

# More Creative Rage Against the Computing Machine: Creative Materials and Social Contexts

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In “Creative Rage Against The Computing Machine: Necessary and Sufficient Conditions For Authentic Human Creativity,” I proposed the following analysis of—framed as a list of necessary and sufficient conditions for—what I call *authentic human creativity*, or AHC:

**First**, AHC must be an inferential or non-inferential process that unfolds in actual spacetime (condition 1: *the processual condition*).

**Second**, AHC must generate an *output, conclusion* (in the case of inferential acts or processes), or other *product*, from some informational inputs, premises, or materials that are given or supplied to that process (condition 2: *the process-product condition*)....

**Third**, AHC must be an organic—hence self-organizing or naturally purposive, negentropic, thermodynamically non-equilibrium, and temporally asymmetric or irreversible—process (condition 3: *the organicity condition*)....

**Fourth**, as a consequence of the third condition, AHC *cannot* be performed by a machine, and in particular it cannot be performed by an AI system, any other digital computing system, or by digital technology more generally (condition 4: *the anti-mechanism condition*).

**Fifth**, as a consequence of the fourth condition, if AHC performs a function in the *logico-mathematical sense*, then that function must be an *uncomputable function* (condition 5: *the uncomputability condition*)....

**Sixth**, AHC must guarantee—in the strong modal sense of *necessitate*—a categorical improvement or upgrade in the intrinsic specific character of the informational inputs, premises, or other materials that are given or supplied to that process, an improvement or upgrade that is manifestly real in all the informational outputs, conclusions, or other products of that process (condition 6: *the transformation condition*). Correspondingly, I call this essential feature of AHC *creative transformation*.... In turn, creative transformation can happen in any one of the following ten basic ways:

(i) AHC can creatively transform *uninteresting, un-beautiful, or otherwise inferior*, informational inputs, premises, or other materials into *interesting, beautiful, or (in the case of fine art) great* informational outputs, conclusions, or other products,

(ii) AHC can creatively transform *ethically or morally bad or wrong, or at least ethically or morally non-good or non-right*, informational inputs, premises, or other materials into *ethically or morally good or right* informational outputs, conclusions, or other products,

(iii) AHC can creatively transform *ethically or morally merely instrumental* informational inputs premises, or other materials into *ethically or morally non-instrumental* informational outputs, conclusions, or other products,

(iv) AHC can creatively transform *meaningless or nonsensical* informational inputs, premises, or other materials into *meaningful* informational outputs, conclusions, and other products ...,

(v) AHC can creatively transform *logically inconsistent* informational inputs, premises, or other materials into *logically consistent* informational outputs, conclusions, or other products,

(vi) AHC can creatively transform *false* or at least *non-true* informational inputs, premises, or other materials into *true* informational outputs, conclusions, or other products,

(vii) AHC can creatively transform *contingent or merely factual* informational inputs, premises, or other materials into *necessary* (including morally necessary or *obligatory*) informational outputs, conclusions, or other products,

(viii) AHC can creatively transform *merely finite* informational inputs, premises, or other materials into *infinite* informational outputs, conclusions, or other products,

(ix) AHC can creatively transform *merely denumerably infinite* informational inputs, premises, or other materials into *non-denumerably infinite* informational outputs, conclusions, or other products, and finally,

(x) AHC can creatively transform *philosophically false, meaningless, trivial, or uninsightful* informational inputs, premises, or other materials into *philosophically true, meaningful, important, or insightful* informational output, conclusions, or other products....

