Synopsis

My entry

My entry is digital generative art, focusing on the use of randomness and unpredictable processes.

Introduction

The overall problem that I have chosen to write my final paper about, revolves around generative art and the use of randomness and unpredictable processes. The field of software, programming and computer code seems to be quite shielded from people who doesn't engage with it in their everyday life. In that sense I find digital generative art quite interesting, because here the digital world meets the world of art and the world of art somehow seems to be more accessible. Since digital generative art both consist of art and something digital and generative, there still might be some underlying elements behind the digital artworks, which isn't immediately obvious, but might consist of important and meaningful underlying aspects, laying in the written code behind the program, that brings a greater dimension to the digital generative artworks, than just the final visual output.

In addition, I also find the use of randomness and unpredictable processes quite interesting. Examination of the combination of randomness and generative art might raise some interesting questions. Thinking about what effect the random syntax and the unpredictable processes brings to the digital generative artworks; how it brings in an element with a lack of control and the questions about true randomness and pseudo-randomness, questioning if it is even possible to create true randomness in computer code or if pseudo-randomness is the highest reachable? At the same time our understanding of authorship might be put to the test as well, when the artworks is generative and the unpredictable processes seems to take the lead of the artworks; who is then the real author behind those artworks?

The problem

I think it is important to illuminate the invisible processes behind digital generative art, to enlighten all its underlying aspects which contain a lot of complicated facets when comparing it to our understanding of traditional art and paintings. In that sense I would like to address the problem of authorship, when using randomness and unpredictable processes in the creation of digital generative art. Also, I would like to examine which effect and what dimensions the random syntax and the

unpredictable processes brings to the digital artworks and how it effects our understanding of who the authorship belongs to.

Questions to be addressed

- What is art?
- What is generativity?
- How would you define generative art?
- What is randomness?
- What is pseudo-randomness?
- Which effect does (pseudo)randomness bring to digital generative art?
- How does the use of randomness and unpredictable processes affect our understanding of the authorship of the digital generative artworks?

Literature

My paper will be based on the literature mentioned below, read with a critical lens, comparing different perspectives on generative art and randomness to enable a discussion and a perspectivation on the use of randomness in generative art:

Generative Art Theory (Galanter, 2016) brings a definition of generative art and some critique points from the definitions. Also, the text enlightens some problems of generative art such as the authorship. Lastly, the text brings a perspective on generative art in the future.

Emergence and Generative Art (Monro, 2007) also brings a definition of generative art as well. The text focuses on the emergence regarding generative art. In that sense the text consists of some discussions about emergent phenomena in science and several definitions of emergence from the literature, especially concerned about Artificial Life. The chapter about generative art, also consist of a section about randomness and pseudo-randomness, consisting of definitions and the use of randomness in generative artworks.

Generative art and rules-based art (Galanter, 2006) also brings a definition of generative art. The focus of this text revolves around rule-based art in relation to generative art. The text consists of a brief overview, some critical observations about rule-based art and generative art and enumerate

several rule types and indicate which constitutes generative methods and which do not.

The text *What is generative art?* (Galanter, 2003) also consists of a definition of generative art. The text looks at the term generative art from two points of view; the bottom up, about clusters of current generative art and from the top down, about its literal abstract meaning. Also, the text brings in a perspective about complexity science as a context for understand systems. The text also consists of a section about the use of randomness and chaotic systems, as well as a look at the algorithmic complexity. Lastly, the text asks several questions about generative art, among others about why artist uses generative methods and the issue of authorship.

The chapter "Randomness" in *10 PRINT CHRS(205.5+RND(1)); : GOTO 10* (Montfort, et al., 2009) explores among others the use of randomness in computer code. The role of randomness is taken in relation to games, literature and art, as well as in mathematics, engineering and computer science, where randomness originates. Pseudo-randomness is discussed, including the creation of "random-like" values, which initially might seem random, but as you later find out is not completely random. It is also argued that the maze pattern in *10 PRINT CHRS(205.5+RND(1)); : GOTO 10* is intertwined by a complex history of aesthetics, utilitarian coin flips and other probability calculations.

The chapter *Executing unpredictable queries* in *Executing liveness* (Soon, 2016) brings different argumentations, perspectives and definitions of randomness and how it is used in unpredictable processes.

