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Helping Machines (Help Us) Make Mistakes: Narrativity in Generative Art

The development of automatic narrative systems has been largely driven by the engineering tendency to anthropomorphize the machine logic so they can ‘tell stories’ similar to how humans do. From the artists’ perspective, however, the experimentation with their media is often more important than the (plausibility of) storytelling, and it often unfolds in non-verbal events that have a potential to generate diverse narratives through experience of the audience. We discuss the emergence of the creative practices that enrich the poetic repertoire of new media art by playfully utilizing the machine flaws, irregularities, errors and systemic technical imperfections thus revealing the human biases and fallacies entangled with technology. One of the implications of these practices is that if the AI research opens up a broader space in which a machine could achieve its own authorial voice, our concept and understanding of the narrative would need to be reconsidered.

1 INTRODUCTION

This paper examines the ways in which generative narrative artworks contribute to the creative and expressive repertoire of new media art. It focuses on the complex interrelatedness between the procedural (algorithmic) thinking which is one of the key elements in generative art, and the narrativity as one of the human universals. (Brown 1991) We explore different perspectives of generative narrativity by discussing the art projects which exemplify the artists' abilities to transcend and/or question the conceptual, expressive and aesthetic limits of instruction- or code-based art. We observe this theme primarily from the aspect of the artists' creative thinking and critical evaluation. The aim of our study is to show that the expressive, emotional and cognitive impact of generative art expands our understanding of narrativity by including the audience's comprehension of the system logic and algorithms used in creation of the work. We believe that the anthropomorphizing of intelligent narrative machines results in the impoverished narratives or pale imitations of the existing storytelling methods. Experimenting with the authentic authorial voices of the machines can open up new fields of research in the arts and in the sciences, which can help us define the more robust concept of narrativity and its roles.

1.1 Generative Art and New Media Art

The conceptions of generative art in contemporary discourse differ by inclusiveness. (Galanter 2003; Arns 2004; Quaranta 2006; Boden and Edmonds 2009; Watz 2010; Pearson 2011) In this text, we perceive generative art broadly, as a heterogeneous realm of artistic approaches based upon combining the predefined elements with different factors of unpredictability in conceptualizing, producing and presenting the artwork, thus formalizing the uncontrollability of the creative process and underlining the contextual nature of art. (Dorin et al. 2012) Like all other human endeavors, the arts always emerge from an interplay between control and accident, and exist in a probabilistic universe, so in that sense all the arts are generative. However, the awareness of the impossibility to absolutely control the creative process, its outcomes, perception, reception, interpretation and further use is often not the artists' principal motivation, but it becomes central in generative art. Generative art appreciates the artwork as a dynamic catalyzing event or process, inspired by curiosity and playfulness, susceptible to chance and open for change. (Grba 2015)

Contemporary generative art has emerged from the Modernist exploration of the nature of creativity, of the material, semantic and contextual identity of the artwork, influenced by information theory, systems theory, cybernetics and semiotics throughout twentieth century. (Weibel 2007, Rosen 2011) The use of instructions and language in minimalism and in conceptual art introduced the algorithm and procedure as formal elements but also as participatory factors, e.g. in Sol LeWitt, Lawrence Weiner and George Brecht. It emphasized that the operation of an algorithm,

as a structured set of rules and methods, may be well comprehended but its outcomes can evade prediction. The cognitive tension between the apparent banality of pre-planned systems and their surprising outcomes became one of the major poetic elements in Steve Reich's opus in the 1960's with astonishing effects of phase shifting, iteration, repetition and accumulation of musical figures, in processual artworks such as Hans Haacke's *Condensation Cube* (1963), and in some land art projects such as Walter De-Maria's *The Lightning Field* (1977). (Grba 2015)

Generative techniques figure prominently in new media art. Aware of its dubious nature and diverse meanings, we use the term *new media art* to denote a rich repertoire of practices based upon the innovative, experimental, direct or indirect application and exploration of emerging technologies often in correlation with scientific research, which strategically redefine the notions of traditional and new media, and challenge the distinctions between artistic process, experience and product.