**Seventh**, AHC necessarily requires the activation of all the members of a unified set of innate cognitive, caring-based, and practical mental capacities or powers that are present in all and only the minded animals possessing the essentially embodied, living organismic basis of those mental capacities or powers (condition 7: *the mental capacities condition*; see, e.g., Hanna, 2006, 2011, 2015; Hanna and Maiese, 2009). These organic and also organismic innate mental capacities or powers are: (i) *consciousness*, (i.e., subjective experience), (ii) *self-consciousness* (i.e., consciousness of one's own consciousness, or second-order consciousness), (iii) *caring* (i.e., desiring, emoting, or feeling), (iv) *sensible cognition* (i.e., sense-perceiving, remembering, or imagining), (v) *intellectual cognition* (i.e., conceptualizing, believing, judging, or inferring), (vi) *volition* (i.e., deciding, choosing, or willing), and (vii) *free agency* (i.e., free will and practical agency). Because AHC is a process that necessarily requires, in particular, the activation of the mental capacity or power of *free agency*, then all AHC must (i) be *spontaneous* and *unique*, (ii) have *ultimate sourcehood*, and also (iii) entail *deep responsibility* (whether moral or non-moral) for the existence of its products (Hanna, 2018: chs. 1-5).

**Eighth**, AHC must *also* flow from the activation of a *special non-basic or composite innate mental capacity or power*, drawing on all of the ten basic capacities or powers, whereby there's a *meta-cognitive acknowledgment* of how that particular creative transformation radically restructures some or another determinate and inherently limited domain of informational inputs, premises, or other materials, thereby revealing new rich structures in that domain, as represented from a higher-order perspective, and producing correspondingly creatively transformed human thoughts that are original insights with respect to that domain; moreover, (i) these new rich structures cannot be represented in any way *other than* from this higher-order perspective, and (ii) acknowledging them results in a *Gestalt-shift* with powerful theoretical, caring-based, moral-practical, existential, and/or sociopolitical implications and resonances (condition 8). Otto Paans and I have called this special composite non-basic innate mental capacity or power, *creative piety* (Hanna and Paans, 2021, 2022); therefore, I'll call condition 8 *the creative piety condition*....

**Ninth**, as a consequence of conditions 7 and 8, AHC must be performed by a *rational animal*, whether that animal is *human* or *non-human* (condition 9: *the rational animality condition*)....

**Tenth**, and finally, although, as per condition 4, AHC *cannot* be performed by any machine, and in particular AHC cannot be performed by any AI system, any other digital computing system, or by digital technology more generally, nevertheless, in the course of

this performance, *machines of any kind*—including AI, digital computing systems, and digital technology more generally—*can be used as tools*, provided that these machines do not *themselves* perform this process (condition 10: *the tool-using condition*).

To conclude in a nutshell, I'm claiming that *necessarily, something X is authentic human creativity if and only if X satisfies conditions 1-10*. (Hanna, 2023a: pp. 2-8)

But what about the following apparent counterexample to my analysis, as formulated by a friend of mine, Mark Pittenger, or MP for short, in e-mail correspondence?

Agreed that “authentic human creativity doesn't operate according to *any* sort of computable algorithm.” You go on to say that artists confront their materials “in such a way as to produce categorical improvements or upgrades,” that they intend “to transform them into something essentially better.” Now, I have a friend who transforms beautiful photographs of beautiful flowers into beautiful paintings. She doesn't copy the photos, as American artists learned their craft by copying paintings in the Louvre. She does what many landscape artists do: takes a photo, then uses it in her studio as a stimulus to create a painting that typically shows aspects of pointillism and impressionism. Her titles often include the word “loosely”—e.g., “Irises, loosely.” So, would that be two categorical shifts—from irises growing in her garden to a photo taken of the irises, and secondly to a painting “loosely “ based on the photo (plus on her memory of the iris, plus on her memories of all other irises she has seen, plus on her memories of and ideas about all non-photorealist paintings she has seen, etc.)? Is the latter “essentially better” than the former? It's certainly different, and occupies a different space within a pluralistic universe. She possesses consciousness and makes choices according to her desires and aesthetic principles and executes them within the limits of her abilities; so each of her works has the “aura” that Walter Benjamin ascribed to artworks not mechanically reproduced—until she posts them on Facebook and renders them digitally-reproduced common property. So she does (at least in the first place) what no machine could do. But does she think of her painting as better than its concrete, living inspiration? I suppose this is a question for aesthetics, but does this language of better/worse rightly apply in your argument in the same way that your language of falsehoods and truths in science, or non-good and good ways of moral being (not that either of the latter two sets of categories may be simply articulated) does?

