

Defining Creativity: A View from the Arts

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Abstract

Over several decades, novel-and-appropriate has become established as the standard definition of creativity; while allowing for variations in the exact wording, the requirement that creativity requires external validation of value, utility, etc. is largely unchallenged. This functions well in high consensus fields in which value can be empirically verified. However, in low consensus fields such as the arts, value judgments are subjective, controversies abound, and it can take a long time to reach agreement. As a result, novel-and-appropriate needs to be revisited as a generalized definition. In its place, a successful definition should take into account that bringing something novel to life often requires taking the initiative long before there is external judgment of value or utility and, in low consensus fields, those external judgments can be a poor barometer. Synthesizing arguments by Simonton and Weisberg, the solution is to conduct separate analyses for personal production and public reception, and to remove utility from the definition of creativity. Advantages, risks, and implications of the recommended framework are discussed.

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Introduction

The Mars candy company regularly runs television ads for Skittles with the slogan “Taste the rainbow.” For the 2019 Super Bowl, however, the company took a radically different approach. Each year, Super Bowl commercials are seen by the largest television audience in the world. Networks charge a premium for this exposure: a 30-second spot costs upwards of \$5 million. Instead of a broadcast advertisement, Mars commissioned “Skittles: The Musical,” with a book by avant-garde playwright Will Eno. The musical was performed *once* before a paying audience in New York City on Super Bowl Sunday. A cast album was released, including the title song “Advertising ruins everything” (Soloski, 2019).

Was “Skittles: The Musical” creative? At first blush, the answer would seem to be yes. There was a novel product: a 45-minute musical, unlike any other Super Bowl ad ever made. But researchers have long been troubled about evaluating creativity solely on the basis of novelty. As Cropley (2018) has written:

Although intuitively it is the sine qua non of any kind of creativity, novelty is insufficient on its own. It may involve no more than ignorance, reflex non-conformity, lack of discipline, blind rejection of what already exists, or simply letting yourself go (p. 54).

Similarly, Runco & Jaeger (2012) argue:

Originality is vital for creativity but it is not sufficient. Ideas and products that are merely original might very well be useless. They may be unique or uncommon for good reason! Originality can be found in the word salad of a psychotic and can be

produced by monkeys on word processors. A truly random process will often generate something that is merely original (p. 92).

Over the past few decades, researchers have put forth models of creativity that describe why novelty alone isn't enough to qualify, and lay out what other qualities an idea or product must have, such as *usefulness*, *value*, *adaptiveness*, *task appropriateness*, or *fitness* (Runco & Jaeger, 2012). In a field with many hotly debated questions, creativity as some version of novel-and-appropriate has become widely accepted; it is often referred to as the “standard definition,” and underlies almost every experiment. As Silvia (2018) writes, “this novel-and-appropriate definition is in all the textbooks and first paragraphs of articles” (p. 272).

Most proponents of the definition agree that evaluating utility and value requires outside judgment. As Csikszentmihalyi (1999) writes:

If creativity is to retain a useful meaning, it must refer to a process that results in an idea or product that is recognized and adopted by others (p. 313).

As a result, creativity does not exist without the imprimatur of culture. As Csikszentmihalyi (2003) argues elsewhere, “Bach and Van Gogh were not creative in their lifetime, because no one thought so, nor did they mysteriously become creative in the grave—what changed was our perception” (241). This view is implicit in a majority of creativity studies.

Yet “Skittles: The Musical” presents a conundrum. Was such an outside-of-the-box ad *useful, valuable, adaptive, or task appropriate*? During its creation, there was no way to be sure—it was an *experiment*. Time, energy, and money had to be invested long before any public accounting could be made.

Then, once the Super Bowl was over, how to assess the ad’s value? Is a musical seen by a tiny audience a good fit for a Super Bowl ad? Maybe the answer is straight-forward: yes, as long as it led to a bounce in sales. But suppose it didn’t. As Simonton (2013) has stressed, a low score on effectiveness or utility diminishes the creativity of the product. But perhaps more intangible measures should apply: after all, the ad gets your attention by being novel...and *inappropriate*. Did it thereby enhance the company’s reputation by being so subversive? If so, how is that factored into the equation?

Likewise, should the critical response to the musical be considered? If, over time, the ad gains in notoriety and impact, how does that change the calculation? As Gladwell (2011) has demonstrated, how criteria are weighted in a subjective judgment can markedly change the result. While the campaign’s novelty would be undisputed, its *value, adaptiveness, and effectiveness* would be open to interpretation; it is easy to see how different people might come to different conclusions.

This points to a far-reaching problem. Simonton (2009) has described the contrast between high and low consensus fields. High consensus fields such as physics and chemistry have: more laws and fewer theories; abundant citation rates for recent work, indicating rapid acceptance; high consultation rates, as researchers seek out their colleagues for advice and collaboration; and frequent turnover, as new discoveries are made. In contrast, low consensus fields such as sociology and psychology have: more

theories and fewer laws; lower citation rates for recent work and less frequent consultation, indicating greater controversy; and slower rates of obsolescence, as ideas are debated for years and even decades. Simonton places the arts at the bottom end of the consensus spectrum.

As Simonton (2016) writes, “One of the prime assets of the so-called ‘hard’ or ‘exact’ sciences is that they contain precisely defined terms” (p. 81). Usefulness, effectiveness, and value are easier to evaluate in high consensus fields, where claims can be empirically validated. Low consensus fields are an entirely different matter: the subjective, provisional, and often unstable nature of judgments creates ambiguities and contradictions that are often difficult to resolve. The result is that highly creative work will often generate a broad spectrum of responses, especially in the short-term. Which raises the question: is the standard definition of creativity imposing criteria from high consensus fields onto low ones, where they are not a good fit?

These concerns can be remediated in two ways: first, utility or appropriateness do not belong in a generalized definition; second, there need to be separate terms for the creative act and its social reception. In laying out this perspective, I will synthesize the arguments of two researchers who have recently been at odds over the definition: Weisberg and Simonton. Weisberg (2009, 2015) makes the case for dropping “utility” from the definition. In contrast, Simonton (2013) insists on utility; and, following Boden (2004), he adds a third term—“non-obviousness.” But again echoing Boden, Simonton doesn’t define creativity once. He does so twice: once for the personal, and once for the consensual—in fact offering separate mathematical equations for each. While it is open for debate to what extent subjective judgments can be captured by

equations, codifying those two levels—which is at odds with how many researchers interpret the standard definition—is a crucial distinction.

