setInterval()

Time-Based Readings of Kinetic Poetry

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C'est cela que je dis, c'est cela que j'écris et c'est cela seulement qui se trouve dans les mots que je trace, et dans les lignes que ces mots dessinent, et dans les blancs que laisse apparaître l'intervalle entre ces lignes : j'aurai beau traquer mes lapsus

—Georges Perec, *W ou le Souvenir d'Enfance* (1975: 59)

Scientific environment

The research involved in this dissertation was conducted from August 2013 to July 2017 at the University of Bergen (UiB), Humanities Faculty, Department of Linguistic, Literary and Aesthetic Studies (LLE), in Norway, within a PhD Research Fellowship in Digital Culture. Teaching duties and research training—25% of the total contract—were developed at LLE. The courses taught included DIKULT 103, 106, and 207, in the areas of electronic literature, digital art, digital media ethics, and digital humanities. Host research groups included the Bergen Electronic Literature Research Group (BEL) and the Digital Culture Research Group. The PhD dissertation constituted 75% of the research fellowship. The main advisor, Scott Rettberg, Professor in Digital Culture at UiB, leads the BEL research group and the ELMCIP Electronic Literature Knowledge Base, a project where the vast majority of practice work was conducted. The co-advisor, Christopher T. Funkhouser, Associate Professor in the Department of Humanities, is the Director of the Communication and Media Program at the New Jersey Institute of Technology (NJIT). Generous scholarships allowed several research stays. A grant from LLE-UiB ("Lengre Forskningsopphold i Utlandet") secured the most extensive research stay, at NJIT in Newark, U.S., during the Fall 2015. Chris Funkhouser, who facilitated fieldwork, and interviews with various poets and scholars, supervised the research. From October to December 2014, a similar stay happened at the Université Paris 8 Vincennes, in France, under the guidance of Philippe Bootz, which was hosted by the Laboratoire Paragraphe with a scholarship from the Fondation Maison des Sciences de l'Homme-The Research Council of Norway (FMSH-NFR), and assistance from the Programme Franco-Norvègien (former PFN, current CUNP). Finally, a Worldwide Universities Network (WUN) Research Mobility Programme grant enabled the attendance and completion of the Inaugural CUHK Research Summit on Digital Methods and Social Development at the Chinese University of Hong Kong in August 2016. The summit and week-long workshop was hosted by Jack Qiu at the C-Centre for Chinese Media and Comparative Communication Research, at the School of Journalism and Communication, in partnership with Richard Rogers, director of the Digital Methods Initiative at the University of Amsterdam.

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I thank the audience at conference presentations, peer-reviewers, and readers, whose comments and suggestions greatly improved drafts, and the final version of this dissertation. An incomplete list of people to whom I am indebted includes Patricia Tomaszek, David Jhave Johnston, Manuel Portela, Rui Torres, Joseph Tabbi, Elisabeth Nesheim, Daniel Apollon, Anne Karhio, Kathi Inman Behrens, and Anders Løvlie. Stephanie Strickland and Jules Chatelain were kind enough to comment, and copyedit an essay and interview about Strickland's work.

Talks, performances, exhibitions, seminars, and readings contributed for a pluralistic and multilingual understanding of digital poetry, though there are too many people to mention here. Conversations and interviews with Manuel Portela, Rui Torres, Judd Morrissey, Philippe Bootz, J. R. Carpenter, Stephanie Strickland, Nick Montfort, Richard Kostelanetz, John Cayley, Ian Hatcher, and Jaap Blonk turned my simple questions into complex answers in regards to creative and theoretical positions. Working, chatting side-by-side, collaborating, and exchanging correspondence with people with different expertise was highly valuable. I am grateful to Claire Donato, Luc Dall'Armellina, Sindre Sørensen, Stein Bjørklund, André Sier, Sandy Baldwin, Pedro Barbosa, Silvestre Pestana, Jörg Piringer, Jonathan Baillehache, Lucas Ramada Prieto, Siri Lexau, Lars Sætre, Jim Andrews, Jakob Lothe, Jack Qiu, Richard Rogers, Johannes Hélden, Daniela Côrtes Maduro, Bruno Ministro, Diogo Marques, Ana Marques da Silva, Maya Zalbidea, Thomas Kohler, Mary Flanagan, Rob Wittig, Florian Cramer, Raine Koskimaa, Maria Engberg, Hans Kristian Rustad, Anna Nacher, Dene Grigar, John Barber, Leonardo Flores, Jeroen

Format of the Thesis

This study is an article-based dissertation with additional research. The study is developed around six articles—see list of publications—that present a history of kinetic poetry, the relations between experimentalism and kinetic poetry, and three case studies: two analyses of digital poems, and one macro-analysis of criticism in digital poetry and the creative works PhD dissertations and monographs cite.

The present study is constituted by a summary (or *kappa*), and an appendix, which presents varied documentation about the issues discussed in the summary. The summary delineates a bird's-eye view of the articles, since it formally and thematically weaves them, but it also goes beyond a regular summary. It adds extensive discussion about the topics connected to the common spine of the study: reading kinetic poetry. This issue revolves around modes of reading, that is, modes and levels of analysis of kinetic poems, as explained in section 6, regarding the articulation of the articles. Therefore, the summary presents more research than a traditional article-based thesis, in that it blends aspects from that type of dissertation format with a monograph, as it deepens the investigation connected to practices of digital kinetic poetry.

The summary includes an introduction to the research project, its scope, goals, and research questions. It also presents a comprehensive literature review of the field of digital poetry and the form of kinetic poetry, and an explanation of the title of the dissertation. In themes and practices, the reader can expect a debate of issues regarding space and time, reading and motion, and common processual composition techniques employed by poets. The summary discusses the methodology applied in the theoretical and practice-based vectors of the research process. It concludes with an assessment of the theoretical discussions, and it contributes to existing research with an original method for conducting digital literary studies. This method, which is explored in the articles, proposes modifications as a way of reading, and analyzing poems that move in time and space. After the summary, the peer-reviewed articles discuss and answer the themes previously launched in full-depth.

Abstract

setInterval() is a study of digital kinetic poetry by English, French, and Portuguese-speaking poets whose work defies the very act of writing and reading. It places an emphasis on the historical, cultural, and technological contextualization of kinetic poetry written in diverse media. A wider study of kinetic poetry has been missing, because the field has been relatively undocumented until now. Thus, *setInterval()* contributes to existing literature with new research, and develops innovative methodology for reading and analyzing poems that literally move.

The forms of kinetic poetry surveyed include film poetry, videopoetry, holography poetry, and digital poetry, which are all dependent on spatiotemporal elements. Therefore, there is a focus on the temporal and spatial dimensions of poems that are time-based and animated. Poems written and read with computational media require interdisciplinary expertise, because they are scripted with code and often integrate text, sound, image, and interactive functions.

The creative works that are analyzed in full-depth in this study are Stephanie Strickland and Cynthia Lawson Jaramillo's Flash poem *slippingglimpse* (2007), and Ian Hatcher's JavaScript and JQuery's *⫽ [Total Runout]* (2015). Other reviewed works include poems by E. M. de Melo e Castro, Marc Adrian, Ana Hatherly, Silvestre Pestana, bpNichol, Nick Montfort, John Cayley, Philippe Bootz, María Mencía, Philippe Castellin, Rui Torres, Jörg Piringer, J. R. Carpenter, and Jhave. This selection aims to engage with a polyglot perspective, as these works demonstrate diverse linguistic, literary, cultural, and artistic traditions. Even though these authors work within similar production and reception contexts—a global community framework, shared networked, and programmable settings—there are rich differences among them at the level of language, local and national topics, themes, and sociopolitical concerns. The case studies presented throughout the dissertation intend not only to provide a sample of different practices within the field, but also to extract practices that are common to kinetic poetry specifically developed and published in digital systems.

This thesis is an article-based dissertation organized around six articles. The articles situate kinetic poetry and experimental poetics in cultural and technological

context. They analyze poems by Strickland and Hatcher in detail, and address issues of canonization and self-referentiality in the field of digital poetry, between 1995 and 2015, via network and visualization analyses. Poets create kinetic poems with computers, via networks, and compose them by scripting code with timers that influence modes of presentation and reception. The tempo set in programming for screens and media output—which allows for text to move—can determine whether a poem can be read and viewed, only viewed, or whether it is illegible. This fact poses the guiding question: How can the critic analyze surfaces of inscription that can be on the verge of unreadability?

The research addresses three levels of analysis that I call 'micro-,' 'meso-,' and 'macro-reading.' These levels investigate modes of reading kinetic poems, their literary and artistic context, and their reception context. Why is the history of kinetic poetry embedded in literary and artistic movements? How does it affect contemporary practices? A relocation of the entanglement of literature with technology and media proves that 1950s-60s experimentalist authors played a crucial role in anteceding an approach to art as a quest for transgression, invention, and recreation that was shaped by multiple media. The attitude of facing the creative act as research, and as a synthesis process, meant that all types of media could be used to materialize and expand the literary field. These notions would echo in the process of experimental poets in the late twentieth century and, it is my claim, continue in digital poetics.

A comprehensive section presents a literature review of digital poetry. It debates different taxonomies of kinetic poetry and digital poetry, and it defines the terms 'timer,' 'time-based,' 'setInterval(),' and 'diastêma.' Another section discusses frequent practices, processes, and techniques employed by poets: spatiotemporal dimensions; multidirectional reading; typologies of timers and textual motion; multilayer, superimposition, juxtaposition, and palimpsest; methods of appropriation, anthropophagy, and remix; coding, authoring software, and interface; randomization and aleatory processes; and finally, the notion of kinetic poems as performative events.

In order to analyze the kinetic poems' behavior, the theoretical methodology used in this study combines perspectives from literary criticism (Samuels and McGann 1999) with digital literary studies (Funkhouser 2007, 2012; Jhave Johnston 2016). It takes insights from materiality and media-specific analysis (Glazier 2001,

Hayles 2002, 2004, 2008, and Pressman 2014), critical code studies (Marino 2006), media archaeology and interface studies (Emerson 2014), collaborative, and multi-approach studies (Pressman, Marino, and Douglass 2015). At the level of praxis, the methodology engages with the notion of "deformative criticism" (Samuels and McGann 1999) and "operation" of works (Strickland and Montfort 2013). Furthermore, empirical methodology involves code forensics and transcripts, the emulation of Silvestre Pestana's *Computer Poetry* (1981-83), modifications of source code and surface, interviews with poets and scholars, research collections developed in the ELMCIP database, and curating exhibitions of digital literary works.

The study's main contribution to the field is the historical overview of kinetic poetry, and the critique of links between experimental poetry and digital poetry. The key finding is the development of a method to read kinetic poetry that blends critical inquiry with modifications of kinetic poems. It contributes to the analysis of digital poetry with exploratory readings, by manipulating code, interface, and the display of creative works. The modification of works constitutes a practice-based strategy that entails altering their output in order to analyze their kinetic behavior. This intervening practice engages with experimental criticism theorized and practiced by Lisa Samuels and Jerome McGann (1999). Therefore, I propose a new method for enriching the analyses of digital literary works, by considering the poem as a perceived event, since it is composed by spatiotemporal, rhythmic, conceptual, and semiotic dimensions. What I call a 'modifying deformance' is no less than a method that emerges out of coding practices and theory of literature. Finally, I argue that modifying deformances can pave the way to resituate assumptions in the field of digital poetry, regarding literary and aesthetic criticism of works that move across time and space.

Keywords: Digital Culture; Electronic Literature; Digital Poetry; Kinetic Poetry; setInterval; Time-Based Reading; Modifying Deformance; Literature and Technology

List of Publications

Article 1 / Book Chapter: Seiça, Álvaro. "Kinetic Poetry," edited by Dene Grigar and James O'Sullivan. *Electronic Literature: Contexts, Forms, and Practices*. London and New York: Bloomsbury Academic (forthcoming, 2018).

Article 2 / Book Chapter: Seiça, Álvaro. "The Freedom Adventure of Portuguese Experimentalism and Kinetic Poetry," edited by Joseph Tabbi. *The Bloomsbury Handbook of Electronic Literature*. London and New York: Bloomsbury Academic, 2017: 165-180. http://www.bloomsbury.com/uk/the-bloomsbury-handbook-of-electronic-literature-9781474230254/

Article 3: Seiça, Álvaro. "The Digital Diasthima: Time-Lapse Reading Digital Poetry." *ISEA2015: Disruption. Proceedings of the 21st International Symposium on Electronic Art.* Vancouver: ISEA, 2015. http://isea2015.org/proceeding/submissions/ISEA2015_submission_315.pdf

Article 4: Seiça, Álvaro. "Polymorphic Reading in Strickland and Jaramillo's *slippingglimpse*." *Electronic Book Review* (under submission, 2017).

Article 5: Seiça, Álvaro. "A Critique of Control and Black Boxes: Modifying Deformances of Ian Hatcher's *// [Total Runout]*" *Poetics Today* 40 (forthcoming, 2019).

Article 6: Seiça, Álvaro. "Digital Poetry and Critical Discourse: A Network of Self-References?" *Matlit* 4.1 (2016): 95-123. http://dx.doi.org/10.14195/2182-8830_4-1_6

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Contents

Summary

1. Introduction

Movement, rhythm, and sound, imagined or displayed, shape poetry. Ideology does as well. During a talk at the International Festival of Text-Sound Poetry in 2015, Charles Bernstein defiantly opened his presentation with a bold remark: "For me, there are only two kinds of poetry: there's sound poetry and there's unsound poetry."[1] Even though there was a whimsical, and provocative character to Bernstein's claim, this was an intelligent move in order to foster discussion about what poetry is, what it can be, and what it might not be. The statement is both valid and not valid. The binomial paradox can be understood in many ways, and that was its strength. Ever since Ancient Greece, poetry's notions of *aeídos* (troubadour and singer) and *melopoiía* (the art of lyric composition) have asserted its rationale to be more than a verbal art, a sonic art. We could further affirm: there are only two types of poetry: verbal poetry and un-verbal poetry. This affirmation would position our thesis at the center of language-driven, and materially inscribed poetic expression. Instead, by shifting the focus into the sonic properties of poetry, we are pushed to think that, for example, a great number of visual poems do not sound; that is, they are "unsound poetry." To be sure, this approach might be read according to each poet's *ars poetica* and artistic affiliations. After Bernstein's talk, the poet Ian Hatcher emphasized the double meaning of Bernstein's "unsound": There are only two types of poetry: good poetry and bad poetry. But besides being a verbal and sonic art, poetry is a visual art.

The present study, *setInterval()*, shows that poetry is also constituted by kinetic and interactive elements. The study does not aim to address poetry from a binary point of view. It focuses on yet another form of poetry: kinetic poetry. It reads kinetic poems that expressively engage with computation, programming languages, and the network in a specific period: from 1995 to 2015. But for achieving it, this study needs to investigate kinetic poetry in a contextualized way.

