

The Paradox of Novelty and Usefulness

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ABSTRACT

The literature on creativity research advocates parameters for judgment of creativity of artifacts based on criteria such as Novelty, Usefulness or Appropriateness. The literature on creativity research throughout its history has endorsed this definition. In this paper an attempt is made to challenge these notions of creativity. The notion of 'Useful (or appropriate)' in defining creativity is ambiguous. The very relative aspect of this term has not been explored adequately or explained in creativity literature. An artifact can be useful for one set of people and harmful for another. Also an artifact may appear useless now, but may be recognized as useful after many years. How to define what is useful, has been a problem that has not been addressed satisfactorily in the literature on creativity. All the focus has been on novelty and how novel ideas can be created. The idea of 'Novelty' is also relative. A product may be novel in one culture and routine or commonplace in another. The social theory of creativity does touch upon the relative aspect of these terms, but it puts the onus of defining usefulness and novelty on 'domain experts' and the 'field'. This is an even more problematic approach because then the question of 'who is an expert' arises. This paper explores alternative ways of defining creativity with the help of literature in other domains and discusses possible implications of defining creativity one way or the other.

Keywords: Creativity, Novelty, Usefulness, Alternative Conceptions of Creativity

INTRODUCTION

In 2009, a TED talk became extremely popular across the world. It was the demonstration of a gadget called 'the sixth sense'. It is still one of the most viewed TED talks [1]. The idea was a perfect case of something that was not just 'novel', but was professed to be extremely 'useful' and could change how people interacted with the real world and gained information about it [2]. It was a perfect creative feat as measured by the criteria of 'novelty and usefulness'. Today no one knows what happened to that revolutionary idea [3]. It simply disappeared from the technological landscape. A similar innovation backed by a giant corporation, the google goggle (glass), is struggling now to find an audience [4][5] after an equal amount of hype [6][7] that surrounded it a few years ago.

This year itself, Samsung's Galaxy Note7 was praised and appreciated by industry pundits [8][9] as a truly 'novel' and 'useful' creation. One can see the enthusiasm of the mobile industry by the kind of positive reviews the phone got. But today, the phone series is actually in danger of being shut down after the incidence of overheating batteries [10]. On the contrary, the supremely criticized iPhone 7 for lacking 'novelty' (design similar to iPhone 6) and usefulness (lack of headphone jack) [11][12], has fared much better than its competitor Galaxy Note7 [13] which was judged to be more novel and useful, by the whole mobile phone

community including users and experts at the time of their launch. Although the actual sales of iPhone 7 are much lower than iPhone 6s, even though according to Apple, iPhone 7 is their 'best' (novel and useful) phone ever [14].

The socio-cultural model of creativity defines it as an act that leads to creation of artifacts that are 'novel' and 'useful' or 'appropriate' [15][16]. The concept of novelty is further extended to being original and imaginative. Imagination being referred to as thinking of something that is yet non-existent, implying that it is 'new'. Even in the case of scientific creativity which is largely associated with problem solving, this idea of novelty and usefulness takes precedence over other ideas:

Generally, creative thinking has been treated as one special kind of problem-solving. Newell, Shaw, and Simon state that problem-solving may be called creative "to the extent that one or more of the following conditions are satisfied: 1. The product of the thinking has novelty and value (either for the thinker or for his culture)..."[17].

In my view defining creativity in terms of creation of novel and useful or valuable artifacts may itself limit the ability for creation. There is a paradox in defining creativity in this way because the awareness of this view of creativity will itself impede the development and flourishing of any natural creative instinct in people. The objective of the remaining part of this article is to show how this could be so. Empirical investigation into the thesis can follow later.

In this analysis, I will first establish that the disputed definition of creativity is actually only criteria for judging the presence or absence of creativity in a product. These criteria alone do not help in understanding the human legacy of creative accomplishment throughout human history. On the contrary, judging an artifact only by the instruments of novelty and usefulness, can lead to false judgments.

Marking something as creative is actually an act similar to that of complimenting and making a comment of appreciation. It is similar to a person saying 'nice dress' or 'nice shoes' or 'well done'. The only difference being that there can be larger consequences if something is recognized to be creative. For example getting an approval from an authority for continuation of a crucial project.

But even before an artifact is displayed for approval to experts or general public, the creator of the artifact has to herself judge it to be creative for her to work on it over a period of time. And if her confidence or self appreciation of the artifact is based on the criteria of 'novelty' and 'usefulness', then this criteria of self assessment will itself prevent her from creating something novel or useful. Why? To analyze this, we may need to look at the various conceptions of creativity that have existed in history and isolate the emergence of 'novelty' and 'usefulness' criteria of judgment as only a recent development. The emergence of these ideas is specifically situated in context of post cold-war America when it was concerned about keeping pace with Russia's competitive technological advancement. The ideas of novelty and usefulness of a product in the context of creativity is firmly placed to address the issues of a competitive capitalist economy. These criteria only

filter those ideas that will provide a competitive edge to one product over the other through the display of its 'novel' and 'useful' assets.

