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Creativity as Potential: Humanity's most important trait reimagined

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Creativity as Potential: Humanity's most important trait reimagined

Senior Project Submitted to
The Division of Social Studies
of Bard College

by

Jess Berkun

Annandale-on-Hudson, New York
December 2022

Dedications

For anyone who has ever been in awe of their own mind, or wondered about where their thoughts come from
For anyone who has ever created and loved their creation
For anyone who is stuck and has never made anything
For anyone who has ever doubted their ideas
For anyone who wonders how things can change

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I wish you all the very best, and most creative, free, potential-filled moments. I hope I can do any of what you did for me back tenfold in all your endeavors.

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Introduction

There are inexplicable forces of randomness that drive the course of history forward. Mutations in genes lead toward evolution and account for which beings survive and do not;the human brain's capacity to generate new ideas leading toward what is potentially feasible by our species. Today, this generative force might even be seen in how algorithms are created, where the algorithms that do their assigned job are used, even when the designers don't know how exactly how these algorithms work. These algorithms, too, are randomly generated methods, by a machine instead of a mind or evolution, which then get pruned.

Similarly, religions around the world are based upon an act of "creation," an ability that was once only reserved for gods. At some point, this ability became part of humans, too.

Mihalyi Csikszentmihalyi, one of the most prominent and cited figures in the field of creativity, argues that the trait that separates humanity from any other animal is that of our creativity, this ability to generate thought, seemingly from nothing (1996). Even in the absence of any new input, the human mind keeps generating, processing, and making new ideas and information. It is a mysterious process that can be understood in many ways.

This practice also brings extreme joy for many, and this can especially be seen in flow states. Csikszentmihalyi writes that when we are involved in creativity, "we feel we are living more fully than during the rest of life… What is remembered are the high points: the burning curiosity, the wonder at a mystery about to reveal itself, the delight at stumbling on a solution that makes an unsuspected order visible" (1996).

The moment that a never-before idea or thought emerges is important, at both the individual and and collective level. These moments can define the course of a lifetime or part of

history, and the amount of change which is possible can either limit or allow for great differences. These moments of creation are heavily intertwined with human free will itself.

Given the problems that plague our species, there can be nothing more important than allowing our minds to create, as uninhibited as possible, and drawing inspiration from new sources.

First, in Part 1 I provide a necessary background of both the psychological and philosophical histories of the concept of human creativity. By no means do these serve to encompass all of the ways in which this ability has been imagined, but it frames this thesis within a literature context, both through philosophical and psychological theories, and provides a vocabulary which will help to imagine the topics that follow. I look at the many tests of creativity and discuss how they, in one way or another fail to fully encompass the full scope of what creativity is, instead opting to measure one small part.

Second, in Part 2 I will analyze theories of mind wandering and free will, in order to more fully understand and investigate the specific mechanism that drives thought forward, in its isolated state. The ideas of "aha" moments and mind wandering more closely approximate how creativity functions in an individual. Then, I explain how creativity is actually free will, and the specific mechanisms through which this functions. One can have the most generative mind possible, but if none of the ideas are held as true possibilities, they no longer hold potential, and the person has less free will. This idea of creativity as potential is heavily influenced by Dean Keith Simonton's theories, which are discussed in this section.

Finally, (Part 3) these theories will be applied and understood through real-life issues that plague humanity currently. Specifically, the representation of Palestinian people in Western media will be analyzed, and potential new representation will be presented. This is not only a

political issue, but a moment through which creative potential can be said to exist. Similarly, I will be discussing climate change not only as an all-encompassing problem that affects us currently, but asa perpetuating idea that exists in opposition to many of the ideas humanity has existed with, and one that generates potential on many levels.

These theories have led me to conclude and become aware of many forms of creativity, but specifically led my thinking to creativity as a measure of the potential for things to be different, in simple terms. It is impossible to measure, in all its facets, in its complexity, and exists completely differently in many cultures, can be individual or societal, and is godlike in its way of making anew. Certain aspects of creativity can be measured, but on the whole, it is an aggregate of all of the factors that allow for the potential of things to be different than they have previously been. There is no need to exclude certain things from being creative, only to understand them as inevitably made from the factors around them. The child who paints for the first time is being creative, but the potential for creation they have been given is a paintbrush and a piece of paper. The place to measure their creativity is that circumstance that gave them that opportunity. The person who mixes foods together to try something new is creative, but they are constrained to only certain possibilities by the foods available to them. If the child were able to create with any object in their given environment, to peel wallpaper or smash tables, they would be more creative, but still limited by their environment. As will be discussed later, the point at which the ideas are generated is the amount of creativity that exists– the potential. In no world can all of the creative ideas be realized, but they can all exist at a certain point in time, like potential energy.

Creativity, as it is most helpful to us now, is a form of potential. It cannot be measured, nor is it helpful to try to do so. Creativity is not only the individual who paints something never

before seen, not only the individual who comes up with the idea for a new product or scientific discovery, but the thought that is allowed to be imagined. Creativity is the potential for one to believe their own thoughts have merit, in the face of an issue they have never before thought about, the potential for things to change. Creativity is not only the one person, it must be an aggregate of the potential for things to change in a single moment, the potential for things to be different than they have previously been. To believe that creativity can be measured, that it can only be one skill for one person is to limit what change can mean, and to limit what potential can exist. Creativity is not necessarily the thing that is created, it is the moment that a person or a society allows a potential idea to exist that has never existed before. It is not the creation of a new thing after it has been planned, it is the person believing that their strangest thought has merit and they can hold the authority to speak. Creativity is not only the new solution, it is the ability to see something as it has never been seen before– a group of people, a way of organizing society, a way of being human. Creativity is potential, free will, and change.

Part 1: The Many Faces of Creativity:

A necessary vocabulary and context

Chapter 1: Psychological Creativity

Functionality and Originality

Creativity is traditionally thought of as a combination of functionality and originality (Kersting, 2003). Originality refers to the novelty of the idea, or whether it's been done before, and the functionality refers to a level of usefulness or adaptivity (Kersting, 2003). One could interpret something like a very strange dream as being high in originality but low in functionality. Something like having the idea to mix chocolate sauce into milk to make chocolate milk, or mix multiple cereals together might be extremely functional, while not being original.

The functionality of creativity acts almost as a secondary measure of an internal process, a resulting characteristic of something that is different from what is being measured. One can imagine the ideas being formed in the individuals' mind, and the ways in which they grasp for new uses, before the filter of functionality. The necessity of originality is seldom debated, but functionality can be more difficult to pinpoint (Clapham, 2011, p. 458). If the original idea is not created with some kind of intent, one could consider it to not be creative. This intent can be any number of things, including expressing one's own emotional state or presenting a new method or solution. Something like a random thought or a dream could be extremely original, but does not become "creative" until the dream or thought is applied in some way. The measure of functionality introduces a number of gray areas, however. For example: Does expressing a dream to a friend count as functionality, in that it is entertaining and leads to good conversation? Does one original thought become functional if it is the beginning of a train of brainstorming that does indeed lead to a very functional and useful thought? It could even be the case that any thought

that is of interest to the individual who has it is automatically functional; but would this entail that any original thought is creative?

Clapham also points out that many creative works were not considered to be appropriate at the time of inception (2011, p. 458). This would imply that originality is a more stable metric, while functionality can change over time. An idea that has never before existed will always be novel and original, but it won't always be useful. This can be imagined like the differences between applied and basic research[1] in psychology; applied research is like functional creativity, and basic research is like originality. An idea that is original might not be useful, but it could be applied later. In terms of research, basic research is done even without knowing how it could end up being helpful, and this is like originality in creativity.

Still, originality is not entirely a measurable thing, either. In order to establish something as original, one requires a point of comparison (Clapham, 2011, p. 459). Csikszentmihalyi (1996) writes, "There is no way to know whether a thought is new except with reference to some standards, and there is no way to tell whether it is valuable until it passes social evaluation." Originality can exist in terms of all of humanity, within a culture, or in an individual context. Originality for a child likely implies them coming up with an idea that has previously existed many times. Whether any idea can truly and completely be original is also questionable; it can be imagined that the same thought could have been had by two different people at very different times in history. There is no way to account for "true" originality.

