idea of emergence is generally attributed to Aristotle (and later developed by Aquinas), the concept has reached a level far more sophisticated in the recent theory of complex adaptive systems with cross-disciplinary applications to biochemical functions, urban development, and Internet connectivity (O'Connor, 2021). Emergence may be considered as much a property of the creative product as the creative process and, as already pointed out in Sawyer's (2010) research, collaborative improvisation as much as individual creativity. Whether it is the consciousness generated by the interactivity of neurons or the collective intelligence of a colony of ants, emergence occurs when simple elements give rise to a more complex system in a bottom-up, self-organizing, process as a form of adaptation. It is order rising from chaos under the right conditions. In his book, *Emergence*, Steven Johnson (2001) describes it as occurring when "disparate agents...unwittingly create a higher-level order," as an "epic clash and subsequent resolution of the dialectic" (pp, 21-22). Lambert (2020) applies the "order-chaos dynamic" of complexity theory, and its resulting emergence, to creativity more specifically by analyzing the various "creativity paradoxes," including "knowledge vs. naivete, psychological health vs. psychiatric disorders, mindfulness vs. mind-wandering, executive attention vs. default network, convergent vs. divergent thinking, and extroverted vs. introverted traits" (as quoted in Schulberg & Guisinger, 2021).

The ultimate creative product, however, is the human being, an emergent synthesis of dichotomous forces if there ever was one. In *A Philosophy of Science for Personality Theory*, Joseph Rychlak (1968) states, "what is peculiarly human is dialectical, including man's

thought process (mind) and ‘human’ behavior in general” (p. 255). Piaget and Vygotsky would likely agree on the point about the mind, as their cognitive development theories both suggest a dialectic to how we construct knowledge when encountering the world (Ayman-Nolley, 1999; Basseches, 1980; Bidell, 1988). Insofar as we are innately dialectical beings with an “urge to merge” dichotomous forces within us and between us, and insofar as increasingly dichotomous forces contribute to more emergent creativity, then there are a great many implications for understanding and exploiting dialectic, from enhancing creativity and well-being in education and therapy to organizational applications. Research approaches may be improved as well. By applying a dialectical view in our attempts to understand ourselves as human beings, says Rychlak, we may arrive at “the *most accurate* picture of the fundamental human condition” (p. 255). We must view ourselves as an amalgamation of both Quixote and Sancho.

THE GOLDEN MEAN: LIMITATIONS AND IMPLICATIONS

Just the realization alone that creativity is a dialectical process is enough to benefit its practitioners as well as its researchers. Acknowledging that paradox is part of its nature relieves anxiety and confusion, and may lead to opportunities rather than obstacles. It seems that many exceptionally creative people already know, or at least intuit, this, as demonstrated in their high tolerance for ambiguity (Barron, 1969), and the deliberate toggling that many do between structured and random modes of thinking (Sawyer, 2013; Wells, 1996). And while this understanding may have practical ends that lead to improved creativity, perhaps the greatest implication is for self-understanding and mental health that may benefit from the realization that exceptionally creative persons are those who often experience greater paradox within themselves, more as a gift than a curse. Understanding creativity as a dialectic has implications for all of us, and not just the creative genius, in that it reveals our own true nature as dialectical creatures who may engage in even small acts of creativity as a way of growing toward synthesis and self-actualization.

The Inverted-U and the Middle Way

However, a caveat must be addressed concerning just how contrasting the combined elements, processes, or traits are for them to have a positive effect on synthesis in terms of creativity and well-being. In other words, how much antithesis is too much? Might there be an optimal level of contrast for achieving emergent synthesis? If anything, dialectical considerations should remind us of the old adage, “Moderation in all things,” reflected in Aristotle’s (350 B.C.E./1926, 1106a26–b28) “golden mean” and the Buddha’s “Middle Way” (Kalupahana, 1979). With his characteristic synthesis of Platonic dualities, Aristotle claimed that virtue, or excellence, emerges from “the mean” of two vices, one of excess and the other

of deficiency. Having the wisdom to discover this mean in each dialectic is the road to a *eudaimonic* life. And the golden mean may apply to the application of the dialectic approach itself, where too much antithesis may inhibit synthesis as much as a lack of it. While greater contrast has been found within more creative personalities (Csikszentmihalyi's, 1996; Kaufman & Gregoire, 2015) and more creative ideas and products (Poze, 1983; Wisniewski, 1997; Wisniewski and Gentner, 1991), there may be some instances in which the compensatory advantage of inherent contradiction eventually becomes a disadvantage at its most extreme levels of dichotomy. Again, the inverted-U may be useful to our understanding here. The effects may appear graphically as such depending upon the degree of antithesis. The dichotomy increases positively alongside creativity until a tipping point is reached. At this threshold, creativity is likely at its peak, with greater likelihood for emergent synthesis and, correspondingly, optimal growth, flow, or motivation, etc. But further degrees of antithesis may begin to undermine functioning, at which point the correlation tips negatively downward.