On the contrary if we look at the judgment of a creative product as simply an innocent human act of appreciation, then we will see that humans can appreciate a created artifact for any number of reasons. A thing can be appreciated even when it does not appear novel and useful. Suppose a poor laborer girl creates a windmill out of her own effort and planning, even though there is nothing novel about it, still it can be appreciated because of the adverse conditions that the girl overcame to create it. Imagine how demoralizing it will be to hold one's appreciation of such a product based on the narrow door of novelty and usefulness as compared to things other children have produced.

It is true that creative artifacts do appear novel and useful to an external viewer, but the motivation of creation in such artifacts may not necessarily have stemmed from creation of novelty and may not be involved in the act of creation itself. In the next section on literature review, we will look at the various conceptions of creativity in human history and record the alternative ways by which people have appreciated a creative act. Finally we propose a wide range of criteria that already exist apart from criteria of 'novelty' and 'usefulness' for appreciation and acceptance of a creative product.

LITERATURE REVIEW

The idea of novelty seems to be in direct opposition to the ancient notion of imitation. Before the Renaissance, creativity was associated with the ability to imitate established masters, and to accurately represent nature [18]. When the term originality was first coined, it meant newness and truth of observation, not a radical break with convention. The most original artists were those who best imitated nature [19]. This has been termed as the rationalist conception of creativity and has a 2000 year long history with philosophers like Aristotle backing it [20].

The view of art being imitation of nature gains its existence in the presence of recognition of the creative force of God which is manifest in the very existence of nature. Until the modern scientific era, creativity was attributed to a superhuman force; all novel ideas originated with the gods. Plato argued that the poet was possessed by divine inspiration, and Plotin wrote that art could only be beautiful if it descended from God [21].

The work of art is appreciated in this tradition according to how well an imitation it is. Coomaraswamy further elaborates that this imitation of nature is not in its likeness or physical appearance, but in its function [22]. How the function of nature is defined is a separate issue. Early humans made no real distinction of sacred from secular: weapons, clothing, vehicles and house were all of them imitations of divine prototypes [23]. Art as imitation of nature has been the dominant view pertaining to all artistic creations from architecture to painting to music, until the Renaissance in the 18th century, after that it gradually gave way to the romantic notion of art.

Only in the 1700s, with a growing rejection of rationalism, did writers in the English Romantic Movement begin to think that art might be created through non-rational processes. The Romantics believed that rational deliberation would kill the creative impulse. The Romantics were revolutionary; they valued the artist's imagination more than mastery of the traditions of the past. Romanticism was the birth of contemporary notions of creativity-the idea that the poet or artist has a privileged status as the epitome of the human spirit. As these Romantic conceptions spread throughout Europe, artists began to be thought of as more than craftspeople [24].

From the above reference it appears that the idea of associating art with novelty has emerged in opposition and almost a revolt of the traditional concept of art being an act of imitating nature. In this world view, breaking from tradition becomes the sole criteria for judging something to be artistic or creative. This idea would seem very relevant in the 18th century because there could be potentially lethal consequences for breaking away from tradition, so it would require courage to create something that did not 'imitate' the work of some previous master, model, form or function.

We see here views about art and creativity being positioned into two opposing polarities. On one hand it is the confirmatory notion of art, by which only such works are recognized which do justice by imitating some existing model that has achieved perfection in the past. On the other end of the pole is the view which abhors all forms of imitation and values such artworks that break away from existing norms and practices and present something new.

Ironically, the traditionalist or rational view of art as conforming to some existing model, has found its way till the last century in notions related to scientific creativity and its active proponent was none other than the famed historian of science, Thomas Kuhn. In the initial years when creativity research was being established in America through the pioneering efforts of Guilford, Thomas Kuhn presented a lecture in the third Utah conference held in 1959. In that conference, while everyone was pushing for the encouragement of divergent think (associated with creation of novel ideas), Kuhn proposed that although divergent thinking was useful, science does not work like that. He advocated that creativity in science emerges from convergent thinking itself.

Again and again the continuing attempt to elucidate a currently received tradition has at last produced one of those shifts in fundamental theory, in problem field, and in scientific standards to which I previously referred as scientific revolution. At least in the scientific community as a whole, work within a well-defined and deeply ingrained tradition seems more productive of tradition-shattering novelties than work in which no similarly convergent standards are involved [25].

Here we see that innovations in science may not proceed with the intention of creating new theories or breaking away from old ones, even though the outcome

is indeed breaking of tradition. This questions the whole paradigm of creation of novelty being the central driving force for innovation in science. But what about 'usefulness'? We show here through literature, that even that criteria is questionable. Don Norman, one of the key proponents of "User centered design", has cautioned the design fraternity on relying to much upon analyses of user needs to come up with new product ideas.