[1] Applied research is research that is used towards a specific end, while basic research is knowledge for knowledge's sake. In the case of COVID vaccines– researching how RNA vaccines might work would be basic research, while researching in 2020 how to specifically apply this to COVID is applied research.

Divergent Thinking

Creativity, in terms of problem solving, is often thought of in terms of divergent and convergent types of thought, as defined by Joy Paul Guilford (1967). Guilford is known for giving a speech to the APA about creativity in 1949, which kick-started research in the field for it. Guilford has had a large influence on the field of intelligence as well, having identified 180 different aspects of intellect. Convergent thinking requires utilizing already formulated solutions or ideas and applying them to a new situation, while divergent/lateral thinking deviates from commonly used or previously taught strategies. In convergent thinking, someone might use a fork to eat a food, or even a food that doesn't normally get eaten with a fork. That would still be applying it within its normal range of use. However, if someone used a fork to dig a hole, that would be considered divergent thinking. Guilford also defined 4 characteristics through which he described creativity or divergent thought. He accounts for fluency, or producing many ideas in a short number of time, flexibility, or the variety of approaches, originality, or the newness of the ideas, and elaboration, the ability to systematize and organize an idea, or actually carry it out (1967.)

Interestingly, Paul Torrance, famous for his creativity testing, introduced two new ways of measurement to Guilford's scales, those being Abstractness of Titles and Resistance to Premature Closure (Torrance & Ball, 1984). The first, "Abstractness of Title," relates to creativity's requirement of abstracting thought and moving beyond concrete labeling, while "Resistance to Premature Closure" represents a degree of openness and a consideration of a variety of information. This iteration of the tests also removed flexibility from the tests because of its correlation with fluency. The two new ideas could be thought to rest on top of Guilford's original fluency, originality, and elaboration, where an amount of openness allows for any of the

ideas generated, no matter how many (fluency) or how original, to be held as possibilities and allow for elaboration. In this way, it acts almost like functionality, in the original originality-functionality dichotomy. However I would argue that openness functions differently from functionality. While functionality is set societally and contextually, the openness to new ideas is a mindset that allows one to imagine things existing differently than they are. Functionality assumes a certain amount of context that offers a use for the imagined idea, while openness to change allows one to imagine a completely different context entirely.

Imagining creativity as divergent thought is similar to remote associations. To many, the creative person is one who can draw a connection between two seemingly unrelated ideas. One can see this in a metaphor in a poem, which compares one thing to another with a similar characteristic. This idea originates from Sarnoff A. Mednick's 1962 paper, "The Associative Basis of the Creative Process," where he explains in many areas, both scientific and artistic, where this associative property is seen. He discusses three processes that lead to these kinds of connections: serendipity, similarity, and mediation. Serendipity occurs when one stumbles randomly across a connection, similarity occurs when two things are similar and are then subsequently paired, as in the metaphor mentioned earlier, and mediation involves intentionally bringing together similarities between two things.

Broader, more social metrics

Another way of differentiating types of creativity is in "Little C" creativity in comparison to "Big C" creativity. Csikszentmihalyi explains "Big C" creativity, or "eminent" creativity as being reflected in culture-changing achievements, not only in the mind of one individual (1996). This is contrasted with "Little C" creativity, or the everyday creativity that many people experience, like "aha moments." "Little C" is seen in children and helpful in problem solving and

creative tasks. More recently, Kaufman & Beghetto have identified the developmental levels of creativity in their "Four C Model" in order to help teachers better nurture creativity (2009). Along with "Big C" and "Little C" they add "Mini C" and "Pro C" creativities (making the order, from smallest to largest: Mini, Little, Pro, Big). "Mini C" creativity is the type inherent in learning and doing a new task, like a child creating a painting for the first time that is meaningful to them. "Little C" would reflect growth from this stage. The "Pro C" level represents the ability to be creative in a professional setting, or with deliberate practice and training.

This kind of metric clarifies the more social, external factors of creativity. Rather than simply analyzing an idea, creativity can also be analyzed more broadly, based on the cultural contexts that created it, as well as how it in turn affects culture. Another way of doing this is the categories of the 4Ps (Clapham, 2011, p. 459-460). Creativity can be grouped broadly into products, people, processes, and environmental press, and many studies focus on how these factors contribute to creative outcomes (Clapham, 2011 p. 460).

In one way or another, each of these definitions fail to encompass all of what creativity is, instead opting to focus on a small piece of the puzzle. Originality and functionality both require specific frames of reference, and can be changed. They also only analyze the resulting creative thought, not the social factors that led to the generation of the thought. Divergent thinking follows that same flaw, and is impossible to measure completely. The social metrics, like "Big C" / "Little C" and Clapham's 4 Ps can categorize creativity into broader, social metrics, but fail to look at the thought processes that lead to their external results. Calling creativity "the potential for things to be different" can fully encompass both the hyperspecific thought and this broader social connotation of creativity. It can also encompass the theoretical, philosophical idea of creation, as will be discussed in the following section.

Chapter 2: Philosophical Creativity

Creativity can be looked at through a psychological lens, but also through a more artistic and conceptual one. This chapter concerns itself with the history of the idea of human creativity. The fact that the human concept of creativity is compared to that of a God in many cultures lends itself to how crucial and important this skill is to humanity. The question of our creativity is on par with our very humanity and free will itself, as many philosophers and scholars argue. To bring something into being, especially from nothing, is to create change, on the most fundamental level.

There are many origins and beginnings for the concept of creativity and here I have only analyzed a few of them. Weihua Niu and Robert J. Sternburg discuss and compare Eastern and Western philosophies of creativity using the ancient Greeks and the ancient Chinese philosophies, and I have followed their lead in that comparison, supplementing their findings with other sources.

Western ancient history

As modern psychology has come to understand creativity as a combination of originality and functionality, the artistic and philosophical world has grappled with this same divide for centuries. As an example of this constant argument, the Greeks had separate theories for different art forms. The ancient Greeks believed that artists, specifically painters, musicians, or sculptors, imitated nature and were subject to certain laws and rules in their creation (Tatarkiewicz, 1977). Art, for them, involved a knowledge of rules and an ability to apply these rules–meaning that if too much originality was involved in art, it would actually be a negative thing. Artists were imagined more as discoverers than inventors. The only exception to this rule was the poet, who

was thought to bring to life a new world instead of imitate, and not bound by rules. At no point was this divide clear, however; as the Greek theorist Longinus would write that even in poetry, all can be done via method, and Aristotle would attribute poetry as neither true nor false (Tatarkiewicz, 1977). This is similar to Mednick's idea of connecting disparate ideas– there is a novelty, but also a similarity to what has existed.

The pairing of the ideas of artist and creator is very familiar to us, but as Tatarkiewicz explains, these concepts have not always been one and the same. Tatarkiewicz divides the progression of the term "creativity" into four stages. At first, it did not exist at all; the Greeks had no term for it, and the Romans did, but never applied it to the fields of philosophy, theology, or art. Second, the term was used, but only in theology, as creator was a synonym for God. Only in the 19th century did "creator" become used to describe art. During this time, it could only be used to describe artists, and it was a synonym for artists. In the 20th century, the expression began to be used to describe all of human culture– used in sciences, politics, and technology. Creativity can now describe not only the process in the mind of the creator, but also the product of that process.

The origin of all things, creativity or otherwise, is a contentious idea in Western history, as some theories would argue that all that will be created already exists in some form, independently of human activity, while others argue that humans are responsible for their creativity. (Niu & Sternberg, 2006). The first of these would be imagined to be divine-inspired creativity, and have emanated from one or multiple gods. In Western thought, it originates from the Greek idea of the Muses inspiring any kind of creation, as well as the biblical idea of God's initial creation from nothing (Niu & Sternberg, 2006). On the other hand, individual creativity,

which emerged later, would be based on the notion that the human mind can bring something entirely new into being.

