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Mark A. Runco

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Updating the Standard Definition of Creativity to Account for the Artificial Creativity of AI

Mark A. Runco 

Southern Oregon University

ABSTRACT

Recent developments in AI compel an update of the “standard definition of creativity.” This short article cites various proposed additions to the standard definition, which point to Surprise, Value, Authenticity, and Intentionality. The latter two are the most useful when distinguishing human from artificial (machine) creativity. *Artificial creativity* can be contrasted with *pseudo-creativity* as well as human creativity. Artificial creativity may be the best way to describe the output from AI. Even when that output is original and effective, it lacks the authenticity and intentionality that is apparent in human creativity.

ARTICLE HISTORY

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The website for the *Creativity Research Journal* indicates that the 2012 article titled “The Standard Definition of Creativity” is the most cited of all *CRJ* articles.¹ This is not really surprising, given that the *CRJ* primarily reports research, and research usually needs an explicit definition of creativity. The Standard Definition of Creativity (SDC) points to two requirements for creativity, namely originality and effectiveness. Each of those has some breadth: Originality may be novelty, for example, and effectiveness may be utility, appropriateness, or fit. Several additional dimensions of creativity have been proposed since the SDC was published. These have pointed to value (Harrington, 2018), authenticity (Kharkhurin, 2014), intentionality (Runco, 1996, 2007a; Weisberg, 2015, 2018), and surprise (Acar, Burnett, & Cabra, 2017; Bruner, 1962; Simonton, 2012).

The debate about the best definition of creativity has recently gained urgency. That is because there are claims that AI is creative. AI may in fact qualify as creative according to the SDC, but at the same time there are compelling reasons to question the creativity of AI. This in turn implies that it may be time to update the SDC. That is the purpose of this article. It examines criteria that should be added to an updated SDC to distinguish the artificial creativity, produced by AI, from creativity displayed by humans. Authenticity is considered first.

Authenticity

Authenticity is a compelling candidate for an updated SDC. The concept of “authenticity” is, for example, just

about diametric to “artificial,” and that is what AI produces – artificial creativity. It is artificial in the same sense that “artificial intelligence” is artificial.

Authenticity implies that what is expressed is true and accurate. This is why Rogers (1970) included it in his definition of *self-actualization*. He described how a therapist can convey authentic concern to a patient who will in turn be comfortable enough to be honest and authentic him- or herself when sharing thoughts and feelings with the therapist. Rogers tied authenticity to self-acceptance and eventually concluded that self-actualization and creativity are inextricable. It follows that creativity and authenticity are inextricable.

Authenticity has also been associated with creativity in cross-cultural studies (Horan, 2007; Kharkhurin, 2014; Tan, 2016). Kharkhurin, for example, felt that the originality required for creativity in Western culture is significantly less important elsewhere. He suggested that authenticity and aesthetics are at least as important outside of Western culture. Averill, Chon, and Hahn (2001) also described the role of authenticity in Eastern creativity. Adding authenticity to the SDC would broaden its applicability.

This idea of updating the SDC was motivated by the recent claims that AI can be creative. With that in mind, the most compelling aspect of authenticity is not (a) its role in self-actualization, nor (b) its cross-cultural validity, but instead (c) the fact that authenticity is impossible for AI. Certainly machines are capable of remarkable things. They are fast and thorough when searching relevant information. They can tap huge data bases

and can compile long lists of what is relevant to the task at hand. They can also combine information into seemingly original output (Guzik et al., 2023). This is why originality and effectiveness, and even value and surprise, do not distinguish artificial creativity from human creativity. Authenticity, on the other hand, does clearly distinguish human from artificial creativity.

The *Stanford Dictionary of Philosophy* defines “authenticity” in the following way:

The term “authentic” is used either in the strong sense of being “of undisputed origin or authorship,” or in a weaker sense of being “faithful to an original” or a “reliable, accurate representation.” To say that something is authentic is to say that it is what it professes to be, or what it is reputed to be, in origin or authorship. [Authenticity] describes a person who acts in accordance with desires, motives, ideals or beliefs that are not only hers (as opposed to someone else’s), but that also express who she really is.