I will begin by examining problems with consensual assessments and the concepts of utility, value, effectiveness, and fitness in the arts. I will then discuss Weisberg's definition and several close variants, and suggest alternative terms for the reception of creative work. I close with a discussion of advantages, risks, and implications of these definitions. The hope is to contribute to a framework for examining creativity in the arts in a way that is appropriate to how they function—and that is also applicable to human inventiveness at large.

Problems with Consensual Assessments

Experts can disagree

When Richard Wagner's monumental opera *Tristan und Isolde* was performed throughout Europe and the United States, opinion was deeply divided. Some critics decried the music's breach with traditional forms, lack of memorable melodies, absence of choral singing, and interminable length. A member of the English Royal Music Society referred to the experience of listening as "torture" (Rizzuto, 2010, 22). A columnist in the *New York Times* warned American audiences:

Wagner's music is now driving people to insanity and suicide. We learn from Munich that Herr Eberle, the piano-forte conductor, has gone mad over *Tristan und Isolde*, and it is known that the rehearsals of this unique opera had previously killed a celebrated German tenor (Rizzuto, 2010, 39).

Others were more complimentary: writing the *Musical Times*, critic Frederick Corder describes the opera as “stupendous, crushing effort of genius” (Rizzuto, 2010, 15). Still others came down somewhere in the middle: an American critic’s review found *Tristan* “more noteworthy as a genial technical accomplishment than as the product of creative power or originality, and better calculated to appeal to the intellect than to the emotions” (Rizzuto, 2010, 66).

As Csikszentmihalyi (2014) has remarked:

Whether an outcome will be creative or not does not depend on the process itself, but on the judgment of whoever has the power to legitimize new discoveries. Hence the notorious difficulties in agreeing as to what is or is not a creative contribution (p. 66).

Generating a spectrum of responses is to be expected with innovative work. Such controversies have been exacerbated by the aesthetic pluralism of the 20th and 21st centuries. For example, earlier musical cultures were built around a common practice: composers working in similar mediums shared the same musical language. In the 19th century, highly individualistic composers such as Schumann, Chopin, and Mendelssohn still shared the same musical vocabulary and set of musical values. Not so in modern times (Griffiths, 2010). As composer Milton Babbitt wrote in 1958:

The informed musician...lives no longer in a unitary universe of “common practice,” but in a variety of universes of diverse practice (Babbitt, 1958,154).

Taking just one example from concert music, Pierre Boulez's *Structures II* for two pianos (1961) is highly dissonant, covers the full range of the piano, constantly changes speed and dynamics, and never repeats itself; meanwhile, Steve Reich's *Piano Phase* (1967) is diatonic, stays in one register, speed, and dynamic from start to finish, and maniacally repeats the same pattern. Other than the same instrumentation and tempered tuning, the two works have almost nothing in common.

A similar spectrum of aesthetics exists in all art-forms—whether it is the Baroque word play of James Joyce and the laconic prose of Hemingway, the photo-realistic paintings of Chuck Close and the color fields of Gerhard Richter, or the contrasting movement vocabularies of Twyla Tharp and Merce Cunningham. As a result, consensus in the arts is trending towards an all-time low. As Auner (2013) comments,

There has never been less agreement that there is today about how...to measure ideas such as historical importance, originality, and progress (p. xvii).

It is difficult to find common ground in a pluralistic culture. As Kompridis (1993) remarks,

Pluralism cannot by itself derive valid rules of judgment only by appealing to its own principles...If they are just another one of a number of equally valid principles, they have no legitimate authority when potential conflicts *between* principles arise. (p. 10)

Similarly, Berlin (1991) writes of

a plurality of values, equally genuine, equally ultimate, above all equally objective; incapable, therefore, of being ordered in a timeless hierarchy, or judged in terms of one absolute standard. (p. 79)

In Simonton's view, "a field with maximal evaluation variance could hardly be called a 'field,' because the consensus would almost perfectly absent. Everybody just does his or her 'own thing'" (p. 74). In modern times, artistic frontiers are more wide open than ever; as a result, broad agreement can be stubbornly difficult to reach.

Who is the jury?

If creative output needs to be judged by others, who is the jury? Sometimes a single figure can wield outsize authority, as was the case with Clement Greenberg, "the most influential art critic of the twentieth century" (Seidell, 2002, p. 15). The same can be said of the powerful editors, gallery owners, and impresarios whose opinions can make or break a career. When Franz Schubert finished his Eighth Symphony, he gifted the score to conductor Anselm Hüttenbrenner, who decided for unknown reasons not to perform it. That was enough to sink the Symphony's prospects during Schubert's lifetime.

Others believe validation should come from like-minded professionals. In his influential article "Who Cares if You Listen?" (1958), Babbitt insists that forward-looking artists should receive the same deference as their scientific colleagues: to work removed from the pressures of the market place, and be evaluated by qualified peers. Arguing that "only in politics and the 'arts' does the layman regard himself as an expert" (p. 156), Babbitt proposes that

the composer would do himself and his music an immediate and eventual service by total, resolute, and voluntary withdrawal from this public world to one of

private performance...with its very real possibility of the total elimination of the public and social aspects of musical composition (p. 158).

In Babbitt's view, the only audience that should matter to a composer is other advanced musicians.

Others have lamented such an insular approach. Composer Pierre Boulez (1985) comments:

There exists a tendency to form a larger or smaller society corresponding to each category of music, to establish a dangerously closed circuit among this society... The different circles of music, if they are not Dante's, none the less reveal a prison system in which most feel at ease but whose constraints, on the contrary, painfully chafe others (p. 7).

For some, the crucible of the marketplace is the ultimate arbiter: as the saying goes, you have to "make it on Broadway." In the end, who is qualified to judge remains contentious—and is often a flashpoint between artists, critics, and the public.

Likewise, how prizes, grants, fellowships, and commissions—bellwethers of professional advancement—are administered varies considerably. Some, like the Nobel Prize for Literature, appoint jurists for extended, renewable terms; others rotate their membership each year. Some advertise their panelists in advance; others wait until after the prize announcements or keep them unlisted. Some require anonymous submission; in others, applicants' identities are known to the jury. Some, like the Grawemeyer Award for Music, include a mix of a critic, presenter, and critic, while others are more homogeneous. Some strive for gender and ethnic diversity; to others, that is not a

primary concern: for its first fifty years, the judges of the Pulitzer Prize for Music consisted almost exclusively of white males. The reality is that the value of other human beings' creative work is judged in an ad hoc, uncoordinated, and unregulated manner.