A few of the paradoxes turned up by creativity research may be explained by this nuance. It has already been speculated in a previous section that the inverted-U spectrum may apply to creativity's relation to mental health – that is, that it correlates with both dysfunction (Andreasen, 1987; Jamison, 1993; Ludwig, 1995) and with health and flourishing (Csikszentmihalyi, 1990, 1996). Again, as the dialectical tension within an individual increases, the potential for emergent synthesis does as well, until the increasing tension begins to undermine creative efforts. The notorious and yet relatively rare cases of the tortured poet – the Poes and the Plaths – suddenly make more sense in light of the research showing mental illness as an impediment to creativity (Kaufman, 2009; Runco,

2007; Sawyer, 2012; Weisberg, 2006). Similarly, the inverted-U may apply at the sociocultural level of analysis where research (Hambrick et al., 1996; Jackson, 1996) has found that the more diversity within a work group or organization, the greater the creativity. But more diversity has also been found (Ancona & Caldwell, 1992; Knight et al., 1999) to diminish creativity, revealing yet another paradox. In this case, the degree of diversity is positively correlated with creativity until the liminal point is reached, where it then tips negatively toward dysfunction, which consequently undermines the potential synthesis of the group. If future research supports this hypothesis, a dialectical approach to group interaction within organizations would not only clarify these contradictory findings, it could possibly reveal an optimal level of synthesis, where factors may be deliberately managed for maintaining the group dynamic at the most creative level. This inverted-U spectrum may furthermore add to our understanding of other paradoxes explored in this paper: Amabile's findings that extrinsic motives both undermine (Amabile, 1982) and enhance (Amabile, 1993) creativity; the research (Vallerand, 2015; Vallerand et al., 2003; 2007) showing that passion for creative work can both promote and compromise one's well-being; Karwowski's (2014) discovery that one can simultaneously have both a fixed and growth mindset for creativity; and the perennial paradox of creativity's "dialectical relation to intelligence," as Sternberg calls it (2001, p. 360), where correlations of the two factors are observed until an IQ of approximately 120, at which point creativity begins to drop as intelligence continues to climb (Simonton, 1994; Sternberg, 1996).

A Meta-Theory for Paradox Studies

Whether a consistent progression or a rise and decline in creativity as correlated with the degree of dichotomy, there are implications for a dialectical approach in a variety of

areas, such as organizational psychology and management. As mentioned at the outset of this paper, this area has already made significant headway in the exploration and application of what is now being called “paradox studies,” in which antitheses are seen as providing opportunities for increased creativity and innovation (Miron-Spektor & Erez, 2017; Smith & Lewis, 2011; Smith et al., 2017). In their survey of the last few decades of paradox studies, Schad and colleagues (2016) call for the formulation of a meta-theory to avoid the narrow scope, and fragmentation, witnessed in organizational research so far. Although “Greater simplicity renders phenomena understandable and testable,” they state, “oversimplifying complex realities can foster reductionist and incomplete theories” (p. 5). Dialectic may provide precisely the meta-theory they seek, by addressing the weaknesses they claim challenge paradox studies – namely, a lack of understanding of the dynamics and relationships within paradoxes, and the dearth of individual approaches needed to compliment their collective approaches. Some organizational researchers have already hinted at the connection. Harvey (2014) specifically applies dialectic in her exploration of how extraordinary group creativity emerges as a synthesis. Smith and colleagues (2017) make historical connections to Aristotle and Hegel in their exploring theories that help us understand how “our greatest insights derive from grappling with intricate, interwoven and often irrational contradictions” (p. 303). “The potential of such theories may be especially strong in the context of ‘grand’ challenges,” they argue. “Indeed, there has perhaps never before been a greater urgency for leaders to understand the range of tensions experienced, and to learn how to respond in different, more complex and integrative ways.” It seems that the field of organization and management is ripe for a dialectical theory that integrates their efforts to conceptualize how paradox may best contribute to creativity.