The *Stanford Dictionary* also emphasizes the “distinction between authentic and *derivative*” (emphasis added). This is very important because AI output depends entirely on the data it discovers somewhere in various data bases. The output is either identical to what it finds (and already exists) or, more likely, is derivative of what already exists. This constrains or may even preclude originality.

There have been claims about *emergence*. This occurs when a complex idea arises from something simple. The outcome is not a linear function of what existed before; it is truly new. The concept of emergence has often been used to describe human creativity (Estes & Ward, 2002; Rogers, 1959; Waller, Bouchard, Lykken, Tellegen, & Blacker, 1993) but recently there have been claims that certain output from AI is emergent. Examples include the computer that taught itself Bengali without being instructed to do so and the computer which taught itself to code (Miller, 2019). Yet a careful empirical analysis of the so-called emergence underlying these examples indicated that the emergences were merely *mirages* (Schaeffer, Miranda, & Koyejo, 2023). That is the term used to describe AI output which seems to be original but actually is not. The originality of the computer is a mirage, as is any ostensible initiative.

This points to a concern when evaluating the output of AI. It is one thing for an individual or group to attribute emergence or originality to some output, but something very different if there is evidence of a process that actually brings something new into existence. This is essentially the same distinction used in the 4P and 6P theories of creativity (Rhodes, 1961; Runco, 2007b), which separate Process from Product. I recently used

this distinction in an argument that AI can only produce artificial creativity because it cannot use the same processes as humans (Runco, 2023) even if the product appears to some to be creative.

If we are uncertain about the process used by a machine, all we have is the outcome or product, and thus we must rely on judgments and attributions. This is problematic because attributions of output as creative are often mistaken. Consider, for example, Miller’s (2019) description of the famous 1997 chess match between Garry Kasparov and IBM’s supercomputer called Deep Blue. Miller described how at one point “the computer came up with a sacrifice of such subtlety that Kasparov accused IBM of cheating” (p. 46). Later it was discovered that the incredible move resulted from a bug in the software. It was not a carefully chosen move but was a result of a glitch. Miller (2019, p. 40) also described how, in the 1960s, an IBM supercomputer generated random lines instead of its typical meaningful graph. The individual monitoring the output “ran down the hall shouting that the computer had produced art!” (p. 40) Here again the ostensible machine creativity was actually an inaccurate attribution. Indeed, in both of these cases there was output which appeared to be creative, but on closer inspection, it was clear that the output was not the result of a creative process. In the case of the chess match it was a glitch, and in the case of the graph, it was random output.

Intentionality in the updated SDC

Intentionality is also a reasonable update to the SDC, in part because it makes sense to ask what initiates the creative process. Csikszentmihalyi (1988) said something like this when he debated Simon (1988) about the limitations of BACON, the problem solving software. Csikszentmihalyi did not question BACON’s problem solving; instead he pointed out that the software had not found the problem to solve. This is a convincing point because human creativity very often involves *problem finding* (Abdulla, Paek, Cramond, & Runco, 2020; Getzels & Csikszentmihalyi, 1976; Mumford, Reiter-Palmon, & Redmond, 1994; Runco, 1994). AI could feasibly find original problems, but it would need to be programmed to do so. Humans can find, define, and redefine problems in a creative fashion. They often initiate this process for themselves.

I recently related intentions to problem finding and the decision-making that so often plays a central role in *positive creativity* (Runco, 2022). I suggested that educators might support the intentions that are necessary for positive creativity:

Positive creativity may involve not just problem solving but also problem finding. ... Educators must be prepared to take the good with the bad. More specifically, when creativity is encouraged, students are likely to think in truly divergent directions, which means they may offer negative as well as positive ideas. Educators should be prepared for ideas that they themselves do not understand. ... Educators should encourage careful decision-making about what constitutes a worthwhile problem (as well as how to solve such problems in a creative fashion). Quite a few instances of malevolence take the form of pseudo-problems. These must be recognized as such and attention must be directed instead to the significant problems that do plague society, such as the climate crisis, the protection of voting rights, and racial discrimination. Positive creativity is needed now more than ever before.