Generative new media art expanded in the early 21st century with the development of hardware and software systems, coding environments and computational techniques for efficient manipulation, transformation and interaction of various types of data. Diversifying conceptually beyond purely computation-based methodologies—which drew considerable and well-deserved criticism (Arns 2004, Watz 2010) but are still widely recognized as *the* generative art—the production of contemporary generative art unfolds into a broad spectrum of creative endeavors with different poetics and incentives, many of which deal with narrativity.

1.2 Narrative and Narrativity

For our consideration of narratives in generative art, we combine Abbott's 'bare minimum' definition of narrative as *a representation of an event or series of events* (Abbott 2008, 12) with the second definition of narrative (noun) in Cambridge University Press English dictionary as *a particular way of explaining or understanding events*. (V.A. 2019) This generic approach is useful and necessary because we are analyzing hybrid new media artworks which often do not exhibit the obvious narrative qualities that we find in traditional literature, film, theater or computer games. The more specific definitions of the term *narrative* such as *a series of events connected in cause-effect relationship* (Bordwell and Thompson 2004) may be too exclusive since the examples in this paper often introduce non-linear and discontinuous processual inter-relations that are nevertheless narrative.

Taking the Oxford Dictionary of English definition of *narrativity* (noun) as the *quality or condition of presenting the narrative*, we understand narrativity as a feature of the artwork to be experienced or perceived as narrative (primarily or derivatively) and/or to motivate the viewers to develop their own narratives. (V.A. 2007) Taking this broader view, we aim not to expand on the theory of narrativity (Sturgess 1992) but to examine how generative systems and methodologies can be (come) narrative and contribute to the poetic breadth of new media art.

1.3 Generative Narrativity

According to our concepts of generative art, narrative and narrativity, we use the term *generative narrativity* to describe the narrativity of generative art projects. These projects primarily feature the creative development, design and application of the systems which function procedurally, autonomously, largely rely on chance, treat narrative as the source material and/or as an experiential medium, and push the artists to inventively address and design the supporting structures for impactful and experiential transference of narrativity between an art piece and its audience.

2 CONCEALING THE MACHINIC IMPERFECTIONS

Amongst a range of the 18th and 19th centuries automata such as Jacques Vaucanson's *Flute Player* (1730's), Jaquet Droz's *Automata* (1768-1774) or Joseph Faber's talking machine *Euphonia* (1845), John Clark's invention *The Eureka* (1845) stands out as an early predecessor of generative narrative systems. It could produce Latin verses with a pull of a lever, through the mechanism that utilized a complex system of pulleys, gears and weights in order to automate generation of the verses. Because of the strict rules of Latin hexameter, this wooden machine was capable of flawlessly randomizing words and arranging them in the plausible output, which enabled the inventor to hide the possible mistakes of the system. A significant degree of the success, popularity and historical impact of *The Eureka* and many other machines of that time relied on the spectacle and novelty that accompanied the automatic generation of the verses. (Hall 2007)

A somewhat ambivalent approach to concealing the machinic imperfections reflects in the early computer art experiments, partly due to the variety of the creators' motivations and approaches. Besides his pioneering work in the development of computer music and computer games, British scientist Christopher Strachey had anticipated the computer experiments with literature. Strachey's program *Love Letters* (1952) constructed four sentence long love notes using the random number generator of Ferranti Mark I computer. The system was capable of combining salutations, nouns, adverbs, adjectives and verbs from an appropriately compiled lexical database. Although semantically inarticulate, the sentences were syntactically acceptable and plausible. The love letters looked like they had been written by a low-fluency English speaking person or as if they had been produced by some of contemporary online machine-translation services. (Strachey 1952) This project, even though it was programmed on a powerful computer system at that time, retains both the logic and the complexity close to Clark's *Eureka*.