Eastern ancient history

While creativity in Western philosophy can be imagined to be a more individual idea, very specific to the person creating, early Chinese philosophy of creativity focuses less on individual creativity and novelty and more on what Niu & Sternberg call "natural creativity" (2006).

A certain kind of divine creativity can be said to have existed in Chinese thought, but there was not a fully personalized "God" in the way that Western philosophies have. Ancient Chinese did believe in a supernatural moral authority, which was called Tian (Heaven), but the popular and influential concept was Dao/Tao, from Confucian and Taoist philosophies, representing an ultimate force of nature. Instead of a God creating everything, in ancient Chinese thought, the conflict, change, and interaction between yin and yang is what creates the world. As Niu & Sternberg write, "Dao is the unity of two opposites, yin and yang… Yin manifests dao as an inexhaustible source from which every form of energy or activity is derived, whereas yang manifests dao as a form of activity that is ever creative, but that has a beginning and an ending and therefore remains exhaustible. Thus, when yang exhausts itself, it will fade into yin, and when yin dominates, there is then greater promise of yang activity. In the process of yin-yang movement, everything was created" (2006). There is a certain faith in the natural exchange of ideas here, a way in which ideas can reconnect, but never be completely from nothing.

Between Western divine creativity and Chinese natural creativity, some similarities exist. Notably, they represent the ultimate origin of all things, this ultimate origin endlessly produces and renovates changes, and Tao/creativity creates all goodness. The differences lie in the

principles of novelty and individuality. Chinese natural creativity can involve novelty, as in the Dao's ever-renovating and producing, but it does not matter whether these things are novel as much as in Western thought. Novelty might be a prerequisite for Western divinely-inspired creativity, but this is not the case in Chinese natural creativity. Also, while some Western philosophers entertained the idea that the human mind was the origin of creativity, this was not a consideration in Chinese natural creativity, which imagined humans as actually the same as nature. Humans experiencing creativity is the same as the universe's creation, just acting through a person. Achieving great levels of creativity, as included in perfecting one's' humanity, was a life goal for many Chinese scholars (Cheng 1991).

The ways in which time is conceptualized in Eastern and Western cultures can also lead to a difference in how creativity is viewed. For example, from a Hinduist perspective, time is more circular than linear, meaning that any creative discovery is more of a re-discovery than a specific unearthing (Westwood & Low, 2003, p. 239). This idea of "re-discovery" instead of complete newness can be imagined to be similar to the ideas of Mednick, discussed in the previous chapter, depending upon whether pairing by association creates originality. Does pairing two things together based on a similar trait create newness, or is that just a re-use of previously existing ideas?

Cultural creativity today

These philosophical roots in the West and East affect modern peoples' understanding of creativity. In the West, the focus of creativity is on the individual and on novelty (Niu & Sternberg 2006). Creative acts are seen as problem-solving, linear, and forward-moving (Westwood & Low, 2003, p.239). In the East, Chinese believe moral goodness and contribution to society are more important, although it has also been affected by the Western perceptions, and

a contemporary perspective shares focus on novelty and individualism. Westwood & Low write that Western creativity is more focused on the tangible outcomes of the process, while Eastern creativity focuses more on the role of creativity in providing personal fulfillment and connection (p. 239, 2003).

Westwood & Low (2003) write that creativity involves a social dimension, and is not created in a vacuum (p. 235). Models of creativity that make sense in one culture do not necessarily make sense in another, meaning that it can take many different forms (p.236).

The field of psychology as it exists today is extremely biased towards Western thought, both in its conception and philosophies and its practices. Specifically, the problem of WEIRD (Western, Educated, Industrialized, Rich and Democratic) populations being over-sampled and making up much of the information about human behavior has been well discerned and publicized in recent years (Azar, 2010). As this issue pertains to creativity, this bias should be held in mind while reading any psychological writing. By no means should this project be taken to imagine all forms of creativity; rather it should be taken as a way to encourage more ways of imagining creativity. Westwood & Low (2003) argue that culture has an effect on the very conception and processes of creativity and impact how it is nurtured. They explain that the Western views of creativity are taken to be the default, of which all gets compared to and lay out three problems caused by this (p. 237). The first is the tendency to apply any kind of universal theory onto all of creative processes, the second is promoting one approach to creativity over others, and the third is falsely simplifying differences into “polarizing dimensions” (p. 237). They advocate for a more careful and nuanced reading and interpretation of the many cultural differences that exist. Furthermore, even beyond this, there is a lack of creativity research outside

of the Western corpus which makes it difficult to not fall into these problems (Westwood & Low, 2003, p.237).

Chapter 3: Creativity tests

Measuring Originality?

While the concept of divine-inspired creativity emerged first, almost all contemporary scholars or psychologists studying creativity focus on individual creativity. Discovering whether creativity comes from a divine source or the human mind is not possible for psychology, but seeing an end result is possible. Similarly, measuring the results of creativity, at least as it applies to certain contexts might be possible, but measuring originality itself is not. There is something inherently counterintuitive about studying creativity; how can one measure originality? Can pure idea generation become predictable?

In all of the ways I investigate below, a certain facet of creativity is analyzed, but the factors that lead to idea generation are innumerable and not possibly understandable by any test. M M Clapman writes, “In assessing creativity, the goal is not to predict specific creative outcomes, but rather to measure characteristics related to creative production irrespective of specific outcomes. Considered in this light, assessment of creativity is feasible and, given the importance of creativity for individuals, society, and culture, it is critical to understanding human nature.” (2011, p. 458). Choosing to measure creativity means acknowledging that you are trying to measure the production of ideas, but being unable to do so without providing a context for them. Measuring creativity without context would be measuring the thoughts that the brain produces without their merit or context.

Many of these tests, in what they choose to measure, effectively make an argument about what creativity is. Most can be understood as either measuring the factors around an individual, their performance in one specific instance, or the individual's behaviors in general, which would make them creative.

"Big C" and "Little C"

Clapham explains that "Big C," or eminent creativity, and "Little C" or everyday creativity, must be studied in different ways. Eminent creativity must be examined through case studies or histriometrics, or retroactive study of human achievement. These achievements might be an ideal standard of some kind for creativity, but information about them is extremely limited by what information is available historically. Any study of this kind of creativity can be imagined to be lacking in a large amount of vital information and specific details. Everyday creativity usually looks more at the present, allowing for more methods of assessment. These methods usually compare a participant's creativity to others, making a kind of relative creativity. The methods discussed here are of this type, and they are at best relative measures.

Divergent Thinking Tests

Divergent thinking tests (DT), after Guilford's concept of Divergent thinking, are the most common tests of creativity. They are the most frequently used to test everyday creativity and usually ask participants to produce multiple ideas in response to specific stimuli. A Divergent thinking test might ask one to draw a picture using an incomplete figure, respond to an imaginary situation, or list possible uses of an object. This taxonomy includes the Torrance Tests of Creative Thinking (TTCT), developed in the 50s and published originally in 1966, with updated versions coming in later years. Ellis Paul Torrance himself defined creativity as "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements,

disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results." (1966, p. 6) This definition is similar to Guilford's ideas of problem solving, but interestingly adds in a sort of "sensitivity," or awareness. As explained by Kyung Hee Kim (2006), Torrance's tests do not entirely operationalize his definition of creativity, and he did not suggest that they be used alone as a basis for decisions. Torrance also stated (1974) that showing a high degree of abilities on the TTCT does not guarantee a person's chances of behaving creatively. Even the creator of these tests acknowledges their shortcomings.

