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# Artificial Intelligence Catalyzes a Revolution for 21st Century Human Creativity and Modern Art

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## ABSTRACT

Art is arguably the most creative form of expression known to mankind. Artificial intelligence has advanced to occupy a position of paramount importance in Science, but seldom do we associate it with Human Creativity in general, and with Modern Art in particular. Creativity is one of the rudimentary constituents of the functioning of machines. By using algorithms, machines churn out representations of shapes, images and structures. Machines are perpetually expanding, redefining and reinventing creativity in their own right. This idea has triggered the birth of a new subfield in Artificial Intelligence known as Computational Creativity. This paper analyzes the diverse ways in which the integrated algorithms of Machine Learning and Artificial Intelligence are cut for producing breakthroughs in the field of 21st Century Modern Arts.

***KEYWORDS:*** *Artificial Intelligence, Modern Art, Computational Creativity, Human Creativity, Freedom of Expression*

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## INTRODUCTION

The concept of Art defined and formulated by humans has its roots in medieval culture which can be traced back many centuries. Art is neither scientific nor empirical, rather it is a sentiment which is emotion driven. However, it is not practised without technique. An artist is bound to conform to a certain level of shared meaning with the world, adapting geometry, shapes and anatomy in order to create representations that can be made sense of by the recipients of his art - a wider group of audience. The magical aspect of Art is the absence of constraint, checks or universal law describing the extent to which the artist must conform to these frameworks. Thus, unlike in science, math, or logic, one of the realms that makes Art so phenomenal is that it is individualistic - spearheaded by the Artist's free will. It is certainly the purest and most lucid form of the freedom of expression that humankind possesses.

Have you ever wondered - From where does a creative impulse arise in the painter? Rather, What is it that constitutes the brain processing system which develops creative ideas and artistic schemes? Since nothing emerges from vacuum, we must decipher that every creative instinct is always preceded by a historical-cultural scheme - serving as a fruit of the traditional inheritance and the lived experiences of its formulators. This prevailing theory is well elucidated by Margaret Boden, who has stated in her book Artificial Intelligence and Natural Man (Boden, 1987): "Probably the new thoughts that originate in the mind are not completely new, because they have their seeds in representations that already are in the mind. To put it differently, the germ of our culture, all our knowledge and our experience, is behind each creative idea." [1]

Keeping the implications in mind, a widely accepted definition of creativity is: "A creative idea is a novel and valuable combination of known ideas." [2]This entails that all physical laws, theorems, and musical pieces are derived from a finite set of elements. Creativity is an "advanced domain of problem solving" that involves mindfulness, analogy, rationale, and memory under constraints, among others, and is therefore possible to be replicated by computers. [3]

Back In July 2013, a promising artist put up an exhibition at the Galerie Oberkampf in Paris. It lasted for a week, was attended by masses, garnered media coverage, and showcased works produced over a number of decades, including some created on the spot in the gallery. Altogether, it was a spectacular International Art Festival. However, the peculiar aspect was that the artist in question was a computer program known as "The Painting Fool." [4] After much speculation, it was brought to light that even that was not such a novelty. Art made using the mechanics of artificial intelligence has stuck with humans for an astonishingly long time. Since 1973, Harold Cohen - a professor at the University of California, San Diego, and the first representative of Britain at the Venice Biennale - has been collaborating with a program called AARON. AARON has been making paintings autonomously for decades. Therefore, even in the late 1980s, Cohen was able to joke around that he would be the one and only artist who would ever be able to put up a posthumous exhibition of new artwork created after his death.

**Discussion:**

The unresolved questions about Artificial Intelligence Art are - first, what its potential is and, second, whether—irrespective of the quality of the artwork produced—if it can truly be described as "creative" or "imaginative'' when compared against the existing parameters and standards of Art set in our society of human beings. [5] These are problems, rather opportunities, profound and fascinating, that prompt us to delve deep into the mysteries of Artificial Intelligence with the Arts.