Judgment can be faulty or biased

When the African-American painter Mavis Pusey died in 2019, the *New York Times* obituary marked the passing of this “under-the-radar abstract artist” (Genzlinger, 2019). Asked why Pusey was not as well-known as contemporaries such as Ellsworth Kelly and Frank Stella, the curator Erin Dzeidzic was quoted as saying: “It is not because Pusey’s work is any less ground-breaking, pristinely executed, or formally or conceptually evocative...Simply put: It is because she was black and a woman” (p. 24). Similarly, when Mexican abstract artist Virginia Jaramillo was asked why it took until she was eighty-one to have her first solo museum exhibition, she answered that “for artists of color, the system was ‘geared to make you fail’” (Loos, 2020).

Other female painters' careers have recently been reappraised, including Hilma af Klimt (1862-1944), the Swedish painter who preceded Vassily Kandinsky as a pioneer of abstraction (Schwartz, 2019); and Agnes Pelton (1881-1961), whose first New York retrospective did not take place until nearly sixty years after her death (Smith, 2020). In 2019, the Museum of Modern Art in New York City added 40,000 square feet of exhibition space to display works by women and minorities that had been kept in storage for decades. Works that had long been marginalized were finally made part of the canon (Pogrebin, 2019).

Like the visual arts, Western concert music was long closed to women and minorities. Until several recent commissions, the Metropolitan Opera had only performed operas by two female composers—Ethel Smyth and Kaija Saariaho--over a hundred years apart. In its first fifty years, there were two female winners of the Pulitzer Prize in Music: Ellen Taaffe Zwilich and Shulamit Ran. A 1994 study found that women made up only 2.9% of tenure-track faculty positions in composition in the United States (Payne, 1996).

Too often, history has shown that experts can be biased or prejudiced, excluding creative efforts on the basis of gender, race, religion, social class, sexual preference, and more. Recently, studies by Proudfoot et al. (2015) found that men were rated as more creative than women for equivalent work. The more subjective the judgments, the greater the impact of these biases: without an experiment to prove or disprove a conjecture, it is hard to hold cultural gatekeepers to account. As Nochlin (1988) writes:

If a truly just social order were to be created, ... the unstated domination of white male subjectivity (is) one in a series of intellectual distortions which must be corrected in order to achieve a more adequate and accurate view of historical situations (p. 146).

Finally, value judgments are more vulnerable to politicking in low consensus fields. As composer Ludwig van Beethoven once said, “The world is a king, and like a king, desires flattery in return for favor” (Beethoven, 1927, p. 197). The more subjective the

judgment, the more susceptible it is to a variety of hidden influences, including the critic's self-interest.

Judgments can change

Czikszentmihalyi (2014) has observed that “in art...selection criteria...can change rather erratically”: as an example, he cites the painter Botticelli, who “for centuries was considered to be a coarse painter” until nineteenth century critics saw in his work “creative anticipations of modern sensibility” (p. 3). Weisberg (2015) contrasts the career trajectory of the 19th century painter Ernst Meissonier, whose reputation plummeted, with that of Van Gogh, which sky-rocketed. Simonton (1998) has analyzed the historical reputations of operas. He limited himself to composers who created at least one stage work that has made it into the standard repertory—figures such as Mozart, Verdi, and Bizet. An opera's popularity was measured by such factors as the number of recordings, the number and geographical breadth of performances, the amount of critical text devoted to them, and their ranking by music critics. Simonton found that, though the operas' initial reception was typically congruent with modern views, “the consensus is not stable over time and the source of the instability is...fashion cycles” (Simonton, 1998, 206); he also found that critical appraisal was particularly volatile in certain eras. Simonton deliberately omitted composers whose hits have faded into obscurity, but those trajectories happen as well. You might be forgiven for not recognizing the name of the 18th century composer Niccolò Piccinni, whose *Pamela* was once all the rage in Europe; nowadays, his 124 operas are rarely performed. Antonio Draghi (130 operas), Giovanni Paisiello (110), and Wenzel Müller (166 operas) were likewise in high demand in their day and now largely forgotten.

So something viewed as *useful* or *valuable* today may not be seen that way tomorrow.

For Weisberg (2009), this problem risks disqualifying any research that examines living creatives, because it is inevitably time-stamped. He writes:

If we include value in our definition of *creative*, the products or persons that one generation classifies as creative might not be so classified by the next. That possibility means that our database would be constantly shifting as we tried to develop our understanding of creativity and related concepts—an unacceptable set of circumstances (p. 39).

In Weisberg's view, originality can be readily evaluated, since it involves a comparison with what already exists: after all, both the patent and copyright bureaus are confident they can at least make gross judgments. Furthermore, once established, originality remains true: "If we produce something that is new relative to some database, the product forever remains novel relative to that database" (p. 119). The only way that could change is if new information were to come to light—as was the case when Hilma af Klimt was found to precede Kandinsky as an abstract painter.

In contrast, it may decades--even generations—for work to filter through low consensus fields and be recognized for its usefulness and value; and those judgments may change. This forces researchers into a difficult trade-off: either accept that current research into living creatives is by necessity flawed or incomplete; or commit to longitudinal studies that may take a lifetime to complete. In subjective fields like the arts, the answer is to seek out controversial figures, over whom there is a spirited debate about their work's utility or effectiveness. In other words, in order to study creativity in low consensus

fields, you need subjects whom at least some experts feel fall short of the standard definition.

For research's sake, it might be ideal to have a world in which value and utility can be well articulated, objectively measured, and remain stable. But this will never happen in domains like the arts. In fact, one of the goals of innovators is to challenge existing norms and find value where no one had considered it before—be it Warhol's "Campbell Soup Can," Ligeti's composition for one hundred metronomes, or Basquiat's graffiti art.

It's not even clear how strongly utility factors into consensual judgments: Acar et al. (2017) found that, though the standard definition grants novelty and usefulness equal weight, they "may not be equally important in explaining the creativity of a product" (p. 133). Instead, the researchers found that both experts and non-experts gave priority to a product's originality, and only considered its utility as a subordinate factor. Amabile's widely adopted consensual assessment techniques deliberately asks judges to use "their own subjective definition of creativity in that domain" (2018, p. 4) and does not require them to explain their reasoning. As a result, it is impossible to know if different judges assign similar weight to usefulness, or even if the same judge weighs usefulness equally in different works.

