The Creation Process in Digital Art: Latest Developments

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Abstract:

The focus our analysis on the creation process in digital art we easily conclude it is intrinsically linked with the design and development of computer-based artworks. By exploring computer technologies digital art opens to new type of tools, materials and artworks as also establishes new relationships among creators, artworks and spectators or observers, largely not comparable to previous approaches.

Indeed we can describe art objects as simple symbolic objects that aim at stimulating emotions. They are created to reach us through our senses (visual, auditory, tactile, or other), being displayed by means of physical material (stone, paper, wood, etc.) while combining some perceptive patterns to produce an aesthetic composition.

These digital art objects or artifacts, where some are possibly non-tangible, constitute, in fact, the resulting product from the artistic creation process that together establishes a common communicational and informational space. Information or information content, meaning the intended message of each artifact, is a central constituent of this common communicational and informational space. Accordingly, artistic artifacts, may these be of digital or physical nature can be defined as informational objects.

Digital art objects differ from conventional art pieces by the use of computers and computer-based artifacts that manipulate digitally coded information and digital technologies, i.e., they explore intensively the *computer medium*, what opens unlimited possibilities in interaction, virtualization and manipulation of information.

Key words: creation process in digital art, virtualization, digital art objects or artifacts**.**

Introduction

The process behind the act of the art creation or the creation process has been the subject of much debate and research during the last fifty years at least, even thinking art and beauty has been a subject of analysis already by the ancient Greeks such were Plato or Aristotle. Even though intuitively it is a simple phenomenon, creativity or the human ability to generate innovation (new

ideas, concepts, etc.) is in fact quite complex.

It has been studied from the perspectives of behavioral and social psychology, cognitive science, artificial intelligence, philosophy, history, design research, digital art, and computational aesthetics, among others. In spite of many years of discussion and research there is no single, authoritative perspective or definition of creativity, i.e., there is no standardized measurement technique.

The computer medium is defined here as the set of digital technologies ranging from digital information formats, infrastructures to processing tools that together can be observed as a continuum art medium used by artists to produce digital artifacts.

When we consider the creation process itself, we can establish its beginnings when the creator gets an hold of the first concept or idea resulting from his/her subjective vision, gradually modeled into a form of (un)tangible artifact. It constitutes the message, this *about* something, the artist wants to transmit to the world. When digital content is used in this process, it can be both the means and the end product. On one hand, the digital content can be explored as the means to create non-digital artifacts, as for instance, digitally altered paper-based photography, and, on the other hand, be the end-result intended as it is the case in animated comics.

Similarly, digitally coded information content can be manipulated by digital artists to create artistic objects. When in the creation process, digital artists apply information content along with technologies from multimedia, virtual reality, computer vision, digital music and sound, etc. as also the information and communication infrastructure available such are the internet, presentation devices, and storage arrays, among others, to create interactive installations and generate digital artifacts. Therefore, the computer medium traverses effectively all the stages of the creation process, from concept drawing until the final artifact production and exhibition. Today's powerful editing and programming tools make it possible to an artist to modify, correct, change and integrate information content as valuable raw material in the creation process, that may be presented in several digital formats such are text, image, video, sound, 3D objects, animation objects.

Digital art fundamentals

Digital art has its roots within the first decades of the twentieth century with isolated experiments created by a few visionaries whose results were mostly exhibited in art fairs, conferences, festivals and symposia devoted to technology or electronic media. These first artworks have been mostly classified as marginal to the mainstream art world. Alike in the Dadaist art movement some of these artworks were seen as a form of *anti-art*.

The development of science and technology has been the principal engine of the evolution of digital art. But, what we know today as digital art has been strongly influenced by several art movements such were, among others, Fluxus, Dada, and Conceptual Art.