Eight Categories

Hocevar and Bachelor divide the types of creativity tests into eight categories: divergent thinking tests (described above); attitude and interest inventories; biographical inventories; personality inventories; ratings by peers, teachers, or supervisors; ratings of eminence; judgments of products; and self-reported creative activities (p. 53, 1989). They classify more than 100 examples of creativity testing into these categories. Attitude and interest inventories, or self-assessment inventories, focus on a person's characteristics. They ask questions about the individual's interest in creativity, making the assumption that a creative person will favor creative activities (Hocevar & Bachelor, p. 54, 1989). These kinds of tests might ask about humor, risk-taking, personality, hobbies, and other similar individual qualities, all from the individual's perspective (Clapham, 2011, p. 461). The next type, biographical inventories, assume that an individual's current behavior is determined by past experiences (Hocevar & Bachelor, p. 55, 1989). They might ask questions about current and past hobbies, leisure activities, family history, childhood environment, and educational experiences (Clapham, 2011, p. 461). Clapham writes

that attitude and interest inventories and biographical inventories are easy to administer and have relatively adequate validity[2], even between the two test groups (2011, p. 461). Similarly, self-reported creative activities involves the individual reporting counts of creative accomplishments in their life (Clapham, 2011).

Personality inventories assess an individual's typical way of responding to a situation and test creativity as a set of personality traits rather than cognitive factors (Clapham, 2011, p.461). These usually take the form of questionnaires that ask questions believed to relate to personality traits. The most studied of these is the Big 5, which studies traits of extraversion, emotional stability, openness to experience, conscientiousness, and agreeableness (Clapham, 2011, p. 461). Of these traits, openness to experience has been most frequently found to be associated with creative performance and extraversion has been found to relate positively to performance on DT tasks and creative occupations with social interaction (Clapham, 2011, p. 461). The Big 5 traits are very broad, though, which makes it difficult to find which parts of personality relate to which parts of creativity.

Hocevar & Bachelor write that ratings by teachers, peers, and supervisors is the least homogenous category and is mostly defined by the method of having a knowledgeable individual report on creativity (1989). Clapham writes that for "Big-C" creativity, the evaluator would have to be an expert in that field, but for everyday creativity, this individual would just be someone who knows the person well (2011). Some scales have been developed to rate students, as well as metrics for parents to assess their child's creativity (Clapham, 2011). Oftentimes, ratings by a teacher or supervisor are used to validate the validity of other creativity tests (Clapham, 2011).

[2] Validity in psychology refers to a test's ability to measure what it aims to measure. This is typically compared to reliability, which measures the consistency of a test.

Eminence of creativity refers to the figures who have been the most creative, as in "Big-C" creativity (Clapham, 2011). They represent great case studies for what "ideal" creativity might look like. Similarly, for "Judgement of Products," knowledgeable individuals will rate creative products from a person in order to determine their level of creativity. Many judges and experts can rate a product on many different criteria (Clapham, 2011).

Clapham suggests that environmental climate inventories be added to this taxonomy (2011, p. 460). This involves looking at the factors around an individual that shaped their creativity, including their work environment, safety, people around them, and support. Clapham writes about this as a workplace-specific type of investigation, and it seems to differ from biographical inventories in that it inquires about the current work environments of an individual instead of just the past ones.

Domain Specificity & Conclusions

Attempting to understand creativity, separate from specific applications is extremely difficult. John Baer argues for what is called "Domain specificity" for creativity (2016). Here, he states that there is no creativity separate from any specific task. Baer writes, "A theory of creativity may work in one domain (such as the domain or domains in which it has been tested) but not work at all in others, which is perhaps why creativity research is rife with conflicting results. And even when a theory seems to work in multiple domains, the content of the theory is likely to be completely different as one moves across those different domains" (p. 55). For example, someone who is very intrinsically motivated and open to experience in studying astronomy might be the opposite in their creativity for writing fiction, and there is no way to measure each of these creativities. Most studies of creativity would likely hold that this person is a creative person across all domains, when that might not be the case. Given this theory, many of

the above tests fail to encompass all of creativity. A DT task might measure an individual's ability to interpret a line into a figure, for example, but this says nothing about their overall creativity, only that given this extremely specific set of factors, they are good at coming up with a connecting image. I imagine this as being similar to an AI– if an algorithm is trained in one specific area, like recognizing a cone, it will not automatically be good at recognizing the color orange, even though one would think these skills are transferable. There is something specific about the factors surrounding cones that allow the AI to work its magic, and domain-specific creativity works much the same way.

In summary, these methods seem to each measure a specific part of a larger cultural phenomenon. One can measure the accomplishments of an eminent individual, but can't know all of the factors that led to that creativity. One can measure the creative output of someone, but can't say all of the sources that led them to produce something.

Part 2: Synthesizing a Definition of Creativity

Chapter 4: Moments of Pure Generation

The moments and processes that have been described as "creative" can be seen elsewhere in psychological fields, specifically in "aha" moments and mind wandering. Creativity often gets discussed in cultural forms and repercussions that stem from certain creations, but the moment of idea generation, the point where creativity still exists in the brain, is the moment of greatest potential. The brain's natural power of generation is often written about as a bad thing, and this can limit creativity.

"Aha!" moments

Another way of defining the synthesis of an idea, is an “aha moment,” insight, or eureka effect. If you have ever been working on something like a crossword or puzzle and had a moment where the answer seems to just appear to you, out of nowhere, you have experienced this phenomenon. An aha moment functions as an almost miraculous burst of original, creative energy. Aha moments can be imagined as the most creative moments possible, as they come with inherent excitement and belief in their possibility.

This is usually applied more to problems, but can be seen in any way that a sudden, before unrealized knowledge occurs. Often, a solution to a problem appears in this “all-at-once” way, where a realization can be said to be like a light turning on, or saying “aha!” Topolinski & Reber note 4 key pieces of an aha moment, those being suddenness, ease, positive affect, and the feeling of being right (2010). Some only define an aha moment by the first two traits, the abruptness and surprisingness of the aha moment as well as the ease of processing it. Others are more interested in the swell of joy and the pure belief and confidence in the discovery, even before it has been verified.

Aha moments have occurred all throughout human history and are well-documented (Irvine 2015). William Braxton Irvine writes about their importance in 5 “domains:” religion, morality, science, mathematics, and art. He divides them into “unbidden,” referring to their randomness of onset and less delight in experiencing them and “bidden,” referring to aha moments that take years of study and effort and lead to more delight. Unbidden “aha” moments are related to morality and religion, while bidden ones are more related to science, math, and art. Irvine also writes that the aha moments in art are more likely to be a series of smaller moments, not a larger one. These types of moments might happen in a flash of inspiration, but create repercussions for years to come. In this way, they hold great potential for change.

Because these aha moments exist for different people each time they solve a puzzle, they can be imagined to be "Big C" or "Little C" creativity. Two different people can approach an "aha" moment about the same puzzle, even when that puzzle has been solved many times before. Aside from the problem-solving kind of insight, Irvine describes another category, the kind of "personal epiphanies," where one might realize that they no longer like a type of food, don't want to do a certain profession anymore, or are in love. These moments might not be considered traditionally "creative," but they hold great potential for change for an individual. A realization is a moment in which things can become very different, even just for one life.

Aha moments are usually correct, and for some, are defined by being correct insights, but people can still experience false "aha" moments (Grimmer et al., 2022). Evolutionarily, this makes sense; any new idea won't be tested at all if the "creator" themself does not believe strongly in it. Grimmer et al. were able to induce false "aha" moments in their experiment by using semantic priming with word lists (2022). False insights were found to be significantly less intense, but could still be experienced. Interestingly, these kinds of "false solutions" would be an example of a creativity that fits the definition for being original, but not functionality. The second a moment of insight occurs, possibility opens up.

However, there is a dark side to these kinds of "false insights." Humans are more likely to take something as true when it dawns on them very quickly, as compared to physical experiences like hunger or tiredness, as explained by Laukkonen et al. (2018). They propose that moments of insight act as a heuristic[3] that makes ideas feel more true or valuable, and were able to demonstrate that facts were rated as true more often if they were accompanied by such a

[3] A heuristic is a way to guess about something that uses some kind of mental shortcut, usually to reduce the cognitive load of the individual and make a decision easier.

moment, even if the facts were false. Feelings of insight can easily become overgeneralized and biased.