To summarize, creative assessment in the arts is problematic because experts can disagree, judgment can be faulty or biased, and opinions can change. As Kreitler and Kreitler (1983) write,

The situation is reminiscent of forecasting the weather or predicting a cosmic event. The applied formulae may be right but some of the needed information is not

precise enough and other information is missing. Hence, the interpersonal agreement in regard to artistic value judgments will not be absolute or dramatically high (p. 209).

Especially in modern times, with its aesthetic pluralism, there is no guarantee of a stable consensus for controversial work. For these reasons, relying on subjective external judgments in order for a work to clear a bar for creativity is perilous.

If external judgment is problematic, what do value and utility mean to the creator? That too raises concerns.

Problems with Utility in Personal Creativity

Usefulness as an experiment

On August 29, 1952, the pianist David Tudor took the stage at a benefit concert in Woodstock, NY to perform the premiere of a new work by composer John Cage. Tudor clicked a stopwatch, lowered the piano lid, and waited a short time. He raised and lowered the piano lid twice more. After exactly the four minutes and thirty-three seconds, Tudor bowed and left the stage, never having played a sound.

At first blush, what could be more useless or ineffective than an entirely silent piece of music? In Cage's view, music is not restricted to the sounds of instruments; there is music everywhere, and *4'33"* was his way of inviting an openness to the environmental sounds that surround us. As Kyle Gann (2010) writes: "Cage was *framing* the sounds

that the audience heard in an experimental attempt to make people perceive as art sounds that were not usually so perceived” (p. 20).

The standard definition implies that novelty and utility or effectiveness operate in tandem. However, in low consensus fields, they are often working at cross-purposes: in order to offer a novel perspective on music, Cage had to risk writing something useless.

There were howls of protest at the *4'33"* premiere, but critics and the public eventually found value in Cage's silent music. Although it continues to provoke controversy and many still dismiss it entirely, *4'33"* has arguably become one of the most influential works written in the twentieth century (Gann, 2010). In 2004, an Australian classical radio station polled listeners for their favorite piano works: Cage's *4'33"* ended up no. 40 in the countdown, just ahead of works by Schumann, Mozart, and Debussy (“Classic 100 Archives,” n.d.).

Similarly, Marcel Duchamp anonymously submitted a porcelain urinal to the inaugural exhibition of the Society of Independent Artists in New York. Its title: *Fountain*. According to the society's rules, no one could be turned away if they paid the necessary entrance fee; obligated to accept the urinal, the committee members hid it behind a screen. As they wrote later, *Fountain* “may be a very useful object *in its place*, but its place is not an art exhibition, and it is by no definition a work of art” (Camfield, 1989, op.cit., 27). Later generations of artists have overruled that committee: the found-art and conceptual art movements both trace their lineages to Duchamp's piece. *Fountain* is now often credited as one of the most influential art works of the 20th century.

There is often a trade-off: the more novel the product, the less certain its value or adaptiveness. Experiments by Ward (1997) probed that tension. He asked participants to invent imaginary sports and animals on distant planets. Ward found that those who stuck closest to the familiar—for instance, adhering to body symmetry in the space creatures--were less inventive but more practical, whereas those who treated the models more abstractly created ideas that were more original but less plausible.

Sometimes novelty is the value

On October 5, 2018, bidding at a Sotheby's auction reached over one million pounds for a framed copy of the artist Banksy's "Girl with Balloon." No sooner had the auctioneer struck his gavel signalling the winning bid than the painting self-destructed, shredded by a mechanism hidden in the frame by the artist. Given the chance to revoke her purchase, the winning collector chose to keep the painting. When asked why, she was quoted as saying, "I was at first shocked, but gradually I began to realize that I would end up with my own piece of art history" (Reyburn, 2018, 10). Sotheby's later proclaimed that the shredded canvas—now retitled "Love is in the Bin"—was the first work of art created live during an auction.

Especially in the arts, where originality is prized, being first is itself a source of great usefulness and value, thus conflating the two terms. Even something as absurd as a self-destructing painting can have value because no one has done it before.

Subjective notions of usefulness may be at odds with the field or society

In the arts, part of what is being risked is the public reaction. As Simonton remarks, personal and consensual assessments can become “seriously decoupled” (2013, p. 71). Sometimes, the provocations are deliberate. As Yingling (1990) observes, photographer Robert Mapplethorpe “courted, if not thrived on, controversy” (p. 5). His exhibition at the Whitney Museum, was “bent on shattering the taboos of even the most bored, sophisticated patrons” (p.5). It featured sexually explicit images of gay and S&M culture, including a pant-less self-portrait showing Mapplethorpe with a whip “issuing from his ass like a tail. It is among his rudest images” (p. 5). For his 1971 performance art piece *Shoot*, the performance artist Chris Burden filmed his friend shooting him in the arm at close range in front of a live audience. Asked by an interviewer, “Why is it art?” he responded “What else is it?” (Ward, 2001, 125). Other works from this period included Burden dragging himself through fifty feet of broken glass, pushing two live electrical wires into his chest, and being pushed down a flight of stairs—all scrupulously documented. Meanwhile, as part of her one-woman show *The Constant State of Desire*, performance artist Karen Finley smashed raw eggs from an Easter basket and then used stuffed animals to smear the yellow liquid over her naked body. Her work was banned in England, and she was one of the NEA Four whose funding was revoked and had to be won back in court (Schuler, 1990). Damian Hirst’s 1991 art-work *The Physical Impossibility of Death in the Mind of Someone Living* featured a shark suspended in a tank filled with formaldehyde. Art critic Robert Hughes called it a “cultural obscenity” (Kennedy, 2004). In such circumstances, the creator is aware that his judgment of value will be in direct opposition to many in his audience.

Sternberg has described creativity as being motivated by “defiance of—active assertion against—conventional views in favor of a new view” (2018, 318). He describes three types of creative defiance: against the crowd, against oneself, and against the Zeitgeist. Those who mandate consensual approval in assessing creativity put the non-conformist at an immediate disadvantage: she may challenge prevailing notions of beauty or marketability, and take a longer time to be accepted. Simonton acknowledges the depth of the problem: the extent to which personal and consensual assessments align “depends on the degree to which the individual is representative of the field as a whole” (2013, 77). In other words, your work is more likely to be viewed as useful if it’s not too far from the mainstream. It seems unfitting for any definition of creativity to penalize the iconoclasts, who are often idolized—at least in retrospect—for their daring and innovation.