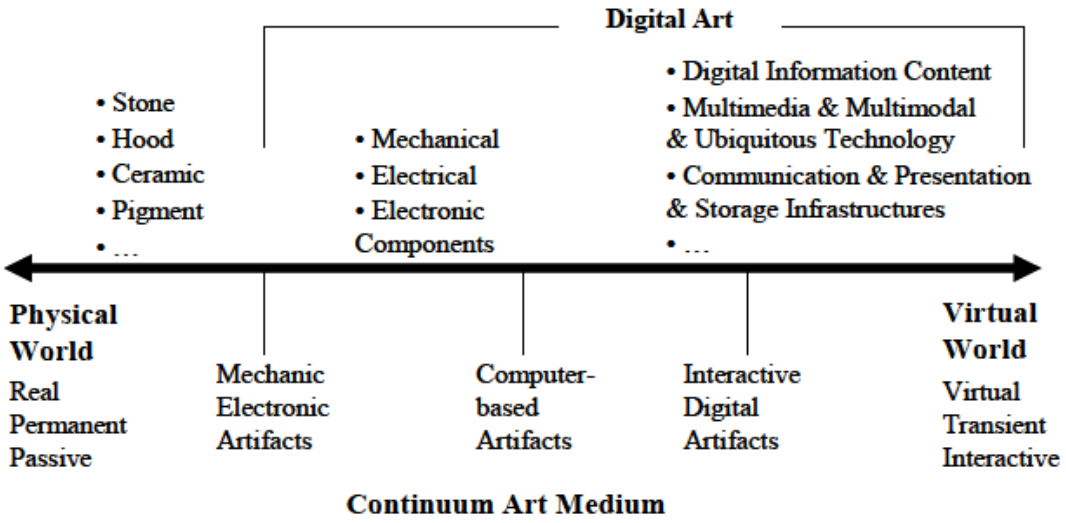

Figure 1. The Continuum Art Medium.

These movements brought into digital art the emphasis on formal instructions, the focus on concept, on the event *per se*, and also, the emphasis on the viewer's participation, contrasting to the art based on unified static material objects. From the Dadaism specifically, digital art inherited the concept of creating art by using precise predefined rules, i.e., a finite set of instructions generates the final artwork (a poem, a painting). The rule' or algorithm' instruction was adopted as the conceptual central element in the creation process.

Instruction-based art is a fertile soil of today's digital art. Similarly, the Fluxus art movement has also extensively explored the idea of instruction-based generated art along with the immersion of the audience in the event, forcing an *interaction* between the spectator and the artworks. Influences from the Conceptual art, a movement emerged in the 1960s, came from its central statement "the idea or concept is the most important aspect of the work". This is still a way of thinking and practice common to many digital artists in all over the world. The concept or idea is the leitmotif for the shaping of the digital artifact. It means that "all of the planning and decisions are made beforehand and the execution is a perfunctory affair, i.e., the idea becomes a machine that makes the art", by artist Sol LeWitt (1967).

Digital art is mainly based on three grounding concepts: *controlled* ***randomness access***; *presentational* ***virtuality*** and ***interactivity*** that have been behind emergent artwork from the 1960s to today's digital art installations. They can be described as follows:

Randomness Access: (pseudo) non-deterministic instruction-based algorithms open the possibility of instant access to media elements that can be reshuffled in seemingly infinite combinations;

Virtuality: the physical object is migrated into a *virtual* or *conceptual object*. The *concept* itself becomes perceptible through its virtualization;

Interactivity: the viewer may assume an active role in influencing and changing the artwork itself.

The artwork is often transformed into an open structure in process that relies on a constant flux of information and engages the participant in the way a performance might do. The audience becomes a participant in the work, resembling the components of the project that may display information of a specific perceptive nature (visual, auditory, tactile, or other). The artist plays usually the role of facilitator for the participant's interaction.

Creation process

The creation process in digital art relies often on collaborations between an artist and a team of programmers, technicians, engineers, scientists and designers, among others. This collaboration implies a multidisciplinary work involving art, science, technology, design, psychology, etc., that form a common communicational and informational space. Due to the widespread of the digitally coded information content that is increasingly available in high expressive multimedia formats, the creation process is becoming more and more based on the manipulation and integration of digital content for creation of artworks.