Clearly, this is a *prima facie* counterexample to my analysis, because it postulates that MP's friend's production of beautiful paintings of flowers by AHC uses, as its set of creative materials, beautiful flowers, beautiful photographs of beautiful flowers, the artist's mental representations of those beautiful flowers or beautiful photographs, and the artist's essentially embodied pre-reflectively conscious or reflectively self-conscious mental acts, states, and processes with respect to those mental representations, such that

the beautiful artwork that's produced by her *isn't* essentially better or more beautiful than the individual beautiful flowers themselves or the beautiful photographs of them.

Now, I think that my view is actually consistent with this example. Works produced by AHC, including of course works of fine art, happen when creators organize, re-organize, structure, or re-structure given creative materials, in order to produce a single unified work whose intrinsic specific character or quality is a categorical improvement or upgrade in the intrinsic specific character or quality of the set of creative materials they originally confronted. If the creator had merely copied or reproduced the set of creative materials as it existed when the artist confronted it—the mere unordered *collection* or *heap* of those creative materials—then that wouldn't be AHC: a machine, especially including digital computers and other digital technology, could do that. Let's suppose, as per MP's example, that there are at least some individual beautiful objects in the set of creative materials that an artist confronts: nevertheless, the mere unordered *collection* or *heap* of them isn't itself a beautiful object. Indeed, even if *every* item in the mere unordered collection or heap of creative materials that the artist confronts were an individually beautiful object, it still wouldn't follow that the mere unordered collection or heap of them is a beautiful object. Similarly, a mere unordered collection or heap of individually great novels by different authors isn't itself a great novel or indeed a single unique artwork of any kind.<sup>1</sup> So, what MP's friend does, is to organize, re-organize, structure, or re-structure something that is not itself beautiful—i.e., the mere unordered collection or heap of items in the set of creative materials that she confronts, some of which are also individually beautiful objects—and thereby produce something whose intrinsic specific character or quality is categorically better than that of the mere unordered collection or heap of creative materials she originally confronted: namely, a single unified work of art that is itself beautiful. Or as MP pithily put it:

Got it. I wasn't considering the total bulk and range of those things constituting the heap. [My friend's] works are definitely improvements on the heap. Artists, by definition, must be supra-heapists.

So that was my response to MP's *prima facie* counterexample. In turn, that response generalizes beyond painting to all forms of AHC. In this way, for example, a

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<sup>1</sup> But what about a given novelist's complete body of work, their *corpus* or *oeuvre*, i.e., the mere unordered heap or collection of novels produced by the same author? Normally, this wouldn't itself be considered a single unified work of art. But let's suppose that it's at least possible for the corpus of some great novelist to be itself a many-volumed great artwork: as if, say, Balzac's corpus had consisted exclusively of the novels in The Human Comedy series. Nevertheless, in such a case, the corpus or oeuvre wouldn't in fact be a mere *unordered* collection or *heap* of individual novels: it would be a single unified *ordered* collection, *ensemble*, or *suite* of novels.

any work in the other fine arts (say, music), applied arts (say, architecture), formal or natural sciences (say logic, mathematics, physics, or biology), or philosophy, can build on other high-quality works in the fine arts, applied arts, formal or natural sciences, or philosophy, that are included in the mere unordered collection or heap of creative materials confronted by that artist, scientist, or philosopher, and then categorically transformed by the AHC of the artistic, scientific, or philosophical creator. A good and also particularly interesting example of this is *sampling* in recent and contemporary music, especially hip-hop (see, e.g., Rapaport, 2011). But no machines, especially including digital computers or other digital technology, can do this, not even in principle.