Students' thinking in "truly divergent directions" suggests that they can take the initiative. They may explore lines of thought that were not provided to them. The key point, however, is that educators might support intentions that lead to positive creativity.

Previously I described creative efforts that involve the intentional transformations of thought or feeling (Runco, 1996). And before that Gruber (1988) described the *deviation amplification* intentionally used by various creators who find a promising idea and alter it slightly, again and again, in order to fully understand it. A recent example of this was reported by Brandt (2022). He described how Beethoven once wrote 53 variations on a waltz theme while other composers in the same competition each submitted one. Deviation amplification is an intentional tactic used to support creative thinking. A large number of other tactics for creativity have been identified (e.g., Adams, 1982; Root-Bernstein, 1989; Runco, 2020). These are typically employed when the creator intends to find an original solution to some problem. In that sense tactics (e.g., "put the problem aside and incubate," "consider alternative perspectives," "change how the problem is represented") depend on intentionality. One last example: Rothenberg (1999) described how Janusian and homospatial processes may aid creative thinking. This example had to be mentioned because Rothenberg was explicit about the "aesthetic intent" of creators.

Thus, for some time theory and research has tied intentionality to creativity. This parallels what was said about authenticity. Both intentionality and authenticity have previously been tied to creativity, and now there is a pressing new reason to consider them for an updated definition of creativity. Their inclusion will ensure that an updated SDC distinguishes between human and artificial creativity.

Conclusion

Certain individuals or groups may attribute creativity to computer output, but computers do not use the same process as creative humans. The output will be based on what already exists. It may be derivative of existing information or a combination of existing data. In that sense it cannot be authentic (which is the opposite of derivative). Nor is it emergent or intentional. It may be original, useful, valuable, and surprising, but given what is known about human creativity, the output of a machine should be viewed as artificially creative.

The output may be useful. This means that artificial creativity might be used as a tool for particular stages of the creative process. The two-tier model of the creative process, for example, describes problem finding, idea generation, and evaluation as stages on a primary tier, and information and motivation as second tier and influences on the primary tier (Runco & Chand, 1995). AI can generate ideas which are based on existing information or derived from it (Guzik et al., 2023; Runco, 2023) so may assist with one of the primary components of the two-tier process. Similarly, Wallas (1926) described the creative process as involving preparation, incubation, illumination, and verification. AI can supply information well beyond what a human can. This is useful for the preparation stage. AI is not intrinsically motivated, however, nor does it identify problems by itself. It may be useful for practical evaluations but would lack its own aesthetic, so would be of limited assistance for the final stage of the process.

The position that AI is not creative because it lacks authenticity and intentionality is consistent with the scientific principle of *parsimony*. The output of AI may be novel. If so, it should be called novel and not creative. The output of AI might be effective, in which case it should be called effective and not conflated with creativity. That is parsimonious. If the output of AI is both original and effective, and thus consistent with the 2012 version of the SDC, we may grant that it has a particular kind of creativity, namely, "artificial creativity."

Intentionality might sound like a difficult criterion to use when studying creativity. It is, however, used with great regularity in the US legal system. Judges and juries often distinguish between lesser and major crimes (e.g., manslaughter vs murder) solely on the basis of the criminal's intent (*mens rea*). Many serious decisions made in the judicial system take intentions into account. Social scientists should be able to take intentions into account when evaluating creativity.

The main suggestion of this article is that the SDC should be updated to include authenticity and intentionality. These distinguish the artificial creativity of computers, which may be original and effective, from human creativity, which is more than just original and effective. There is an alternative to the concept of *artificial creativity*. This is the *pseudo-creativity* described by Cropley (1999), May (1959), and Nicholls (1972). That label could be used to describe the seemingly creative output from machines. This would convey the fact that machine output is not authentic. There are human forms of pseudo-creativity (Cropley, 1999, May, 1959; Nicholls, 1972), however, and thus it is more precise to use the term artificial creativity when referring to machine output which is original and effective. Additionally, the term *artificial creativity* (or AC) makes sense given that we already use the term *artificial intelligence* (or AI).