This decoupling is particularly acute in totalitarian regimes, where any attempt at originality is likely to be condemned and suppressed. During the Soviet occupation of Hungary, composer Gyorgy Ligeti wrote state sanctioned folk song settings while at the same time composing “works for the drawer,” which he kept carefully hidden. It wasn’t until he escaped that he could bring those more personal works to light. To avoid detection, Soviet poet Anna Akhmatova wrote her poetry on slips of paper, which were committed to memory by friends and then burned (Chukovskaia, 1994).

Sometimes the decoupling is inadvertent or undesired. In the early 1950s, the television network NBC was frustrated by the laborious process for filming programming in-house: it took stage crews several days to construct sets, leaving little rehearsal time before broadcasts and costing a lot to reconfigure for the next show. The network hired

famed industrial designer Norman Bel Geddes to fix the problem. Bel Geddes' solution was to apply factory efficiencies to live broadcasting: in his blueprints, nine stage sets could rotate via an elevator and rolling track system, enabling the same auditorium to house multiple tapings in a single day. Bel Geddes' design was so efficient that he estimated that it would increase NBC's production from three shows per week to forty-nine.

Unfortunately, NBC executives balked at his proposal: the studio was operating at a loss and the executives felt such a radical make-over was too risky. In addition, his model was so efficient that he estimated it would reduce stage crew by up to 75%; upper management was worried about running afoul of labor unions. Thus, any utility of Bel Geddes' design came at a cost NBC wasn't willing to bear. Bel Geddes spent years revising his plans to suit the network but, in the end, the studio was never built.

Bel Geddes and his superiors would undoubtedly agree that his studio was novel; but they did not see eye to eye over its value. Bel Geddes' design failed the consensual assessment.

Whether wittingly or unwittingly, creator and public are often pitted against one another: it is the inevitable tension that arises when novelty challenges the status quo. As Simonton writes, "Ultimately, and somewhat uniquely for a supposedly cognitive event, creativity is a socio-psychological phenomenon that requires two levels of analysis" (p. 71). Under such circumstances, the concepts of "usefulness", "effectiveness," or "value" become even more tenuous, because the personal and the social may be at odds.

Usefulness is highly context-dependent

What makes a work of art useful? There is a wide spectrum of possibilities, from material concerns about popularity and commercial success to more intangible goals such as beauty, depth, and self-expression. As we've seen, novelty can factor significantly into the calculation, as can provocation. Different situations call for a different mix: writing a film score draws on one set of values, an avant-garde jazz performance another. Sometimes, the initial stipulations may lead in one direction, but the creator ends up taking a different path. For an artist, there may be no iron-clad meaning for utility besides "worthy of my creative effort." However, defining creativity as "producing something novel and worthy of my time" is not generally how "usefulness" is intended.

Production is important—whether useful or not

The equal-odds rule (Simonton, 1997; Jung et. al., 2015) posits that the greatest predictor of creative achievement is productivity: the best way to have successful ideas is to generate lots of options. Yet the standard definition undervalues the useless ideas of a restless imagination. For instance, Leonardo da Vinci's reputation as the supreme "Renaissance Man" rests not only on his artistic and scientific successes, but also on his tireless speculations. These included a host of inventions that were never built—such as an eighty-foot wide crossbow, a needle-grinding machine, a driverless cart, and diving suit--and others that were unlikely to have worked--such as human-powered flying machines, and water-walking shoes (Isaacson, 2017; Childress, 2010). Da Vinci's standing is enhanced by these far-out ideas, and clearly they were of value to *him*, as he

took pains to write them down. Yet his plans for water-walking shoes might fall short of the standard definition of creativity: they were not effective, useful, appropriate, or valuable. As Corazza (2016) puts it

To deny the fact that this result-empty activity can still be classified as creative would be tantamount to saying that a football team that did not score in a match did not actually play football (p. 261).

Except for extemporaneous cases such as live improvisation, a creator must often make the commitment to bring an idea to life long before it reaches the public. That is a personal decision that, in low consensus fields, may take years to externally validate; and there are no guarantees about how the world will receive it. But that cannot—and does not—stop creativity from happening all across the world. As many of these examples illustrate, creativity often occurs independent of outside judgements of value.

For instance, composition in the Western classical tradition is among the most self-reliant of all art-forms: there are no editors, focus groups, or out-of-town try-outs. It is true that a composer works in and depend upon an artistic milieu and infrastructure. Yet, in order to function, they typically make virtually all creative decisions autonomously.

On top of that, few works are guaranteed more than a premiere: the first audience to hear the music is often its last. Composers in J.S. Bach's day had only the dimmest notion of posterity. Works were seldom revived; indeed, Bach's music virtually disappeared from the concert stage for almost eighty years. To this day, the fate of a

composition often rests on the performance quality of and the audience present at its first hearing.

Taken at face value, the standard definition undervalues the risk and responsibility assumed by artists and discounts the creativity of many great artists when they were alive. Vast imaginative resources might be expended, yet it would not be enough to qualify as creative without public praise. Taking this view to its logical extreme, a creative product would never be finished, because opinions can always change.

Speaking about the human brain, neuroscientist Anna Abraham (2018) has written:

“How does a predictive system that has evolved to ensure fast, accurate, seamless, and goal-directed action in order to select the ‘correct’ action give rise to novelty or originality when goals are unclear or the situation is open-ended and unpredictable?” (p. 100) Every time an imaginative person produces new work, they raise that question anew.

Defining Creativity

Two conclusions can be drawn from the previous discussions. First, creativity involves a “negotiation between private impulse and the community that receives it” (Brandt & Eagleman, 2017). As Boden (2004) and Simonton have articulated, the personal and the social—while intertwined—need to be articulated and examined separately; they require separate terms and analytic frameworks. For the social level, Boden refers to “H-creativity” and Simonton to “consensual creativity,” but it would be better if the word

“creativity” weren’t included, to make the making of a creative product more clearly distinguished from its reception.

Second, especially in low consensus fields, creativity may take a long time to reach a critical mass of acceptance—if it ever does. Corazza (2016) captures this in his dynamic definition, which describes creativity as requiring “*potential* originality and effectiveness” (p. 262). Corazza’s definition elegantly presents creativity as more aspirational, but “potential effectiveness” may be no easier to quantify in low consensus fields than “effectiveness” alone; it is just a lower threshold to meet. As he himself writes

The higher the level of potential originality of an outcome...the wider the space the space for subjective imagination and interpretation...and...the higher the chances for chances disagreements among experts (as well as novices) and for variable attribution of value in different epochs (p. 262).