This study is a dissertation based on six articles. The articles research the history of kinetic poetry, and the connections between experimental poetry and digital poetry. They also analyze poems by Stephanie Strickland and Ian Hatcher in detail,

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[1] See http://issueprojectroom.org/program/international-festival-text-sound-poetry

by approaching literary criticism and creative output in the field of digital poetry. Furthermore, they develop a new method in order to analyze poems whose textual behavior shifts in space and time. Two main challenges immediately arise as we try to understand kinetic poems: the reader cannot fully read the text, and the poems, which are multimodal, demand a highly skilled critic who is trained in multiple domains. `setInterval()` is a programming term that enables coders to set the displayed time in a digital poem. Therefore, the title of this study highlights the practice of coding for an understanding of poetry, both as the task of reading the code that poets write, and of tweaking their scripts in modifications of temporality and behavior.

In order to understand contemporary kinetic poetry practices, in terms of cultural, artistic, and technological context, the study goes back to 1910-20s Constructivists, Dadaists, and Marcel Duchamp's Dadaist *Anémic Cinéma* (1926) to locate the first kinetic text. These practices are expanded with the 1960s Experimentalists, including Marc Adrian, E. M. de Melo e Castro, and Silvestre Pestana, who create the first examples of film poetry, videopoetry, and kinetic digital poetry. Contemporary kinetic digital poetry is informed by, and can be traced back to literary and artistic traditions such as Dada, Futurism, Lettrism, Experimentalism—concrete, visual, and sound poetry—Fluxus, and Conceptualism. For the purpose of contextualization, this study then presents a brief history of kinetic poetry. It highlights ruptures in literary and spatial syntax on the page, such as those by Stéphane Mallarmé and Guillaume Apollinaire, but also the influence of Futurist cinema, early Abstract films, and kinetic art by the Constructivists as pivotal moments that instigated future generations of authors to technically activate moving words and letters on the screen. "Kinetic Poetry" (Article 1) re-situates four major forms of time-based poetry: film poetry, videopoetry, holopoetry, and digital poetry. It advocates that cultural context and technological development are intertwined and need to be examined from that lens.

Analog media, as we propose in this narrative, has produced significant works that bridge visual arts and literary forms, such as those found in the Surrealist and Lettrist films. In the post-World War II period, a new cycle of Experimentalist authors engaged with film. We can consider Marc Adrian's pioneer experiments with film poetry in this scope of artistic investigation that would lead the artist to work

with computers to produce textual and static output. Nonetheless, the first examples of kinetic poems that are composed with electronic media, and presented with electronic media emerge in Portugal in the 1960s, with videopoetry, and in the 1980s, with digital kinetic poetry. "The Freedom Adventure of Portuguese Experimentalism and Kinetic Poetry" (Article 2) debates critical positions in experimental poetics. It focuses on the Portuguese group of writers and artists that emerged with *Poesia Experimental* 1 and 2 (1964, 1966). Within the scope of experimental and kinetic poetics, it reads E. M. de Melo e Castro's videopoem *Roda Lume* (1968, 1986), and Silvestre Pestana's ZX *Computer Poetry* series (1981-83).

setInterval() discusses three modes of reading that I call 'micro-,' 'meso-,' and 'macro-reading.' Micro-reading is in-depth critical analysis of poems, which includes time-based reading methods. Meso-reading involves contextualizing digital kinetic poetry, by relocating its practices within the larger cultural and technological context in which kinetic poetry has been created. Throughout the twentieth century, modes of production included different media, and are situated in different artistic periods. Macro-reading is the application of 'distant reading' notions, but especially macroanalytical software tools, for the study of large corpora of works.

The study embraces the challenge of critically analyzing poetic works that are events; poems that are set in physical motion. Kinetic poems are presented in various iterations, forms, and demand to be read in their various modalities. As C. T. Funkhouser (2012: 5) observes, "If a work's contents are not, and cannot be, fixed, we can, even if momentarily, 'fix' or build potentially profound understandings of these works on an individual basis." The method I develop deals precisely with the problem of instability. It analyzes kinetic poems through the following layers: displayed text, image, sound, interface, source code, and their performance or live reading manifestations. Moreover, because these poems are time-based, and laid out in 2D or 3D space, their spatiotemporal dimensions are topical concerns. Thus, in order to approach kinetic behavior, and the lack of frameworks to approach moving artifacts, this study puts forward a new method of experimental criticism coined as 'modifying deformance.' This key finding designates the critical action of modifying the works' presentational mode, by means of modding the source code and surface. These modifications of temporality are built within a framework of open source software and

remix culture—additionally drawing from practices of altering video games as mods—and are further discussed in dialogue with Lisa Samuels and Jerome McGann's (1999) notion of "deformative criticism."

Two kinetic poems are analyzed in detail in "Polymorphic Reading in Strickland and Jaramillo's *slippingglimpse*" (Article 4) and "A Critique of Control and Black Boxes: Modifying Deformances of Ian Hatcher's *// [Total Runout]*" (Article 5). The time-based readings discussed in these two articles address the problem of analyzing kinetic poetry. First, the reader and critic face the task of being prevented from meaningfully reading the displayed text. In this sense, the critic needs to present solutions, which may complement an interpretation of the "texte-à-voir" ["text-as-seen"] (Bootz 2004) with the source code. I argue that, in time-based works, readings will always include a degree of observable time-lapse and, therefore, temporality as an expressive literary and aesthetic element can be explored by experimental methodology. Second, these poems are multimodal, and require expertise and versatility in many disciplines. As a result, the critic needs to draw from the areas of literary studies and digital culture. On a more refined level, the critic needs to investigate experimental and digital poetics, experimental and digital arts, programming, code studies, and specific critical frameworks developed in recent years by thinkers in the area of electronic literature and the field of digital poetry.

Dislocating the critical gaze from individual works to clusters, "Digital Poetry and Critical Discourse: A Network of Self-References? (Article 6) presents macro-analyses of critical writing and creative work in digital poetry. Extensive development with the ELMCIP Electronic Literature Knowledge Base—a database resource operating at the University of Bergen that documents all types of artifacts, persons, and organizations working in electronic literature—prompted a distant reading approach (Moretti 2013), and network analysis of critical discourse in the field of digital poetry. The main aim of this research project was to understand the relation between the most cited poems and whether self-referentiality is high, or not, in a set of monographs and PhD dissertations published between 1995 and 2015. This article adds insights to the literature review, and it problematizes the issue of canonization of digital poems.

In the summary of this study, the reader will find complementary discussions to the articles, which include definition of terms, an extensive literature review, methodology, historical contextualization, and presentation of practices in kinetic poetry written in digital systems. *setInterval(): Time-Based Readings of Kinetic Poetry* aims at discussing kinetic poetry in an historical and contextualized manner. It proposes an original method for reading moving poems that are dependent on space and time as expressive literary elements. For as Ben Lerner's (2016: 72) critique of Claudia Rankine's *Citizen* (2014) points out, "The virgule is the irreducible mark of poetic virtuality—the line break abstracted from the time and space of an actual poem." Can the virgule—that representation of a gap in time and space—speak for absence and void? In a digital system, what does an interval in time and space mean? How can we read the onscreen presentation of the in-betweenness in two animated sequences? We see strings of letters and words changing from state to state in projections. Is then the virtual—the imagination—gaining equal momentum as the other elements of the poem in front of our eyes?

2. Aim and Research Questions

This study addresses modes of reading in digital kinetic poems mainly published between 1995 and 2015. Contextualized in a rich history of kinetic poetry created with varied media, time-based poems are constituted by temporal and spatial dimensions, which are part of their content, discourse, and technical apparatus. A literature review of digital poetry and kinetic poetry suggests that there is a gap in the criticism of the temporality of time-based works. Moreover, there is a lack of methods to analyze kinetic poetry.

Kinetic poetry is time-based because its poetic forms are dependent on the scripting and display of temporality. Often, these poems are composed with timers and experienced by readers with specific tempos that vary according to technological processes. As John Zuern (2014: 482) points out, "The computational processing and manipulation of text, images, sound, and audience feedback inevitably introduce distinctive temporal features into digital artworks." In order to investigate these topics, the following research questions have guided the critical inquiry:

First, because this study focuses on the digital processes of time-based poetics, it draws from a long history of kinetic poetry that was, until now, fairly undocumented. Thus, an investigation of other forms of kinetic poetry composed with film, video, and holography is informative and necessary.

Research Questions 1: Why and how is the history of kinetic poetry embedded in literary and artistic movements? How does it affect contemporary practices? My hypothesis is that relocating digital poetics within a tradition of experimental poetics can pave the way for a constructive understanding of its vanguard and media-oriented practices. Articles 1 and 2 answer this question.

Second, researching the "distinctive temporal features" of poems written and read in digital systems means that spatial and interactive features are also affected by coding and interface decisions.

Research Question 2: How do spatial and temporal dimensions configure the composition and reading of kinetic poems? This question is discussed throughout the summary and investigated in practice in articles 4 and 5.

Third, it becomes fundamental to address modes of reading in kinetic poetry.

Research Questions 3: How to simply read poems behaving as events? How to read poems that display at extremely high speed? How to critically analyze surfaces of inscription that may be impossible to read? Therefore, in addition to analyzing the different components of a work by using models that humanities critics long have applied, experimental criticism at the level of praxis with programming languages and processes must develop new methods for an understanding of kinetic poetry. What methods of criticism can be set in practice in order to read kinetic poems? This set of questions is answered in articles 4 and 5, where modifications are implemented with the purpose of analyzing text behavior. I call this critical practice 'modifying deformance.' It is discussed in detail in the subsection 5.2.2.

It is enough to experience the fast and slow speed overlapping textual animations embodied in the works by Philippe Castellin, María Mencía, Stephanie Strickland, Giselle Beiguelman, Jörg Piringer, Nick Montfort, J. R. Carpenter, Jhave, Rui Torres, Zuzana Husárová and L'ubomir Panák, Johannes Heldén and Håkan Jonson, and Ian Hatcher, to name but a few, to perceive that a new approach to reading and viewing is needed, together with an understanding of what code does.

Reading poems that incorporate text, sound, and image that run once code is executed, is a complex task. As Talan Memmott (2006: 301) clearly asserts, "If the expectation of a reader-user is that she will discover the secret of a particular piece by abstracting its elements—for example, isolating the verbal from the visual—the environmental grammatology of the work is lost and the outcome is not a close reading but a partial or close(d) reading that depletes the work of its poetics." Following up Memmott's (2006: 300) double-meaningful "mis(e)-[on-Screen] reading," as well as C. T. Funkhouser's (2012) notion of the screen as a stage, kinetic poems need to be understood as "performative events" (Strickland 2006, Jhave Johnston 2016).

3. Literature Overview and Taxonomy

This section discusses the title of the study, the form that is at stake, kinetic poetry, and the field in which it is situated: digital poetry. It deals with taxonomy, terminology, and it presents definitions of the following terms: 'timer,' 'time-based,' 'setInterval(),' 'diastêma,' 'kinetic poetry,' and 'digital poetry.' It offers a literature review in the context of the broader field of electronic literature. In addition, the reader will find a discussion of theoretical frameworks concerning definitions and critical perspectives about digital poetry that relate to the study as a whole.

3.1. setInterval()

Timers define kinetic text. A timer is an argument or variable that is part of an algorithm. It can be part of a method in programming that incorporates a temporal variable in its syntax, in order for determining the tempo of motion in a kinetic poem. Yet, technical devices and platforms frame the overall way writers define timers—cultural and technological context that is embedded with conventions on how to compose animations and conceive kinetic text. Specific arguments and functions can, nevertheless, be edited, modified, and transgressed. Using film and video technology, experimental poets Marc Adrian and E. M. de Melo e Castro created a set of instructions—an algorithm—for setting a tempo between each frame. Scripting in BASIC (Beginner's All-purpose Symbolic Instruction Code), a programming language developed at Dartmouth College in 1967, experimental poets Silvestre Pestana and bpNichol (in AppleSoft BASIC) coded time-based algorithms with loops of `PAUSE` statements and `SPEED` teletype commands. Typically, when running, a `PAUSE 100` command followed by a `PRINT` statement with the argument `"KINETIC POETRY"` means that, for instance, the string of text "KINETIC POETRY" is outputted in the screen after an interval of 100 milliseconds. Since then, contemporary programming environments, such as browser-based dynamic scripting languages, and libraries JavaScript and jQuery have radically changed the possibilities for kinetic poetry and time-based arguments. My notion of 'time-based' goes pretty

much in line with John Cayley's (1998, 2004c), in that it points to literary works whose "programmability" relies on temporal methods, and "transition effects" to be displayed and performed, in kinetic poetry, generative poetry, "alternative montage," and "textMorphs" (Cayley 1998: n.p.).

　　　　`setInterval()`, the title of this study, is a method for coding timers in JavaScript. As such, it immediately signals the spatiotemporal dimensions necessary to write and read kinetic poetry in digital systems. Therefore, this study not only gives prominence to the temporal aspect of kinetic digital poems, but it also emphasizes its scripting functions, which can be found in their source code in order to set a delay. To activate letter, word, or string movement and transitions, a writer-programmer needs to script them. In JavaScript and ActionScript, this type of scripting happens by writing timer methods such as `setTimeout()` and `setInterval()`. These timer methods incorporate a function to be executed and a timer in milliseconds with the following syntax: `setInterval(function, milliseconds)`. Temporality represented in the process of coding and expressed in the display of writing is then indispensable in order for a kinetic poem to work, that is, to be executed by the computer. Thus, the title of this study highlights `setInterval()` as an archetypal method, given that we can find it in manifold pieces of digital poetry.

