



TITLE

Futurism Art and its significance to Computational Generative Art

Topic: Art and Technology

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it was observed that continuity could also be described as a kinesis of sequential iterations. Advance use of machinery allowed sophisticated tasks to be analysed in detail to construct its building components to formulate a fabrication system. Consequently, futurist artists were heavily inspired by the flourishing technological advancements in the early 20th century and portrayed these inspirations in the various forms of art.

However, due to its provocative uncanny manners, Futurism Art has not been embraced extensively in the scope of art discourse. Despite its far-right political connotations, futurism art has been influential in many art forms and techniques including Computational Generative Arts. In this paper, the author aims to explore aesthetic constituents and procedural methodologies shared between Futurism Art and Computational Generative Art.

The code generated art aesthetics will be in the focus of this study to inspect similarities between the examples of Futurism Art and the contemporary generative artworks built with creative coding methodologies.

Major artworks from Futurist Art movement will be investigated and their associations with generative manifestations will be analyzed with respect to computational systems.

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With the invention of new imaging technologies such as chrono-photography, futurist artists studied physical exertion as a mean to depict movement in still images. When a continuous action was broken into its constituent elements, it was observed that continuity could also be described as a kinesis of sequential iterations. Advance use of machinery allowed sophisticated tasks to be analyzed in detail to construct its building components to formulate a fabrication system. Consequently, futurist artists were heavily inspired by the flourishing technological advancements in the early 20th century and portrayed these inspirations in the various forms of art. However, due to its provocative uncanny manners, Futurism Art has not been embraced extensively in the scope of art discourse. Despite its far-right political connotations, futurism art has been influential in many art forms and techniques including Computational Generative Arts. In this paper, the author aims to explore aesthetic constituents and procedural methodologies shared between Futurism Art and Computational Generative Art. The code generated art aesthetics will be in the focus of this study to inspect similarities between the examples of Futurism Art and the contemporary generative artworks built with creative coding methodologies. Major artworks from Futurist Art movement will be investigated and their associations with generative manifestations will be analyzed with respect to computational systems.

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INTRODUCTION

Art, in its marching augmentation, has brought about a multitude of artistic movements with their distinctive characteristics that emerge from the sensational influences of various times of history. These movements have been generally influencing each other with transitional boundaries. Occasionally distinct artistic movements form over time as a reaction or a derivation of a certain style and conception. Furthermore, art has been mainly influenced directly by the environment in which the society is in, and the content of art continues to shape with the changes in society. Futurism Art has also been featured in history as an art movement deeply influenced by the revolutionary political and technological developments in which the world is engaged with. In 1909, Futurism Art was acquainted for the first time with the large audiences by Filippo Tomaso Marinetti's article "The Founding and Manifesto of Futurism", which was published in the front cover of the newspaper Le Figaro in Paris (Rainey, Poggi, & Wittman 2009, Poggi 2009, Humphreys 2003). Marinetti, a son of a wealthy family, was a daring character who was eagerly paying homage to technology in every aspect of his life. His enthusiasm about speed was prevalent in the way he was driving his car dangerously and a serious accident he had been through in 1908 is regarded as a reference to his Futurist Manifesto (Carey 2015). His controversial attitude was on such a patriotic level that he would not hesitate to consider a roaring car with an explosive breath to be more beautiful than the famous Victory of Samothrace sculpture.

When we examine Marinetti's past in the practice of art, we see that in the early periods of his artistic

production he was often engaged in a literature-oriented occupation. Marinetti published his first poem "L'Échanson" in 1898 in a magazine published in Milan called *Anthologie Revue*. His early poetry works have been reflecting a remarkable scent of brutality and controversy that his incendiary language has made him be distinguished severely from the existing art climate. In a very short amount of time after emerging as a new trend in the areas of literature and poetry, Futurism has become widely impressive in many areas of contemporary art and design such as painting, sculpture, architecture, theater, cinema, music, fashion, gastronomy and product design. In this respect, Futurism must not be considered only as an art movement but also as a sociological change that has delivered ambitions towards revolutionary consequences.