Why do we have Aha moments?

These moments might not actually be random, miraculous bursts of inspiration. Doyle, in comparing Csikszentmihalyi's flow state and these moments of insight explains that these ideas, while they seem to arise all at once, are actually emerging from the subconscious incubation process, something that happens in the background (2017).

In some ways, the "aha" moment seems almost inevitable. Certain situations require only one sort of answer– either it is one way or it is not and so this phenomenon existing in this way follows logically. In a problem-solving sense, you either know how to solve a problem or you don't, so there can only be one moment of realization. A eureka moment is sometimes defined in having an "impasse," or coming to a stage where one feels like they have exhausted every possibility, before having a moment in which a new realization for the puzzle is realized (Mai et al., 2004). These realizations often include a breaking of the subject's "mental set," or previous way of seeing things. Creativity here can be imagined to be a moment of perspective, almost, a sudden dawning that the way you have looked at things before is not the way that things definitively are or have to be. For example, in some of these problems, answers are found by a realization the lines can be connected in a way previously unrealized. Insight from both a presented solution and coming to it on ones' own have comparable effects in EEG imagery (Mai et al., 2004). Seeing something differently for the first time, either for yourself or from someone else is a similar experience, and an enjoyable one, at least in this context.

Mind wandering

At some point while reading this paper, you will almost undoubtedly find yourself not paying attention to it, likely even unintentionally, as some word or phrase sets off a latent thought, or you suddenly remember what you have to do after reading this. This common phenomenon of “zoning out,” “daydreaming,” or “losing focus” is referred to as mind wandering in the psychological field. Smallwood and Schooler (2006) pulled together a group of separate terms and studies in order to cement this term and investigate it in terms of models of attention. They define mind wandering as a situation in which executive control shifts away from a primary task to the processing of personal goals. Executive control or executive function refers to the effort used to regulate thoughts and actions towards one's own personal goals (Jurado & Rosselli, 2007). This definition positions itself in the idea of mind wandering as task-unrelated thought (TUT), implying that attention has moved away from a task (Smallwood, 2010). The process described as “incubation,” in the “aha” moments section also includes this kind of thinking (Doyle, 2017).

However, this leaves a large category of mind wandering seemingly untouched–the daydreaming that occurs even in absence of a definable task. This kind of mind wandering has been conceptualized as stimulus-independent thought (SIT), representing the tendency of the mind to generate thoughts even without any kind of trigger (Smallwood, 2010). Both TUT and SIT arguably fail to encompass a specific kind of mind wandering, though, the mind wandering that is related to the task, but not directly, like reading a detective novel and trying to consider the solution to the plot.

There is a paradox inherent in mind wandering: how does it take some cognitive effort, and yet simultaneously lack any kind of intentionality? Smallwood and Schooler (2006) suggest that the initiation of mind wandering is not part of executive control and that, rather, our lack of

awareness of our own experiences (meta-awareness) may enable us to drift off. This state of "drifting off" is usually referred to as the "default mode network" (Raichle 2015). This state exists when the brain is at rest, but is still generating. This is also the state that arises when one is "bored," and as Zomorodi writes, boredom can be very important to creativity (2017). She explains, "Boredom is the gateway to mind-wandering, which helps our brains create those new connections that can solve anything from planning dinner toa breakthrough in combating global warming" (Zomorodi, p. 19).

However, this leaves some part of daydreaming unaccounted for; many of us can, at will, think about something unrelated to a task, and this behavior is markedly different, but still fits into the established definition. This question of intentionality is discussed in the literature and has been encouraged to be questioned in further research. Seli et al. (2016) not only call for this, but demonstrate in their study the importance of it by comparing the mind wandering in a difficult and easy task. The difficult task led to more unintentional mind wandering, while the easier one led to more intentional mind wandering.

The rhetoric around mind wandering is often that it is a negative thing. It is often seen as a bad thing to "zone out" or to daydream. These traits make it extremely difficult to feel comfortable letting the mind brainstorm and run freely. If the individual believes a thought within their mind wandering to be a legitimate possibility, then the mind wandering becomes creative. When these thoughts are shut down and believed to be "distractions" or things to avoid, they are no longer creative because they never were given a chance to exist as a new possibility.

Chapter 5: Creativity as Free Will

In reimagining creativity as the potential for things to be different than they are, there is no clearer way of thinking about this than thinking of it as free will itself. The question of free will is obviously more concerned with whether humans are actually controlling themselves or whether some outside force is. This is reminiscent of the discussion in Chapter 2 surrounding philosophical thought. There, I examined the opposing theological theories about whether creativity was the universe acting through a person, or the individual person themself. For this chapter, the latter will be assumed– that an individual does have free will.

In this chapter, I will examine creativity as free will itself. The fundamental ability to create change is human's free will. In choosing which thoughts to act upon and utilize as creative ones, we are using our free will.

Connections between Philosophy and Psychology

Dean Keith Simonton writes that free will is a subject far more likely to be treated by philosophers, whereas creativity is more likely to be discussed by psychologists, meaning that an essential connection between the two often gets overlooked (2017, p. 65).

An early place in which creativity and free will were theorized to be similar can actually be observed in Abraham Maslow's hierarchy of needs, which is one of the more well-known and recognizable theories in psychology. He described humans as perpetually wanting creatures, who, once had one need fulfilled, would want the next. This might be better, or more pessimistically, described with the hedonic treadmill theory[4] today. The highest part of being a human, or the last need to be fulfilled, for Maslow, was self-actualization, or personal freedom,

[4] A theory that states that people will usually return to the same baseline happiness, even if they get more and more things. Hence, they are climbing a treadmill up and up.

which included creativity for some people (1943). He described his idea of "self-actualization" as "...the desire to become more and more what one is, to become everything that one is capable of becoming… It is not necessarily a creative urge although in people who have any capacities for creation it will take this form" (Maslow, p.382-383, 1943).

Another notable intersection between free will and psychology can be seen in the theories of Roy Baumeister. Baumeister is famous for his ego depletion[5] theory, especially as it fits within self-regulation. As described by Simonton, self-regulation is another form of free will, compared to the usual rational choice, which is discussed here (2017, p.72). Self-regulation acts as "free won't," where an individual has the capacity to stop themselves from doing something, and this is how Baumeister conceived of free will (2008). Baumeister conceives of this as a limited resource that can be used up in limiting oneself. He also explains a difference between philosophy's and psychology's respective interactions with free will; Baumeister writes that psychology tackles the questions of how the mechanism of free will functions, instead of looking at any sort of religious context.

Dean Keith Simonton's BVSR and Two Stage theory

Simonton writes about creativity in two stages, building on Campbell's 1960 concept of BVSR (blind variation, selective retention), discussed in chapter 2. For Simonton, creativity is focused on problem solving, as he writes, "many circumstances in which volitional behavior occurs are also inherently problem solving in nature, such as choosing the best course of action from a set of two or more alternative choices" (2017, p. 67). The three parts of how a problem gets solved, for Simonton, are, first, the initial probability that the person will come up with a

[5] A theory that states that regulating oneself takes up part of a depletable resource, the ego, after Freudian theories.

solution to the problem, then, second, the probability that the solution will actually prove useful and be selected, in the selective retention phase, and finally, third, the person's prior knowledge of whether some of the solutions will work, before even generating them (2017, pp. 67-68). He also notes that all three of these factors are extremely subjective toward the individual, occurring alone in their own mind (p. 69).