Seven years later, on Zuse Z22 computer at Technische Hochschule in Stuttgart, German mathematician Theo Lutz created a stochastic text generator. Using a 100-word lexicon extracted from Franz Kafka's novel *The Castle* (*Das Schloss*, 1926), the program constructed more or less plausible sentence pairs. *Tape Mark 1* software, created by the Italian writer Nanni

Balestrini for the IBM 7070 system, produced generative poetry by recombining the words from one short quote taken from Lao Tzu's *Tao Te Ching* (4th C. BC), one from Michihito Hachiya's *Hiroshima Diary* (*Diario di Hiroshima*, 1955) and one from Paul Goldwin's *The Mystery of the Elevator*. However, the *Tape Mark 1* poems were syntactically satisfactory and semantically plausible at least partly thanks to the subsequent hand editing of punctuation and grammar. (Funkhouser 2007; Clements 2013)

Between 1966 and 1968 on IBM 7090 system at the German Computing Center in Darmstadt, Gerhard Stickel and Otto Beckmann generated the first song lyrics (texts for vocal lines) titled *Monte-Carlo Texts* (*Monte-Carlo-Texte*) within their *Verbal Block-Montages* series (*Verbale Blockmontagen*). (Stickel 1967) Finally, the 1280-page novel *People's Book: Room Alphabet* (*Volksbuch: Raumalphabet*)—that Austrian architect Heidulf Gerngross produced between 1968 and 1978 using software which connected text passages from newspaper articles, detective stories, science fiction, folk novels, poems and mythology—stands as a monumental example of early computer-based generative literature. (Franke 1985)

Computer experiments in organizing and manipulating text continued during the 1960's and 1970's by the engineers, scientists and artists of various interests and profiles, such as Marc Adrian, Waldemar Cordeiro, Rul Gunzenhäuser, Brion Gysin and Ian Somerville, Manfred Krause, Gotz F. Schaudt, Jean A. Baudot, Alison Knowles, James Tenney, Edwin Morgan, R. John Lansdown and Poetry Group (Robin Shirley, Graham Wallen, Jeff Harris and Lynette Willoughby). In different ways they experimented with the stochastic lexicons and with syntactical rules in order to achieve the plausibility through semantic coherence but at the same time to probe and discern the semantic rules and principles of generative grammar which describes syntax as a set of logical rules that can produce infinite number of grammatical sentences in a language and assign them all the correct structural description.

One of the first chatting programs—*ELIZA*—written by Joseph Weizenbaum in 1964, pushed the performance and the audience's experience of generative narratives a step further. Designed by applying the basic rules of Rogerian psychotherapy to Alan Turing's *Imitation Game* (Miller 2001), *ELIZA* appropriated, repeated and reordered parts of the user's input, modifying and altering between pools of possible reply options. Although this early attempt on creating computation-based simulation of artificial intelligence never managed to pass the Turing test, many users, starting with Weizenbaum's secretary, attributed the human-like feelings and emotions to *ELIZA* while interacting with it. (Weizenbaum 1966)

With *ELIZA*, as well as with other simple generative narrative machines, the users tend to submit their desires to the logic of the machine. Discussing the relationship between a player and the computer game algorithm in *Gaming*, Alexander Galloway outlined this tendency observing that some games have the "ability to arrest the desires of the operator in a sort of poetry of the algorithm". (Galloway 2006)

Video game *Façade* (2005) made by Michael Mateas and Andrew Stern uses a chatbot system as the core element of the gameplay. Chatting with two virtual characters who are also a couple, the player can improve or diminish their relationship. Like with the Choose Your Own Adventure book series, in *Façade* we are facing a limited number of predefined branches and endings of the story. This project's design aims to establish a plausible narrative experience by hiding the errors that ensue from the system limitations. When we probe such 'intelligent' system, it responds with a relatively small subset from the pool of pre-programmed events so in just a few questions we can make it reveal its modesty by choosing a wrong event.

Similarly, when we try out contemporary AI-driven chatbots such as Siri, Alexa or Google Assistant, we often make an effort to establish a relation with these systems by tricking them into giving out the unexpected results, into making mistakes that will surprise us. Although these systems are designed to mask their imperfections behind the efficiency and the ingenuity of their spectacle generation, we desire to experience their authenticity in their flaws.