But in reflecting on MP's question, it became apparent to me that there's actually some conceptual trickiness involved in stating clearly and precisely what counts as "the set of creative materials" that a creator confronts and then categorically transforms by AHC, especially when we consider different art-forms, and also different kinds of creative activities other than those found in the fine arts: say, in the formal or natural sciences, or philosophy. Now, to begin with, when I say that a creator "confronts" their set of creative materials and then categorically transforms it by AHC, I mean that *they encounter, engage with, and work on, or with, or by means of, that set of creative materials*. Then, in turn, I need to be clearer and more precise about what *counts as a member of that set of creative materials* when a creator encounters, engages with, and works on, or with, or by means of, their set of creative materials, and then categorically transforms its specific intrinsic character or quality by AHC.

I think it makes good sense to be fairly liberal about what will count as a member of the set of creative materials, so let's include (i) *things in the manifestly real natural world*, (ii) *physical representations of things in the manifestly real natural world*, for example, photographs, music recordings, and legible texts of all kinds (Hanna, 2023b), (iii) *physical media or tools* used by creators when they create, (iv) *the creator's mental representations of all the relevant objects*, (v) *the mental contents of those mental representations*, and also (vi) *the essentially embodied pre-reflectively conscious or reflectively self-conscious mental acts, states, and processes* that creators perform or undergo as they create. Focusing for the moment just on the fine art of painting—for example, the kind of painting that MP's friend is doing—then the relevant set of creative materials would include:

1. the canvas,
2. the paints and other essential paint-related tools, like paint-thinners, mixing-boards, and brushes,
3. the flowers themselves,

4. photographs of the flowers,
5. the artist's sense-perceptual, memory-based, and imaginative mental representations of the canvas, paints, flowers, and photographs of the flowers,
6. the mental contents of those mental representations, and
7. the artist's essentially embodied pre-reflectively conscious or reflectively self-conscious mental acts, states, and processes, insofar as they're directly involved in the production of the painting.

Now let's suppose, as per MP's example, that *some* of these creative materials are indeed individually beautiful—for example, the items under 3. and 4. At the same time, however, *some* of these materials *aren't* individually beautiful—for example, normally, the items under 1. and 2. Moreover, it would seem to be some sort of conceptual mistake to hold that mental representations and their contents, and essentially embodied pre-reflectively conscious or reflectively self-conscious mental acts, states, and processes, could be *either* beautiful or *not*-beautiful, for example, drab or ugly. They're just not the kinds of things that can be one or the other. So they're non-beautiful and also non-not-beautiful. Most importantly, however, the total unordered collection or heap of all those items under 1-7 certainly isn't *itself* beautiful, even though it contains some individually beautiful objects. Therefore, when MP's friend creates by means of painting in that way, she organizes, re-organizes, structures, and re-structures the total collection or heap of creative materials into a single unified object—i.e., the painting—that's individually beautiful, whose intrinsic specific character or quality is a categorical improvement or upgrade of that of the total collection or heap of creative materials that she originally encountered, engaged with, and worked on, or with, or by means of, and then categorically transformed by AHC.

Let's now consider a slightly different sort of example, although again from the fine arts, that will also prompt a further elaboration of my account of what counts as a member of the set of creative materials confronted by a creator. I'm thinking here specifically of Marcel Duchamp's 1917 "Fountain" (TM, 2023) and Andy Warhol's 1964 "Brillo Boxes" (PMA, 2023), as per the images displayed at the top of this essay. For the purposes of argument, and in order to avoid re-hashing longstanding controversies and debates about artistic modernism and what counts or doesn't count as "fine art," let's stipulate that these productions are not only works of fine art, *but also* examples of AHC, thereby manifesting categorical improvements or upgrades in the intrinsic specific character or quality of their creative materials, *even though the artists didn't actually physically transform their physical creative materials*—or at least, they physically transformed them *only* very minimally and superficially. Duchamp used a real urinal and merely