Simonton goes on to compare this to the two stage theory of free will. Bob Doyle explains this theory, in "Free Will: The Scandal in Philosophy," as "Thoughts come to us freely. Actions go from us willfully. First chance, then choice. First 'free,' then 'will.'" (2011, p. 67). This two stage theory has been discussed by and credited to many philosophers, including William James, Henri Poincaré, and Martin Heisenberg (Doyle, 2011, p. 66). In writing about William James' two stage theory specifically, Doyle states that it "effectively separates chance (the indeterministic free element) from choice (an arguably determinate decision that follows causally from one's character, values, and especially feelings and desires at the moment of decision)" (2011, pp. 162-163). The "free" part of this is not, in fact, the choice, but the generation of thought that occurs in the mind. Simonton writes that "the individual merely wills one choice out of those accessible at decision time. The term 'free will' is misleading insofar as the adjective modifies the wrong noun" (2011, p. 72). The thing that is "free" is the generated choices, and the choosing follows from ones' character at the moment of choice.

This theory in philosophy mirrors that of psychology's BVSR, and even the idea of originality and functionality. In all of these models, there is a generative force, which is uncontrollable, and influenced by what is available to the individual at the time. It inevitably is influenced by culture, experience, and any other factors contributing to their current state.

This can even be seen in the current use of AI art generators, which take a given prompt and create based upon what images are in the world. The generative, original, "free," chance mechanism might be relegated to the outside source, the AI, but the "choosing" is still done by the individual, who determines the parameters of the generation. Simonton argues that if the person already has an idea of whether or not the solution might work, BVSR no longer makes sense, because the person would not be selecting potential solutions after testing them (2017). This factor is otherwise known as blindness. For Simonton, the level of blindness that the individual has is where the amount of free will rests, or his third piece to the problem solving. He believes that the key to two stage free will is whether or not the choices are produced with or without prior knowledge of whether or not they will be chosen after rational evaluation (2017, pg. 74). For example, if two high school students are choosing their major, one might have no idea what they want to choose and go through the list of available majors. This person might come across majors that interest them, even if they never anticipated it. On the other hand, a second person might look through the majors to confirm that the one they are looking for is already at the school. In this second case, the choice was already predetermined before the list was generated (Simonton, 2017, pp. 73-74). Simonton writes, "it is not a matter of whether or not a person has free will but the magnitude of freedom manifested in the set of choices provided in the first stage of the two-stage theory" (2017, p. 76). Similarly, if the initial probability of choosing each choice is equal among the choices, this also increases free will (Simonton, 2017, p. 77). For example, if the student views each major as equally likely, they have more freedom of choice (Simonton, 2017, p. 77).

Given how BVSR becomes less meaningful in the face of prior knowledge, it stands that people who do not have as much experience in a given field might actually be more creative, in a

sense. They do not immediately exclude certain ideas upon their generation, holding more actual potential in coming up with them. In other words, the ideas generated by someone without experience in solving a certain problem will not discount ideas without testing them, while someone who does, is more likely to do so. When an AI generates, at least one knows exactly where it is drawing inspiration from. For humans, it's very blurry what we are sighted in and what we are blind to, but for an AI, it can easily be seen based on the crisp-ness of the image. If you ask an AI to create something that it is very sighted in, and has many reference images of, there won't be as much variation as when it is generating more blindly.

Conclusions

To recontextualize Maslow's theory from earlier in the chapter, it can be said that those who don't have their other needs met would be distracted from a more full kind of idea generation. Someone who is hungry is obviously more focused on that than any kind of free creative thoughts. In this way, fulfilling the basic needs literally frees an individual.

Following from, and expanding upon Simonton's ideas in his chapter, I argue that it is this very potential around choice generation that allows thoughts to be creative. It is a combination of the amount of choices generated and the individual's ability to see them as actual choices. Creativity, free will, and this potential are all one and the same. It is influenced by the amount of choices generated and the ability to see them all as actual options.

Part 3: Creativity As Potential, Applied Globally

Chapter 6: Creativity and Politics

While creativity can represent a change in thinking for an individual, it also represents the possibility for change in the political and global world as well. As a way of allowing things to exist in ways that they have not before, creativity is also political.

Personality and Political Views

According to the definitions before, the most "creative" ways of existing politically might be the most radical views possible, from any party, that have not existed before. This type of thinking is similar to the "openness" discussed earlier.

However, thinking about this in a framework of American politics, Tyagi et al. found that creativity, specifically creative personality and creative ideation, can predict political party, as mediated by individual's social risk-taking (2018). To measure creativity, they used creative personality tests to attempt to find how often the individuals generate ideas, identify creative traits in them like "original," or "insightful," and a creativity self-report for each individual. This builds upon previous research that demonstrates a link between party affiliation and socio-political attitudes, which are in turn predicted by a multitude of factors that also often predict creativity and risk-perception. Tyagi et al. tested to see if those traits were connected to party affiliation, even though they are mediated through socio-political attitudes. They found this to be the case.

For the purposes of this paper, the most interesting traits related to creativity would be the social risk-taking and the openness. The first represents a level of willingness for things to be different and experimentation, and openness allows for more potential to exist. As can be seen

here, and in the latter parts of this chapter, what happens in the individual mind has consequences and repercussions on a larger scale.

Creativity and complexity

Russel Eisenman argues that "creative people tend to look at issues in a more complex way and should be somewhat immune to simplistic or authoritarian-like 'appeals'" (p. 19, 1992). While Eisenman measures this with students' preferences for simplistic versus complex polygons, this is a trait of creativity that can be seen elsewhere. Having access to more sides of an issue would likely lead one to be able to combine more disparate ideas.

To put the Simonton in conversation with this idea, someone who can see the complexity of an idea (if it is a personal trait), is more likely to generate ideas more blindly. In other words, they are more likely to draw from a multitude of ways of generating ideas, knowing that things that are not usually associated with the one issue could be. Someone who has a preference for simplicity, and comes across an issue will likely only draw from ideas surrounding that specific topic, making them sighted, as they assume that only things relating to this issue can be a part of it. They would assume that less can be drawn upon to analyze one specific issue, and thus be more "sighted," or inclined to only generate around it.

A Representational Gap

Western media has been shown to distort and incorrectly portray the Palestinian struggle in the Israeli-Palestine conflict, one of the world's most enduring occupations. This media does not express the distinction between the powerful Israeli army and their military occupation and the Palestinians who are often armed with rocks and rockets (Siddiqui & Zaheer, 2018). This can especially be seen in the words that are used by the western media, which give the public a skewed idea of the actual occupation that is occurring there. A report published by 416 Labs, a

Canadian research lab, analyzed U.S. media coverage of the Israel-Palestine issue over the 50-year period of Israel's occupation from June 1967 to June 2017 across five major American newspapers. They used Natural Language Processing (NLP) techniques, an algorithm that can look at words that are input into it, in this case specifically newspaper headlines. They found that the sentiment scores, as measured by the type of words in headlines, are significantly more positive when discussing Israelis than Palestinians, as well as that there are four times as many Israeli-centric headlines. Furthermore, Israeli sources are 2.5 times more likely to be quoted than Palestinian sources.

In other studies as well, this same bias can be seen in other western media outlets. Ezzina analyzed CNN, as compared to the more neutral BBC, through the lens of critical discourse analysis, towards "unmasking the ideological practices used to produce power, dominance, and resistance" (2021, p. 359). Compared to the BBC, CNN uses much kinder words when referring to the violence by Israel, using words like "Isaeli Security forces" and "Israeli Defense forces" as compared to BBC's "Israeli military offensive," "Illegal occupation," and "colonial occupation" (Ezzina, p. 361). These words create a narrative that frames how people who read these news outlets conceive of the issue.

Similarly, the New York Times are notorious for distorting this narrative towards the Israeli perspective. Jackson analyzed over 33,000 NYT articles for their use of active/passive voice and the objectivity, tone, and violent sentiment of the language (2021). In the First Intifada, Jackson found that 11.9% of all references to Palestinians used violent language, while only 5.9% of all references to Israelis used violent language (2021, p. 6). Similarly, reports during this time referred to Israelis using the passive voice half as often as Palestinians (2021, p. 6). This has the effect of de-emphasizing or hiding those perpetrating negative action and minimizing the

responsibility of Israeli aggression. Similarly, in the Second Intifada, over 17,000 NYT articles were published, 49% of which referenced Palestinian groups or individuals and 93% of which referencing Israeli groups or individuals. The regression revealed 15.9% of references to Palelstinians using violent language and 11.7% of references to Isralis using violent language. While the overall use of passive voice decreased, again, the passive voice was used twice as often to refer to Palestinians (Jackson, p. 9).