　　　　Poets working with programming languages for browser-based application set simple refresh functions, else and if conditions, while or sleep conditions. Virtually all works in Flash's ActionScript or JavaScript that are time-based need to have scripted timers. Examples that demonstrate the use of `setTimeout()` and `setInterval()` methods are abundant. For instance, Stephanie Strickland and Cynthia Lawson Jaramillo's *slippingglimpse* (2007), Ian Hatcher's *ʊ [Total Runout]* (2015), and Nick Montfort's *Una Página de Babel* (2015) are coded with the following methods and timers:

```
var loadingCall:Number = setInterval(preloadSite, 50);
```
(Strickland and Jaramillo 2007: line 4)

```
setTimeout(grow, (Math.random() * 2400));
```
(Hatcher 2015: line 148)

```
window.setInterval(render, 0);
```
(Montfort 2015: line 134)

Even Jörg Piringer's website background—running a program of animated "letter soup" that uses kinetic letters with the function `moveLetterSoup()` and `animSoup()` scripted in PHP inside `lettersoupanim.php`—sets the animation of letters with:

```
var init = setInterval("animSoup()", 100);
```
(Piringer 2011: line 22)

J. R. Carpenter's word generator is used in various works with explanations on scripting intervals. The scroll essay *Notes Very Necessary* (2015a) uses the JavaScript library `word.generator.js` (2013a) with annotated code:

```
/**
 * ### Generator.play(Int: interval)
 * Renders and inserts the current frame in its element, and
then every interval miliseconds thereafter.
 *
 *   *   __interval:__    Interval between generations, in
miliseconds.
 */
Generator.prototype.play = function(interval) {
this.stop(); // Stop generator in case it's running.
if(interval != null) {
     this.show();
     var that = this;
     this.repeater  =  setInterval(function(){that.show();},
interval); // Weird stuff to work around scope as detailed
here: http://www.vonloesch.de/node/32
     this.interval = interval;
}
return this;
}
```
(Carpenter 2013a and 2015a: lines 179-184)

The `generator.play` function is applied in different guises. In *…and by islands I mean paragraphs* (2013b), Carpenter sets different intervals for each island with different timers. For instance, the timer in the first island (`isle1.js`) is set with 23 seconds, which means that the strings of words regenerate every 23 seconds:

```
isle1.play(23000);
```
(Carpenter 2013a: line 23)

As Strickland and Jaramillo (2007b) assert, "Code is meant to control time. Animations and interactions would not exist without scripting of time." Animations, transitions, and movement onscreen can be differently given by `setTimeout()` and `setInterval()`. The first method sets one event to run after a number of milliseconds, whereas the second sets a function to be repeated over and over. The general syntax is `setInterval(expression, interval);`. In this coding scheme, "expression" is the variant that establishes the coded function. The "interval" is an integer given in milliseconds. Moreover, these methods can be stopped by clearing methods: respectively, `clearTimeout()` and `clearInterval()`.

In the subsection 4.1., the reader will find further discussions about spatiotemporal dimensions. They encompass notions of gaps, intervals, or voids that are of the utmost relevance when reading kinetic poetry. Poetry is the art of brevity, if compared to prose. When presented with dynamic media, it often requires a shorter time span than static media in order to be read, perceived, viewed, and interacted with. Janez Strehovec (2003a: 2) notes this phenomenon, because:

> Economical use of language has always been essential for poetry, (…) a tendency to compactly express as much as possible by means of as few words as possible. However, where there are few words, there are many voids, much blankness and whiteness. Quality contemporary poetry in the tradition extending from Mallarmé to Paul Celan (and also Edmond Jabès' poetry-philosophy) has efficiently used such blank spaces and included them into the signifying process. This idea is being used by kinetic poetry, too, restoring intervals of a hidden or merely indicated text instead of using blanks. Such a text runs somewhere in the depth of the screen and appears in the foreground only partially for a short period of time.

Blanks and intervals have been always part of poetry. If silence—the blank space—in discursive poetry has deep meaning, in concrete, visual, and typographic arrangements it can acquire other forms as signifier. Intervals can act as silences, negative spaces, or precisely the opposite—consider Eugen Gomringer's "silencio" (1953). Because they are shaped signs, they can mean as much as a word or letter. As we note in the discussion about experimentalism in article 2, Luciana Picchio stresses Salette Tavares's work with graphic blanks, and by extension concrete and experimental poems' features—"the Mallarméan silences" (1992: 13)—as symbols of contemporary

"re-semanticity." In kinetic poems, the signifiers live within a tension in space-time between visibility and invisibility, readability and unreadability—the "restoring intervals" that Strehovec points out. The interval acquires an indexical or deictic aspect, which is scripted at the level of source code, but it is displayed through layered temporalities reliant on hardware and software: machine processing time, code running time, queried dependencies time, and network speed.

The notion of 'interval' is undeniably relevant for the study of kinetic poetry, though it is not as polysemic as we would expect. Yet, if we go back to Ancient Greece, we find a word and concept that reveals a rather higher polysemy range, as well as a track of application in different areas of knowledge, by different thinkers and philosophers. In Greek, the notions of 'interval,' 'spatial or timely extension,' 'dimension,' 'distance,' 'aperture,' 'difference,' 'ratio,' 'space in-between,' and 'musical interval' are given by a single word: *διάστημα*. This word is found in numerous treaties, namely by Aristoxenus, Aristotle, Epicurus, Euclid, Hippocrates, and Zeno. These sources are extracted from *A Greek-English Lexicon* (1843, 1940, 1996), edited by Liddell and Scott, which is not a Latin, but a Greek Thesaurus.[2] The Greek entry *διάστημα* (1996: 413) would correspond to the Latinized version *diástima* or the Greeklish *diasthima*. Online sources seemed to confirm the same.[3] Furthermore, the notion of 'musical interval' has been reworked throughtout time by several composers; prominently by Iannis Xenakis (1992: 157) in stochastic music, and the concept of "distance (interval)."

Looking into the Latinized version of a word that originates from the Ancient Greek—a set of languages with more than 2,500 years of existence—required investigation. In order to find the correct transcription of the word in English, I researched print sources at the University of Bergen's library. I inspected hundreds of dictionaries in diverse languages, etymological Greek dictionaries, encyclopedias and lexicon compendia, in modern and ancient languages. Neither philosophical, literary, religious, utopian, or general encyclopedias—from Britannica to Americana, from Luso-Brazilian to Einaudi—nor *World Literary Terms* dictionaries, *Dictionnaire des*

[2] See http://perseus.uchicago.edu/cgi-bin/philologic/contextualize.pl?p.16.LSJ.2096207.2096507
[3] See https://en.wiktionary.org/wiki/διάστημα and
http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.04.0057%3Aentry%3Ddia%2Fsthma

Mythes Littéraires (1988), and encyclopedias of poetics—such as *The New Princeton Encyclopedia of Poetry and Poetics* (1993)—state occurrences of 'diastêma,' 'diasthma,' 'diastima' or 'diasthima.' Indexes often jump over from 'diaeresis,' 'dialect poetry,' 'dialectical materialism,' 'dialogue,' 'dialysis,' or 'diary' to 'diatribe,' 'dibrach,' or 'diction.' Later on, Henrik Indergaard, a specialist in Greek at the University of Bergen, attested that the stable English transcription of *διάστημα* is 'diástêma.' According to Indergaard (2017), "The 'e' represents 'eta' (η), a long 'e' (as in English 'air')." Therefore, the transcription of *διάστημα* I am adopting is 'diastêma.'

Moreover, the Greek-English index of Simplicius's *On Aristotle On the Heavens 1.5-9* (2004: 167-168) lists 'diastasis' (division, distance, separation), 'diastêma'—referring to interval, distance, extension—and two types of diastêma: 'diastêma apeiron' (infinite interval, infinite distance) and 'diastêma peperasmenon' (finite distance), which would be interesting to think of in terms of code that sets endless loops, and code that sets finite loops. Simplicius of Cilicia's reflection on Aristotle's work reminds us that Aristotle was indeed the most prolific author elaborating on the notion of 'diastêma,' for instance, in *Generation of Animals*, *Problems*, *Prior Analytics*, *Posterior Analytics*, but especially in *Physics IV 1—5*, where it is discussed in relation to 'topos' (place). Notions of 'interval' have also been developed in other ways, and fields by Bergson, Merleau-Ponty, Tarkovsky, Deleuze ('interstice'), Irigaray, Derrida, and McCloud. The scope and length of this study unfortunately does not allow for pursuing a comparative analysis of all these variants.

The essay "The Digital Diasthima: Time-Lapse Reading Digital Poetry" (Article 3)[4] precisely develops the notion contained in the Greek word *διάστημα* as a broader concept of 'interval' that can be connected to text in movement. It presents the notion of 'diastêma' in kinetic poetry in association with time-lapses in digital systems. Time-lapses are perceived differently if the reader-user-viewer of a kinetic poem is given a time controller or not, and if the reader is presented with invariable dislocations of text in space-time, or variable and unique generative output. The concept of digital diastêma becomes relevant in the analysis of digital kinetic poems because the writer scripts the interval, the reader sees it, reads it, interacts with it, and

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[4] After more in-depth research, the title should now read "The Digital Diastêma."

the performer improvises with it. Representing spatial and temporal dimensions, but also extension, the diastêma becomes symbolic of the composition and visualization of kinetic poems, in that the tempo is fundamental to determine whether the reader reads or just sees.

When Strickland, Jaramillo or Hatcher script time, they do it in accordance to a concrete tempo they want to see text displayed onscreen. This temporal extension works according to the speed and the organization of words in the space of the screen canvas. When Hatcher accelerates the tempo of a cognizable human reading up to 33 chain transitions per second, he emphasizes overabundance of information in networks and unreadability, which conveys a deeper meaning of inaccessibility, as we will see in-depth in article 5. At the same time, when one of these works is live performed, further snappy and critical decisions are taken. Consider the way Hatcher performs gibberish syllables as to mimic a speed-read technique; or the way Jhave selects and reads from *Big-Data Poetry* (2015), a Python generator running on the terminal that rearranges thousands of poems from databases at high speed.[5] Poetic systems as organisms executed by machines that are *autokinêtos* (self-moving) need the interference of the human performer at the level of selective reading. Kinetic poetry becomes entangled spatiotemporal performance.

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[5] Such as the databases of poems from Poetry Foundation and *Jacket*.

3.2. Kinetic Poetry

Kinetic poetry is an old form that has been cyclically renewed in various media. Kinetic poetry is a form of poetry that relies on physical movement as an expressive and functional element. Mike Weaver (quoted in Solt 1968: n.p.) notes in the catalogue of the *First International Exhibition of Concrete, Phonetic, and Kinetic Poetry* (1964) that kinetic poetry means "moving in a visual succession." Weaver—who, like Stephen Bann, Reg Gadney, and Mary Ellen Solt was aware of kinetic art—is perhaps thinking of kinetic book techniques such as the flipbook. For Solt (1968: n.p.), "It is easier to classify the kinetic poem because it incorporates movement, usually a succession of pages; but it is essentially a visual poem, and its words are, of course, made up of sounds." At times, however, 'kinetic poetry' is equivocally and interchangeably used as 'optical poetry.' For Klaus Dencker (2016 [2011]: n.p.), who has written a monumental study on the subject, it is even a subform of optical poetry:

> The term 'Optical Poetry,' as I use it, (…) is a kind of poetry that visualizes something in the double sense of being poetry that can not only be read but also is there to be seen. (…) Optical Poetry as a kind of umbrella term comprises all areas that concern visualised *poetic* productions. These include (…) the graphic models of Kinetic Poetry and, finally, Visual Poetry (emphasis original)

Yet kinetic poetry goes beyond suggested or implied motion to actually denote applied dislocation of signifiers in space and time—a feature that has only be made possible by mechanical and digital media that displays movement. The term 'kinetic' has its roots in the Greek verb *kinein*, which means 'to move.' As we will see in more detail in article 1, kinetic poetry has a long history that needs to be contextualized in aesthetic, artistic, literary, material, and media-technological context. Despite our focus being digital kinetic poetry—kinetic poetry that employs computational, programming, or networked procedures in its creation and observation—other forms, such as film poetry, video poetry and holography poetry, influence kinetic poetry's evolution.

For C. T. Funkhouser (2007a: 85, emphasis mine), "Digital poets (and those working with video and holography) began to work with poetry that was *literally in*

motion." The author (2007a: 94) means that "In kinetic works optical mutation of words and letters is the operative principle; poems, by design, move and change before the viewer's eyes." Therefore, we find in Funkhouser's critical framework a divide between kinetic and optical, in that kinetic is described as motion, not as optical illusion. Funkhouser (2007a: 87) further acknowledges the natural artistic movement continuation from concrete poetics to animation, which was not possible with static media:

> Computers clearly enable and extend ideas invoked by concretist aesthetics; digital works reflect, if not expand, similarities, while also being something altogether different. Although I intend to explore examples of graphical digital poems as an advancement of concrete poetry, this discussion also identifies distinctions between graphical digital and concrete poems. The aesthetics and motivations of the computer artists embody and diverge from compositions displayed and discussed in anthologies of concrete poetry.

This influence is clearly two-fold. First, there is the resonance of concrete poetics in a younger generation of authors entering digital poetics as their first aesthetic model—consider Flash works such as Brian Kim Stefans's specifically created for the computer *the dreamlife of letters* (2000) and Alison Clifford's e.e. cummings recreation and adaptation *The Sweet Old Etcetera* (2006). Second, there is the case of many concrete and experimental poets that worked later on with computers in order to animate their poems. This continuation of the experimental project as an extension process, which was grounded in a creative transmedial position to materials and technology, was divided into: a) doing straight transposition versions or recreations from older print concrete and visual poems with animation software—consider Ana María Uribe's *Tipoemas* and *Anipoemas* (1968-2001; 1997; 2016), Augusto de Campos's *cidadecitycité* (1963; 1999), and E. M. de Melo e Castro's *Roda Lume* (1968);[6] b) creating altogether new pieces from scratch that engage with the specificities of the computer as a programmable and networked machine, as John Cayley would contend. Funkhouser's argument is apt in that it recognizes historical artistic threads and literary influences by Dadaist, Futurist, Surrealist, Constructivist,

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[6] As Loss Glazier has noted: "Such innovative print works find a very natural extension into the digital medium where the kinetic qualities of text can be made literal." (2004: 73)

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and Concrete authors. At the same time, it does not juxtapose kinetic poetry with concrete poetry.

Roberto Simanowski (2011), on the other hand, gives an informed and rich account of historical practices, but misleadingly defines it as "kinetic concrete poetry." Concrete poetry authors have played a crucial role in establishing kinetic poetry, and in redefining future aesthetic links in digital poetics. Still, a univocal junction or direct correspondence of kinetic poetry with concrete poetry fails to acknowledge that kinetic poetry is more than concrete poetry in motion. It is important to demystify part of that common theoretical point of view by untying the connection that exists, but nonetheless is not universal, between concrete, kinetic, and digital poetry (Portela 2006, 2009; Schaffner 2006, 2010). Anna Katharina Schaffner (2010: 184-185) posits: "Not only is there significant overlap between the poetics of concrete and those of digital poetry, but, moreover, digital poetry was born in the orbit of concrete poetry in the late 1950s in Stuttgart." From this prism, we can locate the two foci of this orbit in Max Bense's creative and critical work, and Theo Lutz's generative poem *Stochastische Texte* (1959). Yet, ample diversity in kinetic poetry suggests that not all is necessarily concrete, or follows on from the concrete poetics tradition, especially if we think of kinetic poetry that is generative, and draws from a millennial tradition of combinatorial writing.

