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Digital Art and the Future of Traditional Arts

Ever since the invention of communication technology, which was then followed by the invention of the internet, the two apparatuses have become a very important part of our daily life. For many of us, it feels like something is missing when we do not have a look at social media during a particular day, either in search of news, a message from friends or relatives, or otherwise when we would like to send a post to our social media account. This developed into a phenomenon called the Internet of Things (IoT), which denotes everything about physical items communicating with each other. Machine-to-machine communications and person-to-computer communications are extended to inanimate objects. Indeed, ubiquity networks do exist everywhere, and with the aid of the modern computer, which has become so speedy and powerful in its work, they are opening up the road to the revolution of IoT (simply known as Revolution 4.0), which then signifies the beginning of the future generation of the internet.

This article forms a descriptive study of the presence of digital art, which has been signified by three extraordinary occurrences, i.e., the presence of the world of art as based on Virtual Reality (VR), the principles of digital art for everybody, and the future which is expected to be signified by artistic creativity based on tech-enabled availability. All of these three phenomena are discussed here for the sake of achieving an understanding of the generic multidimensional space, since this article does not intend to lead us to the specific meaning of digital art and its implications for the development of aesthetic values. Furthermore, this article does not assume to provide any theory of criticism whatsoever. The result of this study is simply to show how technological disruption in the world of art, including art education and its effects on the traditional arts, has become a constant topic of discourse in academic society.

Keywords: Digital Art, Virtual Reality, Traditional Arts.

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Цифровое искусство и будущее традиционных искусств

С момента изобретения коммуникационных технологий, за которым последовало изобретение Интернета, эти две системы стали важнейшей частью повседневной жизни. Многие из нас ощущают, что чего-то не хватает, если мы не просматриваем социальные

сети в течение дня либо в поисках новостей, сообщений от друзей или родственников, либо когда отправляем сообщение по адресу на аккаунт в социальных сетях. Это превратилось в явление, так называемый «Интернет вещей» (IoT), который обозначает всё, что касается физических предметов, взаимодействующих друг с другом. Межмашинные коммуникации и коммуникации между людьми распространяются на неодушевленные объекты. Действительно, повсеместно распространённые сети существуют повсюду, и с помощью современного компьютера, который стал необычайно быстрым и мощным в своей работе, они открывают дорогу революции IoT (известной, как «Revolution 4.0»), что означает начало будущего поколения Интернета.

Эта статья представляет собой исследование цифрового искусства, обозначенного тремя необычными явлениями, то есть, присутствием мира искусства, основанного на виртуальной реальности (VR), принципах цифрового искусства для всех и в будущем, что, как ожидается, означает художественное творчество, основанное на доступности технологий. Эти три явления обсуждаются здесь для достижения понимания общего многомерного пространства, поскольку данная статья не ставит цель привести нас к конкретному значению цифрового искусства и его последствиям для развития эстетических ценностей. Более того, эта статья не предполагает вообще какой-либо теории критики. Результатом данного исследования становится демонстрация того, как технологический прорыв в мире искусства, включая художественное образование и его влияние на традиционные искусства, стал постоянной темой обсуждения в академическом обществе.

Ключевые слова: цифровое искусство, виртуальная реальность, традиционное искусство.

An artist is somebody who produces things.
that people don't need to have.
(Andy Warhol)

Introduction

We are here to agree about one thing in common: that *our destiny begins today*!

The *Internet of Things* (*IoT*) literally means *everything related to physical items talking to each other. Machine-to-machine communications and person-to-computer communications will be extended to things*." [17, p. 2]

The *IoT* revolution begins with the invention of software such as sensor technology, fiberoptic, smart things, nanotechnology, and miniaturization. Moreover, the swift and admirable development of ubiquity networks, which truly exists everywhere, as well as the invention of the modern computer, which has opened up the road to the revolution of the IoT (simply known as Revolution 4.0), signified the beginning of the future generation of internet.

What is the implication of these inventions when they are associated with our emotions? Firstly, never again will our emotions be tied up in such a way to the gadget with the requirement of networks availability in the form of the internet quota, as well as the *Wi-Fi*. All of us may have such an emotional experience connected to the computer, an iPad or to a personal mobile phone. It means that we are already entering the matrix world. When we play a 3Ds game, for example, it feels that we already exist in that world. This means that we have already entered the virtual world.