In 1930, the *Manifesto of Futurist Cuisine* was published on an Italian newspaper *La Gazzetta del Popolo* and in this writing, specific rules for the activity of a perfect lunch were listed in detail (Marinetti, Brill, & Chamberlain 2014, Berghaus 2001, Rohdie 2009). In furtherance of ruling out all the previous traditions, Futurist cuisine aspired to encourage knives, forks and traditional dishes to be removed in favor of tactile pleasures and flourish the ground with the measured use of accompanying music, poetry and even perfume to be paired with the flavors and colors of dishes. Likewise, a similar attitude is apparent in the way the music has been formulated by the Futurist artists. Two provoking manifestos were written by Francesco Balilla Pratella in 1911 and Luigi Russolo in 1912 which dictated rudimentary statements about the way the music was defined by the Futurists. According to Pratella, "the progress and the victory of the future will consist in researching and realizing the enharmonic modes of music" (Rainey, Poggi, & Wittman 2009:81). The composers should combine harmony and counterpoint to write polyphonic compositions that would echo the musical spirit of the technological age. Moreover, Russolo claims that musical sound is too narrow in its selection of timbres. He claims that "We must break out of this restricted circle of pure sounds and conquer the infinite variety of noise-sounds" (Rainey, Poggi, & Wittman 2009:134). It is observed from Russolo's "The Art of Noises" manifesto that there is a tendency to embrace the use of noise as a compositional element because of its reference to the new emerging technological sounds such as factories, trains, electrical machines, cars etc. The same reference to enlarging the field of sounds is still relevant to today's musical understanding (Cascone 2000, Russo & Warner 1987). In order to perform noise as a musical constituent, Russolo built a set of mechanical acoustic instruments named "Intonarumori" that were producing enharmonic possibilities. While he was able to transform the noise with the use of these instruments, the listeners were deceived to hear a resemblance of a timbre relation with the sonic experience. Russolo's analysis on this experience is noteworthy and it foreshadows the underpinnings of "musique concrete" of which the theoretical basis was developed by Pierre Schaeffer in the 1940s.

Noise therefore loses entirely its character of result and of effect, which is bound to the causes that produced it (motive energy, percussion, friction through speed, bumping, etc.), causes resulting from, and inherent in, the purpose of the machine or object that produces the noise. (Russolo 1913)

According to Schaeffer, *musique concrete* is a conceptual comprehension of sounds as solid abstractions with the absence of reference to their original causes. Thus, the listening activity is relieved from the encapsulation of cause and effect reasoning. Therefore, Russolo's reference to noise as a musical constituent reflects us another precedent for the transitive characteristic of the Futurist Movement.

ABSTRACTION IN FUTURISM ART

Futurist artists were profoundly dominated by the charming elevation of the power of the machines. Consequently, Futurism Ideology aims to convey the dynamism of the modern world with an understanding deeply influenced by the rapid advancements of the era of science and technology. When their avant-garde approach to the arts was flavored with the praising of the technology, their works of art primarily reflected the range of notions such as speed, power, movement, temporality, electricity, cityscape, mechanical modes of production, modernity etc. In Russolo's music composition "Wake Up a City" ("*Risveglio di una Citta*"), we

are witnessing a birth of a new musical loudness, in which the sounds associated with the name of the piece, urban sirens, and factory whistles are elicited extensively. With its irregularly vibrating sonic content, the piece portrays a sense of sound-walking in a modern city of the day. Although the name of the composition is self-explanatory about its premise, the inclusion of noise materials creates an abstraction of a spectrum of sounds as a detached listening experience from its causality.