Use of the literature

The definition of generative art will be based on the texts *Generative Art Theory*, *Emergence and Generative Art, Generative art and rules-based art* and What *is generative art, Galanter 2003.* To look at randomness, pseudo-randomness and unpredictable processes I will use the chapter "Randomness" from the text *10 PRINT CHRS(205.5+RND(1)); : GOTO 10,* the chapter about "Executing unpredictable queries" from *Executing liveness,* the section about randomness and pseudo-randomness from *Emergence and Generative Art* and definitions of randomness from online dictionary's.
The analysis of how (pseudo)randomness contribute to the creation of generative art will be based on

the knowledge gained from the previous sections in the paper as well as the chapter "Randomness" in *10 PRINT CHRS(205.5+RND(1)); : GOTO 10* and the chapter "Executing Unpredictable Queries" from *Executing liveness.* The final discussion about the question of authorship in digital generative art will examine and discuss the argumentations in *Generative Art Theory* combined with the results and knowledge gained from the previous sections in my paper.

Disposition

Introduction:

Presentation of my entry

Definition:

Definition of generative art

Art

Generativity

Autonomy

Presentation:

Randomness

Different kinds of randomness

Probability, predictability and unpredictability

Algorithm

Pseudo-randomness

Analysis:

The effect of (pseudo)randomness

Discussion/ critical reflection:

Authorship

References

Galanter, P., 2003. *What is Generative Art? Complexity Theory as Context for Art Theory,* New York, USA: Interactive Telecommunications Program, New York University.

Galanter, P., 2006. *Generative art and rule-based art,* s.l.: vague terrain.

Galanter, P., 2016. Generative Art Theory. I: C. Paul, red. *A Comparision to digital art.* s.l.:John Wiley & Sons, Inc., pp. 146-180.

Monro, G., 2007. *The Concept of Emergence in Generative Art,* Sydney: Sydney Conservatorium of Music.

Montfort, N. et al., 2009. Randomness. I: M. Cambridge, red. *10 PRINT CHR$(205.5+RND(1)); : GOTO 10,*. London, England: The MIT Press, pp. 119-146.

Soon, W., 2016. *Executing Liveness: An Examination of the live dimension of code inter-actions in software (art) practice,* Aarhus: School of Communication and Culture, Aarhus University.

Digital Generative Art (DRAFT)

When appreciating digital generative artworks, you might be fascinated by their form and appearance, and you might consider them to be simple pieces of computer art. When digging further into the core of digital generative artworks, examining how they are created and constructed, looking at the code behind the final program, you might figure that they consist of much more complicated facets than first assumed. This paper will revolve around generative art and the use of randomness and unpredictable processes. The field of software, programming and computer code seems to be quite shielded from people who doesn't engage with it in their everyday life. Digital generative art might consist of some quite interesting aspects, because here the digital world meets the world of art and somehow the world of art might seem to be more accessible. Since digital generative art both consist of art and something digital and generative, there still might be some underlying elements behind the digital artworks, which isn't immediately obvious, but might consist of important and meaningful underlying aspects, laying in the written code behind the program, that brings a greater dimension to the digital generative artworks, than just the final visual output. In addition, the use of randomness and unpredictable processes also contribute to the generative art with some quite interesting facets. An examination of the combination of randomness and generative art might raise a few questions. Thinking about which effects the random syntax and the unpredictable processes brings to the digital generative artworks; how it brings in an element with a lack of control, as well as the questions about true randomness and pseudo-randomness, questioning if it is even possible to create true randomness in computer code or if pseudo-randomness is the highest reachable? At the same time our understanding of authorship might be put to the test, when the artworks are generative, and the unpredictable processes seems to take the lead of the artworks; who is then the real author behind those artworks?

To illuminate the invisible and underlying processes behind digital generative art, this paper will be initiated by a definition of generative art, followed by a presentation of randomness, pseudo-randomness and unpredictable processes. In addition, an analysis of the effects and dimensions that (pseudo)-randomness contributes with to the digital generative art will follow. Finally, the paper will end up with a discussion about how generativity and the use of randomness affects our understanding of authorship in the digital generative artworks.

Definition

The topic digital generative art might seem easy to define at first sight; simply it must be art that is digital and generative, but what is art? And what is generativity?