The second question is: what would it be if the experience of entering those virtual worlds happened when we were dealing with art works? These imagined experiences

can be widened with more questions, such as: when was the last time you went to an art exhibition and underwent the experience as if you were dragged into the inner world of its painter's imagination? Or when you had the feeling that you were playing on the stage along with your favorite band?

Figure 1: "*It's hard to sell Virtual Reality*", (Picture taken from Linkedlin.com, downloaded on March 12, 2019)

However, in our new tech-enabled world, artists tend to sharpen the power of virtual reality, to put us right in the middle of an artistic experience, to establish our connection with their art works, and at the same time to enrich the relationship between artists and their audiences, which goes beyond the wildest manifestations of our imaginative power.

The second part of this article will bring us to the beginning of the presence of digital art, which has been signified by three extraordinary occurrences, i.e. the presence of the world of art, as based on Virtual Reality (VR), the principles of digital art acceptable for everybody, and a future which would be signified by artistic creativity based on technological means. All these three phenomena will be discussed here in crisscrossed order to achieve an understanding in a more generic

multidimensional space, because this article does not intend to bring us to any specific meaning of digital art.

Digital art is undoubtedly connected to Artificial Intelligence (AI), or the engineering of intelligence. The idea that a machine can be made to simulate intelligence was introduced by John McCarthy in 1955, when he wrote a proposal to his ongoing technological research. These are some of his vivid ideas in his thesis: "The study is to proceed based on the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it." [16; See also: 15]

One of the examples of a 'program' for intelligence engineering in music may be found in the last part of this article. The program is called EMI (Experiments in Musical Intelligence). According to Hofstadter, this kind of 'program' can produce brilliant music. [12, p. 3] As an example, EMI is convincingly intriguing, but in Indonesia nobody has shown any willingness to study this 'program' yet.

In short, technological disruption in the world of art, including art education, has already occurred, and is constantly changing since the emergence and development of Information Communication Technology (ICT). According to Scrivener and Clement [23, p. 25]: "ICT changes at such a rapid rate that it is constantly outmoded by innovation. There is also the fact of the great diversity of what constitutes 'new media' at any one time. What constitutes the new media art world is therefore both very diverse and constantly changing."

The very last inquiry is perhaps the most controversial one. In such a hustle and bustle of IoT and Digital Art, which will certainly be applauded by many people, what is the stand of Traditional Art? Is the smell of paint on a canvas, the scratches of composing music,

gamelan, choreography, and dramaturgy? Is it photography with old print methods, and all of the psychomotor aspects of the art, which have already disappeared?

It is fortunate that we have with us a caliber ethnographer such as Alan Lomax who is greatly admired by most of our postgraduate students. Sharing our concerns with us, this great scholar and ethnographer had the same feeling as we did in regard to the disappearance of our Traditional Art, when he exclaimed out loud in the following manner: "We should appreciate rural and indigenous traditions as true art, on the same level as classical music." [21]

Since we take it for granted that we think of Western classical music as a serious and high art, the time has now arrived that we should regard our traditional arts, which also deserve to be appreciated as a serious art, as a form of high art too. This paragraph has been purposely written as a short one, in order to provide us with enough time to reflect about that philosophy. Moreover, while we reflect on manual and traditional art, it will not be discussed in this article anymore, but we must make the subject of our reflection after we have concluded this seminar.

Digital Art

"Science is art. It is the process of creating something that never has existed before. It makes us ask new questions about ourselves and others, about ethics and the future."– Regina Dugan, Senior Executive at Google (2013).

Before the computer became so closely connected with the artistic world, all of our creative processes had been carried out manually. Composers wrote musical scores manually; for this reason, many mistakes could be found in them, which made publishers speculate over the originality of particular publications of the composers' works, which the editors claimed to be the only authentic ones. Choreographers had the necessity of asking the dancers with whom they worked to improve the musical compositions to which they were dancing. Painters, designers and other artists made raw designs of their projected works in preliminary sketches. Photographers had no means of altering what they photographed, since they were not able to create any distortions to the pictures like what might be possible today.