In a like manner, futurist painters have tried to break down a visual experience into its abstract elements. With the influence of chronophotography on futurist painters, the notion of transforming movements into a sequence of silhouettes became a subject of interest for the composition of paintings. In 1900, when Giacomo Balla encountered Etienne-Jules Marey's chronophotography works, he was fascinated by the framing of the suspended kinesis in the appearance of a stasis (Poggi 2009). Balla's approximation in depicting a movement on a painting was celebrated in his famous painting "Dynamism of a Dog on a Leash" ("Dinamismo di un cane al guinzaglio") in 1912. In this painting, the rapid movements of the dog's feet and the lady's walk cycle were superimposed to capture their motion on a single moment. The suspended moment of temporality and dynamic equilibrium have contributed to the feeling of the painting with an exalted feeling of desire to elongate in a fourth dimension. In the early twentieth century, artists in almost every major modern movement were influenced by the fourth-dimension conceptualization (Henderson 1981). In another masterwork by Umberto Boccioni named Unique Forms of Continuity in Space, the motion was laid on a bronze sculpture with a wavy man figure leaning forward in space. According to Boccioni "Dynamic form is a kind of the fourth dimension in painting and sculpture that does not take on real life without the full affirmation of the three dimensions that determine the volume: height, width, depth" (Boccioni 1913). With its dynamic form, this sculpture portrays an abstract manifestation of an intrinsic potential for a flow and a dissolution of a solid matter.

As it is observed in all the mentioned artworks above, it is evident that Futurism has been maintaining its discourse in an ongoing relationship with the abstraction in art. Basically, abstraction in art aspires to create conceptual forms that do not carry any direct reference to the observed reality. This subject has been frequently visited during the 20th century in the various fields of art including painting, sculpture, photography, and cinema. Even though it is considered controversial to follow the traits of the notion in the past, as a precursor one may point the Neandertal cave art paintings in Spain which is taught to be 64.000 years old (Hoffmann 2018, Marris 2018). Distinct forms of dots, rectangular shapes and handprints are easily recognized in these astonishing red and black paintings. These abstract shapes merely represent any resemblance to a visible reality. An outstanding figure, the ladder-like form in this finding is a fascinating drawing of an unknowable geometric shape with deliberate touches of hands. Furthermore, on the top-left side of this structure, there is a curvilinear shape composed with several dots almost evenly ordered on a proper grid layout. This repetitive figure discloses an intentional behavior in generating a specific pattern and configuring an order in a composition of a painting. Repetitive forms in arts have been embraced in various other artworks by artists such as Claude Monet, Wassily Kandinsky, Kazimir Malevich, Rene Magritte, Andy Warhol and others.

REPETITION AND RECURSION

Repetition is not superficial. It has been observed in nature in various circumstances. On a macro lens, a cosmic example would be the dawn of the day, on the other hand on a much microscopic level we observe that a cell of an organism has repetitive properties as well. The concept of repetition has been studied as an important philosophical debate by Deleuze in his writing "Difference and Repetition". According to Deleuze, there are as many constants as variables in laws of nature and repetition can be described as an extreme resemblance or perfect equivalence (Deleuze 1994). As there is a certain or zero approximation in the repetitive action on a theoretical dimension, it could also be relevant to the works of arts as well. In Yves Klein's Blue Monochrome series, we are seeing an abstraction of a single blue color hue with repetitive

applications of a specific pigment on different canvases. Even though one may easily describe these painting as identical from a distance, Klein states that all his paintings are different, and their pictorial quality is immaterial and invisible (Duve & Krauss 1989).