The individual is a moving target. Design for the individual of today, and the design will be wrong tomorrow. Indeed, the more successful the product, the more that it will no longer be appropriate. This is because as individuals gain proficiency in usage, they need different interfaces than were required when they were beginners. In addition, the successful product often leads to unanticipated new uses that are very apt not to be well supported by the original design [26].

In recent years, user centered innovation has been at the receiving end from many different quarters, some describing it as not enough [27], others calling it as unsustainable [28], and some saying that it is altogether dead [29].

I contend that the emphasis on usefulness and appropriateness has emerged for the proliferation of the modern consumer culture where consumer is considered to be the king.

In the bigger scheme of things, user-centered logic implies that the user is right. It tacitly assumes that what individual consumers want will benefit the whole system. All over the world, people still say that the customer is either 'king,' 'queen,' 'emperor' or even, 'God.' This idea came from our feudal past, when servants were always less well-educated than their masters. This is no longer always the case. Mostly, in today's high-speed lifestyles, the idea that 'the customer is always right' is a cynical phrase. Deep down, most customers know that owning a cool product will not make him a cooler person. On the other hand, the smiling shopkeeper hopes, privately, that appealing to the vanity of the customer is enough to make her buy more than she needs [29].

The arguments presented above are in context of judging a product to be creative if it satisfies some usefulness criteria of how 'people' or consumers will like the product or not. And in this world-view, experts are those who have a tacit understanding of what people will find 'useful' and hence these experts become the gate-keepers of judging creativity and giving sanction to it to enter the 'market'.

Besides, in the history of technology, there are many instances when a certain technology that has become the backbone of modern life, was once considered 'worthless'. A case in point is the 'telephone'. Presented here are some of the quotes that were exchanged between people relating to acquiring a patent for the device. Names of the people are not important, only thing to note is what they thought about the 'usefulness' of the device at that time.

"...I don't think that it will ever be of much use for long-distance messages..."

...you haven't got much money, and as a friend, I don't want to see you lose what you have got. That invention is practically worthless. It will never amount to anything...There is nothing in this patent whatever, nor is there anything in the scheme itself, except as a toy. If the device has any value, the Western Union owns a prior patent called the Gray's patent, which makes the Bell device worthless [30]."

Michael Faraday, on inventing the <motor> and the <dynamo> was questioned, what is the use of these devices? When Faraday first demonstrated his electricity generating device, he was asked by an audience. "Sir, what use is this?" Faraday replied to the question "what use is a new born child?" Faraday was again confronted by this demoralizing question by William Gladstone, the chancellor of exchequer in England [31]. If Graham Bell and Faraday had asked this question to themselves while working on these inventions, would they have been able to create these remarkable inventions that have practically defined the modern human world? In the above cases, we see that the term <useful> emerges from specific economic considerations. That is why Keith Sawyers places a particularly neglected <legal> profession that contributes to the selection and approval of creative artifacts.

In a sphere of activity far removed from the mainstream of creativity research, a huge group of highly paid professionals has spent decades poring over the arcane details of creativity and innovation. Who could these neglected creativity scholars be? They are the lawyers connected with the field of intellectual property rights....The patent office website even provides a helpful elaboration of what "useful" means: The term "useful" in this connection refers to the condition that the subject matter has a useful purpose and also includes operativeness, that is, a machine which will not operate to perform the intended purpose would not be called useful, and therefore would not be granted a patent [32].

This definition of <usefulness> implies that the thing has to have a purpose for which it is made. It may be helpful for lawyers to scrutinize patent applications, but not for all acts of creativity. Some people from the art world might say that artists are free from considerations of usefulness, and create things only for the joy of creating. Keith Sawyers debunks such myths about creativity in the art world and says that artists are especially conscious of giving their audience, things that they like.

Many successful artists and musicians have fans who closely follow their careers; these connoisseurs may remember more about the artist's past work than the artist himself. Fans expect similar work in the future, and they get angry when their favorite artist shifts styles. Popular bands know that the audiences at their next tours will want to hear the hits from their past albums; and if they dare to play new music, the fans will want those new songs to sound pretty much like the old ones. Bands ignore the fans at their peril; they know that their core fans are those most likely to buy their new CDs [33].

In the context of art, the word usefulness acquires another form, appropriateness. And measure of creativity depends on the appropriateness of the artwork to a certain set of audience.

Does Creativity Always Require a Social Sanction through Judgment of Novelty and Usefulness?