signed it “R. Mutt, 1917.” And Warhol’s brillo boxes are precise replicas of real brillo boxes. That’s why such artworks are called “ready-mades.” Nevertheless, Duchamp and Warhol obviously engaged in various essentially embodied pre-reflectively conscious, reflectively self-conscious, intentional mental acts, states, and processes with respect to the actual installations of their artworks, including giving them their titles, etc., and they *also* thereby confronted—in the sense defined above—the collective intentionality of all the people who jointly constituted the social institutions of their early 20<sup>th</sup> century Paris and mid-20<sup>th</sup> century New York *artworlds* (Danto, 1964, 1981). So, the set of creative materials that Duchamp and Warhol encountered, engaged with, and worked on, or with, or by means of, included *not only* items belonging to the six-part list I spelled out above, *but also* specific social institutions in actual sociocultural and historical times and places, jointly constituting specific *social contexts*, i.e., their *artworlds*. Moreover, Duchamp’s and Warhol’s confrontations with their *artworlds*, in addition to the production of the artworks themselves by AHC, also generated what Walter Benjamin aptly called the social-institutional *aura* of non-mechanically-reproduced artworks that are embedded in those *artworlds* (Benjamin, 1935/1969).

Here, then, is my expanded list of what will count as a member of the set of materials confronted by creators: (i) *things in the manifestly real natural world*, (ii) *physical representations of things in the manifestly real natural world*, for example, photographs, music recordings, and legible texts of all kinds (Hanna, 2023b), (iii) *physical media or tools used by creators when they create*, (iv) *the creator’s mental representations of all the relevant objects*, (v) *the mental contents of those mental representations*, (vi) *the essentially embodied pre-reflectively conscious or reflectively self-conscious mental acts, states, and processes that creators perform or undergo as they create*, and (vii) *specific social institutions in actual sociocultural and historical times and places*, that jointly constitute *specific social contexts*. Generalizing this seventh element beyond *artworlds*, this would also apply to formal-scienceworlds (logicworlds and mathworlds), natural-scienceworlds (physicsworlds and biologyworlds), philosophyworlds, and so-on.

I’ll conclude by returning to my creative rage against the computing machine. All machines, especially including digital computers and other digital technology, operate *only on* well-defined, restricted sets of given physical or informational inputs. Moreover, all machines, especially including digital computers and other digital technology, operate *only within* some or another social context. Nevertheless, by the very nature of those machines, especially including digital computers and other technology, *they cannot operate on the social contexts in which those very machines operate*. Therefore, machines, especially including digital computers and other digital technology, are *neither* capable of AHC, *nor* can they produce Benjaminian *aura*. This is precisely because, by their very nature, as operating only on well-defined, restricted sets of physical or informational



inputs, and as operating only within some or another social context, all machines, especially including digital computers and other digital technology, *cannot get direct access to the social contexts in which they operate*. For direct access to social institutions in social contexts is possible *only* by means of rational human animals' essentially embodied pre-reflectively conscious, reflectively self-conscious, intentional acts, states, and processes (Maiese and Hanna, 2019). But all such social contexts necessarily belong to the total set of creative materials confronted by rational human animals when they actualize their innate mental capacities for AHC. Therefore, essentially unlike machines, especially including digital computers or other digital technology, rational human animals, insofar as they exemplify AHC, *always have direct access to the social contexts in which their AHC operates*.

So, early 20th century machines produced all those urinals, and mid-20th century machines produced all those brillo boxes—by the millions, no doubt—including of course the very urinal that Duchamp used in 1917 and the very brillo boxes that Warhol used in 1964 when he made precise replicas of them. But none of those machines, not even in principle, could have produced the categorical improvement or upgrade in the intrinsic specific character or quality of the set of creative materials confronted by Duchamp and Warhol, especially including the Benjaminian aura of their equally celebrated and notorious artworks, insofar as they created *Duchamp's "Fountain"* and *Warhol's "Brillo Boxes"* by their AHC. Correspondingly, no 21<sup>st</sup> century or future digital computer or other digital technology can do this sort of thing either, not even in principle. For, even leaving aside their other inherent limitations, digital computers and other digital technology necessarily *aren't* social animals, whereas rational human animals necessarily *are* (Maiese and Hanna, 2019).<sup>2</sup>

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<sup>2</sup> I'm grateful to Mark Pittenger for the thought-provoking e-mail correspondence that inspired this essay and also constituted a principal part of its creative materials.

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