Exhibition – Yves Klein

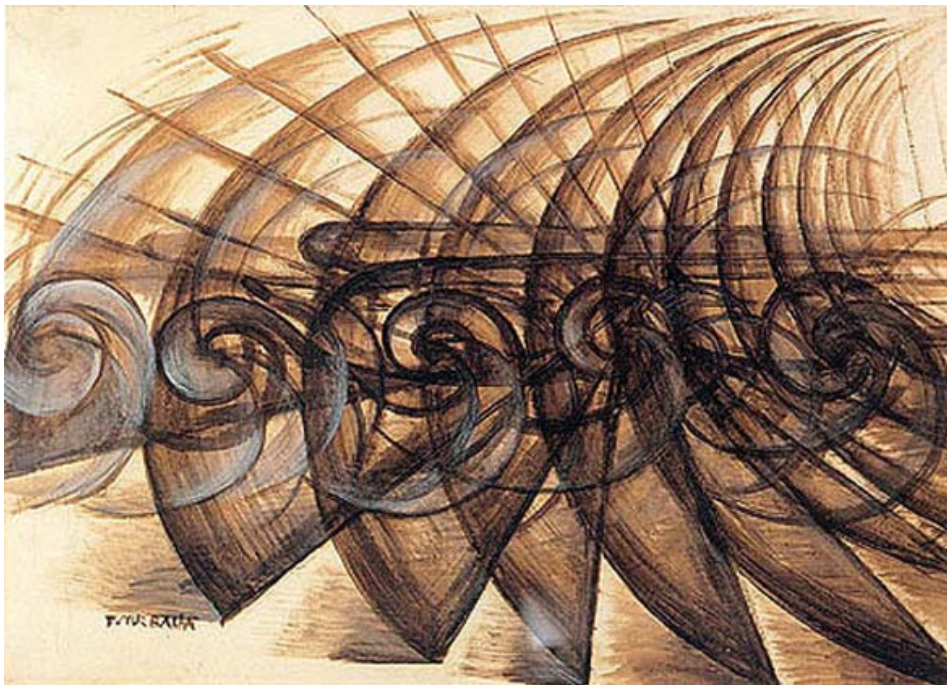
Klein's repetition series calls for some references to Deleuze's separation of two types of repetition: static and dynamic repetition. According to Deleuze, static repetition refers to an "abstract effect" whereas dynamic repetition refers to an "acting cause". In the dynamic repetition, the concept of representation is transformed into an Idea that forms the dynamism of the totality (Deleuze 1994). Thus, with reference to Deleuze's the dynamic repetition, an analysis of Klein's Blue Monochrome series is not only pertained to a symbolic meaning of a distinct color, but the repetitive conduct of the artworks implicates an artistic reality of its own with internalized nuances.

Use or repetitive forms on canvas have been frequently implemented in futurist painters' compositions. In Giacomo Balla's artworks that are based on the themes of speed and movement, we are extensively observing the adoption of repetition techniques in his painting style. In his painting titled "Lines of Movement and Dynamic Succession" (1913), the layering of geometric shapes and curvature representation of sequential copies of visual elements on superimposed juxtapositions implies his vigorous attempt to portray the infiltration of the movement into imagery. Placement of a flying bird's repetitive appearance in a consecutive structure enhances the idea of illustrating a continuous movement as a breakdown of precise discrete samples.



Giacomo Balla - Lines of Movement and Dynamic Succession" (1913)

His articulation of the same figurative approach may be observed largely in his other paintings including Speed of a Motorcycle (1913), Abstract Speed (1913), and Flight of the Swallows (1913). In a classic famous example of futurist paintings, "Speed of a Motorcycle", the repeated shell image designates an abstract shape to signify an accelerated motorcycle's displacement. While Balla attracts the viewers thoroughly into his radiant composition, he adopts the technique of using a sequential arrangement of the same geometric shape that has been recursively rotated from its center of origin.