Art

Looking in the dictionary searching for the definition of art, it is explained as an expression of application of human creative skill and imagination, typically in a visual form such as painting or sculpture, or about producing works to be appreciated primarily for their beauty or emotional power (https://en.oxforddictionaries.com/definition/art). Looking in several academic texts about art or generative art, you also might run into a lot of different perspectives on what art is and what it is not, and different ways of defining it: "*For some, it is a prime example of intellectualism about to run amok. For others, it is the required starting point for any serious discussion of aesthetics and the philosophy of art. And for yet others, it is both."* (Galanter, 2016, p. 147)

When examining art analytically there are many theories of what art is including; art as representation, expression, form, experience, as an open concept and family resemblance, as an institution, and as a historical definition. In this sense the idea is that art has no stable essence, but that there is a body of recognized art at any given point in time (Galanter, 2016, p. 147).

Generativity

From the definition of art, to the question of generativity and how to define it. In the dictionary generativity is defined as something having the ability to originate, produce or procreate, relating to the production of offspring or relating to or produced by the rules of a generative grammar. (https://www.thefreedictionary.com/generativity). Something that is generative must therefore be something dynamic and changeable and produced by some rules of generative grammar if it is generativity in the digital world.

Generative Art

When combining those definitions of art and generativity the immediate definition might be that digital generative art is something that is expressive and creative in a dynamic and changeable sense produced by some rules of generative grammar. In the text *Generative Art Theory* a few other typical examples of what generative art is include; generative art is art that uses randomization, art that uses genetic systems to evolve form, art that is constantly changing over time, and art created by running

code on a computer (Generative Art Theory, p. 150). These definitions aren't without problems though:

"The problem with such attempts at definition is that they mistake options and choices within the field of generative art as being requirements for generative art. The other option is to create a big tent that accommodates all kinds of generative art and discussion." (Galanter, 2016, p. 150).

The problem is that these are not definitions but different requirements for generative art. Instead there is a need of a more complete and broad definition of generative art consisting all its possible aspects.To deal with these problems of defining generative art Phillip Galanter came up with a definition in 2003, defining what he would consider as generative art:

Generative art refers to any art practice in which the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, that is set into motion with some degree of autonomy, thereby contributing to or resulting in a completed work of art. (Galanter 2003) (Galanter, 2016, p. 151)

This definition hasn't either been able to escape from critiques and misunderstanding. There has among others been critiques about the definition of the autonomy and misunderstanding about generative art as a subset of computer art. In relation to that Galanter redefined his definition of generative art in 2008:

Generative art refers to any art practice in which the artist cedes control to a system with functional autonomy that contributes to, or results in, a completed work of art. Systems may include natural language instructions, biological or chemical processes, computer programs, machines, self-organizing materials, mathematical operations, and other procedural inventions. (Galanter 2008), (Galanter, 2016, p. 154).

In Galanter's new definition a few things have changed. First, he has change the fact that the artist must cede control to a system with functional autonomy, instead of just using a system. In this way he describes how autonomy is part of the generative art process. Galanter also adds more systems to be included, which broaden the definition. In this way he is both more specific and broad in his definition on generative art. He is more specific in that sense that he explains that it is not enough to

just use a system, but the artist must cede control to it with functional autonomy, where the words control, and the functional autonomy specifies the definition. At the same time, he is also broadening his definition by adding biological or chemical processes, self-organizing materials and mathematical operations to be included as systems within generative art, in his second definition.
Another definition on generative art is found in the text *Emergence and generative art*:

"Generative art is any art practice where the artist creates a process that in turn acts with some degree of autonomy to create all or part of an artwork. It represents a particularly intriguing interaction between art and science, as not only does the artist use technological means (typically computer programs), but also the art itself often relates to fundamental questions about life and what it is to be human in the face of rapid technical advance. Indeed much generative art is closely allied to the scientific discipline called Artificial Life, which asks similar questions from a scientific point of view." (Monro, 2007).

In this definition there is a new focus on the creation of a process enacting with some degree of autonomy to create all or parts of an artwork. There is also mentioned the interaction between art and science, which enlightens the two dimensions of generative art, namely the use of technological means, but also how the art enables fundamental questions about life and what it is to be human in the face of rapid technical advance. Lastly, the scientific discipline Artificial Life is also mentioned as a closely allied to the generative art.