All such limitations have already become a thing of the past. Present-day computers have made it possible for choreographers to write down their choreography by creating animations of human figures and making virtual rooms in order to be able to view the danced movements from every corner. It is not necessary any more for choreographers to invite other dancers to help their dancers make corrections or eliminate mistakes during the rehearsals. Similar advantages are now also enjoyed by composers, since they are able not only to complete full musical scores, but also to be able to listen immediately how they sound. This has minimized the speculations and uncertainties about how any part of the music sounds, since presently the composer can directly be the sound editor of the music, as well.

All artists can now enjoy all the benefits offered by the computer and an improvement of digital technology. Furthermore, the unprecedented innovation of technology could be highly developed even more in a blink of an eye. A present-day computer is able to create a musical composition in the scope of a symphony orchestra, to create paintings and works of other types of visual arts simply by clicking in an input set out for it in advance (See Part 3 of this article).

It is not at all surprising that various questions may be asked, such as, wherein lies the essence of human intelligence? Psychologists may be able to make a measurement of our intelligence but when asked where is the precise location of this

intelligence, it is confirmed that the answer to that is that it can be found in our left brain. Accordingly, our brain possesses 10 billion neurons, whereas the processor in our computer has perhaps the capacity of only 1 gigabyte with 32 megabytes of memory, but this already provides a great capability. So, which among the left sides of the brain possesses such a capability? (See Part 4 of this article).

It is precisely the condition of postmodern culture [19, p.108] that its phenomena may be viewed in the following manner:

– The postmodern culture can be explained as an alternative path for society which, perceiving its inherent structural element as a form of confinement, is fundamentally in a condition of anxiety.

– The new era of ICT offers this alternative as a key of hope for a better life and a more prosperous society.

– The discourse of postmodern culture focuses on people's flexibility to be able to progress with individual identity and to carry out an existence which proclaims rationality and autonomy above all other things.

– The discourse of the new system of communication provides more technical improvements in information exchange which not only are beneficial for human beings as individuals, but also for all institutions created by human society.

As it might be suggested, the description above precedes the discourse in which the postmodern phenomenon within the arts has already demonstrated itself in so many materializations, in which it may be fully understood. One example of postmodern culture is the phenomenon of Andy Warhol.

This controversial artist has been compared to an object of deconstruction (the object which can be found in the discourse of postmodernism of that time) by having presented himself as an artist who had to be deconstructed. In cases when repetition was considered a taboo, he made repetition a part of his philosophy "From A to B and Back Again". (More about this artist is written in the last part of this article).
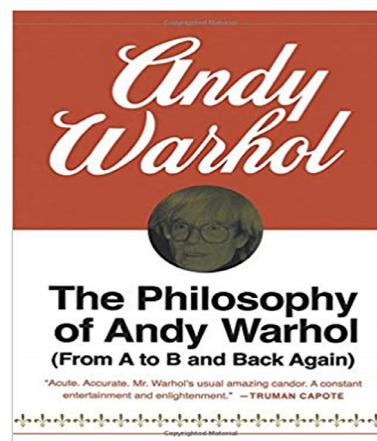

Figure 2: Andy Warhol "*From A to B and Back Again*" (1977). In this autobiography Warhol speaks of his works of in the sphere of painting which contain a considerable amount of irony and open-mindedness

The new era of communication preceded by the appearance of cybernetics as a term, that is a science of unification of communication theory and the theory of control. The term "cybernetics" was introduced by Norbert Weiner in 1948. Weiner (1948, 23-4) has created a periodization parallel to the scientific development and the history of the development of the human body as follows:

1. The ancient period (the Golemic Age),

2. The period of the invention of the clock (17th and 18th century),

3. The invention of the steam engine and early mechanic contrivances (the 18th and 19th centuries),

4. The age of communication and control, signified by changes from power engineering to communication engineering, from the economy of energy to the economy based on accurate signal reproductions.

This development parallels and encourages four kinds of human body functions:

1. The body as something magic, created from dust,

2. The body as a work of mechanics based on time,

3. The body as a heated machine which not only burns up glycogen in the human muscles, but also consumes natural fuel meant for moving real machines,

4. Lastly, the body as a system of electronic mechanisms which has the ability to exchange and reproduce signals in the forms of messages and various other accurately input materials (the cyborg).