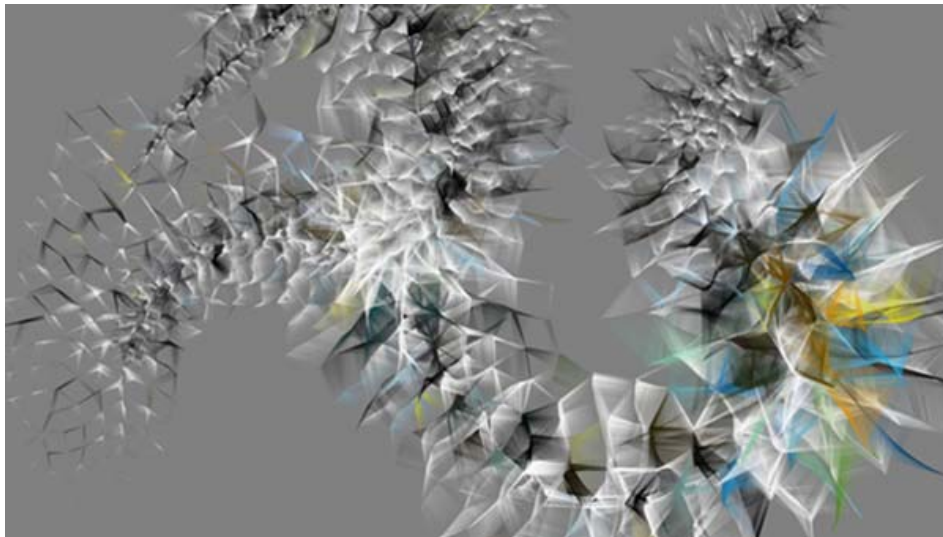
Giacomo Balla - Speed of a Motorcycle (1913)

In this painting, we are not only observing a repetition of a single object but a recursive manipulation of its replicas with variance on its positioning, rotation and scale properties. Similarly, handling the control of derivations in the building properties of a visual instance has been a crucial point of departure for the

computer-based generative arts. Computer-based Generative Arts is a practice to produce artforms by executing a set of rules in a systematic collaboration between an artist and a computer. Generally speaking, the artist is usually predominant in controlling a creative system to authorize an autonomous generator. The artist explores various alternatives of iterations and a result is finally determined by the evaluation of the artist. According to Boden & Edmonds, generative artworks are developed by some partial action that is not under the artist's direct authority (Boden & Edmonds 2009). Additionally, Galanter provides a comprehensive description of the concept as;

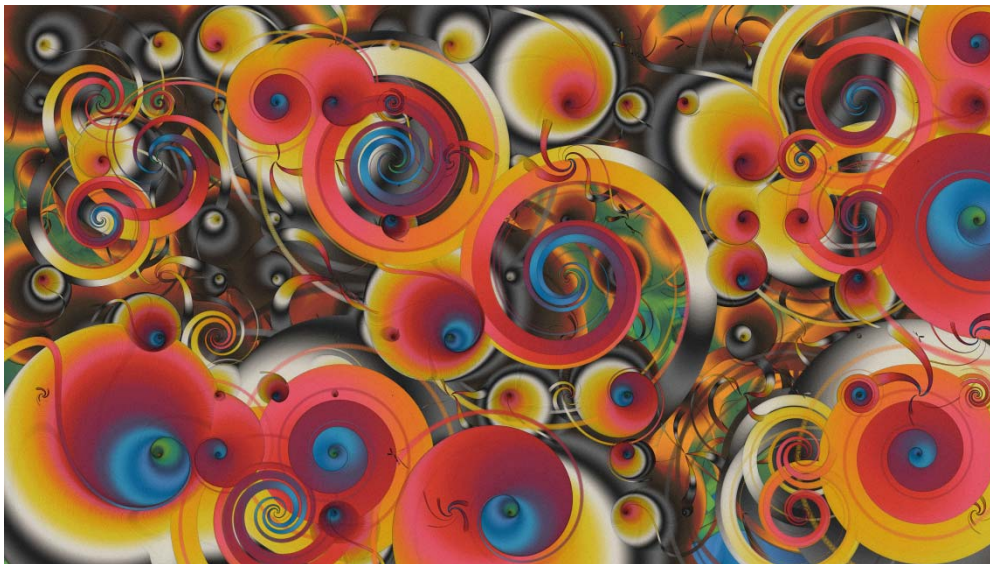
Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set into motion with some degree of autonomy contributing to or resulting in a completed work of art. (Galanter 2003)