Notes

1. As of June 2023.

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ORCID

Mark A. Runco  <http://orcid.org/0000-0002-5043-7900>

References

- Abdulla, A. M., Paek, S. H., Cramond, B., & Runco, M. A. (2020). Problem finding and creativity: A meta-analytic review. *Psychology of Aesthetics, Creativity, and the Arts*, 14(1), 3–14. doi:10.1037/aca0000194
- Acar, S., Burnett, C., & Cabra, J. F. (2017). Ingredients of creativity: Originality and more. *Creativity Research Journal*, 29(2), 133–144. doi:10.1080/10400419.2017.1302776
- Adams, J. (1982). *Conceptual blockbusting*. New York: Norton.
- Averill, J. R., Chon, K. K., & Hahn, D. W. (2001). Emotions and creativity, East and West. *Asian Journal of Social Psychology*, 4(3), 165–183. doi:10.1111/1467-839X.00084
- Brandt, A. K. (2022). Beethoven and divergent thinking. *Creativity Research Journal*, 34, 1–18. doi:10.1080/10400419.2022.2088131
- Bruner, J. (1962). The conditions of creativity. In H. E. Gruber, G. Terrell, & M. Wertheimer (Eds.), *Contemporary approaches to creative thinking* (pp. 1–30). New York: Atherton. doi:10.1037/13117-001
- Cropley, A. J. (1999). Definition of creativity. In M. Runco & S. Pritzker (Eds.), *Encyclopedia of creativity* (pp. 511–524). San Diego, CA: Academic Press.
- Csikszentmihalyi, M. (1988). Solving a problem is not finding a new one: A reply to Herbert Simon. *Journal New Ideas in Psychology*, 6(2), 183–186. doi:10.1016/0732-118X(88)90003-7
- Estes, Z., & Ward, T. B. (2002). The emergence of novel attributes in concept modification. *Creativity Research Journal*, 14, 149–156. doi:10.1207/S15326934CRJ1402_2
- Getzels, J. W., & Csikszentmihalyi, M. (1976). *The creative vision: A longitudinal study of problem finding in art*. New York: Wiley.
- Gruber, H. E. (1988). The evolving systems approach to creative work. *Creativity Research Journal*, 1(1), 27–51. doi:10.1080/10400418809534285
- Guzik, E. (2023, May). Presented at the annual creativity conference at Southern Oregon University, Ashland, Oregon, USA.
- Harrington, D. M. (2018). On the usefulness of “value” in the definition of creativity: A commentary. *Creativity Research Journal*, 30(1), 118–121. doi:10.1080/10400419.2018.1411432
- Horan, R. (2007). The relationship between creativity and intelligence: A combined yogic-scientific approach. *Creativity Research Journal*, 19(2–3), 179–202. doi:10.1080/10400410701397230
- Kharkhurin, A. V. (2014). Creativity.4in1: Four-criterion construct of creativity. *Creativity Research Journal*, 26(3), 338–352. doi:10.1080/10400419.2014.929424
- May, R. (1959). The nature of creativity. *A Review of General Semantics*, 16, 261–276. <https://www.jstor.org/stable/24234376>
- Miller, A. I. (2019). *The Artist in the machine: The World of AI-Powered Creativity*. Cambridge, MA: MIT Press.
- Mumford, M. D., Reiter-Palmon, R., & Redmond, M. R. (1994). Problem construction and cognition: Applying problem representations in ill-defined domains. In M. A. Runco (Ed.), *Problem finding, problem solving, and creativity* (pp. 3–39). Norwood, NJ: Ablex.
- Nicholls, J. G. (1972). Creativity in the person who will never produce anything original and useful: The concept of creativity as a normally distributed trait. *American Psychologist*, 27(8), 717–727. doi:10.1037/h0033180
- Rhodes, M. (1961). An analysis of creativity. *Phi Delta Kappan*, 42, 305–310.
- Rogers, C. R. (1959). Toward a theory of creativity. In H. H. Anderson (Ed.), *Creativity and its cultivation* (pp. 69–82). New York: Harper & Row.
- Root-Bernstein, R. S. (1989). *Discovering: Inventing and solving problems at the frontier of scientific research*. Cambridge, MA: Harvard University Press.
- Rothenberg, A. (1999). Janusian processes. In M. A. Runco & S. Pritzker (Eds.), *Encyclopedia of creativity* (pp. 103–108). San Diego, CA: Academic.
- Runco, M. A. (Ed.). (1994). *Problem finding, problem solving, and creativity*. Norwood, NJ: Ablex.
- Runco, M. A. (1996). Personal creativity: Definition and developmental issues. *New Directions for Child Development*, 196(72), 3–30. doi:10.1002/cd.23219967203
- Runco, M. A. (2007a). Comments and corrections: Chance and intentionality in creative performance. *Creativity Research Journal*, 19(4), 395–398. doi:10.1080/10400410701756781
- Runco, M. A. (2007b). A hierarchical framework for the study of creativity. *New Horizons in Education*, 55(3), 1–9.