These factors contribute to a very negative view of Palestinians for most Americans, who create their worldview based on these news outlets. These news outlets are usually praised as being objective and helpful, so most have no reason to doubt this view that they are given of a place they will likely never visit. The average American views Israelis as objectively right in their seeking of Jerusalem, even though they are occupying and oppressing the group of people who live there.

A Creative Intervention

In order to humanize a group of people, sometimes a different view of them needs to be seen. Representation for Palestinian children can start to allow the average American to see these people differently than just a violent group who is always at war.

J.M. Norman writes about participatory media for Palestinian youth, explaining how it gives agency and freedom to those partaking in it, as well as how it challenges dominant discourses in media about the conflict (2009). Many people only associate Palestinians with violence and terrorism, and presenting regular people in their daily lives can challenge this. For example, Norman discusses images of children playing, students going to school, or adults working as photos that can generate dialogue and surprise (2009, p. 263). For many Western people or Israelis, seeing such “normal” images is surprising and counterintuitive. A moment

like this allows a freedom, in the mind of the observer, to imagine a people as they have never imagined them before. It opens up the potential for a narrative to exist differently than it has before. Participatory media, according to Norman, refers to "alternative media in which individuals and communities share personal stories and collective experiences, often with the goal of raising awareness about a specific issue or challenging dominant discourses in the mainstream media" (2009, p.253). To go into this situation with sightedness, not blindness, would be to believe that this situation cannot change and to be fully influenced by the western media sources. Someone who knows this issue well might be more likely to believe it to be unchangeable, as they are walking in "sighted."

While this creates representation for those looking in from the outside, creativity also gives personal freedom to the people in Palestine. Norman explains that on the basic level, media training, with things like cameras or theater, provides youth with both technical and artistic skills that can open up opportunities and show them things that they are interested in (2009, p. 258). On a higher level, though, Norman also explains that creative expression for these youth is empowering and therapeutic, using the example of a boy who rarely spoke until he was able to use a camera to create a photo-story about his father's arrest (2009, p.258). Creativity is freedom and potential, both in the sense of idea generation, and for self-expression. To give a child a camera is to say "there is more than one way to say what you want to say," and provide an opening for them. It creates another option, another way in which things can be.

This case is not unique. Representation, in many cases, means people have the ability to even imagine a type of person existing in a certain role. When not represented, it is impossible to even conceive of a certain type of person in a certain position, and so a case like this literally gives potential to the generative power for many minds. This problem is often seen in the

sciences, where the role of "scientist" is seen as being only for white, cisgendered, men. One way that the beginnings of this can be measure is via the "draw a scientist" test, where kids are asked to draw a scientist, and then the traits of this person are measured (Hayes et al., 2020). Usually the scientist drawn has a stereotypical appearance and is a man, and this shows how the media impacts what the children can actually even imagine.

On a political and social level, the entire world rests at a state of potential when these things are open to change. While in a typical measure of creativity, some of the art made by these children might be not creative or original (except for by a "Mini C" measure) by the measure of its ability to cause change, it is extremely creative. To analyze this moment as a creative one, according to one of the tests in Part 1 would be to look at the children creating photography, books, and other art, and call that creative. That is to undervalue the power of what is occurring here. But to look at creativity as pure potential, as a worldly affair is to recognize the power that seeing this art can have and the political situation that makes it even more crucial. Because it is creating the potential for more change in the minds of many, it is so much more creative.
It becomes creative when analyzed not on a skillful level, but on a sociological level. Here, creativity is not being measured at an individual level, but more as a way of new representation. The capacity for change can be political and based on representation; a collective creativity.

Chapter 7: Creativity and climate change: maintaining the status quo means death

People can become very stuck in certain viewpoints, especially with processes like confirmation bias and cognitive dissonance[6], which make it difficult to want to change ones' own beliefs and behaviors. As seen earlier, "Aha" moments, too, can become moments of bias. Creative ideas, and the ideas that we are even capable of generating are, themselves, influenced by the biases that we hold and the things we have seen in our lifetimes.

A clear place in which the narratives that have prevailed no longer are effective is how humanity responds in the face of climate change. Here, I will not be discussing how specifically to mitigate this problem, but more so how it is that we talk about climate change as well as how creative ideas around it might be created.

The Anthropocene

Although it has been floating around since the 1980s in order to describe the biosphere and other influences, the term "Anthropocene" was first used to describe the entire human impact on the planet during a meeting of the International Geosphere-Biosphere Programme (IGBP) in Cuernavaca, Mexico (Carruthers, 2019). It was officially suggested by Paul Crutzen and Eugene Stoermer in 2000, but this term has not been accepted across the geological community (Carruthers, 2019). This is largely because it is impossible to appropriately mark the beginning of this age with specific indicators and signals (Carruthers, 2019). Even from its inception, this idea has not been exactly quantifiable and too large of a concept to measure in full. Renzo Taddei writes, in "Intervention of Another Nature: Resources for Thinking in (and out of) the Anthropocene" that this epoch's designation comes from the irrefutable scientific

[6] Confirmation bias describes a process by which an individual seeks out and confirms their already existing beliefs by taking in information that agrees with it and ignores information that does not. Cognitive dissonance describes the discomfort with having ones' ideas and actions not be congruent. People will often change one or the other to fit.

evidence that there is human interference in all of Earth's ecosystems and organisms (2021). The Working Group on the 'Anthropocene' proposes that this age begins following the Holocene, which began around twelve thousand years ago with the end of the last glaciers, and ends with atomic weapon experiments (2019). The stability of the Holocene is also notable, as it allowed many people to believe that nature was nothing more than a background for human actions (Taddei, 2021, pp. 126-127).

Resources and Capitalism as the Default Mode for Human Thought

The idea of nature as a pool of resources, existing for human consumption, originates in the time when humans shifted from nomadic hunting and gathering to agriculture, and in four thousand years, this idea traveled to the Fertile Crescent, sacred texts, and the Enlightenment (Taddei, 2021, p. 127). The expansion of Roman Catholicism across Europe dramatically increased the prevalence of this idea, altering the perception of nature as spirits and deities to "empty spaces" and "materials" (Taddei, 2021, p. 127). At the time of its first inception, these ways of thinking about the natural world and seeing it as usable might have been extremely creative and generated great potential, allowing humans to create new kinds of technologies and foods, which made life easier.

One can imagine this way of thinking becoming the default, uncreative way in which the human mind generates ideas about how to further improve the world. Instead of the natural awe that existed for many people in the face of nature, the immediate thought would become more akin to, "how is this useful to me?" Taddei writes about the Anthropocene not only as a physical, geological problem, but also as a turning point in ideological thinking. He writes, "...it would be more instructive, and even more responsible to focus on the Anthropocene as the moment of realization that the dominant narratives of reality–'modern' or 'Western'--were wrong about their

powers of knowledge…The Anthropocene is the moment when the global elites… realize that their paradigms and ideologies were efficacious in helping them accomplish their short-term desires, but at the price of destroying everyone's capacity for long-term survival" (2021, p. 129). In other words– an idea has failed the trial-and-error test, because one was blind to its potential outcomes, only on a global scale, where the resources to try a new idea are nonexistent.