Corazza insightfully unpacks the risk-taking and uncertainty of the creative process. In doing so, he argues that effectiveness is necessary in the definition because otherwise it would be “over-inclusive” (p. 260). But if a silent piano piece can qualify as music, a urinal as sculpture, and covering your naked body with egg as theatre, would it ever be possible to say that a work of art did *not* have potential effectiveness? In the avant-garde, *effectiveness* is not necessarily a selection criteria—it can be a provocation.

So how to define creativity? Weisberg’s definition of creativity as “intentional novelty” (2015, 119) captures two crucial stipulations: first, that creativity requires motivation and attention; and second, that its aim is to produce something unique. Spelling it out more elaborately, creativity might be described as “producing, sharing, or preserving

something imagined and unforeseen.” “Imagined” highlights the subjective mental representations that proceed and direct the creative act, and “unforeseen” is a way of incorporating both “novel” and “non-obvious.” As another option, creativity could be construed as “the synergy of imagination, intention, and action that produces a novel result.” Virtually anything regarded as personally creative would fit any of these definitions.

Then, as Simonton advocates (2013), the creative process needs to be separated from its public review. *Cultural relevance* or *value* describes the degree to which a field or community recognizes a product as creative. One measure of cultural value is *impact*: how much an idea is recognized in or alters its field. For example, the iPhone revolutionized mobile communication. Another is *longevity*: how long a product remains viable. The plays of William Shakespeare have been performed for over four hundred years. And another is *influence*: the number of works that reference, cite, or draw from the original product. Each year, hundreds of papers are published based on Darwin’s theory of evolution.

Consider Beethoven’s *Grosse Fuge*: it received such a negative reception at its premiere that, bowing to pressure from his publisher, the composer removed it from his Opus 130 string quartet. For one hundred years after his death, the *Grosse Fuge* was regarded as incomprehensible; in spite of the composer’s fame, it was seldom played. In the twentieth century, opinions changed: composer Igor Stravinsky described it as “the most perfect miracle in music” (Kirkendale, 1963, 14); it is now a touchstone work for most professional string quartets. In the recommended framework, the *Grosse Fuge* would be recognized as *creative* when Beethoven wrote it—the composer himself felt it

was one of his most important works. As a separate consideration, it took over a century for it to become *culturally relevant* (Kahn, 2010).

Advantages of the Recommended Framework

One advantage of Weisberg's and the related definitions is that they avoid the double talk that, on the one hand, creativity needs to be useful, while, on the other hand, it demands a high tolerance for error and risk. This is true across disciplines. The design firm IDEO and the toy manufacturer Klutz (2010) recently published a book celebrating their worthless ideas: scratch-'n-sniff menus; the TV remote dumbbell; stilt crutches; and, Sleenex cuffs, for sneezing into one's sleeve (in light of the current pandemic, they might want to revisit this last one). As the authors write, "We're huge supporters of big flops and grand failures...Nobody invents anything very cool without making a lot of hysterically wrong turns" (p. 6). They offer the following advice: "Go for lots of ideas, ridiculous to practical, and then go back looking for winners" (p. 7). Similarly, scientific research depends on having multiple hypotheses to pursue, all but one of which will likely turn out to be incorrect. The definition of creativity has to allow creators to be *wrong*.

Furthermore, value and appropriateness differ by field. As Averill et al. write:

The nature of value depends on the domain of creativity. For example, a painting is judged by its aesthetic value, a scientific discovery by its theoretical value; a business venture by its commercial value. (Averill, Chon, &Hahn, 2001, 171-172)

As a result, Abraham (2019) observes that “there are potentially unlimited ways in which we could construe value or appropriateness, as this differs as a function of context and time” (p. 12). Including these measures in the definition of creativity thus fragments human ingenuity into a myriad of sub-categories. Removing them underscores the *domain general* nature of creativity. Putting imagination into action is the common denominator across disciplines: in every possible area of human endeavor, creative people devote time and energy to generating novelty (Brandt & Eagleman, 2017).

An effort-based definition also puts childhood and adult creativity more in alignment. Because children are naïve about the world, their imaginations are far less constrained about value, utility, effectiveness, or fitness. As Bateson and Martin (2013) write, childhood play “involves doing novel things or having novel ideas without regard to whether they may be justified by a specified pay-off” (p. 45).

Some researchers believe it is a mistake to view children as creative. For instance, Csikszentmihalyi (2003) writes: “Because creativity does not exist until it produces a change in the culture, it cannot be observed or measured in children” (p. 234). For Moran (2003), we only view children as creative because of low expectations:

We think of our adult lives now and sigh; we remember that it was simpler when we were younger. We could draw pictures that looked like nothing and be called talented; do little experiments that showed no results but a big mess and be called clever; write stories with no plot and be called creative. Just about anything productive we did earned us kudos from the people who loved us. (p. 235)

Acknowledging the contrast between the personal and consensual and removing the requirement for utility undercuts these arguments: children don't need to produce a change in culture; and their work doesn't need to be useful. All that is required is that they be interested in going beyond imitation and making things they haven't seen before. By those criteria, the majority of children are creative (Russ & Wallace, 2017).

While our focus has primarily been on defining creativity as a personal initiative, the importance of its social acceptance should not be under-estimated. In Kaufman and Beghetto's 4C model of creativity (2009), *cultural relevance* or *value* help to distinguish between the various levels of creative endeavor: they would be of little or no consequence for the mini- and little-c, as practiced by the young and the amateur; serve as aspirations for Pro-c; and achieves broad agreement with Big-C.

In statistical calculations, determining the *p*-value indicates whether a data set can be generalized to the population it is referencing. A low enough *p*-value depends both on strong correlations and a large enough sample size. Given a lack of consensus exacerbated by aesthetic pluralism, the often small initial audiences for new work, and the scatter-shot way in which it is critiqued, artistic appraisals will rarely meet scientific standards. As Kreitler & Kreitler (1983) write,

Artistic value judgments will remain fallible, and due to this inherent fallibility potentially harmful to this or that artist, or even to this or that artistic development (p. 211).

The test of time remains the fall-back position. But that leads to a quandary: if value judgments are required to define creativity, then science should be limited to studying

real world professional work long after the fact—as Simonton has done in his historiometric studies. Separating public reception into a separate analysis gives scientists the license to study creativity before the ink is dry.

Risks and Objections

Someone who lives an active creative life is likely to have more ideas that they can use. How do they choose which ones to realize? For instance, it is *de rigueur* for architectural firms to model multiple options for a building, only one of which will be built. The purpose of terms like *utility*, *value*, *effectiveness*, and *task appropriateness* is to incorporate a selection mechanism into the definition of creativity. How is that reflected in the proposed framework?