Concrete poetry had a concise aesthetic, literary and even political project. Inspired by Apollinaire, Mallarmé, Ernest Fenollosa, and Ezra Pound's writings about oriental ideograms, concrete music and art, Lettrist poetry, Bensean information aesthetics, and advertisement strategies, 'concrete poetry' came to represent a search for an artistic program grounded in non-abstraction, synthesis, and atomization of language in the 1950s-60s European and Brazilian context. Consider Öyvind Fahlström's "konkret poesi" manifesto-ideal "KRAMA språkmateria," that is, compressing the material of language by acting directly on its minimal elements: letters, words, and structures (Fahlström 1953).[7] This notion echoes in Gomringer's

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[7] Öyvind Fahlström's manifesto is translated by Karen Loevgren in Solt's collection: "SQUEEZE the language material: that is what can he titled concrete. Do not squeeze the whole structure only: as soon as possible begin with the smallest elements, letters and words. Throw the letters around as in anagrams. Repeat the letters in words; lard with foreign words, gä-elva-rna [djävlarna = devils]; with foreign letters, ahaanadalaianaga for handling, compare with pig latin and other secret languages; vowel

1954 "formalin vereinfachung" ("structural simplification," quoted in Solt 1982: 202), and Max Bense's "formal simplification" (1965) of language as signs. As Mary Ellen Solt (1982: 197, emphasis original) observes, "Throughout his manifestoes and theoretical writings, Eugen Gomringer, founder of the European concrete poetry movement, emphasizes the 'sign character' (*zeichencharackter*) of the concrete poem, referring to the poems themselves as 'sign schemes' (*schemata von zeichen*) or 'systems' (*systeme*)." These positions resonate in Ana Hatherly's 1959 statement that "Concrete poetry, suppressing description, creates imagination" (1981 [1959]: 91). As this study's articles 1 and 2 demonstrate, my thesis does not dismiss concrete poetics, but it gives more weight to experimental poetics, since it encompassed concrete, visual, sound, performative, and computational poetry elements. As such, it traces these historical threads, as they became fundamental pillars of kinetic and digital poetics. This is not a new critical position in experimental and digital poetics discourse (Drucker 1996; Vos 1996; Clüver 2007; Torres 2008, 2014; Portela 2006, 2009). We could go back to Solt (1968: n.p.) to find evidence of what was already being felt in the 1960s regarding the experimental project as an overarching set of practices: "we are interpreting the term 'concrete' in its broader meaning in this presentation of the new experimental poetry."

Simanowski (2011: 66) discusses kinetic poetry pieces that "share the requirement of a common medium: they all are presented on a computer screen." If that is true for digital kinetic poetry, it is not true for all "kinetic concrete poetry." As the survey presented in article 1 tries to articulate, kinetic poetry is a form of poetry that has been explored in different media. Moreover, poets such as Marc Adrian and E. M. de Melo e Castro developed kinetic poems with film and video technology within a clearly stated 'concrete' project.

Kinetic poetry lives from the tension between mobile and immobile signs and elements that are framed by spatial and temporal dimensions. Noigandres, the São Paulo-based concrete poetry group, had already acknowledged part of these variables.

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glissandos gäaeiouuåwrna. Of course also 'lettered,' newly—discovered words. Abbreviations as new word building, exactly as in everyday language, we certainly have Mimömolan [the law of least resistance]. Always it is a question of making new form of the material and not of being formed by it." (Solt 1968: n.p.)

In "Plano-Piloto para a Poesia Concreta" (1958), the poets Augusto de Campos, Décio Pignatari, and Haroldo de Campos posited that concrete poetry's "dynamic structure" lives from a "tension of things-words in space-time," in that "graphic space as structural agent [is] Qualified time: space-time structure instead of mere linear-temporistical development" (quoted in Solt 1968: n.p.). Max Bense (1965: n.p.) further notes their famous, and appropriated, "verbivocovisual" Joycean dictum:

> The 'Pilot Plan for Concrete Poetry' published by the Noigandres group recognizes the verbal, the vocal and the visual materiality of word and of language. However the problem is not to create a traditional linguistic sphere of communication, which conventionalizes meanings in exploiting the verbal function of the word. The word is being manipulated so-to-speak in three dimensions verbally, vocally and visually.

As a result, time and space are two of the fundamental dimensions, besides the verbal, aural, and visual elements. But in digital poetry, we can say that the word, letter, or ideogram can be manipulated in five or even six dimensions, if we add kinetics, interactivity, and the network. Building on Franz Mon's "Poesie der Fläche" ["Poetry in Space" (1994)] and Jay D. Bolter's *Writing Space* (1991) association between digital textuality, kinetic and concrete poetry, Simanowski (2011: 65) fittingly highlights the "spatial and temporal presentation of the poem" by demarking the new elements of time and interactivity: "In the digital realm, concrete poetry gains two additional means of expression. In addition to the linguistic and graphic qualities of words, time and interaction also provide elements of expression; words can appear, move, and disappear, and they can do all this in response to audience input." (63)

The majority of theories in the field of digital poetry define kinetic poetry as poetry in motion, whether it is called 'kinetic' or 'animated.' Loss Glazier (2004: 67), writing on the textual conditions of digital poetry, speaks of "the ability to give a composition kinetic qualities, to have it move while displayed." On the one hand, 'kinetic' and 'animated' are employed as interchangeable modifiers. Sometimes, even if meaning "implementation of movement" (Engberg 2007: 141), they are used in a tautological manner—consider Maria Engberg's (131) consideration of "a fluctuation of meaning which is echoed in the kinetic animated screen." This shared meaning is nonetheless the prevailing taxonomy in plenty of debates surrounding digital poetry.

This fact recognizes cinematic techniques, software-based animation, and motion graphics as influences to the notion of animation in digital poetry. This argument is visible in Manuel Portela's (2010: 25) position, when describing a course of kinetic poetry:

> The use of digital animation changes the presence and the representation of time and space within the poem. The seminar 'Kinetic Poetry' looks at kinaesthesia as a poetics of the signifier (…) at ways in which the motion in the chain of signifiers, one of the structural features of language, is simulated in several kinetic poems (…) how specific forms of animating texts symbolize both the instability of signifiers and the instability of meaning.

We can fairly say that Flash, Director, and After Effects—pretty much like Pure Data and Max/MSP in the experimental music and video communities—were the main creative platforms responsible for the definition of "animated" as *the* common taxonomy. Stephanie Strickland (2006: n.p.) considers Ana María Uribe's transition form typewriter poems to digital poems as "graphic animations." Janez Strehovec's (2003a: 1-2) discussion of visual and kinetic qualities of digital poetry also emphasizes these features:

> We are not referring to any hardware conditions for production and reproduction of such texts, but to the mode of textual units organization – not to digital poetry in general, but its kinetic and animated genre (e.g. e-poetry pieces by John Cayley and Loss Pequeño Glazier). It seems that the generation Flash (Manovich's term) is very active in this field of textuality, organized in the form of time-based audiovisual moving words sequences as well.

The "Generation Flash," as Lev Manovich (2002) has argued, embodies a whole range of practitioners who worked in the once popular platform Flash, but not only in Flash. The Flash aesthetics relate to a collage and remix period in time driven by software. Thus, cinematic properties—whether they are "presentational" or "participatory" (Funkhouser 2012)—become the main basis for frame-by-frame (scenes) composition and textual motion display. Maria Engberg (2007: 93) emphasizes the presentational mode in "animated forms," because "Cinematographic poems tend to use the types of motion that do not involve the reader to any particular extent." Furthermore, David Jhave Johnston (2016) extends the notion of animation

to encompass aesthetic animism, in that motion properties are intertwined with organic and cybernetic living forms. As we will see in the subsections dedicated to the themes of remix, appropriation, and modification, open-source software, browser-based dynamic languages, and libraries such as JavaScript and JQuery have brought a whole new range of possibilities for kineticism, versioning, and collaboration.

On the other hand, not all theorists share the notion of 'kinetic' and 'animated' as a simile. For Philippe Bootz (2007), kinetic poetry means dislocation or movement in space without linguistic changes. Kinetic poetry is a subset of other modes of 'animated poetry,' such as syntactic programmed animation, 3D animation, digital calligrams, and typographic animation. For Bootz, animated poetry needs to entail algorithmically transformed syntax, a feature that can be found in the majority of his works, since they employ textual generation and movement: *Amour* (1989), *La Série des U* (2004), or *Elpénor* (2015). To sum up, in the context of digital poetry, the emphasis is placed in kinetics as movement, but movement that cannot only be suggested, but rather displayed.

3.3. Digital Poetry

More than kinetic poetry, *digital poetry*, as a term, is more open to discussion. *Digital poetry* is a transitory label that accounts for a set of creative practices involving poetic forms that require computational and networked processes in their production and reception. As a result, programming languages, software and hardware have an inextricable role in the process of writing and presenting poetry. Understood in the light of platform studies (Bogost and Montfort 2009), this means creatively engaging with computational media in order to write poetry. As Adalaide Morris and Thomas Swiss (2006: 4) argue in relation to the 'posthuman' term, "we have as yet only a tentative vocabulary." As such, while we discuss taxonomy systems proposed by different practitioners and scholars in more detail below, we ought to keep the notion of "tentative vocabulary" in the back of our minds. For as Stephanie Strickland and Ian Hatcher propose, terms defining the field should be broad and all-inclusive, therefore, "a tag, not a folder," as Hatcher (2014) suggests, when thinking of the term 'electronic literature.'

Like 'electronic literature,' the term 'digital poetry' arises out of necessity. That might mean recognizing digital poetry as a term to demarcate territory at the creative and institutional levels, "even if"—as Stuart Moulthrop (2013: 11) suggests—"it is impossible to draw out the future of electronic literature with any hook, one message seems fairly clear: to read is now to write, and vice versa."[8] The modifier 'digital,' as 'computer,' 'cyber,' 'electronic,' and 'computational,' acknowledges the productive demarcation of poetry as being written and read in digital systems. The word 'digital' appears in the United States of America in 1938, and in France in 1961, deriving from the English *digit* (number) and the Latin *digitus* (finger).[9] We *still* code the numbers (digits) with our fingers (digitus). As such, 'digital' represents the underlying

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[8] Stuart Moulthrop's keynote address "Failure to Contain: Electronic Literature and the State (Machine) of Reading" was delivered at the United States Library of Congress (April 4, 2013). The talk was further developed in chapter 1, "Entity and Event," in Moulthrop, Stuart, and Dene Grigar. *Traversals: The Use of Preservation for Early Electronic Writing*. Cambridge, MA: MIT Press, 2017.
[9] In France, it enters the fixed vocabulary in 1961, according to the *Le Grand Robert de la Langue Française* (2001: 1504). In the United States, according to *The Oxford English Dictionary*, it enters in 1938, "applied to a computer which operates on data in the form of digits or similar discrete elements," in C. Campbell's U.S. Pat. 2,113,612 9/1: "The emitter (…) differs from the other emitters in that it has twelve digital conducting spots." (1989: 654)

binary machine code of 0s and 1s. It appears to be a reliable adjective to affix next to 'poetry,' because it has this double meaning.

In "Experimentalism" (Article 2), I discuss the technological determinism of defining a field and aesthetic practices through media. If digital media defines our age, poetry, literature, and art developed specifically with computers and networks benefit from a compound term that clearly states its specificity. Yet it might soon turn into an outdated compound. Think of Friedrich Kittler's media discourse analysis (1999) and Katherine Hayles's media-specific analysis (2002, 2008). Do we solely define poetry and poet's output on the grounds of materiality? In that case, should poets writing with typewriter be solely studied within the field of typewriter poetry?

Following this logical argument, consider Charles Bernstein's 1960-70s "tapepoems."[10] Discussing experimental approaches with techno-deterministic or media designations as modifiers for describing poetic forms is obviously problematic. It seems anachronistic today to consider Bernstein's sound poems as *just* tape poems. Was Bernstein working in the field of reel tape poetry? His poems are in fact recorded with reel tape and we should pay close attention to their media-specificity, in that the cultural and technological production context, and the granularity of the sound achieved with tape are fundamental issues. Yet, is that the main characteristic that distinguishes them? Bernstein's poems, such as "1-100" (1969), are self-reflexive and conceptual. So, medium, and materiality approaches should not eclipse other modes of criticism, least to say, the critic's labeling of a poem. From the same angle, consider Melo e Castro's video *Roda Lume* (1968). Is it a video poem? Was Melo e Castro working in the field of videopoetry? Yes and no. *Roda Lume* is also self-reflexive, conceptual, as much as it is experimental.

It would seem bizarre to speak of a "canvas artist," but that has not prevented "video art" from being considered as a field itself. This critical reasoning seems to sit the medium at the forefront of the discussion. As Marjorie Perloff (2006: 160) observes, by pointing out Bill Viola's discomfort with the institutionalization system,

> In evaluating electronic poetries (…) we should not subordinate the second
> term to the first. 'I don't like the label 'video artist,' (…) Bill Viola once

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[10] See http://writing.upenn.edu/pennsound/x/Bernstein-Class.html

> remarked. 'I consider myself to be an artist. I happen to use video because I
> live in the last part of the twentieth century, and the medium of video (or
> television) is clearly the most relevant visual art form in contemporary life.'

The same was said by Andy Warhol regarding the relevance of silkscreen as *the*
medium of his time. Even if the subordination of poetic values over the medium itself
might be prejudicial, the very inattentive consideration of the medium's materiality,
together with a critical reading that dismisses the specific characteristics and poetics
inflicted by its processes is also reductive—something that is evident in the same essay
by Perloff, when the author analyzes works by Caroline Bergvall, Kenneth
Goldsmith, and Brian Kim Stefans. Therefore, Hatcher's (2014) proposal seems to
resonate again as the most adequate. Poetic works can be tagged with different labels
as they belong to, and participate in several traditions. Themes, media, aesthetic, and
political writing projects shape them in a specific cultural context that needs to inform
our demarcations. If tagged with enlightening labels, they can as such be studied from
multiple points of view. Digital poetry is then faced with the same line of thought.
Kinetic poems are, and will always be kinetic. Even if 'digital' might be dropped from
our future vocabularies, kinetic poems written with computers are for sure
'computational.' As Funkhouser (2007a) has noted, due to this instability all studies of
digital poetry in the next decades will likely to have a discussion about taxonomy. Let
us then have a closer look at theoretical discourse in the field surrounding these issues.

The field of digital poetry is increasingly growing in diversity and quality:
practitioners, festivals, critics, and critical discourse alike. In "Digital Poetry and
Critical Discourse" (Article 6), we discuss the relation between creative works, PhD
dissertations, and monographs. To my knowledge, the main monographs solely
devoted to the field so far are by Pedro Barbosa (1996a), Glazier (2001), Reither
(2003), Stefans (2003), Funkhouser (2007a, 2012), Antonio (2010), and Johnston
(2016). They introduce new critical perspectives and discuss the problem regarding
taxonomy and denominations: 'e-poetry,' 'cyberpoetry' and 'digital poetry.' According
to several authors—including Wardrip-Fruin (2005), Funkhouser (2007a), Bootz
(2012), and Carpenter (2014)—Christopher Strachey's Ferranti Mark 1 *M.U.C. Love*

Letter Generator (1952)[11] and Theo Lutz's *Stochastische Texte* (1959) were the first works of programmable and generative literature, in the forms of the epistolary monologic generator and the poetry generator.