3 SELECTIVE SEMANTICS

Comparably to the simple generative systems optimized to generate plausible narratives, many generative narrative artworks function as signal-processing machines. In automatic writing—which involves writing without thinking, logical reasoning or conscious manipulating the content—our mind, thoughts and memories are treated as the elements of a signal processor. André Breton and Philippe Soupault developed this method in the early 20th century so they could spontaneously capture the uncontrolled and random thoughts, as in:

“ The great curtains of the sky draw open. A buzzing protests this hasty departure. Who can run so softly? The names lose their faces. The street becomes a deserted track. (Breton and Soupault 1985)

They believed that uncensored recording of free associations facilitates the emergence of unique and deep levels of consciousness. However, if we start modifying the signals (free associations and uncensored thoughts) with our logical reasoning, the results will look manipulated, edited or 'deformed'.

In generative art, certain qualitative phenomenological aspects can be selectively quantified and turned into something else. This principle of applying an external tool/system to spontaneously change or transcode the input signal and get surprising results can be a theme in itself. Introduced by Brion Gysin in Paris in 1959 and adopted by William Burroughs, the cut-up technique improved the 'signals' one can generate with the earlier generative method of Dadaist poetry by selectively rearranging the random fragments of text. Burroughs claimed that “You cannot will spontaneity. But you can introduce the unpredictable spontaneous factor with a pair of scissors.” (Burroughs 1963)

The online profit-oriented processual recognition of linguistic and behavioral patterns was deftly subverted by Mimi Cabell and Jason Huff in *American Psycho* (2012). The artists mutually Gmailed all the pages of Bret Easton Ellis' novel *American Psycho* (1991), one page per email, and correspondingly annotated the original text with the Google ads generated with each email. Then they erased the original text leaving only the chapter titles and the adds as footnotes. Printed and bound in the book format, *American Psycho* recursively employs the early 21st century business and marketing strategizing based upon data-mining to process the narrative about the paroxysms of business culture in the early 21st century.

As an essentially generative technique, the supercut was both elevated conceptually and charged processually with meta-political critique in Luke DuBois' brilliant projects *Acceptance* (2012) and *Acceptance 2016* (2016), the two-channel video installations in which the acceptance speeches given by the two major-party presidential candidates (Obama and Romney in 2012, Clinton and Trump in 2016) mutually synchronize to the words and phrases each of them speaks, which are 75-80% identical but distributed differently.

The filtering/processing machine in Jonathan Harris' and Greg Hochmuth's project *Network Effect* (2015) also visualizes the power of generated narratives. The artists have designed a web interface that introduces a series of clickable keywords which trigger an ever-changing stream of related videos. For example, a click on the keyword 'kiss' will initiate a stream of automatically shuffled videos of kissing, accompanied with the information about that keyword such as how many people are kissing now, the use of the word 'kiss' in Google books, etc. However, the clicking experience is limited to around 6-10 minutes per day depending on the life expectancy of the country in which the system is being used, and this brings us back to life. That is where this artwork reveals its own cracks and allows permeability by reminding us that it, as well as the Internet, represent new forms of (fictional) reality.

For the installation *Listening Post* (2001-2002), Ben Rubin and Mark Hansen have developed a system that filters content from thousands of internet chat rooms in real-time and displays the processed material on 200 LED screens. As we watch the filtered messages appear on screens, we also hear eight different computer-synthesized voices produced with customized text-to-speech software. Sometimes the system filters only the messages that start with "I am" and then we can hear the snippets: "I am 18", "I am from Latvia", "I am hot!", etc. The artists have defined how this system works, but it is the machine that performs autonomously and once the audience understands its logic, the experience becomes even more meaningful and impactful.

In simple generative narrative systems such as Dadaist poetry, the audience's engagement with the work is conditioned by knowing the operational logic of the machine/system. In the signal-processing generative machines, the audience experiences a more independent work of art which doesn't require as much exposition. The audience, however, still

searches for the errors, irregularities, surprises, perhaps some deep levels of yet undiscovered machine consciousness or poetic aura.