The Dialectics of Wellbeing

A dialectical theory of creativity may have profound implications for clinical and positive psychology, where, unlike organizational research, there has been less progress. There are some exceptions, however. An exciting “second wave” of positive psychology is emerging due to what some (Lomas & Ivztan, 2016, p. 1753) are calling “the dialectics of wellbeing,” an approach that has found that greater flourishing comes from “a dynamic interplay of positive and negative experiences,” and not strictly from what they had called “positive” characteristics in previous decades. Traditional dichotomies, such as optimism versus pessimism, are integrated for more optimal growth. How the dialectical nature of creativity contributes to this integration of “light and dark,” or such integration contributes to creativity, may be a promising area for future inquiry. Post-traumatic growth (Tedeschi & Calhoun, 2004) is one potential area. Crises often shatter one’s schemas about the world and oneself and require renewed integration, not the least of which is the synthesis of one’s former self with the self that has undergone tragedy. They must reconcile who they were with who they are becoming, to synthesize these selves and emerge whole from the experience, if they are to be healthy – not just restored, but renewed. Because of its parallel dialectical processes, creative activity may help accommodate this synthesis for therapeutic ends. Incidents of major trauma have already been found (Forgeard, 2013) to correlate with subsequent creativity of more exceptional quality, in what is called “posttraumatic creative growth.” It may be that dialectical synthesis is at the heart of both the creative work and the personal renewal of those dealing with trauma. James Pennebaker’s (Pennebaker & Chung, 2011) research on the healing effects of creative writing may also have dialectical implications.

In a similar manner, there may be benefits to understanding the formation of one's entire identity as a creative act, particularly as it involves antithetical conflicts and synthesis. Insofar as identity is a self-generated life narrative, as Dan McAdams (2004) describes, it is inevitably a dialectically creative process. His narrative identity theory is rooted in Eriksonian developmental concepts in which "identity is an integrative configuration," beginning especially in adolescence and culminating in midlife generativity (p. 99). We live "storied" lives, shaped by the cultural tropes and narrative styles we are exposed to while growing up, and this involves dialectical synthesis in at least two ways. First, one's identity is a *synchronic* synthesis of competing roles; and secondly, identity is a *diachronic* synthesis of who one used to be and who one is now. "Identity needs to integrate these kinds of contrasts," states McAdams, "so that while self-elements are separated in time (and in content quality), they can be brought meaningfully together in a temporally organized whole" (p. 100). The developing identity strives for coherence – temporally, causally, thematically, etc. – all which are rife with antitheses that must be synthesized. What McAdams calls "redemptive stories" – an especially American narrative motif about overcoming challenges and personal transformation – might be viewed in terms of the emergent synthesis that transcends the sum of its independent parts as the protagonistic self is recreated. Just as studies (Leung, 2018; Paletz et al., 2015) have compared dialectical thinking between different cultures from East to West, and how such thinking influences the quality of their creativity, researchers might consider how the types of self-narratives people of various cultures create are influenced by their dialectical tendencies as well. How we conceptualize our life stories impacts our daily functioning and well-being (Bauer et al., 2008), so metacognitive strategies might be developed for creating a more redemptive identity, in this

case, by deliberately identifying antitheses within our lives for synthesis and eudaimonic growth.

Educating for Dialectical Synthesis

A further implication of viewing creativity as a dialectic is in connection with education, and what James Flynn has discovered in terms of generational IQ growth. The “Flynn Effect,” as it is now called, is seen as primarily the result of a shift from premodern to modern thinking that requires the ability to deal with conceptual combinations from wide-ranging domains. With each generation, greater flexibility and transferable thinking is needed as one is exposed to more variety of information. Sadly, however, Flynn has pointed out in an interview with David Epstein (2019) that education systems around the world have become increasingly specialized in siloed disciplines, narrowing the range of exposure. “Flynn’s great disappointment,” states Epstein, “is the degree to which society, and particularly higher education, has responded to the broadening of the mind by pushing specialization, rather than focusing early training on conceptual, transferable knowledge...” (p. 47). So, an understanding of ourselves as dialectical synthesizers may shed light on Flynn’s work. Diverse exposure may be a step in the right direction for pedagogical practices in that it provides the raw material for such thinking, as with the education of the Renaissance polymath. However, without the skills for creative synthesis, diverse exposure alone is not enough. Creativity is not merely divergence, but requires the convergent processes necessary to achieve emergent synthesis.

CONCLUSION

While much of this paper has considered creativity as a dialectic, the research approaches to understanding creativity are themselves in need of a dialectical synthesis. Kozbelt, Beghetto, and Runco (2010) have called for a more robust theory that is pluralistic and integrating. Although they do not refer to it as dialectic per se, the authors distinguish between rigorous empirical perspectives and the more speculative metaphorical theories as often antithetical in their relationship. They argue that these need not be “mutually exclusive nor endpoints on a unidimensional continuum” (pp. 21-22). While the former approach is important for dispelling many of the myths and misconceptions that have plagued our understanding of creativity through the years, it is constrained by observable phenomena. “Einstein’s breakthrough theoretical work on special relativity, for instance,” they assert, “would have been impossible if he had limited himself to the directly observable” (p. 22). The hypothetical, “what-if” speculations of metaphorical theories, on the other hand, inspire new directions and fresh understanding while being kept in check by the scientific approaches. In terms of the very definition of creativity, metaphorical theories offer novelty while scientific theories offer appropriateness, as the field advances our understanding of creativity in a dialectical manner.