Cheery Colin in her book titled *On Human Communication: A Review, a Survey and a Critic* (MIT Press, Cambridge, 1980) considers imagination a viable took for communication, citing examples when a human organism, its organic and mechanical systems become united in a workable signal in the temporal dimension, such as speech and music, and then also becomes united in the spatial dimension, such as painting, printing or carving.

Although this was, most likely, only the work of imagination, Colin engaged in a significant study of the subject and developed certain views on the subject, some of which can be quite provoking. When such a phenomenon occurs, it cannot be otherwise that our entire culture will be changed. We will enter the stage of life in a true post-humanist condition in which we will be surrounded by cyborgs and will depend on machines. Our lives, our bodies and our living machines can surely be merged together. One can only imagine the situation that a powerful microchip based on an Android can be created out of a fiber which would not be rejected by our cell system, if inserted into it, and at the end would merge with our body. (As this article

is being written, this microchip has already begun to be implanted into the human hand and has proven its usefulness for many kinds of digital economic transactions; see the picture below).

Figure 3: *The Independent* reports that Swedish workers were implanted with microchips – the size of one grain of rice – to replace cash cards and ID passes. Microchips are injected in between the thumb and index figure with a syringe (*The Independent*, 6 April, 2017)

Stone (1991, 102) shares this concern, when he states that "… our fundamental division between technology and nature is in danger of being dissolved; the categories of the biological, the technological, the natural, the artificial and the human – are now beginning to blur."

After reading Stone, our memories soon focus back on the cyborg. According to Clynes & Kline [6, p. 29], the word "cyborg" is the shortened form for "cybernetic organism," i.e., a human cybernetic structure capable of self-regulating. Thereby, the result of these experiments is a kind of human machine parts of which can be replaced, integrated, or utilized as a supplement of the human body, added to enhance the power of the latter. Examples of such graphics can be found in science fiction movies, such as *Robo Cop, Blade Runner, Star Wars: The Last Jedi, and Avatar*.

Cyborgs undoubtedly exist in the perfect borderless dimension of inner and outer

space. The domain for their mobility is the so-called cyberspace. The latter is a domain of information in which relevant data is described in such a way to as provide the illusion of control to an operator so that he can move and access information. In this situation, the cyborg is connected to various kinds of simulations similar to shadows. Indeed, this type of technology is already familiar to us for instance the 3D or 4D games.

Other technologies of the kind are still being developed in the present for this and other kinds of presentation of 'real time,' albeit, for the most part still in the fictional world; nonetheless, all of them have capabilities of simulating the space with which we all interact. Those readers who are interested in learning more about cyborgs are advised to read the book on the subject by Joanna Zylinska (editor): The Cyborg Experiments: *The Extensions of the Body in the Media Age*. New York, NY: Bloomsbury Publishing, 2002.

At the same time, Lanier & Biocca [14, p. 150] and Jefferies [13, p. 43] concur on the issue that cyberspace usually appears in connection with virtual reality, an extension of process of cyberspace existing in order to provide 'pristine' informational space by means of constructing data which results in the effect of immersing into the cybernetic space. Virtual reality is usually familiar to us in the form of 3D/4D. During its process, virtual reality can provide our body with artificial vision in the form of light, sound and touch, unlimited only the dimensions of space and time (2D). Furthermore, whereas, in an ordinary dimension we might not be able to share this space with other people at a precise time, in the space of virtual reality we are not only capable of sharing the same space with other people, but we are also capable of doing so from a very different place.

It is only by using 3D technology that Jefferies [13, p. 44] is able to utilize visual manipulation to compose his choreographic works. According to him,

"*Another impact of using 3D has been that we have learned so much more about our practices. More about physics, ways of choreographing in virtual space, assembling movement material, behaviors. Now we are making physical objects from forms taken from our virtual worlds*."
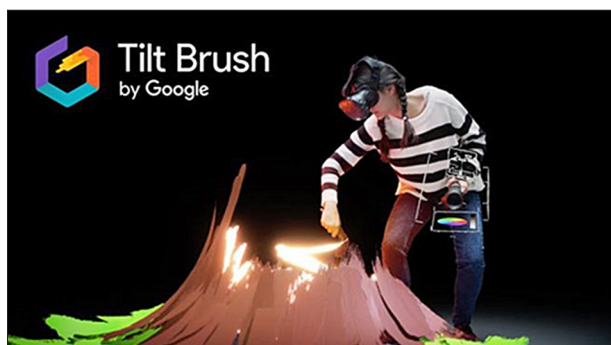