In the above cases where we see that novelty and usefulness have been the criteria for judging creativity in created artifact, but in all these cases, a social sanction is required for a product to be recognized. The sanction may come from some authority or public at large. But not all acts of creation begin by consciousness of audience. And it is specifically true in some aspects of research in science and technology as we have seen earlier and it is also true in context of a school going child wanting to create something. If creativity of children at young age is judged by their ability to produce novel and useful ideas, then it will filter out a large number of children who can be creative in other ways. The only purpose with which a child may create is the purpose of creation itself, not because it will solve some problem. There can be a criteria of judgment of creativity of individuals for example if the same child creates another windmill, what kind of improvements and changes the child has brought about could reveal presence and absence of creativity instead of measuring it against some universal criteria of novelty and usefulness decided by some expert in making windmills. By this self-assessment, a person can know herself whether her new design is an improvement upon the previous one, without waiting to be judged by some authority. And this ability of self-assessment is significant for a creator to work on a project for long time. A person cannot wait to receive feedback from some external authority (expert or audience). The creator has to move ahead with her individual ability to scrutinize whether her efforts are an improvement upon some previous effort.

RECENT ALTERNATE CONCEPTIONS OF CREATIVITY

We have earlier mentioned creativity as 'imitation' of nature as a traditional criteria for judgment of creativity. Here we present some recent ideas about judgment of a creative product.

Creativity as Performing Multiple Functions with Same Structural Mechanism

Ulrich proposed a conception of creativity when a product or artifact displays ability to execute many functions on separate occasions or simultaneously, without adding any extra structural mechanisms.

Function sharing in mechanical design, according to Ulrich, is the simultaneous implementation of several functions in an artifact, by a single structural element. Ulrich states three main reasons for the importance of function sharing in engineering design: first, designs that exhibit function

sharing are in most respects better than those that do not (fewer parts, easier assembly, less required maintenance, better performance due to decreased size and weight etc.); second, awareness of the process of function sharing allows the designer to think in a modular, decomposed fashion with the option of subsequently using function sharing to make the design more efficient; third, function sharing is one of the sources of novelty or interest in mechanical design [34].

Creativity as Elimination of a Conflict

Many situations may require resolution of such issues that have multiple conflicting elements. The complexity of the issues may be of the kind that addressing one set of elements may lead to problems in other set of elements. The creativity is in resolving such complex contradicting situations. Attention to this form of creativity was drawn towards by Altshuller.

Altshuller conducted a comprehensive study of a large body of data stored in patent collections. His main finding was that a necessary condition for design inventions is that they incorporate an 'elimination of a conflict'. Conflicts in engineering systems arise between a system parameter that should be improved to meet the requirements, and another system parameter which in-admissibly deteriorates as a result of the improvements. Consider for example the conflict in the design of an incandescent light bulb: on the one hand a requirement for efficient energy consumption dictates high filament temperatures, while on the other hand filament temperature should be kept low to ensure the bulb's long life [35].

Horowitz has shown in his PhD thesis that there are some shortcomings in Altshuller's theory of creativity, for example it does not make it clear how to know if the conflict has been sufficiently resolved without making any compromise. Our attempt here is only to show that alternative conceptions of creativity exist and that a product can be creative in many ways and in itself, not just whether it is judged as novel or useful by some external audience.

DISCUSSION

The objective of this article was not to come up with any new definition or criteria for judging creativity. It was only to elucidate many other alternative ways of defining a creative product. For example, recognition of creativity, as elimination of a conflict, has many repercussions for different problem areas. Most of the modern world problems are of this kind. Take for example third world countries that are in serious need for development, which can be interpreted as increase in quality of life of maximum number of people. An obvious solution suggested by their governments is rapid industrialization. Factories forming the backbone of industry, produce harmful waste that affects the local environment where

they are located. So development inadvertently affects, the quality of life of a lot of people in a negative way who are living in the vicinity of a factory. This is a perfect example of solving one problem, leading to creation of another. Solution to such problems require creative thinking. And creative outcome can only result when such conflicting situations are attempted to be solved. It is not the case that all problem are of such conflicting nature, but many are of such nature, and such situations cannot be judged by the sole criteria of novelty and usefulness. In cases of conflicting problems, the solution of increasing output may appear useful for the industrialist and a few people who are employed in that factory, but it will not be useful for many other people. So usefulness or value in itself implies useful for whom? And valuable for whom?

It is quite possible that this narrow criteria of usefulness and novelty is responsible for creation of new products at a rapid pace by industry which wants to beat the competition in showing the customers that they are always coming up with new products. And this heightened production of products at a blitzkrieg-in pace is also leading to a lot of waste being generated that is inadvertently affecting the ecology of planet earth. Because of these concerns, sustainability has been added as another criteria necessary for creative output that can no longer be ignored [36]. How we choose to define creativity, has larger repercussions on the lives of not just humans but all species sharing common resources with us. Hence, defining creativity as creation of 'novel' and 'useful' products is itself detrimental to the creation of novel and useful artifacts.

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