On the one hand, Strachey—a computer scientist—programmed the first font for screens and anthropomorphized the Ferranti machine by signing "M. U. C." in random whimsical letters that had an anonymous lover as destination (Strachey 1954). On the other hand, Lutz—under Max Bense's guidance—published "Stochastische Texte" ['Stochastic Texts'] as an article that presented his permutation investigations based on Franz Kafka's *Das Schloss* ['The Castle'] (1926) vocabulary. The work's database generated different outputs on a Zuse Z22. Thenceforth, programmable poetry via electronic and digital media has come a long way, particularly after the widespread access to the World Wide Web in the 1990s, when language, code, and network moved away from mainframe and institutional environments to personal computers and the user's home desktop. This long history places the beginning of computational experimentation with generative literary forms in the 1950s. As it might be expected, critical work on these topics has a rather shorter history. Therefore, the way authors have been coining and defining the field is important, in the sense that theorization shapes idiosyncratic points of view and crystallizes definitions.

Thus, it is relevant to investigate the diversity of terms in the field and whether they come to mean similar things with different names or not. I argue that it is useful to identify a working definition and keep a solid account. The field and its multiple forms have undergone various classifications and, more precisely, various umbrella terms, depending on the author, period, language, cultural and national traditions, which surely manifest different stages in its evolution. A brief, even if debatable exposition can help mapping part of this diversity.

In the French-speaking world, upon the seminal work laid down by Abraham Moles on information aesthetics and computer art in the 1950-70s, practitioners and theorists coming from different traditions helped establishing the term *poésie générée ou assistée par ordinateur* (computer-generated or assisted poetry) and *poésie*

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[11] M.U.C. stands for Manchester University Computer. See David Link's description and reenactment in *LoveLetters_1.0* (2009) at http://www.alpha60.de/art/love_letters/

numérique (numerical/digital poetry). According to Philippe Bootz (2012), generation is the paradigm of digital poetry in France, in the tradition of Jean-Pierre Balpe's generative work. I would argue, with Philippe Castellin (1997), Jacques Donguy (2007), and Serge Bouchardon (2012)—though Bouchardon takes a standpoint of 'experimentation'—that experimentalism is the other integral side of this paradigm. Combinatorial poetry and constrained writing techniques became the focus of the group OuLiPo, founded by Raymond Queneau and François Le Lionnais in 1960. In the 1960s, Canadian Jean A. Baudot—a Québécois linguist and engineer—programs a text generator in an LGP-30. According to Cynthia Sugars (2015), Baudot publishes the uncut output in *La Machine à Écrire* (1964). In 1981, with ALAMO, Paul Braffort and Jacques Roubaud tried to enhance combinatorial practices with the *assistance* of computational media—consider Paul Braffort's *Triolets* (1985), Marcel Bénabou's *Dizains* (1985), and Bénabou and Roubaud's *Alexandrins au Greffoir* (1985). The same year, the exhibition *Les Immatériaux*—curated by Jean-François Lyotard and Thierry Chaput at the Centre Pompidou—and the Polyphonix festival mark two gathering venues for these practices, but also for what Bootz et al. (2013) call the "seconde période de la literature numérique" ('digital literature's second period').[12] This second phase is undoubtedly the combination of generative practices with kinetic elements, which became prominent characteristics of the group LAIRE—Bootz, Tibor Papp, Frédéric Develay, Jean-Marie Dutey, and Claude Maillard—and their magazine *alire*. Founded in 1988-89, *alire* stressed the computer not as a tool to assist the writer, but rather its capacity to procedurally transform literary, poetic and visual forms. According to Alain Vuillemin, it published "electronic poetry" (1999). This might only mean a question of literary program, platforms, and period. It seems as if the first wave of writers working with generated text would feel more comfortable with the label 'computer-generated poetry,' while the second wave with *poésie animée* (different from Johnston's 'animism') and *poésie numérique/électronique*. Poets affiliated with experimental and digital poetry, such as Donguy, Patrick-Henri Burgaud, Castellin (~~DOC(K)S~~ magazine), Alexandre Gherban, among others, also published in *alire*.

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[12] See Bootz's input in the *Balises* timeline resource: http://balises.bpi.fr/culture-numerique/lhistoire-de-la-litterature-numerique

In the Portuguese-speaking world, experimental poet António Aragão (1963) refers to Nanni Balestrini's 1961 permutational *Tape Mark I* as "electronic poetry." Developed in Italy in an IBM 7070, Balestrini's poem experiment, with 3002 combinations, outputted 63,74 meters of paper. In 1975, influenced by Moles, information theory, cybernetics, and practices from the Portuguese experimentalists, Pedro Barbosa introduced the notion of *literatura cibernética* (cybernetic literature) and *autopoesia* (automatic poetry), in *A Literatura Cibernética 1: Autopoemas Gerados por Computador* ('Cybernetic Literature 1: Computer-Generated Autopoems,' 1977). Barbosa's (1996a) conception of computer-generated and automatic poetry would evolve as *ciberpoesia* (cyberpoetry). Cyberpoetry encountered broad usage in the late 1990s and 2000s in the works by Brian Kim Stefans (2003), following Espen Aarseth's (1997) cybertext taxonomy. However, since the 1960s, E. M. de Melo e Castro (1988), a pioneer of experimental, sound, and visual poetry in such diverse media as paper, video, textile, and computer, described the creative relation between computation and poetry as *poesia informacional* (informational poetry) or *infopoesia* (infopoetry). Silvestre Pestana, an artist associated with experimental publications and venues, created—to my knowledge—the first programmed kinetic poem in a ZX81: *Computer Poetry* (1981). Pestana (1985: 205) also developed videopoems in the 1970s-80s, and therefore referred to some of his works as "video-computer-poetry." In Brazil, Erthos Albino de Souza created with FORTRAN, PL/I, and heated fluid[13] a correspondence matrix in order to output mathematical curves of visual and aleatory poems in *Le Tombeau de Mallarmé* (1972) and *servilivres (Ninho de Metralhadoras)* (1976)—a wordplay with the palindrome LIVRESERVIL. The print poem acts against dictatorship with the nested letters forming *servil* (servile) outputting ballistic curves that form the word *livre* (free). João Coelho further programs in BASIC, and an IBM personal computer, the visual poem *Universo* (1985). These experiments, together with Eduardo Kac's 1980s and André Vallias's 1990s poems, are known in the Brazilian context as *poesia de computador* (computer poetry). Eduardo Kac, working with holographic poetry as well, disseminated a broader category of 'media poetry' and 'new media poetry' (1996),

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[13] Machado (2001) quoted in Fajardo (2014). See also Kac (2004).

whereas Jorge Luiz Antonio (2005), researching electronic poetry, inventoried dozens of different labels concerning digital poetry.

In the German-speaking world, much like Moles in France, Max Bense's early criticism drew attention to generative aesthetics and experimental literature. Bense and the gravitation around Stuttgart—including Lutz, and experimental authors Reinhard Döhl and Frieder Nake—were important for the connection between theory and practice. Austrian transmedia artist Marc Adrian created the pieces *WO-VOR-DA-BEI* (1958) and *Schriftfilm* (1959/60) in 35mm film, and developed kinetic poems with the Berlin-based Zuse computer in tandem with celluloid film: *Random* (1963), *Text I* (1964), and *Text II* (1964). Writers and artists referred to such work as 'computer poetry'—a term still adopted, e.g. Saskia Reither's PhD dissertation "Computerpoesie" (2002). During the 1990s, with the emergence of the Internet, the German school molds the field as *netzliteratur* (net literature), in connection with the label 'net.art,' paying considerable attention to *digitale poesie* (digital poetry).[14]

In the English-speaking world, between the 1960s and 80s, the label 'computer poetry' became widely popular, in close affiliation with the fields of 'computer art' and Computer-Generated Literature (CGL), of which Strachey (1952) program is pioneer. We can recall British author Margaret Masterman's piece "Computerized Haiku" and Marc Adrian's work at the exhibition *Cybernetic Serendipity* (1968) at ICA in London; Scottish Edwin Morgan's simulated 'computer' poems; American Richard Bailey's *Computer Poems* (1973) anthology, or Canadian poet bpNichol's *First Screening: Computer Poems* (1983-84), an early kinetic poetry series programmed in BASIC. In the United States, Fluxus artist Alison Knowles and James Tenney collaborate in *A House of Dust* (1967), a program and 'computer poem' that generated print stanzas with a database of different words programmed in FORTRAN IV and Siemens 4004, that was later turned into a performance (1968).[15] In the 1990s, with the models of the Electronic Poetry Center (1995-) and the Electronic Literature Organization (1999-) the field developed under the term

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[14] Consider the work by Johannes Auer, Jörgen Schäfer, Peter Gendolla, Friedrich W. Block, Christiane Heibach, Florian Cramer, Roberto Simanowski, and Beat Suter (Switzerland), to name but a few. Due to the scope of this study, a full survey is impossible to draw here.

[15] See http://e-flux.com/aup/project/alison-knowles/ and
https://www.centerforthehumanities.org/james-gallery/exhibitions/house-of-dust

'electronic poetry.' Both 'e-poetry'—an abbreviation of 'electronic poetry,' a simile with 'e-mail=electronic mail'—and 'digital poetry' became widespread terms during the first decade of the twentieth-first century and still prevail today. They are employed in a commutable manner by a heterogeneous group of practitioners and theorists, proving the essence of a global community of authors that nonetheless answers to specific linguistic, local, regional, and national traditions. Described in different ways, the majority of the first examples of digital poetry from the 1950s, 60s, and 70s were developed by computer scientists, engineers, or collective endeavors between artists, writers, and computer specialists—mainly due to mainframe computers being in institutional environments.

Surely, these different linguistic systems, artistic, literary, and programming traditions inform different taxonomies. Also, the release date of hardware, their origin, popularity, accessibility, and affordability are important factors that contribute to the development of varied strategies, uses, and poetic forms. A good example happened in the 1980s, with the 8-bit home computers. Records of creative engagement with ZX Spectrum (1982) suggest that this platform was predominantly used by Europeans, whereas the Commodore 64 (1982) and Apple IIe (1983) by North Americans, though these platforms were also popular in Europe. The United Kingdom-based Sinclair Research released Spectrum, while Canadian Commodore Business Machines released C64. In the United States, Apple developed the Apple II series. Another peculiar case is the French online videotex Minitel. In 1982, Minitel 1 was released. By this time, across France users were connected via a network.

Authors are primarily speaking, and writing about a set of practices with a common denominator, when they refer to computer poetry, infopoetry, new media poetry, cyberpoetry, electronic poetry, or digital poetry. These practices can be subsumed under six primordial traditions: combinatorial, generative, kinetic, visual, linking, and interactive. Thus, it is relevant to pinpoint the most recent full-length monographs in the field and certainly why it is important to discuss them in order to keep a defensible term throughout the study.

Loss Glazier's *Digital Poetics: The Making of E-Poetries* (2001) presents several distinctive "material qualities" of electronic media and "conditions" of digital poetics, following Jerome McGann's (2001) lead. Glazier argues for a coherent model

of electronic poetry within the broader spectrum of digital poetics, by emphasizing source code as poetic material. Simply reading this sentence, we can already locate the ambivalence of definitions in what pertains to the field itself. On the one hand, throughout the monograph, the author considers the prism of "innovative poetry" (2001: 1, 181). On the other hand, there is ambivalence concerning the term "digital poetry," precisely because Glazier clarifies in a footnote: "There is no agreed-upon term for digital poetry. It will sometimes be referred to in this volume as digital poetry, electronic poetry, e-poetry, computer-poetry, or computer-generated writing" (181). Besides these designations, we also find "Web-based electronic writing" (5) and its shorter form "e-writing" (2). Even if he does not specify latent reasons in the footnote, such an acknowledgement serves as proof of a problem to solve.

Considering the discussion of a common field, the reader is forwarded to chapter 8, "Future Tenses / Present Tensions" (153), which has a strikingly symptomatic passage of Glazier's ambivalent take on taxonomy. Glazier accurately debates the scarcity of professional, academic and institutional attention to the field, but with multiple types for the same token:

> A great hindrance is the nonexistence of any commercial or commonly accepted tool for the creation of *digital poetry*. Part of this could, of course, be attributed to the inattention given poetry in general. But for *e-poetry*, this deficiency seems to go even further; for *e-poetry* is neither accepted by other non-poetry digital practitioners nor generally by print poets. The field of *electronic poetry* practice is, of course, well established and broadly defined. The possibilities for *digital poetry* extend… (154, emphasis mine)

This confusion recalls the installment of diverse designations during previous art movements, e.g. Art Nouveau. According to the country, the style assumed different nouns: Jugendstil, Modern, Arte Nova, Modernisme Català, Secession, Stile Liberty, Glasgow Style, Tiffany Style, etc. It is worthy to notice that these nouns, although referring to a common set of aesthetic principles, also referred to specific singularities of each country's architectonic and artistic history and culture, and became manifest in the diversity of styles within the same style. We could argue that digital poetry is neither a style, nor a movement, and that an idea of national borders, and styles is too incompatible with the discourse of networked and programmable digital poetics.

Sharing common platforms and procedures, but different styles, the authors of digital poems and, moreover, of critical writing on digital poetry tend likewise to define their vocabulary according to preexisting national, linguistic, literary, aesthetic, and political values. This fact explains why the term *litterature númerique* is prevalent in France, 'electronic literature' and 'digital literature' in the United States and Canada, *ciberliteratura* in Portugal, and *netzliteratur* in Germany.

Glazier recognizes "that we are faced with not only a lack of a uniform practice in electronic poetry but also an inadequate vocabulary for discussing e-poetries" (162), to which I would add Baldwin's provocation at ELO 2013 calling for more robust theory—a point we will return to. If it is true that he presents other examples of taxonomy, such as Eduardo Kac's wider label of 'media poetry' (1996), the discussion about taxonomy remains to be developed. In spite of this, Glazier's writing crystallizes around the term 'e-poetry,' which can be inferred as an aesthetic, literary (*ars poetica*) and even institutional choice. The author develops important notions about the present and future states of the field, by presenting a theoretic model that focuses on how electronic media can be understood "as a *space of poesis*" (5, emphasis original). This space for poetic construction means that innovative poetry—Language Poetry is an antecedent case—has always been aware of its own processes, procedures and material inscription. As Glazier observes, "Digital innovative practice can add to the possibilities of print the concept of programming as writing and the real-time action that programs realize" (177). As such, innovative poetry in the digital realm enables creation and immediate dissemination via its own medium and the network.