Artificial Intelligence is radically transforming the temperament of creativity. Computers are generating music, architecture, fine arts, and science. Indeed, the computer already functions as a canvas, a brush, and a musical instrument. However, we must target better relations between computers and creativity. Initially the computer was viewed as a mere tool to help human creators. Now, however, it is seen as a creative entity in its own right. This perspective has triggered a new subfield of Artificial Intelligence called Computational Creativity. Creativity in Computational Art has become the discipline of the Information Era and has taken the society by storm.

Computational creativity functions on the principles of Machine Learning which refers to the idea of feeding computers with huge masses of data, and equipping them with algorithms to be able to sort, filter through and create representations of the information. Advanced image-recognition software, after being fed with ample pictures, paintings, and pieces of art, is able to churn out its own version of art, using theorems, locating patterns, extracting functions and deriving algorithms. Artificial Intelligence programs use human-supplied tools, frameworks and information to create representations. As they progress over time, the human intervention and influence required to program, maintain, and monitor the robot is predicted to decrease. And one day, the robot will become smart enough to maintain itself. And only a handful years later, it will program another machine — mayhaps several other machines — to churn out designs as well.[6]

Several years ago, one of the most inspirational and world renowned artists that mankind has ever seen, Leonardo da Vinci recommended gazing at stains on a wall or similar random marks as a stimulus to creative fantasy. This would help the artist trying to "invent some scene" as he would find the swirling warriors of a battle or a landscape with "mountains, rivers, rocks, trees, great plains, valleys and hills." [7] This ideology has been proved as one of the triggers for the prehistoric cave art. It is indeed a common sight for us to see a painting or rock engraving which uses a natural feature. For instance, sculptors engrave a pebble in the wall that looks like an eye. In all probability, the Cro-Magnon artist first discerned a lion or a bison in vague marks, then made that same resemblance bolder with paint and incised lines. It is rather fascinating to acknowledge that all representational pictures — not only paintings and drawings but also photographs — depend on a capacity to see shapes on a flat surface, as another figure in the three-dimensional world.

The study that robots are capable of design and not Art is idealistic — a comforting thought to hold on to as we contemplate the destruction, loss and corruption of one of our most natural means and methods of communication. But does the research support it? Apparently not. [8]Lamus is a software that composes and produces music. A study conducted by researchers at the University of Malaga asked a group of 250 participants, including professional musicians, to distinguish between human-produced music and music composed by Lamus. "The computer piece raises the same feelings and emotions as the human one, and participants can't distinguish them"[9]. Here, the machine is the Artwork — a vehicle of communication, serving as an extra layer of complexity added to convey the message of the Creator's truth.

However, one of the reasons why we are so reluctant to accept that non-human agents can be creative is because they do not have a natural place in our society of human beings. This can be true for even

biological ones, as was it with "Nonja," a twenty-year-old painter from Vienna, whose abstract paintings had been displayed and applauded by the public in massive and grand Art galleries. [10] However, as soon as it was revealed that she was an orangutan from the Vienna Zoo, her art was much less appreciated. The human brain is conditioned to appreciate art better when positioned in a sphere of the stimulating human presence or acknowledgement of a human artist.

**Conclusion:**

Let's examine the earliest Homo sapiens who drew on the walls of caves 42,000 years ago. Following this, our ancestors discovered paper, canvas, sculpting materials and tools. Years later, graphic design was born. Evolution hints at a pattern of discovery and innovation, and a simultaneous ability granted to the human race to be able to adapt and adopt these new paradigms.[11] This is radically changing the processes of how we convey sense and interact with the world at each stage of history.

Technology has always enabled human creativity. Take the example of paintings made with primitive tools in prehistoric caves and then the ones made with paintbrushes and rich colors centuries later. Or, evaluate the invention of the piano and that of cinema, known as "the seventh art"[12]. The fast paced and rising collaborations between humans and machines are poised to take shape of the next great technological leap in art.

Humans are known to have used technological scaffolding to push themselves beyond biological limitations. We make use of the telescope to extend our line of sight, helicopters and airplanes to fly, and electronic media to interact with others. Our machines, invented by us humans, are not always working against us, but rather as an extension of our minds. Similarly, using our machines to enhance our creativity and to push the boundaries of Art is an auspicious way forward. Certainly, embracing this new media is simply humanity's way of adapting to make the timeless, and fluid concept of Art relevant in tomorrow's world.

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