- Runco, M. A. (2020). Tactics and strategies for creativity. In M. A. Runco & S. R. Pritzker, Eds. *Encyclopedia of creativity*. (3rd ed., pp. 529-532). Oxford: Elsevier. [10.1016/B978-0-12-809324-5.06287-8](https://doi.org/10.1016/B978-0-12-809324-5.06287-8)
- Runco, M. A. (2022). Positive creativity and the intentions, discretion, problem finding, and divergent thinking that support it can be encouraged in the classroom. *Educational Science*, 12(5), 340. doi:[10.3390/educsci12050340](https://doi.org/10.3390/educsci12050340)
- Runco, M. A. (2023). AI can only produce artificial creativity. *Journal of Creativity*, 33, 100063. <https://doi.org/10.1016/j.yjoc.2023.100063>
- Runco, M. A., & Chand, I. (1995). Cognition and creativity. *Educational Psychology Review*, 7(3), 243–267. doi:[10.1007/BF02213373](https://doi.org/10.1007/BF02213373)
- Schaeffer, R., Miranda, B., & Koyejo, S. (2023). Are emergent abilities of large language models a mirage? *arXiv:2304.15004v2 [cs.AI]* [10.48550/arXiv.2304.15004](https://arxiv.org/abs/2304.15004)
- Simon, H. A. (1988). Creativity and motivation. *New Ideas in Psychology*, 6(2), 177–181. doi:[10.1016/0732-118X\(88\)90002-5](https://doi.org/10.1016/0732-118X(88)90002-5)
- Simonton, D. K. (2012). Taking the U.S. Patent office criteria seriously: A quantitative three-criterion creativity definition and its implications. *Creativity Research Journal*, 24(2–3), 96–107. doi:[10.1080/10400419.2012.676974](https://doi.org/10.1080/10400419.2012.676974)
- Tan, C. (2016). Creativity and Confucius. *Journal of Genius and Eminence*, 1(1), 79–84. doi:[10.18536/jge.2016.01.1.1.10](https://doi.org/10.18536/jge.2016.01.1.1.10)
- Wallas, G. (1926). *The art of thought*. New York: Harcourt Brace & World.
- Waller, N. G., Bouchard, T. J., Lykken, D. T., Tellegen, A., & Blacker, D. M. (1993). Creativity, heritability, familiarity: Which word does not belong? *Psychological Inquiry*, 4(3), 235–237. doi:[10.1207/s15327965pli0403_18](https://doi.org/10.1207/s15327965pli0403_18)
- Weisberg, R. W. (2015). On the usefulness of “value” in the definition of creativity. *Creativity Research Journal*, 27(2), 111–124. doi:[10.1080/10400419.2015.1030320](https://doi.org/10.1080/10400419.2015.1030320)
- Weisberg, R. W. (2018). Response to Harrington on the definition of creativity. *Creativity Research Journal*, 30, 461–465. doi:[10.1080/10400419.2018.1537386](https://doi.org/10.1080/10400419.2018.1537386)