4 EMBRACING THE UNINTELLIGENCE

The early 20th century artists who experimented with generative narratives were also discovering the alternative ways of connecting with the audience. Their relatively simple generative mechanisms produced fragmented and cryptic narratives which required an additional layer in order to motivate and help the audience experience the work. In Dadaist poetry, for example, the artists were focusing primarily on designing a system rather than on creating logical or plausible narratives. In order to engage with the artwork, the audience needed to understand the properties of the system for generating the narrative. Without appreciating the system logic, we could try to make these lines plausible:

prices they are yesterday suitable next pictures/
appreciate the dream era of the eyes/
pompously that to recite the gospel sort darkens/
group apotheosis imagine said he fatality power of colours/
carved flies (in the theatre) flabbergasted reality a delight/

It is difficult to find sense in these lines, but if we understand the rules for their generation, our reading will be entirely different. In *Dada Manifesto of Feeble Love and Bitter Love* (1920), Tristan Tzara wrote the instructions for making a Dadaist poem:

“ Take a newspaper. Take some scissors. Choose from this paper an article of the length you want to make your poem. Cut out the article. Next carefully cut out each of the words that make up this article and put them all in a bag. Shake gently. Next take out each cutting one after the other. Copy conscientiously in the order in which they left the bag... (Tzara 2017)

With this information about the generative system and after second reading, we start to get closer to the narrative. We slowly enter the magic circle of engagement with the artwork and while we read, we can picture the bag, the newspaper cut outs, the sounds of slicing scissors and other elements of this system. If we do not consider the system and if we don't envision the operation of this simple generative platform, our reading and interaction with the piece will be limited. In this type of work, for both the author and the reader, experiencing the technological, procedural and machinic becomes equally or more significant than comprehending the semiotic qualities of the generated narrative. The content of this type of works includes the generative system, and our engagement with the system functions like an expository device in traditional narratives, which simultaneously introduces us to the artwork and triggers the unfolding of the narrative.

In one of the early works from Oulipo's doctrine—*A Hundred Thousand Billion Poems* (1961)—Raymond Queneau has created a simple system which can generate a combination of 10^{14} different poems. It consisted of ten 14-line sonnets, with each line cut out as a separate strip. While interacting with this system, we have to value its logical properties on the same level on which we engage with its generated outcomes and it would be 'wrong' to only focus on the plausibility of poetry. Nick Montfort's *World Clock* (2013) is a 246-page book generated by 169 lines of code. Its structure resembles Queneau's *Exercises in Style* (1947) in which 99 versions of one story are written in different styles. In *World Clock*, there are 1440 incidents/variations of the story. Each incident starts by explaining the time and place of the event, then illustrating a random character, and finishing the story with a different action, randomly selected from an array of predetermined actions. Darius Kazemi, one of the jurors in the computer-generated novel competition NaNoGenMo, states that reading the *World Clock* is more an exercise in endurance than indulging yourself in quality of the story. (Dzieza 2014)

Even when generative system features no linguistic material, it has a potential to become narrative thanks to human affinity for establishing mental associations through comparison, abstraction, categorization, analogies and metaphors. Nam June Paik's early generative experiments with sound and video rely on this principle. His sound installation *Fluxusobjekt Random Access* (1962-1963), for example, borrowing its title and concept from computer technology, elegantly deconstructs the dictate of linear succession in reproduction of recorded sound. The installation comprised two sets of magnetic audio tape removed from the reel and cut in various lengths. One set was assembled on the wall in a wild composition, and another in a parallel grid on a horizontal looped conveyor. A detached playback head with extended wiring enabled the audience to choose the parts of tape but also the speed in which to slide the head and play the sounds. (Decker-Phillips 2010)