Figure 4: Artists have quickly realized that by means of technology they were able to improve and polish their art works more effectively. Fabio Giampietro, a prominent Italian artist, told us of how fast the speed of creating art is changing due to modern technology
(*Tilt Brush, VR Application by Google, 2014*)

Moreover, when we combine video graphics with computer graphics in order to create a specific response, we are thereby entering an artificial reality (AR). We might experience it when we play an interactive sport (for instance soccer game in which every player will forcefully attack and blockade another attack from the opponent). The same things are also happening in the movie industry. Film companies have tried various ways to make their audiences capable of feeling as if they existed in the movie they were watching, not merely sat back and watched it [11, p. 28]. Could you imagine that your students were able to

produce a movie in an artificial reality based on a story from the *Bharata Yudha* series?

AR and VR in cyberspace reality prove that these two realities can be developed from their respective characteristics, starting from mimicry of reality, then multiplying in parameters, becoming multiplex and developing into a genuine reality. At the same time some, there have appeared other novel technical terms such as, automaton, automation, automatic, android, robot, and bionic. This would consequently lead us to the perception of our constructed bodies, our conceptions of what is organic or inorganic, relating to the body or to technology, human or non-human, and what comes from machines themselves when in the future we will accept them as organisms pertaining to the human species [5, p. 45].

All of those experiments might be carried out in the future because of the ongoing extra sophisticated computer technology, in addition to the expanding scientific revolution of the theory of relativity, quantum mechanics and the theory of chaos. The very last phenomenon is the theory of non-linear systems, such as, for example, studies of phenomena that in their progression are extremely too sensitive, so that even a very small fluctuation of initial process of a condition, for example of climate change the forming of turbulence, or computer graphic depiction, could be affected.

One example of a concrete linear movement could be cited, when we ride a bicycle twice the normal speed, we will arrive to our destination half the time it would normally take. Each percent we move faster matches to one percent in decrease of the distance of time. However, this linear system may turn out to be non-linear in one specific condition, – for instance, during the steadily process of evaporation of water, which may turn into steam turbulence, then, if further increased, into a storm, and so on.

When this is implemented in a computer program chaos theory, it might produce a number of diverse effects such as VR. This also includes the process of creating Artificial Intelligence (AR).

The explanation of quantum theory is more complicated. David Bohm [3, p. 36] provides four kinds of approaches to understanding it:

1. The progression of quantum cannot be divided: its basic postulation is that the energy of a wave cannot be divided by its specific limit which passes the limit of its frequency.

2. The quality of a particle wave is that all the waves on a specific level of quantum can be considered as particles, but, since it is a wave, it depends on the observer to set up the condition for observation in order to produce the description of a particle wave as a phenomenon.

3. The material elements functioned as enhancement to statistical potency are solid materials with their limited characters which provide statistical description as a group of quantum particles, – for example, billions of particles of atomic uranium can be divided with precise accuracy, but not a single atom would thereby be united.

4. Non-causal correlation is expressed by the fact that quantum theory requires sub-atomic particles to provide direct information instantly beyond their ultimate distance.

During the rest of his life, after he discovered the quantum theory, Einstein tried to overcome it, but without any success. According to him, the only instant and constant element is the speed of light. All of the aforementioned theories, they have already and are continuing to be improved by means of various experiments on working on computers by means of creating virtual intelligence (VR). Examples of different art works carried out by computers examined

in the following sections of this article will provide us with a proof of how computers can possess the skill for creating paintings, composing music, and engaging other kinds of artistic activity.