Accordingly, we need a common creative design space where digital artists can smoothly progress from the concept/idea until the final product (artwork) while exploring the computer medium to its maximum potential. This common creative design space incorporates necessarily a communicational and informational space beneath, where digitally coded information content of different nature and level of processing is available for the artists' use. Furthermore, tools for editing, design or for any specific processing and composing have to be offered along with facilities for communication and collaboration among the community members.

The creative design space shall also provide tools to support all the activities at all phases of the creative design process, ranging from the drafting phase, passing through the artifact's implementation phase until the artifacts exhibition preparation (exhibition space design) as also the access to physical and/or digital exhibition space. This way, the creative design space will facilitate the establishment of communities of interests in art, where people from different backgrounds share materials (raw material), and digital collections while collaborating throughout common goals.

The meaning of design in this context, appoints to a conscious effort to create something that is both functional and aesthetically pleasing. Design is here taken from both the perspective of design in engineering and from a more inventive view as it is the case in applied arts.

The process

The creation process in digital art is mainly based on the design of the artifact's message and its development. The computer medium in the form of editing, communication and collaboration tools as well as digitally coded information content is likely to be always present and traversing the overall creation process.

As depicted in figure 4 the creative design process is launched when the artist gets hold with an initial idea/concept. Then, the artist starts to design the concept, entering a process that will lead into the final artifact. This process is not a linear process, on the contrary, artists may go back and further in the activity sequence, skipping one or focusing the work in another. The process is usually highly dynamic, yet, the artist's vision is always present. The creation process involves the following phases:

Message Design phase:

Concept Design: in this activity the artist gets involved in converting his/her idea/concept or vision into a set of sketches, informal drawings, i.e., the abstraction is concretized in a perceptive structure. The artist does exploratory drawings that are not intended as a finished work. The outcomes of this activity are, thus, sketches, drawings that allow the artist to try out different ideas and establish a first attempt for a more complex composition.

Narrative Design: here the artist takes the drawings resulting from the concept design activity and designs a composition, a construct of a sequence of events that set up the message that will allow the users/viewers an emotional connection which grants memories and recounting of the artwork. The narrative of the message behind the initial concept is designed taking into consideration aspects such as the structure of its constituent parts and their function(s) and relationships. The narrative assumes the form of a chronological sequence of themes, motives and plot lines. The outcome of this activity can be resumed as the design of the message as a story.

Experience Design: this activity embraces the process of designing the message, taking into account its related concept and narrative, to design and conceptualize specific characteristics of each narrative event from the point of view of the human experience it shall provide. This design or planning of the human experience is made based on the consideration of an individual's or group's needs, desires, beliefs, knowledge, skills, experiences, and perceptions.

Aesthetic concern: process of integrating characteristics in the artifact that eventually provide a perceptual experience of pleasure, meaning or satisfaction, arising specifically here from sensory manifestations of the artifact such are shape, color, immersion, sound, texture, design or rhythm, among others. Beauty here relates almost exclusively to the aesthetic dimension of the perceptive nature of the artifact components.

Technology innovation: process of integrating novelty in the reshape, use, combination and exploitation of digital technology. This appoints to the computer medium dimension of the beauty creation, i.e., the technology is a driven force to set up new aesthetic dialogues. Taken the fact of the digital technology is under accelerated development; integration of high levels of technology innovation in digital art is commonly desired.

Artifact Development phase:

Artifact Design: this activity relates to all aspects concerned with the design of the computer system or application that will support the final artifact. This includes the design of the system architecture, interface and interaction, as well as the selection of technology to implement them. Since the artifact is to be acted usually by an audience of viewers, we have also considered in this activity the design of the use scenario from the technological point of view. Design adopts here a hybrid perspective mixing aspects from applied arts and engineering. It applies principles from a more rigorous design based on exploitation of technology, science and even mathematical knowledge along with the aesthetical concerns.