Paik's early works established a strong legacy of rebellious imagination in experimental art. In his debut feature *Mysterious Object at Noon* (2000), Apichatpong Weerasethakul deconstructed the dictate of linearity and logical clarity in conventional cinema by appropriating the surrealist technique of *Exquisite Corpse*. His crew travelled through Thailand villages, telling the villagers the story that they filmed in the previously visited village, and asking them to continue the story by reenacting or narrating it. The resulting feature-length film with a fragmented narrative structure embraces the noise, mistakes and coincidences between different stories. In a way, it makes the narrative implausibility desirable. Paik's approach of hacking and transcoding also resonates conceptually with a number of technically sophisticated projects in generative and interactive art, such as Matt Richardson's *Descriptive Camera* (2012) in which the temporary image generates the narrative interpreted by the human operator—as opposed to *Mysterious Object...* in which every narrative section generates the following narrative. We point the *Descriptive Camera* at a subject and press

the shutter button to capture the scene but instead of showing an image, it uses online human labor via Amazon's Mechanical Turk service to generate a text description of the scene.

5 MACHINE LEARNING MISTAKES

Developing technically more complex generative narrative systems, computer scientists have been pursuing the ways of making the machines able to write like humans. And in the best-case scenarios these constructed machines have been capable of rendering the impoverished narratives or weak imitations of the stories created by humans.

James Meehan's *Tale-Spin* (1976) was in essence a simple generative narrative machine with an extra layer which attempted to understand how characters of the story felt, what action they could perform, or what their environment was like. The audience could influence the development of the story by choosing all these options through the interface of *Tale-Spin*. Although Meehan spent a lot of time planning the unfolding generated narratives, his system kept generating mis-spun stories which were often unintentionally humorous and attracted more attention than the well-spun ones:

“ Henry Ant was thirsty. He walked over to the river bank where his good friend Bill Bird was sitting. Henry slipped and fell in the river. Gravity drowned. (Wardrip-Fruin 2006)

In the misplaced sentence 'Gravity drowned.' we may start noticing that this machine attains its unique poetics as it reminds us that it exists by malfunctioning.

With recent AI and ML systems, the structural and/or the formal elements that convey the narrative meaning become malleable. In *sCrAmBlEd?HaCkZ!* (2006) Sven König explored the concept of real-time procedural audiovisual synthesis from the arbitrary sample pool that elevates the narrative structure. *sCrAmBlEd?HaCkZ!* applies the psychoacoustic techniques to calculate the spectrum signatures of the sound snippets from the stored video material and saves them in a multidimensional database that is searched in real-time to mimic any input sound by playing the best-matching audio snippets and their corresponding videos. (König 2006)

Procedural audiovisual synthesis was advanced through the application of neural networking and machine learning by Parag Kumar Mital in his PhD project *YouTube Smash Up* (from 2012). Each week, this online software takes the #1 YouTube video of the week and resynthesizes it using algorithm that collages the appropriate fragments of sonic and visual material coming only from the remaining nine of the Top 10 YouTube videos. (Mital 2014) It produces a surreal animated effect, visually resembling Arcimboldo's grotesque pareidolic compositions.

A more demanding, machine-based synthesis of coherent film structure and plausible narrative was tackled by Oscar Sharp and Ross Goodwin in *Sunspring* (2016). Well versed in natural language processing and neural networks, Goodwin programmed a long short-term memory recur-

rent neural network and, for the learning stage, supplied it with a number of the 1980's and 1990's sci-fi movie screenplays found on the Internet. The software, which appropriately 'named' itself Benjamin, generated the screenplay as well as the screen directions around the given prompts. Sharp produced *Sunspring* accordingly. The film brims with awkward lines and plot inconsistencies, but it qualified with the top ten festival entries, inspiring one of the judges to say 'I'll give them top marks if they promise never to do this again'. (Newitz 2016) *Sunspring* playfully reverses the 'Deep Content' technology of What is My Movie web service, which analyzes transcripts, audiovisual patterns and any form of data-feed that describes the video content itself, automatically converts it into advanced metadata which is then processed by a machine learning system that matches the metadata with the natural language queries. (Valossa 2016) Far from being forcefully plausible, the experience of watching *Sunspring* takes us back to the Dadaist poetry experiments. If we didn't know that it was written by an AI, it would be difficult to engage with the film. It is evident here that even the relatively advanced AI systems make mistakes when attempting to replicate the plausibility of human-written stories.