Other creativity theories lending themselves to a dialectical framework include: developmental concepts emphasizing the exchange between the individual and the social environment, such as the balance between freedom and structured focus in one’s creative growth (Albert & Runco, 1989); stage or componential theories, such as those pairing incubation with insight (Kounios & Beeman, 2009; Wallas, 1926); cognitive theories such as Guilford’s (1959) divergence-convergence processes and Mednick’s (1962) remote

associations; evolutionary theories that metaphorically compare idea generation to genetic variation, and critical verification to selective retention, as with Simonton's "chance configurations" model (1988, 1999) and Sternberg and Davidson's (1999) concept of "haphazard recombinations;" personality typology theories addressing polarities such as Galenson's (2001, 2006) "seekers" versus "finders" and Csikszentmihalyi's (1999) paradoxical traits of eminent creators; and systems theories that explore the influence of one being involved in networks of remotely associated enterprises (Gruber, 1981), as well as the contrast of planned structure versus free-form improvisation in collaborative performance (Sawyer, 2007). Although not calling for a grand unifying theory, in their meta-analysis of creativity theories, Kozbelt and colleagues (2010) conclude that there needs to be a "golden mean" of existing theories such as those described above so that there may be deeper and broader understanding of the phenomenon (pp. 40-41). They provide an example of such a synthesis in how domain-general theorists (who view creative ability as transcendent and transferable to a variety of domains) and domain-specific theorists (who view creative ability as restricted to particular domains) have integrated their once-opposing camps (Baer & Kaufman, 2005; Plucker & Beghetto, 2004).

Understanding creativity as a dialectic may have implications for both the theories and the methods by which we study creativity, and how we study ourselves as a creative species. Sawyer and colleagues (2003) describe a recent union of developmental psychology and creativity research, as an emerging domain with new possibilities that call for the "need to cultivate, not reduce, contradictions." They add that this merger has "inspired us to bring to light and synthesize tensions, to hold and move among different perspectives, and to build on the dynamics of the individual and the social in the construction of the new" (p. 86).

Sawyer (2012) furthermore describes a synthesis between individualist and sociocultural approaches to studying creativity, which considers perspectives on the creative individual's personality and cognitive processes, as well as the inextricable social contexts of creative activity. Such an approach draws upon perspectives from a variety of disciplines including anthropology and sociology, in addition to neuroscience and psychology.

However, a great divide still exists between qualitative and quantitative approaches. In this dialectic, the dominant voice has been the latter, more objective, methods – and for good reason, considering empirical data was sorely missing in the early days of creativity research. The lack of a clear understanding of the subject just fueled the Romantic mystique about it. But now, some of those who helped establish rigorous and objective inquiry into creativity are concerned “that the field may have gone too far in its search for scientific legitimacy,” says Mark Runco (Richardson et al., 2016, pp. 415-418). He explains that empirical approaches with easily verifiable data may fall short. “There is a dichotomy between the standard definition, which can be applied scientifically, and a more nuanced definition, which allows for the study and understanding of other parts of creativity.” Sawyer (2012) echoes this concern, stating that some “questions can't be answered using experimental methodologies that predominate in psychological research; they require more qualitative, biographical methods” (p. 138). Perhaps it is time for another dialectical synthesis – a paradoxical blend of these starkly dichotomous approaches so that we may achieve a more emergent understanding of creativity, and of ourselves as a creative species.

One last look at Raphael's *School of Athens* and it becomes clear that such segregations of thought are nothing new, as the visual field of the fresco is divided down the middle, suggesting not just one school, but two. Art historians have speculated over the

identities of the other nineteen figures for centuries, but recent scholarship (Stewart, 2018), aided by both ancient and Renaissance-era sources, has led to the belief that those figures on Plato's side of the wall belong to a tradition that views the world in dualistic terms in which transcendent forms are discovered through philosophical inquiry and discourse, and those on Aristotle's side of the wall perceive universal forms as inherent within the particulars of the observable world, rather than transcendent of it. For the dualists on the left, human beings are objects composed of separate minds and bodies, and ideal forms are as abstract as mathematics. For the proto-scientists on the right, a human being is a synthesis of body and mind, and the ideal is seen as inherent within the real. Our understanding of creativity, and human beings, comes from both schools, and yet our current research approaches are just as divided as Raphael's fresco. We have inherited a dialectic, however paradoxical it may be, that requires a renewed synthesis if we want a fuller, even emergent, understanding of human beings as they engage in their most distinctly human behavior.

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