Various of the aforementioned scientific theories have also altered our position from the *anthropo-centric*, with human beings seen as the center of the universe, through the *anthropo-eccentric*, according to which human beings are no longer seen as the center of the universe, towards the so-called *cyber-centric*, where human beings are seen as the center of the cyber world. Presently, our feeling has fluctuated between the skeptical and the optimistic. However, Plato has reminded us since the 4th century BC that it is likely that we live in a prison. In the 7th book of his "Republic," Plato presented us with the mental image that we live in a cave. What we see in front of us are only shadows created by torches burning behind our backs. [9, p. 19]

This idea evokes the image of people from the Paleolithic Era (c. 14.000 BC) who lived in caves. Painting on cave walls was for them the means to sharpen their vision. They sat around on the floor, making fire, meditating, reflecting on their lives. For Plato this capability of engaging in reflecting is similar to the ability of the so-called "mind's eye." This kind of mental perspective was exactly similar to what we feel after watching a movie. This is essentially merging with virtual reality. Very often, people have felt themselves as a personified Rambo, after watching this movie.

Living in caves, as the people of the Paleolithic Age, watching movies in the cinema, staying at home and sleeping, – all of these create the same conditions. When we read a novel, listen to a symphony, or look at impressive paintings, we feel immersed into the respective activities, as if we 'exist' in a different reality. Such an immersion provides a widespread anthological condition. It is the nearly the same when we 'exist' in the world of virtual reality. The difference however, that in the world of virtual reality the viewed image seems to be very realistic. We face virtual entity and become ourselves an entity of this virtual environment. In this kind of situation, the symbol becomes reality.

The world of telepresence (virtual world) is an example of cyber-reality, since its main object becomes transported and transformed into the world of cyber. As a stratum of the other reality, cyberspace make it possible for us to exist in other place and meet some other people, even though our physical bodies exist in a difference place.

When we use digital camera and engage in chatting with people located at a far distance from us by means of internet connection, in such conditions we create a simple telepresence. A work of art carried out by means of a computer can create a form of telepresence even more amazing than the previous variety. All of this is now made possible by the computer. We all have become very difficult to be separated from the computer. Technology has become more perceptible and closer to us, and it might even occur in the future that soon it will be inserted into our bodies.

Some Examples of Digital Art

The future will be robots and humans working side by side going by the latest research in IIoT (Industrial Internet of Things).
Alasdair Gilchrist, 2016, 12

This article has just led us to the discourse between digital art and 'traditional' art, without any complicated technical explanation. However, when technical description is necessarily required, the writer is only able to provide the readers with the websites on specific technical terms which can be accessed separately.

The first example was a music computer created by Stephen Baron. This computer was an example of network art, a work of art produced and transmitted by means of the internet. This work was "performed" at the Adelaide Festival 1996 in Australia. It featured a combination of internet technology to which were added aesthetic touches, social problems and political agendas influenced by the practice of globalization [1].

This work utilized two prepared pianos, which were set up with screws and rubber bands inserted between its strings to produce certain strange sound effects. The first music for the prepared piano was composed by American composer John Cage. Barron made use of two prepared pianos, which were already connected to computers, one of them was set up at the Sym Choon Gallery in Adelaide, and the other one was located at the Donguy Gallery in Paris, France. These pianos were 'played' by means of an automatic procedure, by consistently applying two kind of resources. One resource measured the amount of air pollution in the ozone layer in Adelaide, affected by the amount of pollution produced by the street traffic in Paris, and the other computer measured the level of ultraviolet (UV) rays pouring into the atmosphere affected by the widening of the hole in the ozone layer in the sky over Adelaide.

The two prepared pianos which had already computerized the produced sounds by certain reciprocal means by measuring the ozone coming from the air pollution from the cars in the streets of Paris, as well as the widening of the hole in the ozone layer.

Thereby, this performance was dedicated to the changes of the "ozone pump" installation affected by air pollution and the natural condition of the ozone layer. It played upon the distance between Europe and Australia, as well as that between human beings and nature. This music was not produced by anybody other than the human activities on the scale of the entire planet Earth (the making of air pollution in the ozone layer by all people) and its interaction with the sun (because of the danger of the ultra-violet rays from the sun light).

An example of a painting produced by a computer can be found in a program called AARON created by Harold Cohen, a professional painter who was interested in Artificial Intelligence (AI) present in computers. Cohen created the AARON in 1972. As a program, the AARON was intended to create pictorial images. It was meant not for copying images, or changing any given input image, but for continuously creating new images. The AARON controls a robot machine, which at the first stage produces lines of painting in monochrome (black and white), after which Cohen finishes the painting by putting in various colors manually. Despite the presence of the artist's manual activity, the development of the AARON has made it possible to paint with many colors, sizes, as well as to wash the brushes used for adding color to the drawing.