In *Fashionable Noise: On Digital Poetics* (2003), Brian Kim Stefans argues for an overarching conception of digital poetics. Stefans cherry-picks 'cyberpoetry' as a legitimate term that can be ironically defined in what it is not. In "Reflections on Cyberpoetry," Kim Stefans points out: "It is assumed that cyberpoetry exists, though whether as a subset of poetry or the larger sphere in which literature exists, we are not sure. It is assumed that cyberpoetry is nearly a school; that it almost consists of certain theories" (2003: 43-44). Without revealing the above-mentioned theories, the author contends: "Cyberpoetry does not exist" (44). For Stefans (45-46), cyberpoetry—meaning a "genuine verse-form"—would

have several singular positive definitions. I can define it only in negatives: (1) the lack of limitation to black and white words on a page, (2) the lack of the possibility for mechanical reproduction (there being no original), (3) the lack of closure and the lack of the lack of choice.

Stefans's maneuver of rhetoric inversion, escaping circumscription, is later turned positive: "the very life of cyberpoetry" (49) is the "contrast between artifice and function, this evasion of monotony" (48), that is, "To the extent that the hyperlink aspires to programming, it is cyber; to the extent that it revisits the promises of literature, blah" (49). Writing in a loose prose with creative prosody, Stefans suggests that truly unique programming interfaces with literary concerns are cyberpoetry's promise.

Fashionable Noise is an anthology of critical writing as well as creative works. Stefans though uses the term 'cyberpoetry' for the field, but treats the cyberpoem as a "computer-poem (hereafter known as CP)" (63), which directly involves source files and algorithms. Like Glazier, Stefans emphasizes that the routines and processes specific to digital poetics were already present in the aesthetics of Language Poetry (LangPo), namely in the "protosemantic" approach by Steve McCaffery: "McCaffery (…) describes the fundamental structures in place for the production of a CP: source text, process, and 'creative concentration'—what the poet-as-editor does with the output. The process or demon of a CP, which is embodied in the code, is also part of the creativity—perhaps even the central part" (88-89). Stefans highlights thus the importance of coding and crafted language. Poetry based on instructions and commands given to the reader—disrupting the poem's habitual *mise-en-scène*—has been a key component of experimental and conceptual practices since the 1960s. Today, sampling, appropriation and remixing continue these literary techniques in digital poetry. Stefans's theoretical framework does not aim to thoroughly systematize the field and its features. The author introduces insightful thematic and critical discussion in the form of comments to creative work, e.g. "Stops and Rebels: A Critique of Hypertext." His reasoning lacks though a clear discussion of what we mean by 'cyberpoetry,' as opposed to 'digital poetry' or 'e-poetry.'

The two most important collections of article-based criticism in the 2000s are *p0es1s* (2004) and *New Media Poetics* (2006). In *New Media Poetics*, we find

valuable positions that we touch upon in several points along this study, including Talan Memmott's sharp essay "Beyond Taxonomy: Digital Poetics and the Problem of Reading." The anthology's title though poses an immediate problem: What is 'new' in 'new media'? Papyri, mainframe computers, and Commodores were once new. By contrast, *p0es1s* addresses digital poetry aesthetics from a state-of-the-art perspective. The project is pluralistic and transmedial. It includes a body of exhibitions, symposia, and catalogues on digital poetry that took place in Germany in 1992—*p0es1s: digitale dichtkunst*, curated by André Vallias and Friedrich W. Block—2001 and 2004. These events created pathways for the collection of essays *p0es1s: The Aesthetics of Digital Poetry* (2004). The groundbreaking exhibitions and their stable critical analysis provided complementary viewpoints on the aesthetic principles of the field, but they have also settled a bold and cogent argument for defining the field as "digital poetry." In the introduction, the editors Friedrich W. Block, Christiane Heibach and Karin Wenz (2004: 13) have argued for "artistic projects that deal with the medial changes in language and language-based communication in computers and digital networks. Digital poetry thus refers to creative, experimental, playful, and also critical language art involving programming, multimedia, animation, interactivity, and net communications." The editors recognize that such label is similar to 'electronic poetry,' 'new media poetry' and 'cyberpoetry.' Yet the selection of the adjective 'digital' alludes to "its symbol or semiotic nature that influences the ever-so-effective culture of computer technology" (13). Thereby, they chose the digits 0 and 1 for the title as distinctive machine language marks. Their argument is fruitful, but the reference to "language art" is problematic. If too wide-ranging, what would specifically define poetry in digital systems? Are all textual works in digital systems digital poetry? If they are affiliated with fiction, are they to be named digital poetry or digital literature, even if, on top, their authors do not label their own works as poetry?

Building upon Glazier's, Stefans's, and the *p0es1s*'s standpoints, Funkhouser's *Prehistoric Digital Poetry: An Archaeology of Forms, 1959-1995* (2007a) elaborates an extraordinary study on the historical construction of the field and delineates an

unprecedented attempt to define it in terms of its varied subforms and *prehistoric*[16] forebears: from Lutz's "Stochastische Texte" (1959) to the World Wide Web (1994/5). Sandy Baldwin (2007: xv) asserts in the book's foreword: "The definition of *digital poetry* remains up for grabs. (…) Even the enthusiasts of digital poetry (…) cannot agree on the definition of *digital poetry*." Baldwin presents Funkhouser's effort in opposition to Glazier's perspective of "how e-poetry is made" and to Stefans's cyberpoetry perspective, "primarily define[d] in the negative, as distinct from printed poetry" (xvi). In doing so, Baldwin prepares the terrain for what he considers to be Funkhouser's "open method," that is, an all-inclusive mode of historicism. Funkhouser's malleable historical approach can be characterized by a constructive criticism that also bears closure, insofar that the author delivers a clear definition of the field as a genre. He (2007a: 1) attests a justifiable term when prompting a digression on the field, even if the notion of 'genre' can be, of course, problematic: "Digital Poetry is a new genre of literary, visual, and sonic art launched by poets who began to experiment with computers in the late 1950s" and "digital poetry is not a singular genre or 'form' but rather a conglomeration of forms that now constitutes a genre." So, is it a non-fiction genre that shares the same classification as, say, diary, essay or poetry itself? Memmott (2006) argues that digital poetry is not a genre of poetry, that is, a sub-genre of poetry, like, say, lyric poetry or narrative poetry.

It is true that digital poetry is in "an evolving process," and that it is a set of practices still in the process of becoming, of developing and acquiring literary expression, techniques, and forms. Therefore, digital poetry contains a definition challenge. Still, that does not preclude Funkhouser from objectively choosing the term 'digital poetry' "with purpose and conviction" (22). In the section called "Discussion of Genre" (22-26), Funkhouser defines digital poetry as "represent[ing] a spectrum of computerized literary art that can be appreciated in the context of the poetic tradition." (24) This definition is more restrictive than the one we find in *p0es1s*. Despite the fact that digital poetry "does not mean that [it] is what it should be called or that [it] is what every digital poet is going to label what he or she does" (22), a digital poem encompasses "computer programming or processes (software)

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[16] The different historic lineages exposed by Funkhouser as being "prehistoric" suggest a reference to E. M. de Melo e Castro's *Poética dos Meios e Arte High Tech* (1988).

[that] are distinctively used in the composition, generation, or presentation of the text [by] combin[ing] poetic formations" (22). This critical standpoint is put forward throughout the whole study and it is maintained in *New Directions in Digital Poetry* (2012).

In his PhD dissertation, David Jhave Johnston (2011: 4) defines digital poetry as "a multimedia hybrid language-art-form. It is a subset of visual language that is now fusing with digital technology and is increasingly mediated by networks. Contemporary poems are animated within GUIs and interfaces; and they often utilize dynamic interactive typography superimposed over video, generative or 3D environments." In the dissertation's expanded version, *Aesthetic Animism: Digital Poetry's Ontological Implications* (2016), Johnston refers twice to 'e-poetry,' though he maintains the term 'digital poetry' as a fixed form. Johnston discusses at length the notion of animation—kineticism— in digital poetry and its connection to visual, poetic subforms, and philosophical animism. For Johnston, language is animation. The author's framework is a theory of sensuality for the integration of visual, sound and text elements. Johnston's argument builds a case for graphic forms, especially letterforms, to replicate aliveness, that is, animism. (The Latin word *anima* meaning "soul, mind.") Johnston believes that morphemes can go beyond kinematics and grow intertwined with phonemes. Embodied language creates embodied form.

Critical positions tend to be formulated with the contrast between media and material inscription. For Lori Emerson (2008: 118)—who establishes a distinction between print and digital poetry in her PhD dissertation (2008) and its expanded edition *Reading Writing Interfaces: From the Digital to the Bookbound* (2014)— digital "poetry (…) is mediated and/or modulated by a computer in such a way that constitutes a departure from what I term 'bookbound poetry' [since] we cannot discount the importance of the medium for the reading/experience of the text but neither can the medium be the defining feature of the work." Like Glazier, Emerson focuses on the material qualities of poetry, arguing that "digital poetry is in fact the *re*materialization of language in the digital realm." (10, emphasis original). Emerson's thesis though has the surplus point of signaling the two-way directional mode of material inscription. Writing and reading are mediated by interfaces. Digital writing, for Emerson, is influenced by the 1960s experimental movements, as well as

contemporary, transmedia experimental writing is influenced by digital systems—what several authors, such as Florian Cramer (2011), have been defining as 'post-digital.' This means that there is a feedback loop in writing practices. Emerson's and Johnston's use of 'digital poetry' as a fixed term seems to suggest that, as the field matures, the notion of digital poetry as a stable expression does as well.

Dimensions and transformations of digital poetry have been defined in two important essays of the 2000s. On the one hand, in "Writing the Virtual: Eleven Dimensions of E-Poetry" (2006), Stephanie Strickland presents the term 'e-poietic' as a fusion of *poetic* and *poiesis* (to make), thus signaling the notion that poetry in electronic environments undergoes a continuous process of construction. Although Strickland, likewise Di Rosario (2011) in her rich study of affiliations, uses various terms—'digital poetry,' 'electronic poetry,' 'e-poetry', 'e-poem' and 'Web poem'—she stresses 'e-poetry.' The author carefully presents the dimensions that help characterizing digital poetry as a "performative event" as digital media produces "intense attachment." For Strickland, the hybridization and translations happening at the levels of language and code, the loop and recursion in poetry and code, mixed reality, place and different modes of "time" in 'e-poietic' productions constitute the core dimensions of digital poetry. On the other hand, in "Poetic Transformations in(to) the Digital" (2007)—which emanates in part from *p0es1s* (2004)—Friedrich W. Block and Rui Torres introduce five relevant conceptual characteristics of digital poetics: medial self-reference, processuality, interactivity, intermediality, and networking.

Finally, regarding our main concern in this section, which is taxonomy, one of the most comprehensive attempts to deal with the discussion of the field is Block's essay "How to Construct the Genre of Digital Poetry: A User Manual" (2010). Block exposes the genealogy of the different terms used to define digital poetry, but from a point of view of genre. For Block (391), genres "as cultural means (…) help to develop certain subsystems within the art system," being "forms of institutionalization, which treat a variety of phenomena in communication and cognition in terms of invariety and a reduction of complexity." Block's is perhaps the most superstructural analysis of the field, and the most Marxist as well. Taxonomic literary systems are important, especially for critics. Their analysis becomes relevant in the discussion of practices, but

also critical discourse in itself. Obviously, classification and systematization is important for artists for other reasons, often to propel subversion and transgression of norms. Adopting 'digital poetry' as nomenclature for a set of practices can be a meaningful and tactical position, though again, as with Funkhouser's claim, it is problematic that Block sees these varied and complex practices as a genre. Nonetheless, Block investigates a term, or a variety of terms ["(x) poetry," 398], and highlights the importance of the *poetic* in *poetry*, which recalls two previous arguments: Glazier's "The Conditional Text: Siting the 'Poetry' in E-Poetry" (2004) and Perloff's "Screening the Page/Paging the Screen: Digital Poetics and the Differential Text" (2006). As Talan Memmott (2006: 293) observes, taxonomy and diversity are two incompatible notions:

> the term "digital poetry" has been applied to such a wide variety of creative digital applications that its only feasible definition is a minimal one: that the object in question be "digital," mediated through digital technology, and that it be called "poetry" by its author or by a critical reader. The actualities of poetic practice in the digital environment are too diverse to permit a comprehensive or coherent taxonomy.

Memmott (294) further posits: "digital poetry is not a single recognizable entity. (…) Because digital poetry cannot be reduced to a *genre* of poetry, we must begin to consider the *applied poetics* of the individual practitioner." Application of poetics in digital systems is, in essence, what I would think of when referring to 'digital poetry.' A broad enough "tag, not a folder" (Hatcher 2014), that includes poetic forms involving, but not delimited to, or demanding all of the following practices with technology: processual, iterative, and mediated modes of literary engagement with writing and programming languages. Hybrid or not, digital poetry effaces boundaries between "natural languages" in multilayered ways. It may use multiple files as hypermedia input, such as text, image (static or moving) and sound, or be a single line of code. It may be a data structure, a tree of files, that includes stored source material, or data scraped in real-time from social network sites or locative metadata sites. It may be generative, random, and combinatorial. It may sample, appropriate, and remix preexisting textual material from other media, and take advantage of the network as a real-time collaborative and reading experience. It

usually fosters a paradigm shift in reception, distribution, and reading strategies, whether by prompting unconventional interfaces, kinetic text, or interactive features, or by engaging participation from its audience. It can be online and migrate offline, or vice versa; be single or multiscreen-displayed, human-machine-performed, and it may include augmented or mixed reality. Its distribution is decentered.

This general picture is, as we all recognize, incomplete. But its incompletion is precisely where the fringes live. The diversity of creative and theoretical approaches reminds us that a field in the process of being shaped always entails a level of instability and resistance, which is only beneficial for its development. As we will see below, there are though processes and composition strategies that can be clearly identified.

4. Themes and Practices

In this section, the reader finds a discussion of a set of practices that relate to composition techniques recurrently employed by poets, from the point of view of process, and procedural strategies. These topics relate to the study's implications, as they are some of the core practices employed in kinetic poetry.

This section debates forms of multidirectional reading, examples of timers, and textual motion; multilayered, superimposed, and juxtaposed effects that recall palimpsestic approaches; methods of appropriation and *anthropophagy* that prompt remix; the relevance of coding, and the development of authoring software and interfaces; randomization and aleatory processes; and finally, a debate on kinetic poems as performative events.

Outside the practices that are highlighted, other topics, or tags, could be explored in-depth, namely collaboration, multilingual reading and writing, translation, combinatorial methods, constraint-based writing, participation, hactivism, locative, network, and translation. By *themes*, in this section, I mean not the themes we can find in the poems' content, but rather the themes explored in this study. The reader will find the themes of specific kinetic poems comprehensively discussed in the readings of Strickland's and Hatcher's works, in relation to the technologies of inscription and capture, self-reflection, ecology, women's oppression, black boxes, privacy, surveillance, violence, and control mechanisms in contemporary societies.