What makes a computer-based generative system so effective is that its generative structure is mainly based on a parametric system. With the help of minor adjustments, the dynamic use of parameters enables one to render numerous alternative representations very quickly. As a consequence of the wide use of computers in creative fields, generative art has become an attractive field of investigation for many artists and computer scientists. People who are involved in creating artworks with computers treated software as a way of artistic expression. Casey Reas, who is widely known as the creator of the Processing programming language with Ben Fry, has been frequently building generative systems to create dynamic and static works of art. He establishes his art projects in the forms of software, prints, and installations. In his artwork series titled "Network A, a.k.a. Process 4", we are observing a repetitive structure that alternates a building element in various size, rotation, color, position and scale parameters. This artwork shares a similar kind of a visual dynamism that shimmers in Balla's Speed of a Motorcycle painting. Adopting an algorithmic system to generate compelling visual forms on a screen, Reas authorizes his software to form abstract environments that unfold glittering harmonies in shapes. He describes the methodology in building his artworks as an emergence from a system and a feedback into it.



Casey Reas - Network A, a.k.a. Process 4 (Installation 2) – Screenshot - 2009

Reas utilizes programming skills to draw computationally complex things that exceed his imagination. One of the tasks where computers outstrip human intelligence is accomplishing repetitive operations quickly. Taking an advantage of this condition, creative programmers frequently apply repetitive, iterative and recursive algorithms to establish generative systems. On another note, Joshua Davis uses the form of spirals to construct an abstract geometry with animating features in his artwork named "the Fatal Impact / Rainbow Hotness".



Joshua Davis - the Fatal Impact / Rainbow Hotness - Screenshot - 2014

Davis also benefits from software to create his compelling artworks with fancy colors. In this motion graphics artwork, multiple geometric shapes are morphing into each other while progressing in random patterns. Perfect circular shapes and their harmonious flow pulls the spectators into a cosmos of whirling spirals. It could be visually inferred that both Davis's "the Fatal Impact" and Reas' "Network A. a.k.a. Process 4" contain strong elements of dynamism in their compositions. Their shared appealing imagery is a result of a progressive development of a software articulated by the artists themselves. Obviously, when compared to the futurists, we observe no scent of unconditional longing for technology or imitation of a technological machinery. Instead, we are able to recognize a high degree of competency in using software skills to merge complex forms with an experimental set of actions. From an aesthetical point of view, futurist art and computer-based generative arts are sharing common figurative abstractions with repetitive juxtapositions. Recursive manipulation of geometric shapes as building blocks results in a proliferation of abstract forms that create an immersive pleasure with dynamic sensations.

CONCLUSION

Futurism art has been influential in many facets of life. Its ideology of denunciation of the past has provided it a radical personality in its discourse. Because of the political climate of the era, the movement did not endure its maturity, but its aesthetical features were survived until today. Today in the age of computers, many artists are implementing computational systems to explore new forms in arts. While analyzing the works of Futurism Art, it becomes evident that some illuminating pathways to today have been established by some artists. Its conceptualization of repetition and the dimension of abstraction is still applied by the computer-based generative artists of today. Both periods are inclined with the technological developments of their day, and like in the case of the Russolo's *Intonarumori*, the artist takes the active role to build their expressive systems to perform their creative tasks. This paper focuses on exploring the similarities between the Futurist and computer-based generative artistic schemes. With this in mind, a particular list of masterworks has been considered to compare their compositional structures. Inevitably, there could be as many differences as similarities between the two approaches and additional influences from other artistic movements are inescapable. However, this paper aspires to underline the specific resemblances with the inclusion of their appetites for creations.

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