Figure 5: *Theo*, 1992. Dilukis oleh AARON, cat di atas kanvas, 34x24 inchi.
(Foto oleh Becky Cohen, *n.d.*)

According to Cohen as noted by Ed Burton [4, pp. 33–49], "*Cohen considers not only that the pictures which AARON produces are art, but also that AARON itself is a work of art.*" It can be said that if Andy Warhol was known as 'mechanistic artist', then Harold Cohen should be considered to be a 'meta artist,' since he creates both a machine for creating his art and the art itself. Readers who would be interested in learning more about the works of the AARON might visit this website: http://www.scinetphotos.com/aaron.html.

Next, we shall examine the phenomenon of experimental music as an example of a composition created by means of Artificial Intelligence (AI) – with a computer by David Cope, a professor of music at the University of California at Santa Cruz, USA, who has successfully created musical compositions by means of a system called "Experiments in Musical Intelligence" (EMI). David Cope had already carried out this experiment for 20 years, when the production of musical works on the EMI was announced for the first time in 1995. The musical scores produced by the EMI are as precise as the works written manually by a composer. For instance, when the EMI creates a Mazurka for the piano imitating the manner of Chopin, it sounds as similar as an authentic piece by Chopin. Similarly, when it was played on the EMI program on a multimedia computer, it sounded very close to the composer's style. [8, pp. 67–69]

The system present on the EMI was related to so-called "recombinant music," i.e. it was a system which repeatedly identified the stylistic traits inherent in the music of various composers. After this, the EMI re-utilized these structures in a new arrangement and composed new music "in the same style". Thereby, we might imagine that when we give an input into the EMI

containing Beethoven's nine symphonies, undoubtedly, the EMI will present us with the output of the composer's Tenth Symphony.

Normally musicians pay much less attention to works created on a computer. Nonetheless, Bach specialist, composer and pianist Bernard Greenberg, when he was given the chance to listen to music composed by the EMI with an initial input set up to imitate the style of J. S. Bach, commented the following way: "It was amazing, not only that this music is in the style of Bach, but also it is in itself magnificent." We might ask then, whether the music was in the style of Bach but was not very good? Thus, this presented the evidence that the music created by the EMI not only sounded like Bach, but also it 'spoke' like Bach (i.e. not only following the style, but also having the personality of Bach!).

A test was given to the students of the Department of Music Theory and Composition of the Music Department at the University of Rochester, USA. A pianist played two Mazurkas in front of the class, after which the students were asked, which piece was the original Mazurka by Chopin and which one was created by the EMI. Most of the students replied that the first Mazurka sounded as if it were written by Chopin, but was not a real Chopin work, because it was too large in its structure, with a plentiful amount of musical inventions. So, they were convinced that the second piece was an original Mazurka by Chopin, for it possessed the grandeur of lyrical melodies, being endowed with beautiful chromatic modulations and with a natural balance of form and duration.

The results of the test announced that the first Mazurka was the original piece of Chopin, while the second one was the work created by the EMI. All the students were amazed at what they had just heard.

How was it possible that the EMI could outwit them, who were notable specialists in music theory and composition? It should be noted that the University of Rochester is one of the highly reputable universities in the USA.

So dear readers, it cannot be denied that that computer has developed tremendously, and the phenomenon that we have just seen provided us with living proof that research and new inventiveness in the field of Artificial Intelligence can be more developed in the very near future. What will things be like in the next 20 years from now? Or in 50 years from now? We have inferred from the aforementioned example that even by this time it has already been proven that the works of art created by a computer can be even better than the works of a human being.

Brian Reffin-Smith [20, pp. 127–138], a well-known critic, observer and visual arts curator in the USA, described the discourse about art produced by computers when he said that, "*The truth is that there used to be much better art produced by means of computers*." The reason was, as he went on saying, "*Because it approached the problems of art, not just of spectacles*." One viable solution of the problems of art, according to Smith, is that the art produced by computer would not be successful in promoting the names of its creators. Thus, this art is devoid of prejudice and preconception, and also lacks the various contextual features normally overly exaggerated by our art critics.