Similarly, Mike Hulme writes in "Why we disagree about climate change" that "Climate change … is an environmental, cultural and political phenomenon that is reshaping the way we think about ourselves, about our societies and about humanity's place on Earth" (2010, p. 41). He discusses climate change as an idea that circles anxiously and a "'mother of all issues:' the key narrative within which all environmental politics - from global to local - is now framed" (2010, p. 41). Species-wide problems can arise because of people submitting to a certain narrative and letting it limit what thoughts they can and cannot have. Given how every human-created thing or idea (all things, in Anthropocene thought) is first generated in the mind of a person, as explained in the previous chapter, one can see how this problem of the outside world is actually one that would have begun in the very perceptions and boundaries that we hold for what can and cannot be created.

The idea of taking nature for human consumption is altogether a very capitalist one. A potentially realistic, or potentially too grim outlook on the way that the world limits what can be imagined is seen in theories of capitalist realism. Capitalist realism can be epitomized by British Prime Minister Margaret Thatcher's pro-market slogan "There is no alternative," in reference to capitalism as the only viable global and political system, as well as other situations (Chen, 2022). As summarized by Mark Fisher, Frederic Jameson and Slavoj Zizek famously wrote that it is easier to imagine the end of the world than it is to imagine the end of capitalism (2009, pg. 6).

He writes, “That slogan captures precisely what I mean by ‘capitalist realism’: the widespread sense that not only is capitalism the only viable political and economic system, but also that it is now impossible even to imagine a coherent alternative to it” (2009, pg. 6). Because the theories and practices of capitalism have become so saturated in the ways that we behave and live so completely, it actually begins to limit what can even be imagined in the generative parts of the mind–free will. Given that we have operated in this mode so long, the fear arises about whether it is possible to escape it. Taddei writes that most people understand the end of Western models as the end of what is meaningful, and explains this as “the negative side effect of having made Enlightenment subjectivity the model of what it is to be human” (2021, p. 131).

Theoretically, any pervasive thought that exists in such an extensive, all-encompassing way can eventually lead to a diminishing of free will, as it limits every person to have a certain amount of sightedness upon imagining it. This anxiety presents itself in a fear that nothing new can ever be created, the idea that nothing can be surprising anymore. Fisher explains a certain sentiment that arises in capitalist realism: “...how long can a culture persist without the new? What happens if the young are no longer capable of producing surprises?” (2009, p. 7). In other words, what happens when one system of thought becomes so dominant that it makes everyone completely sighted to everything, leading to no free will being possible?

However, some traits of capitalism lead it to contrast the idea that any system of thinking and existing can become like this–limiting and impossible to remove oneself from. The very nature of capitalism allows it to encompass all ideas with its system of value. Capitalist realism’s power comes, in part, from its ability to be an “equalizer,” making all of previous history one kind of cultural object (Fisher, 2021, p. 8). Under capitalism, every idea is just that– an idea, with no one idea able to have more value than another. Fisher writes, “Capitalist realism is therefore

not a particular type of realism; it is more like realism in itself" (2021, p.8). The way that capitalism functions even infects the very production of ideas, equalizing them, as well as simply limiting them. When one goes to choose an idea, to exercise their free will, all of the ideas are equalized, as well as being limited by capitalism as the dominant mode of thought.

A Solution?

In a capitalism-driven world, it is nearly impossible to even imagine anything else, so it becomes all the more important to do so. Taddei explains that if the knowledge of the West fails in the face of climate change, then we must turn our attention to other forms of knowing and thinking, seeing in the very people whose lives are affected most by climate change–Indigineous ways of being (2021, p. 131). Furthermore, the systems used to compare measures of success are extremely capitalist and western, leading the success of these types of populations to be ignored, as their accomplishments cannot be seen in material accumulation (Taddei, 2021, pp. 131-132). Even the ways in which we can conceptualize the solutions to this problem are inevitably influenced by the problem itself. We cannot even conceive of a solution to a problem that is part of our entire culture and mode of existence, so it may become necessary to turn to people who still possess the ability to not think in these ways.

Hulme writes that climate change is "the unfolding story of an idea and how this idea is changing the way that we think, feel and act" (2010, p.42). When the minds of many are wrapping themselves around the fact that the default mode of thinking for humans for centuries, in the West at least, of claiming nature for resources, will actually no longer be successful, a paradigm shift occurs. It is similar to the kind of shift that happens in an "aha" moment, in which the way that a problem has been encountered becomes unsuccessful, and a return to the "drawing board" occurs. Hulme suggests that instead of trying to solve climate change, we must turn the

question around, in order to ask "'How does the idea of climate change alter the way we arrive at and achieve our personal aspirations and our collective social goals?'" (2021, p. 42). He goes on to explain how the idea of climate change is actually an imaginative resource, which can shape collective and personal identities and projects (2021, p. 42). In this way, the "problem" of climate change actually becomes an opportunity for new paradigms of thinking and interacting with the world. Problems contain great potential.

The problems created by climate change and the Anthropocene do not allow for universal, comprehensive solutions. While, in human history to date, many of our greatest problems might have been solved when a new piece of technology was invented, this new condition is one that requires an entirely new set of ideas– the foundations of idea generation to be shifted. Hulme expresses many ways in which new solutions can be offered in the face of climate change, but also that these solutions and applications of the idea of climate change are not applications that demand agreement (2009, pp. 42-43). He writes that they actually may be hindered by the search for such agreement, and that they "thrive in conditions of pluralism and hope rather than in conditions of universalism and fear" (2009, p. 43). In reference to chapter - the pluralism and potential of ideas is the greatest at the point before they are applied, at the point in which many ideas can be created. Climate change is a problem so large that it literally makes the multiplicity of idea generation necessary and part of the solutions. Climate change as an idea, as a paradigm shift creates opportunity and new ways of thought, all of which are necessary to imagine a new world.

This is not to say that this shift is simple or enjoyable. As a whole, humanity needs to be kinder to those who change their mind instead of blaming people who have the wrong idea. As suggested by Taddei, one of the ways to change this is giving people the time to literally mourn

the ideas that they have had to let go of (2021, p. 138). It cannot be expected of people to easily let go of the paradigm that has been commanding their entire life and acting as a barrier on what thoughts they can generate. To let go of such a barrier takes time, patience, and care, especially when this image of ourselves is so flattering (Taddei, 2021, p. 138). Taddei writes that interventions against climate change and the Anthropocene require new forms of experiencing reality (2021, p. 138). The Anthropocene can be said to be a species-wide mourning of idea loss, as well as a physical, global condition.

Conclusion

In Part 1 I analyzed different backgrounds of creativity, and provided a context for the ideas of creativity. I found how the psychological ideas failed to fully encompass what creativity is, and their biased influences. I then looked at how creativity exists in theology and history, and how different cultures have come to imagine the ways in which things can change. Specifically, psychology and western thought are often too narrowly focused and fail to account for the worldly and societal influences that first impact what it is that people can possibly imagine. I then, in Part 2, looked more specifically at the mechanisms that allow for creativity, in their most specific form– aha moments, mind wandering, and blind variation, which are change and potential, in their purest form. I explained how the more potential that can be generated in the first steps of these processes, the greater the amount of creativity, potential, free will, and change are possible.

In Part 3, I explained how the thoughts that we are able to have, in the processes in Part 2 are actually limited by worldly affairs, like representation and capitalism. These processes actually limit what thoughts we can generate, limiting the amount that things can change and the

possibilities that can be created. I finally looked at some ways that we can become more open to new thoughts– by adding more representation, allowing ourselves to mourn the loss of ideas, and looking at theories that do not come from sources we usually take in.

The only way for things to become different than they are is for us to actively search for alternative ways of thinking, because the current mindsets and paradigms that we have are not able to even conceptualize some of the problems that we currently face.

Creativity is a measure of how much things can change, both in the individual thoughts that can be generated, and the world. These two factors interact with each other over and over, where the world influences what thoughts are possible, and the thoughts that can be generated. To look at creativity is to look at what is allowed to be possible, and to look at how new things come into being. To create is to have free will, and the free will comes from the amount of possibilities. In its simplest form, creativity is the potential for things to be different than they are, and it is crucial that we protect this potential and allow new ways of thinking to come into being, again and again.

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