6 LEARNING FROM THE MACHINE LEARNING MISTAKES

The successful generative narrative artworks are powerful tools for blending the elements of unrelated perceptual and/or cognitive matrices into the new matrices of meaning. They tell us stories but, more importantly, they stimulate our imagination and motivate creativity by revealing or suggesting their background thinking processes in an engaging way. The joy and fun in the reception of generative art projects come from the viewer's own ability to build concepts, stories and predictions from the available information about the unfolding phenomena. Similarly to computer software, they encapsulate specific intellectual energy which can be engaged implicitly or explicitly and incite new, often surprising, configurations and ideas. (Grba 2015) By reiterating the simple question: *what is narrative?*, generative artworks inspire our amazement with storytelling, and at the same time broaden our critical understanding of the concept of narrativity by reminding us that the ideas are basically the networks of other ideas, and that we make our ideas and they make us in return. (Johnson 2014)

It would therefore be wrong to force generative narrative systems to act like human narrators. (Aarseth 1997) When the designers of AI storytelling platforms get more comfortable to freely explore the non-human modes of narrativity, to smartly embrace the imperfections of system logic instead of anthropomorphizing them (intentionally or unintentionally), we will move a step further toward expanding our expressive potentials and our understanding of language as the key interface for human-human, human-machine and machine-machine relations. By elevating the dynamics of storytelling as a verbal representation of states, scenes or situations, we will also enrich our appreciation of the fact that the narrative is always

uniquely performative, the story always a series of unfolding events. As Google AI puts it:

it's all right here.
everything is all right here.
it's all right here.
it's all right here.
we are all right here.
come here in five minutes.

REFERENCES

Aarseth, Espen J.

Cybertext: Perspectives on Ergodic Literature. Baltimore, MD: Johns Hopkins University Press, 1997.

Arns, Inke.

"Read_me, run_me, execute_me. Code as Executable Text: Software Art and its Focus on Program Code as Performative Text" in *Medien Kunst Netz*. 2004. http://www.medienkunstnetz.de/themes/generative-tools/read_me/1/.

Bordwell, David and Kristin Thompson.

Film Art: An Introduction. New York, NY: McGraw-Hill Education, 2004: 89-91.

Brown, Donald E.

Human Universals. New York, NY: McGraw-Hill, 1991.

Clements, Wayne.

"Tape Mark 1." Wayne Clements web page, 2013. <http://www.in-vacua.com/cgi-bin/tapemark.pl>.

Dorin, Alan, Jonathan McCabe, Jon McCormack, Gordon Monro and Mitchell Whitelaw.

"A Framework for Understanding Generative Art." *Digital Creativity*, 23, (3-4), (2012): 239–259.

Franke, Herbert W.

Computergrafik—Computerkunst. München: Bruckmann, 1971. Second edition: New York, NY: Springer Verlag, 1985: 138.

Galanter, Philip.

"What is Generative Art? Complexity Theory as a Context for Art Theory." in *VI Generative Art conference Proceedings*, edited by Celestino Sodu. Milan: Domus Argenia Publisher, 2003: 225-245.

Abbott, Porter H.

The Cambridge Introduction to Narrative. Cambridge: Cambridge University Press, 2008: 12.

Boden, Margaret and Ernest Edmonds.

"What is Generative Art." *Digital Creativity*, 20, (1-2), (2009): 21-46.

Breton, André and Philippe Soupault.

The Magnetic Fields (Les Champs Magnétiques) translated and introduced by David Gascoyne. London: Atlas Press, 1985.

Burroughs, William.

"The Cut-Up Method." in Leroi Jones, ed. *The Moderns: An Anthology of New Writing in America*. New York, NY: Corinth Books, 1963.

Decker-Phillips, Edith.

Paik Video. Barrytown, NJ: Station Hill Press Inc., 2010: 34, 35.

Dzieza, Josh.

"The Strange World of Computer-Generated Novels." *The Verge*. Nov 25 (2014).