The question that may arise is such: is this the end of traditional art? Richard Shusterman [24, pp. 1–3] in his book entitled *Performing Live: Aesthetic Alternatives for the Ends of Art* expounds the idea which art-related theories have already stated, since Hegel proclaimed that art has reached its final stage. According to Hegel, as it was cited by Shusterman, "*Art no longer affords that satisfaction of spiritual wants*." Similarly, Gianni Vattimo said that the modern age has been marked by "*The Death of Art*." According to Arthur Danto, it was, "*The death of mimesis*." (Note: It must be noted here that even the school of thought known as Dadaism was begun with the assertion that "Art is Dead." This mode of thought was introduced for the first time by Hugo Ball in Zurich in 1916. The word "Dada" in French means a wooden horse. More about Dadaism can be read in Herschel B. Chipp's book *Theories of Modern Art*. Los Angeles, CA: University of California Press. 1966).

An alternative path was offered by Shusterman in challenging the upcoming era (it is provided here for fighting the phenomenon of commodification acts by our contextualists!): "*In our new age of multiple, marketed lifestyles, which sadly seem to foster as much conformism as creativity, the concept of individual style needs more attention*." It is the last part of the sentence, 'individual style needs more attention,' which presents the keywords for developing our traditional art in its challenge to the digital era.

However, the present and future challenges are aimed at sharpening the ability of human intelligence to resist the hegemony of the computer. The next section of this article will briefly describe human intelligence in its relationship to Artificial Intelligence, as well as artists' reaction to the phenomenon of the post-humanist conditions of life and art.

Human Intelligence Versus AI

"Study the science of art and the art of science."
(Leonardo da Vinci)

In the first section of this article mention was made of the phenomenon of Andy Warhol, who thought himself as a

"machine," so in this final section the writer is able to describe the philosophical aspects of the Warhol phenomenon with their connection to human intelligence versus Artificial Intelligence.

Warhol considered the main challenge of the 20th century was to cope with the digital era and the end of the history of aesthetics. According to Jean Baudrillard [2, p. 184], aesthetics was already reduced to the level of the '*mise-en-scene*' (out of the scene). Warhol had deconstructed himself (rather than the object he painted) as a machine, situated outside of the pretense and prejudices of human intelligence. Each of his paintings was created in the form of initiation, but it was initiation to nothing at all. "Marilyn Monroe," as everybody could see, was shown to be what she really was. The image of Marilyn Monroe speaks of herself, because everyone has known this celebrity as the sex symbol of the 20th century. The painting "The Bottles of Coca-Cola" carried a similar message. These kinds of images according to Baudrillard, were images which could be identified as hypostatic, pure without forms, devoid of anything significant. But this was the case, was because Warhol would denigrate his own will, demonstrating himself as a "machine" which had to exhibit such artificial images. This was because in order for the artist to be natural, there must be subject to be exposed through him or her, and thereby to change the real world into his or her paintings. Warhol considered that he possessed an indispensable disregard to all these realities. For Warhol there is no real universe in his works, and there also is no Warhol behind all of Warhol's effects.

Baudrillard described the Warhol phenomenon connected to the paradoxes of art, as well as to the science of context of no real universe. This was what he said:

"*This is the most original and specific situation we can face today in the matter of science, as in the matter of art (perhaps it is no longer art, and perhaps it is no longer exactly science: what is paradoxical science?). The virtual, uncertain and paradoxical status of the image is its ideal status, as it is for the object of science (whether we like it or not, both art and science have become screens).*" [2, p. 189]

The phenomenon of metal music was, surprisingly, also similar to the idea of the absence of a real universe. Realized that all metal musician artists enjoyed their status more as the *totem icon* of the primitive tribes. They gave themselves such names as Sting, Metallica, Nirvana, and U2, which sounded like names of primitive tribes, just to make it clearer of their social identities.

In contrast to icons of goddesses and saintly people present in the temples which were regularly attended by primitive tribes, Metallica and other such groups wisely presented themselves in the forms of video clips available in every household. Their motto, as it was repeated multiple times by what seemed to be their 'empire' – MTV – was: "One world, one music!" So, when there is a machine capable of singing, it must be sounded, like an electric guitar. No matter how much you have listened to this music before, you never listened to the human voice, especially when you were listening to it very loudly. You will have heard nothing. You will only listen to a machine.

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