4.1. Spatial and Temporal Dimensions

In *Prehistoric Digital Poetry*, C. T. Funkhouser expands on the diversity of digital poetry by exposing and framing different typologies. The author (2007a: 93) considers the static versus kinetic paradigm: "Digitally rendered poems portray at least three different traits: words are arranged into literal shapes; words show patterns that represent dispersal or displacement of language; or words are combined with images (as in a collage)." Funkhouser (94) emphasizes a sub-typology in kinetic poems:

> Poems that inscribe kinetic language can also be divided into two general categories: projected and interactive. Projected works set poetry in motion in two distinct ways. Words are plotted into motion (or letters themselves change shape or morph) or are presented as part of kinetic collages in which elements of language are combined with visual objects or symbols in single or multiple visual scenes/scenarios.

In *New Directions in Digital Poetry*, Funkhouser (2012: 14) further develops this typology by opposing "projected" to "participatory presentational strategies," meaning that projected poems are non-interactive and retain cinematic attributes, and participatory poems involve input from the reader. Just as Engberg (2007) stresses the cinematic qualities of digital poems, this distinction entails investigating the spatial and temporal dimensions of kinetic poetry. These dimensions are integral part of the process of composing a digital kinetic poem, or any kind of digital literary work. They are present from the moment an author starts thinking how the interface will work, and what kind of reading, visual, and sonic experience the audience—the reader-user-viewer-player—will have.

However, spatial and temporal dimensions are integral to all literary works. They serve as theme, content, structure, and rhetorical figures. Space, within a poem, can be molded and presented in a variety of ways, as *represented* space. Time, particularly in narrative or epic poems, can also be a trope or a figure of speech, e.g. analepsis, prolepsis and metalepsis, in which different fictional worlds are intertwined. Narratology theory—by Bakhtin, Genette, and Bal—hermeneutically analyzes concepts of time and space at the level of content in literary works, that is, fictionalized, internal, or represented time and space.[17] The figures of the hiatus and ellipsis, which have spatiotemporal interval resemblances to that of the diastêma, become then a stage for parallel, missing, or concurring represented time periods.

Time and memory, understood in the Bergsonian sense of a distinction between duration and measurable time, can be related to the Braudelian notion of history as units of time. In physics, other notions become central and interrelated. Time, and space-time as a shifting physical paradigm, is considerably different whether we approach it from Einstein's relativity theory or Hawkins's quantum theory

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[17] For an excellent overview on *time*, see Scheffel, Weixler, and Werner (2013), and for *space*, see Ryan (2012).

standpoints. In philosophy, as Hansen and Mitchell (2010) discuss, these motives are inscribed by philosophical theories that treat time and space as interpretations of media in rather different ways—the authors (2010: 101) posit that "objective, mechanical, and mathematical models (…) conceptions of time and space" have been so far predominant in qualitative and quantitative analysis that have been always tied to technological development, especially in mechanisms and devices that record time.

In kinetic poetry, and particularly in kinetic poetry written and presented with digital systems, spatial and temporal dimensions bridge notions that go radically beyond the print paradigm—in which content and representation prevail, and, at best, form suggests. In kinetic poetry, space and time present themselves, they materialize, but they also represent. As Ian Hatcher (2014: n.p.) observes, "My memory and conceptions of space and time are imprinted with the logics of digital systems." Writing in digital systems presupposes then a direct effect and cognitive inscription influenced by thinking through, and with computers and code. In a kinetic poem, letters or words move in space. Composed with time-based parameters and media, they evolve over time and space as cascading events.

Space and time, as core elements of kinetic poetry, affect its composition, and the experience of reading. Poets, who often also work as critics, have long reflected on these topics, especially in practices of rupture and experimental nature—let us recall, in the United States, the poets connected to Fluxus, L=A=N=G=U=A=G=E, and *Poetics*, such as Lyn Hejinian and Susan Howe, or, in Portugal, to *Poesia Experimental*. In the 1960s, António Aragão refers that "Esta poesia [concreta, experimental] pretende interpretar organicamente o tempo e o espaço" (1981 [1963]: 104).[18] This aspect is no exception in the realm of digital poetics. Both Stephanie Strickland and John Cayley have continuously reflected on spatial and temporal dimensions. For Cayley (2005: n. p.),

> Flatland text on paper-thin surfaces will be reappreciated as a particular, relatively specialized instance of a more abstract and generally applicable textual object, one, for example, that is able to engage with and comprehend human time. Time is arguably the most important, necessary, and most

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[18] "This kind of poetry [concrete, experimental] aims at organically interpreting time and space."

neglected property of textuality. A complex surface for writing allows time to be reinstated as integral to all processes of writing and reading.

Cayley's relational temporal argument between writing and reading concurs with Strickland's temporal argument between coding, writing and reading. According to Strickland (2007c: 28), "what does the electronic word do, will we say that it maps time into a medium that defeats geometry, that is profoundly anti-spatial, not a place to hold and to own, but a place to log in, full of transitions, timely views, snapshots of malleable non-placed space?" As we will see in more detail below, Strickland— perhaps the most prolific theorist about issues of temporal dimensions—elaborates on several levels of time in human-machine interactions.

4.1.1. Space

Architecture's main subject is the organization of space. Architecture is the discipline that most vitally addresses space from an applied, formal, and artistic point of view. The architect designs positive space by shaping it with planes, curves, and varied geometry embodied by materials and matter, which once were blueprints. Dimensional space can only be annotated and described because it can be contained. Space is frame. Yet, what is left out is also space. It is negative space. If there would be no time, space would not exist. That is, the experience of space exists because time exists. The duration of spatial experience is very different from measuring a person traversing a specific space. Kinetic poetry contains as well this relational aspect.

For instance, in J. R. Carpenter's work, particularly in the piece *…and by islands I mean paragraphs* (2013b), the screen dimensions do not frame space, but rather the canvas, a fact that Carpenter develops in the interview "Space Unseen" (2015b) I conducted with the artist. The reader needs to scroll up and down, left and right, in order to reach out to other islands and other parts of the map background and the moving islands/paragraphs. The reader—the pilot, or *kubernētēs*—is given instructions space and navigation:

PILOT:

Ctrl +/- to Zoom in/out.
Ctrl 0 to Reset zoom level.
Arrow keys or mouse to scroll.
Refresh browser to recentre page.
Click on islands to rewrite paragraphs.
(Carpenter 2013a: n.p.)

Exactly the opposite occurs with Zuzana Husárová and L'ubomír Pának's android application *Obvia Gaude* (2013), Montfort's *Una Página de Babel* (2015), or Abraham Avnisan's *Collocations* (2015).

Figure 1. Abraham Avnisan, *Collocations*, 2014-17. Installation photo. http://abrahamavnisan.com.

The screen's CSS canvas dimensions contain these works. In fact, there are few works that explore negative space, or the unseen space. In the case of the app *Collocations*, the iPad's screen (Figure 1) frames the X and Y-axes, even though Nils Bohr's and Albert Einstein's appropriated essays are constantly shifting, according to the user's tilting arms and hands. The device's movement, particularly rotation, enacts highlighted passages that produce recombinant and "kinesthetic" poetic readings.

Experiments with space—in the organization and composition of a poem—are vital when writing for computational media, insofar as screen-based reading or another kind of projection medium is prompted as a presentation mode. Screens and the Web have a much shorter history than print media. Nonetheless, software and web design conventions have already set rigid layouts, templates, and normalized ways for creation and presentation. At the same time, writers and programmers engage with the fluid character, and expanded possibilities of a novice medium and emergent platforms, in convergent ways with what the experimental writers did—what Lyn Hejinian and Barrett Watten (2013) called "writing in the expanded field," or what Gene Youngblood (1970) called "expanded cinema."

As such, this approach translates into what I would call an authoring experimentation with code, language, and visual elements. These elements are then wrapped up in the interface. Therefore, we also need to consider how spatial decisions are approached. Space needs to be regarded from a holistic perspective, but also how the parts relate to the whole, and how the whole is dismembered into parts.

Space—not strictly considering the screen as a flat bi-dimensional surface, but instead the CSS canvas—is conceived in three axes: width (X), height (Y) and depth (Z). Many digital poems explore only width and height, whilst others further explore depth. Consider screen-based work that explores depth, such as Rui Torres's *Poemas no Meio do Caminho* (2008), or Benjamin Laird's *They Have Large Eyes and Can See In All Directions* (2013), which overlays motionless textual background with tri-dimensional (3D) text to imprint a Z-axis. Consider as well several augmented reality, mixed reality, and virtual reality applications, such as Caitlin Fisher's *Andromeda* (2008) and *Circle* (2011), Amaranth Borsuk and Brad Bouse's *Between Page and Screen* (2012), Jörg Piringer's *Tractatus Infinitus VR* (2014), or Judd Morrissey's and ATOM-r's *Empty House* and *Kjell Theøry* (2015-).

Figure 2. María Mencía, *El Poema que Cruzò el Atlántico*, 2017. Screenshot. http://winnipeg.mariamencia.com/poem/.

Figure 3. María Mencía, *El Poema que Cruzò el Atlántico*, 2017. Screenshot. http://winnipeg.mariamencia.com/poem/.

Moreover, we see a growing number of 3D graphics and dynamic pieces, typically built with game-engines such as Unity, or OpenGL, JavaScript, jQuery, and different JS libraries, such as Ricardo Cabello's Three.js. A remarkable case is María Mencía's *El Poema que Cruzò el Atlántico* (2017), an astonishingly designed zoomable ocean of letters (Figures 2 and 3) that renders the narratives of the Winnipeg passengers escaping the Spanish Civil War in direction to Chile, in 1939, with the help of Pablo Neruda.

Before these apps and browser-based experiments, artists and poets were already creating compelling 3D works. Art mods, or artistic modified versions, of computer games include JODI's Quake 1 mod *Untitled Game* (1996-2001), and *Max Payne CHEATS ONLY* (2004), which recreate the space of play in absurd ways, or Sandy Baldwin's *New World Order: Basra* (2006), a mod of the first-person shooter *Half-Life* in which the reader-player progresses by shooting words. Outside screen-based work, there are surprising 3D examples of immersive virtual reality environments, such as those developed in the Brown University's "Cave," like *Screen* (2002-), by Noah Wardrip-Fruin, Robert Coover, et al.; John Cayley's experiment with "surfaces of inscription" *lens* (2006), or Ian Hatcher and Adam Veal's fascinating *Cubes* (2010), in which the reader-user navigates through concentric 3D cubes whose edges are made up of words from Jorge Luis Borges's short story "The Library of Babel" (1944).

Unavoidably, a common element in the spatial composition of all these works is the grid structure. Not only the grid shapes the composed infrastructure, but it also surfaces as a visible suprastructure in the displayed spatial dimension. Hannah B. Higgins's *The Grid Book* (2009) studies the recurrence of the grid as a constructing and presentational element in the arts, urbanism, and code. It highlights how the grid has been a vital element for creativity and composition. A great number of digital art and literary works evidence precisely this aspect. Consider Jhave's *MUPS* (2012), Hatcher's *TRO* (2015), Strickland and Jaramillo's *slippingglimpse* (2007a), Strickland and Montfort's *Sea and Spar Between* (2010), Jörg Piringer's *Letter Singles* (2015), among others. They clearly demonstrate how the grid is not only shaping the underlying structure, but it is also a visible interface constituent.

As we analyze in greater detail during the reading process of Strickland and Hatcher's kinetic poems, the two works deal primarily with width and height. Strickland and Jaramillo's *slippingglimpse* has stable X and Y dimensions and assigned location points (X, Y), but it incorporates 3D suggestion by scaling motion, when the "text fields" shrink and grow. Furthermore, the videos of water are 3D. For Anna Schaffner and Andrew Roberts (2006: 40), "Digital work has the capacity to explore space as a potentially semantic element and to engage with depth and surface in a more explicit and complex way than poetry on the page." Following Hayles's

(1999) notion of "flickering signifiers," Schaffner and Roberts (40) continue: "Digital signifiers are temporal processes rather than permanent marks, and space, position, and duration become new elements of signification." Thus, the way poets shape and engage text in space can add to the notion earlier proposed by Picchio that space has the potential of re-semanticity. The other side of this exploration is then duration, traversal, the perception of space (Merleau-Ponty 1945), the relational perception of the self, inner, and outer space (Olson 1965),[19] which is absolutely dependent on time and parallel, concurrent times.

4.1.2. Time

Kinetic digital poetry cannot exist without the programming of timers. The title of this study points exactly to this assertion because time is the essential element in kinetic poetry. As we have noted, the `setInterval()` JavaScript method is used in order to code onscreen timers. The perception of the quantified interval that is coded and executed is influenced at the interface level by interferences of various times, and scales of time. One of the most prolific and nuanced reflexions, regarding these issues, has been put forward by Stephanie Strickland. In "Writing the Virtual" (2006: n.p.), the poet remarks that

> Whether works are as slow as paintings, or as fast as Brian Kim Stefans'
> setting of Creeley's poem I Know a Man, letter by letter, they have no
> inherent time. As Adrian Miles points out, with regard to interactive video as
> an e-poietic form, one video clip can last two seconds or 20 minutes, each
> track separately scriptable as to speed, direction of play, mobility, or presence.
> The non-indexical character of time online is a very strong difference in digital
> aesthetics from the aesthetics of print or photography. The times involved in
> any poietic production include machine speed, time for the code to read itself,
> real time, clock time, coded speed, network lags, device delays, and overlaid
> simultaneous rhythms of unfolding. The co-presence of neighboring moments
> opens to a kind of shift that is neither simple oscillation nor simple
> progression. Even as there is no canonical hypermedia unit, there is no

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[19] A long-time standing language exploration of inner and outer spaces, phychological and physical, can be found in what Charles Olson (1965) poeticized as "proprioception." Olson rethinks the process via which naming and sound are formed since the advent of writing and speaking. Olson's book addresses the emergence of languages, and writing systems.

privileged "time" unit or moment.

Strickland's emphasis on aesthetics is crucial. The impossibility of attributing context and meaning as a linear, or univocal mode to time resonates through the diversity of platforms that mediate between the poem and the reader, and as such produce variability. The same variability can happen in static media, where external factors and internal human factors may alter the reading experience. But in digital systems, external factors and internal factors are multiplied by several instances of execution. Time is truly dependent on networks, the encoding and decoding of systems, from code running in browsers to hardware.

Writing, reading, and analyzing inscriptions of text that become kinetic cannot be made unless temporal dimensions are taken in consideration as expressive literary and aesthetic elements. This mode of reading entails the time-lapses surfacing in poetry's movement in space and time. Reflecting on *overboard* (2004a) and *translation* (2004b), two kinetic poems whose letters slowly change in English, French, and German, John Cayley (2005: n.p.) points out: "As they run and perform, pieces from the *overboard* and *translation* series are what they appear to be—ever-changing, ambient manifestations of writing on complex surfaces. Neither *overboard* nor *translation* can be read or appreciated as flatland literary broadsheets." Cayley, one of the most prolific and nuanced writers on issues of language, language arts, and its transformations, calls this procedural technique of letter replacement "transliteral morphing." Cayley has not only theorized about time, but he has also self-reflexively inscribed time as theme and structure in his creative work, for instance, in the HyperCard piece *Speaking Clock* (1995), or *wotclock* (2005).