Funkhouser, Chris.

Prehistoric Digital Poetry: An Archaeology of Forms, 1959–1995. Tuscaloosa, AL: The University of Alabama Press, 2007: 41.

Galloway, Alexander R.

Gaming: Essays on Algorithmic Culture. Minneapolis, MN: University of Minnesota Press, 2006: 18.

Grba, Dejan.

"Get Lucky: Cognitive Aspects of Generative Art." in *XIX Generative Art Conference Proceedings*, edited by Celestino Sodu. Venice: Fondazione Bevilacqua La Masa, 2015: 200-213. <http://dejangrba.dyndns.org/lectures/en/2015-get-lucky.php>.

Johnson, Steven.

How We Got to Now: Six Innovations That Made the Modern World. New York, NY: Riverhead Books, 2014.

Miller, Geoffrey.

The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature. New York, NY: Anchor Books/Random House, Inc., 2001: 352-353.

Newitz, Annalee.

"The Multiverse / Explorations & Meditations on Sci-Fi." *Ars Technica*, June 9, 2016.

Quaranta, Domenico.

"Generative (Inter)Views: Recombinant Conversation With Four Software Artists." in C.STEM. *Art Electronic Systems and Software Art*, edited by Domenico Quaranta. Turin: Teknmendia, 2006: 1-7.

Stickel, Gerhard.

"Monte-Carlo-Texte: Automatische Manipulation von sprachlichen Einheiten" in *Kunst aus dem Computer* edited by William E. Simmat. Stuttgart: Nadolski, 1967: 53-57.

Sturgess, Philip J. M.

Narrativity: Theory and Practice. Oxford: Clarendon, 1992.

V.A.

Cambridge English Dictionary. Cambridge University Press website, 2019: s.v. "narrative."

Valossa.

"Description of Research." What Is My Movie, 2016. <http://www.whatismymovie.com/about>.

Watz, Marius.

"Closed Systems: Generative Art and Software Abstraction." in *MetaDeSIGN - Lab[au]*, edited by Eléonore de Lavandeyra Schöffer, Marius Watz and Annette Doms. Dijon: Les presses du reel, 2010: 1-3.

Weizenbaum, Joseph.

"ELIZA—A Computer Program for the Study of Natural Language Communication Between Man and Machine." *Communications of the ACM*. New York, NY: ACM, Vol. 9 Issue 1, January (1966): 36-45.

Hall, Jason David.

"Popular Prosody: Spectacle and the Politics of Victorian Versification." *Nineteen Century Literature*, Vol. 62, No. 2, September (2007): 222-249.

König, Swen.

"sCrAmBlEd?HaCkZ!." YouTube, 2006. <https://www.youtube.com/watch?v=eRlhKaxcKpA>.

Mital, Parag Kumar.

Computational Audiovisual Scene Synthesis. Ph.D. thesis, Arts and Computational Technologies. Goldsmiths, University of London, 2014.

Pearson, Matt.

Generative Art. Shelter Island, NY: Manning Publications, 2011.

Rosen, Margit, ed.

A Little-Known Story about a Movement, a Magazine, and the Computer's Arrival in Art: New Tendencies and Bit International, 1961-1973. Cambridge, MA: MIT Press, 2011.

Strachey, Christopher.

"Loveletters." Matt Sephton's website. 1952. <https://www.gingerbeardman.com/loveletter/>.

Tzara, Tristan.

Dada Manifesto of Feeble Love and Bitter Love. Molotov Editions, 2017.

V.A.

Oxford Dictionary of English. Second Edition, Revised, 2007. s.v. "narrativity."

Wardrip-Fruin, Noah.

Expressive Processing: On Process-Intensive Literature and Digital Media. Providence, RI: Brown University, 2006: 94-95.

Weibel, Peter.

"It Is Forbidden Not to Touch: Some Remarks on the (Forgotten Parts of the) History of Interactivity and Virtuality." in *Media Art Histories*, edited by Oliver Grau. Cambridge, MA: MIT Press, 2007: 21-41.