There are a lot of factors that go into artistic decision-making, including deadlines, the intended audience, financial risk, current vogues, their previous work, expertise, and more. For an improviser, there is a low threshold: whatever comes to mind *next* has to be best; for someone laboring in a studio, they may revise and revise for months and even years. Two of the most famous paintings of all time—Leonardo da Vinci’s *La Joconde* and Pablo Picasso’s *Les Femmes d’Alger (O. J. R. M.)*—were considered unfinished by their creators (Vezzosi, 2007; Lazzeri & Rossi, 2019; Richardson & McCully, 1991).

Simonton suggests a precise way to quantify personal utility: it indicates “the proportion of requirements that have been *initially stipulated* for an idea to be fully useful.” (p. 72). But in a low consensus field, there may be considerable ambiguity. *4’33”* was created for a benefit concert, and Duchamp’s *Fountain* for an art opening. That leads to a

paradox in Simonton's formulation. Either the personal utility score would be near zero because silent music and a toilet as art fail pre-conceived notions of utility; or it is high because Cage and Duchamp's initial stipulations were to do something radical, in which case the notion of "usefulness" can mean "something whose value is uncertain" or "which has a value that, for the moment, only I can recognize."

So if *utility* isn't part of the definition, how do we acknowledge that a selection process exists? To make something with "intention" or to "produce, share, or preserve" it is implicitly to make that choice. Life is finite, there are only so many hours in the day, and no artist, no matter how hard-working, can follow every lead. Making a commitment to follow through on a particular concept—imagined and previously unforeseen—is what separates creativity from day-dreaming. The selection process is subjective, but the outcome is empirical: a published book, a musical premiere, an improvised comedy sketch.

But the creator isn't always right—sometimes what they produce, no matter how novel, is useless. Removing a value metric from the definition opens the door to the frivolous, the random, and the delusional. In particular, Runco, Simonton, and others warn against conflating the "word salads of psychotics" with true creativity.

Consider the following examples:

Example 1:

What then agentlike brought about that tragoady thundersday this municipal sin
business? Our cubehouse still rocks as earwitness to the thunder of his arafatas but we
hear also through successive ages
that shebby choruysh of unkalified muzzlenimiissilehims that
would blackguardise the whitestone ever hurtleturtled out of heaven.

Example 2:

Fümms bö wö tää zää Uu,

Pögiff,

Kwii Ee.

Dedesnn nn rrrrr,

Ii Ee,

mpiff tillff too,

tillll,

Jüü Kaa?

Rinnzekete bee bee nnz krr müü?

Ziiuu ennze, ziiuu rinnzkrmmüü,

Rakete bee bee

The first is an excerpt from James Joyce's *Finnegans Wake*. The second comes from Kurt Schwitters' *Ursonate* ("Primal Sonata"), a musical work for solo voice based on nonsense syllables. An accomplished visual artist, Schwitters spent ten years composing *Ursonate* and performed it himself many times. Weisberg argues that intentionality "enables us to exclude merely bizarre responses" (Weisberg, 2015, p. 121), since the behavior of someone seriously mentally ill is involuntary and uncontrolled. Both excerpts are word salads; but because they were intentional, they certainly warrant being considered creative.

What about ignorance and reflex non-conformity? Many times pioneers have been rejected as undisciplined, unschooled, and uninformed. As the composer Morton Feldman once remarked, "That's why...Ives, Partch, and Cage (have) been passed over as iconoclastic—another word for unprofessional. If you're original, you're an amateur. It's your imitators—those are the professionals" (Feldman, 1985). Similarly, avant-garde artists have often been labeled as provocateurs whose only goal is to flout convention. Too often in the real world, madness, ignorance, and non-conformity have been used as cudgels to knock down work that challenge the status quo. "Utility" disadvantages the non-conformist; "intention" does not.

Weisberg (2015) writes, "All researchers accept the criterion of novelty as a defining characteristic of creativity" (p. 113). On top of that, it can be measured reasonably objectively, either by rarity of occurrence or qualitative differences with respect to some database. And it doesn't have to depend on outside judgment; a creator can come to her own conclusions. What about multiples though—cases where two people independently came up with similar output? To some, these put originality on as fragile ground as

utility. Whether it is Leibniz and Newton inventing calculus, Darwin and Wallace articulating the theory of evolution, or Graham Bell and Gray submitting their patent applications for the telephone on the same day, how do these convergences square with creativity as novelty? One way to resolve this is argue that each pair's discoveries were rare and unexpected *relative to precedent*: Darwin and Wallace were both highly creative because they broke new ground. One might also investigate: how many people were working on a particular problem? Was that itself unusual? Or examine how many people *tried* to find a workable solution as against those who actually succeeded.

In addition, originality and novelty are well articulated: their opposite is derivative, imitative, tried-and-true, etc. As we've seen, though, in low consensus fields, usefulness and value are deliberately open-ended: they can mean different things to different people, and even put artists and their public in conflict. Innovation in the arts depends on leaving these terms porous.

Implications

Because consensus is hard to reach, the closer the work is to professional level in the arts, the larger the size of the jury should be; and a diversity of backgrounds and perspectives should be represented. That means casting a particularly wide net in assembling a panel or advisory board.

Similarly, when investigating so-called "high creatives" in the arts—whether in the scanner or in psychological profiles—the pool of participants needs to be broadened. Currently, those selected for study are typically mid-career professionals who have

achieved a high level of professional recognition: in other words, their work has been deemed useful. There is an undeniable appeal to having celebrated figures involved in cutting edge research. Yet, as discussed earlier, we should expect that innovative creators in low consensus fields may generate controversy and be farther from the mainstream. History tells us that some percentage of a given generation's "high creatives" will be reassessed downwards, while others who were disregarded will see their reputations rise. The research is more likely to stand the test of time if it is broad-minded and inclusive.

There remain a host of intriguing questions about the creative process. For instance, the role of time is under-researched: that is because most studies involving creativity testing set quick deadlines—frequently as short as ten minutes--in large part because that is more convenient for participants. Yet time is clearly a factor: divergent thinking tests across more than sixty years have demonstrated that ideas "tend to get increasingly original, novel, and remote as time passes" (Beaty & Silvia, 2012, 309); Beaty and Silvia write that this so-called "serial order effect is unusually robust" (p. 310). So far, that effect has been primarily measured in short sessions: for instance, Gilhooly et al (2012) examined immediate versus delayed incubation in divergent thinking—but the incubation periods were only four minutes long. What would happen if time limits were scaled up or relaxed altogether? How far would the serial order effect lead? Is there a point of diminishing returns? In general, incubation studies have focused on divergent thinking tests (Sio and Ormerod, 2009). Could they also be applied to artistic production?