The creative design space architecture

The creative design space is the local, physical and virtual, where the creative design process is realized. As previously defined, a creative design space is a digital communicational and informational space that enables the generation of artistic content, the storage, transmission and exchange of digital data while providing the exhibition and presentation space for access to information and content by both specialists and the public. As a whole, the creative design space as depicted in fig. 6 is not entirely affected either by technological advances or the needs of users and creators. The flow of work from one activity to another remains conceptually the same.

As a whole, the creative design space as depicted in figure 5 is not entirely affected either by technological advances or the needs of users and creators. The flow of work from one activity to another remains conceptually the same.

As previously noticed, the computer medium is likely to traverse all the stages of the creative design process, from concept drawing until the final artifact production and exhibition. As we can observe in the figure 5 the computer medium can be divided in two main lines of contributions, namely:

Computer medium as technology: we identify here three principal types of tools:

Design & Collaboration Tools: they include all type of tools and applications that support activities related with design, drawing, planning, etc. as well as those allowing the collaboration among groups of artists to happen throughout communication, sharing of files, joint editing and annotating, etc.

Technology: we consider here all the computer technologies that are offered not only as tools or applications but principally as technological areas whose knowledge, procedures and techniques can be exploited in benefit of the creative design process. Programming languages, toolkits, specific algorithms, concepts and architectures, scripting techniques or procedures in areas such are virtual reality, computer vision or ambient intelligent are good examples of the technology mentioned here.

Infrastructure: this relates to all supporting infrastructures that make the computer medium to happen, in terms of communication, conferencing, storage facilities, computing capacity, presentation devices, etc.

Computer medium as digitally coded information content: we identify here three principal types of information content:

Hybrid Cultural Heritage Content: this relates to all kind of content, partial or full digital, collected from different cultural heritage sources such are archeological sites, museum, 2D and 3D digital recoveries of architectural and historical findings, etc. Cultural heritage content has been serving as raw material for the shaping of digital artifacts that aim at transmit specific cultural messages. For instance, digitally altered photography is exploiting to a great extend digital photographs of famous paintings.

Digital Document Repositories: these relate to the more formal document repositories ranging from text and image documents, digital music databases, from institutional or personal catalogues and collections. This type of information content is adequate, for instance, to be applied in artifacts that explore more official information sources, as for instance, the ones based on narratives referring to historic, real-life elements (dates, names, events).

Digital art brought the *interaction* and *virtuality* (in the sense of the immaterial) in art, as artists explore new forms of involving the spectator in the artwork and enhancing the shift from object to *concept* in the form of the "virtual object". This virtual object is usually seen as a structure in the process, sometimes dynamic and volatile, that creates expressive effects, stimulates emotions and perhaps feeling on the part of the spectator, who might become an active player when *interacting* with the artwork itself and changing it in unforeseen new shapes.

Furthermore digital artists often explore the concept of *combinatorial* and *strict rule-based* process inherited from the Dadaism poetry, as well as, *controlled randomness* to generate and activate instructions for information access and processing. This leads to the materialization of artworks resulting from pure instruction-based procedures as was the work of the American composer John Cage, whose work carried out in the 1950s and 1960s, explored extensively these concepts. Cage described music as a structure divisible into successive parts that could be filled by means of automatically controlled randomness and instruction-based algorithms. This open an

infinite set of possibilities for creation.

Conclusions and Future Work

In this chapter we have analyze and discussed ground concepts and definitions behind digital art, emphasizing how the computer medium is itself the tool and the raw material in its creation. We have presented a model for digital art creation that consists of a creative design process implemented by means of a common design space where digital artists can smoothly progress from the concept until the final artifact while exploring the computer medium to its maximum potential.

We have seen the creation process in digital art is essentially about design of the message and experience the artifact will transmit and allow, as also its implementation as a computational system or application.

The computer medium affects here the role as the tool to enhance the creation process; as also as the raw material when the digitally coded information content and computer components are primarily explored in the shaping of the artifact. We have also stated the activity of digital art creation is mostly about collaboration among a multidisciplinary team. It requires a common communicational and informational space where the different activities of the creation process can be realized along with communication and collaboration facilities, as also, the access to digital information content and exhibition spaces have to be provided.

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