While the majority of psychological, cognitive, and neuroscientific studies of creativity have focused on idea generation, how creators select which ideas to pursue is less investigated. High consensus fields rely on experiment and prediction; and industrial design often relies on product-testing. But what about the arts? How does a creator judge their own work? For those who subscribe to the theory that creativity consists of random variation and selective retention (Simonton, 1999), understanding how these choices are made is crucial: if the job of imagination is to create an unruly meadow of ideas, how do creatives decide which ones to harvest? For those who believe that idea generation is more guided and structured (Dietrich, 2015; Goldberg, 2018), what is the mix of biological, cultural, and personal factors that lead a creator in one direction and not others? How does prior experience condition future decisions? These issues have implications for artificial intelligence: computers such as Spain's IAMUS can compose an orchestral work in a few seconds (Ball, 2012). But will it ever be able to evaluate its own production?

The public reception of new work also merits more study. A recent fMRI study scanned participants' brains as they listened to a self-selected musical track, culturally familiar music, and culturally unfamiliar music. We found that the more modular the processing during the self-selected track, the greater the amount of novelty it took to stimulate brain plasticity (Bonomo, Karmonik, Brandt and Frazier, 2020). We also found that the processing of familiar music was closer to processing English speech than it was to processing unfamiliar music: the reduced efficiency of processing culturally unfamiliar music led to a breakdown in how the brain behaved when the stimuli was more routine (Brandt, Bonomo et al, 2020). In this case, the highly novel stimulus was Gagaku, the court music of medieval Japan; but the study could easily be

extended to include cutting-edge contemporary creative work. There are other questions worth investigating: How important is early exposure? How vulnerable are people to being influenced by others? Are there safeguards for protecting against unconscious biases?

More research like Simonton's historiometric opera study is needed to evaluate how long it takes for opinions to crystallize in low consensus fields, and how stable those opinions are over time. It is also germane to study historical transitions and inflection points, to analyze how the negotiation between "private impulse and the community that receives it" takes place. Looking forward, a greater commitment needs to be made to longitudinal studies, in order to assess the fate of creative work. Is there a correlation between the degree of originality and the time it takes to reach a consensus? If so, what is that trajectory, and how does it vary between fields or different cultures? If it takes a considerable amount of time, how can science take that into account?

In defining creativity, a lot is also at stake for early learners. If, as Csikszentmihalyi asserts, creativity requires a "change in the culture," then what children produce does not satisfy that standard. He writes:

I don't know what it means to say that children are creative or they display creativity... There is really no evidence that this relates to adult creativity as we usually think of it—that is, as an original response *that is socially valued* and brought to fruition. (2003, p. 255)

For Csikszentmihalyi, it then follows that:

...Schools are not well equipped to make creativity happen, and for good reasons: Schools are institutions designed to transmit the *domain*, the results of past creative achievements that have become part of the culture. They are not supposed to enhance creativity... (2003, p. 231)

On the other hand, if creativity is defined first and foremost as a “synergy of imagination, intention, and action” and children at large are motivated from an early age to produce, share, or preserve work that is not just reproductive but bears the stamp of individuality, then it the responsibility of schools not just to “transmit the domain” but also to nurture and develop creative habits of mind (Brandt & Eagleman, 2017).

Finally, the loss of common practice is a great cultural experiment of modern times. As far as we know, it has never happened before in the history of the world. How has it changed the ways in which work is created, disseminated, and received? These are unique contemporary questions that will impact the future course of both the arts and science.

Conclusion

During his lifetime, Ficre Ghebreyesus was a celebrity chef, founder of the restaurant Caffè Adulis in New York City. After his death, his widow revealed that Ghebreyesus had left behind a studio filled with more than seven hundred paintings. A very private person, he had shared his work with close friends but rarely publicly. His widow

organized a posthumous exhibition of his art work: for the first time, the art world would have a chance to see and evaluate a passion that consumed most of his adult life.

Was Ghebreyesus creative as a visual artist? That was certainly his intention: he expended time and energy that he could have devoted to doing something else. Examining his paintings, it is clear that imagination was involved: for instance, his “City with a River” is an abstract network of lines and colors. Presumably, one could compare his work to a database of other artists to evaluate whether his paintings were overly derivative. If there is sufficient distance from precedent, then Ghebreyesus has satisfied the requirements of personal creativity.

More refined judgments about *how creative* Ghebreyesus was become a matter of *cultural relevance* or *value*, to be debated in the public sphere. Yet according to how many researchers apply the standard definition, a creative work does not exist until it is judged by experts. If we can't say that Ghebreyesus was creative when he was alone in his studio, how else could we describe what he was doing? Messing around? Dabbling? Role playing? Following an impulse? Whether Emily Dickinson's unpublished notebooks, Franz Schubert's unperformed Eighth Symphony, or Ghebreyesus' canvases, artworks that haven't been publicly unveiled during the creator's lifetime may be easily lost to posterity, but they are intentional products of imagination and exist for the person who made them. In Dickinson and Schubert's cases, their work—once discovered--turned out to be more culturally valuable than almost anything produced by their contemporaries. We can only feel awe at the motivation, industry, and vision that took place hidden from view. Especially in low consensus fields, personal creativity is

to the consensual as the quantum world is to our observed experience: they are inter-dependent but obey different laws.

As currently written and applied, the standard definition risks under-representing the non-conformist, the marginalized, the amateur, and the child. On top of that, in an age without a common practice in the arts, a reliance on external judgment becomes even more tenuous. Scientists may often have good reasons to limit themselves to effective output. But a definition needs to be all-encompassing. Runco (2018) has written: “Parsimony is one of the tenets of science...A parsimonious definition should recognize only requirements for creativity, and if something is required, it *is always involved*” (p. 251). Da Vinci’s water-walking shoes, IDEO’s Sleenex cuffs, Schwitters’ “UrSonate,” and, yes, “Skittles: The Musical” all involve imagination and agency. Taking into account the wide range of creativity from amateur to professional, low consensus fields to high ones, child to adult, and private to published work, a definition of creativity is more comprehensive and internally consistent when the making is distinguished from its reception, and *utility, value, usefulness, appropriateness, and fitness* are considered as secondary attributes rather than as primary ones.

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