Strickland (2006) notes the relevance of recursiveness; the functional, rhetorical, and durational figure of the loop, as do other authors before and after her, such as Manovich (2001), Strehovec (2003b), Funkhouser (2007a), Montfort, and Jhave Johnston (2016). This fact stems from the functions in code that are iterative, and/or recursive, and because many works play in loop: "To travel in an e-poietic object means to travel in a loop" (Strickland 2006: n.p.). This could take us back to notions of feedback loops, as early contained in communication theory, and cybernetics (Wiener 1948). But in digital poetry, the figure of the loop is prevalent as

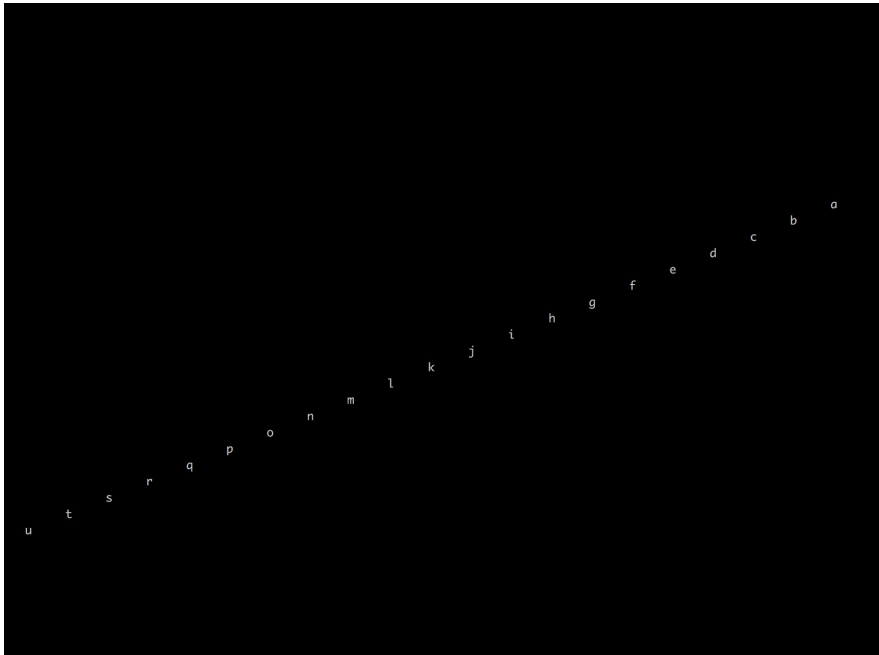well, because sections, or the whole of a poem are programmed to output in loop.

Figure 4. Nick Montfort, *Concrete Perl*, "Alphabet Expanding," 2011. Screenshot of the terminal running the 32-character Perl program `perl -e '{print$,=$"x($.+=.01),a..z;redo}'`. https://nickm.com/poems/concrete_perl/.

Montfort's Perl and JavaScript poems, such as the *Concrete Perl* series (2011, Figure 4) and *Una Página de Babel* (2015), are radical and extreme examples of loops that literally make CPUs warm up; they are respectively scripted with `;redo` and `(render, 0)`. Other authors even include the word *loop* in their works' titles, such as Wilton de Azevedo's *Loopy Poetry* (quoted in Funkhouser 2007a: 234).

Strickland continues, "In *V: Vniverse*, an e-poem I made with Cynthia Lawson, time-tuning is directed toward bringing internal timings of the piece into resonance with each other and with machine-time, network-time, and the timings of perception-cognition." These are questions that videopoetry had already brought up. Melo e Castro (1993), reflecting on the intersection of literature and the visual arts, explores the notion that kineticism introduces a "visual time" in video- and digital poetry. In a review about his book *Poética do Ciborgue* (2014), Melo e Castro (quoted in Alvito 2015) adds that speed entails a dual effect for the reader's

perception-cognition: "um tempo rápido resulta numa percepção visual instantânea, tendendo no limite para o subliminar", whereas "um tempo lento tenderá a propor uma leitura interiorizada, abrindo-se para a fruição subjetiva."[20] This line of thought can be placed in the expanded dialogue of narrative discourse, with Markku Eskelinen's (1998) call for a "modification" of Genette's notion of *duration* and *speed*, by proposing *pseudo-time*, *true*, and *real time*. These notions are reconsidered by Raine Koskimaa (2010: 136), who suggests "user time, discourse time (pseudo time, and true/screen time), story time, and system time," reinforcing that all of these levels can occur simultaneously.

Yet, these issues are exponentially accelerated, and multiplied in networked and real-time processing, which involves, in some pieces, real-time downloading and harvesting of text and data from databases, or social network sites. This study further reads works that explore time in varied and complex ways in the comprehensive discussions of poems that can be found in the articles section.

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[20] Translation: "A very fast tempo results in a visual and instantaneous perception," whereas "a slow tempo will tend to propose an inner reading, opening a subjective fruition."

## 4.2. Multidirectional Reading and Textual Motion

4.2.1. Reading

Eugen Gomringer proposed that "inversion" meant reading in the opposite direction of the common Western paradigm. This paradigm resonates in digital kinetic poems in that many can be read in traditional ways, but others in different axes and directions: horizontally (from left to right and, in inversion, from right to left), vertically (from above to below and vice versa), diagonally, mirroring, and cross-directionally (mesostics, acrostics, and double acrostics). A fine example that recreates an experimental and Fluxus piece is mIEKAL aND's kinetic series *Mesostics for Dick Higgins* (1998), which relies on HTML refresh functions for displaying time-based horizontal and vertical reading modes.

Acrostics and mesostics are composition and reading strategies that have been present in writing since, at least, the baroque. But they have been employed with idiosyncratic rules by experimental authors such as John Cage, Dick Higgins, Jackson Mac Low, and Jim Rosenberg.[21] It is in the baroque period that we can locate one of the most prolific times for visual poetry, in terms of the development of forms and multidirectional reading. In this sense, historiographic work is precious for preserving and disseminating these forgotten practices. Ana Hatherly studies in-depth the baroque techniques, and the inherent quality of *ludus* in labyrinths, acrostics, anagrams, and palindromes, in *A Experiência do Prodígio* (1983). Dick Higgins's *Pattern Poetry* (1987), a global anthology and atlas of a wide-range diversity of visual poems, studies a history of 3,600-years "pattern poems"—visual and literary art—from the "Phaistos Disk" (c. 1700 B.C.) all the way to 1900 A.D.

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[21] John Cage, Jim Rosenberg, and Andrew Culver (1985-86) collaborated in a number of projects in order to computationally generate mesostics, such as *MESOLIST*, and *IC*, for I-Ching change procedures. There are a couple of other projects that recreate John Cage's method for the creation of mesostics. See *P.S.: Meso, a Poesis Spinea* Python mesostic generator by Nicki Hoffman (http://vyh.pythonanywhere.com/psmeso/) and the *Mesostic Poem Generator* by five programmers from the University of Pennsylvania's School of Arts and Sciences Computing group that implements and expands Hoffman's functionalities in JavaScript: http://mesostics.sas.upenn.edu/

Ana Hatherly's critical work rescued, documented, and analyzed hundreds of Portuguese baroque poems from the seventeenth- and eighteenth centuries, such as anagrams, verse, letter, and cubic labyrinths, acrostics, emblems, echoes, enigmas, rhopalic verse, lipograms, and chronograms. A comparative reading of baroque literature shows that similar systems of inscription—shapes, letterforms, and other writing systems—can be found in Portuguese, Spanish, French, Slovakian, German, and Polish visual poetry. But this tradition reaches back not only to baroque, Mannerism, and the Middle Ages—consider French poet Jean Molinet's multidirectional reading visual poems—but as far back as, at least, the circular reading direction of the ekphrastic stamps in the Minoan "Phaistos Disk."
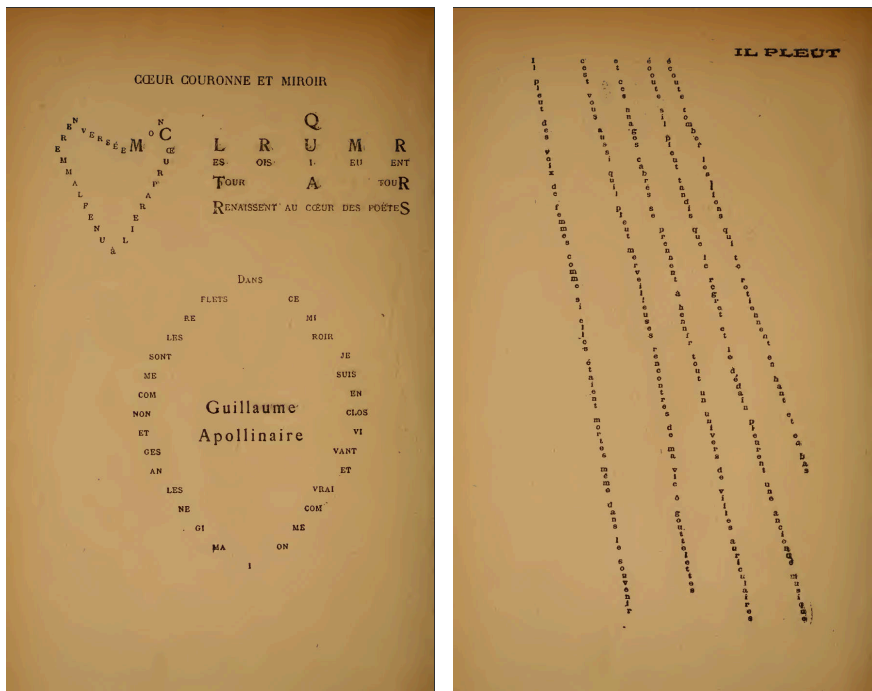
Figures 5-6. Guillaume Apollinaire, "Cœur Couronne et Miroir" (1918: 56) and "Il Pleut" (1918: 62), *Calligrammes: Poèmes de la Paix et de la Guerre (1913-1916)*, 1918. Source: Archive.org.

In the twentieth century, these practices were followed by Guillaume Apollinaire's 1918 groundbreaking *Calligrammes: Poèmes de la Paix et de la Guerre (1913-1916)*. Apollinaire (Figures 5 and 6) employs graphic composition techniques

that allow different reading directions in calligraphic and ideogrammatic ways: oblique reading, backwards reading (inversion), and cross-direction reading. Note, for instance, the similarity between Apollinaire's "Il Pleut" (Figure 6) and Montfort's "Alphabet Expanding" (Figure 4). In the 1950s-60s, concrete poets rediscover oriental ideograms, appropriate Structuralist notions, the vocabulary of advertisement and information aesthetics, and intensively explore minimal shapes and atomization, at the level of letterform, as internalized lyricism with semantic and semiotic value. Gomringer, Fahlström (and authors associated with the Fylkingen New Music and Intermedia Arts venue), and the Noigandres group, enact this exploration, which is followed by many other artists and writers in Europe, America, and Asia. In Portugal, E. M. de Melo e Castro publishes *Ideogramas* (1962). Melo e Castro composes poems, such as "Tontura" and "Pêndulo" (1962), which strikingly recall baroque poetry, as in the case of José de Assunção's *Hymnodia Sacra* (1738). Calligraphy and cursive writing is also rediscovered. Hatherly launches a powerful collection in 1975— *A Reinvenção da Leitura* [The Reinvention of Reading]—that explores handwriting techniques as drawings, words, but also as asemic writing.

The notions of 'inversion' and 'ludus,' as well as the importance of spatial organization, are conveyed by Mary Ellen Solt's (1968: n.p.) astute analysis of Gomringer's critical contribution:

> Notice that these poems can almost be read backwards. 'Inversion I consider as probably my most important contribution to Concrete Poetry,' Gomringer states. He arrived at this new tension possibility for the poem when he discovered that the message conveyed by the 'single word did not always appear sufficient,' particularly 'because we have the habit of reading only in one direction, from left to right.' Had he simply printed the word 'wind' in the center of the page, it would simply have sat there. Arranging it spatially so that we can read the word in four directions, he is able to introduce an element of play into the 'reading' of the poem that captures the nature of the wind far more truly than a longer poetic statement of many words. The letters actually seem to float as if the wind were acting upon them. (The subtlety of the typography is, of course, a contributing factor.) Inversion for Gomringer 'intimates that every message, be it ever so slight, is aligned in one direction, even if it is examined in an inverted order.' And he has 'related this phenomenon—inversion—to one of the intellectual principles of existence'— 'thesis-antithesis.' The principle thesis-antithesis is particularly clear in 'ping pong' in which we find not only inversion but a movement of alternation in

the syllables of the word. The essence of the game ping pong is expressed by the word. The spatial grouping of the syllables, which resembles line breaks in more traditional poetry, is of the utmost importance. In the 'o' poem we find not only remarkably achieved inversion but thesis-antithesis in the use of space: for the words are printed in the negative areas between large white O's of space.

These traditions are reinvented in digital systems. There are a number of poems that directly recreate and recode labyrinths of letters—see Appendix 2.2.—and others that create new reading directions. Jason Nelson, for instance in *Evidence of Everything Exploding* (2012), has explored many different types of interaction with text, which prompt novel motion, how to read, and navigate. In *A Nervous System* (2015), Nelson codes interactive functions so that the scrolling affects the textual, and visual zooming-in and out in a double way. In several of Nelson's pieces, the reader drags the text with the mouse cursor. Letters and words undulate in all directions.

A balanced case of juxtaposition, and overlaid text, image, sound, and bi-directional movement of media elements is Dorothee Lang's Flash piece *Time Train* (2007). Self-reflexive lines of poetry move from left to right and from right to left in-between two frames of animated image in order to create assemblages. The image and sound portraits a train station and mimic the train movement. The kinetic poem's contents and motion act as further layers in the train's narrative, points of departure and arrival, and moving qualities: "they form a line towards / moments void of voice / the place you can't reach / too early and too late / all that remains" (Lang 2007: n.p.). In the work's intro screen, 'Time' and 'train' blur with each other, move against each other, prompting four possible readings: "time train," "timetrain," "train time," and the amalgam of 'time' with 'train.' The overall aesthetic and kinetic features transmit a sense of dizziness that culminates with the line "still you are here" fading out in the center of the spatial composition.

4.2.2. Motion

Contrary to reading, kineticism associated with motion techniques is almost impossible to fix in terms of a systematization of typologies. We could use Jörg Piringer's iPad prototype app *Some Kind of Book* (2015) as a point of departure for a preliminary study on the effect of physics, simulation, and motion properties in kinetic text. Piringer explores several movement animation techniques, predominantly in regards to the simulation of gravity. In "movement," the poet presents x, y; and rotation. In "animation," transparency, character, size, and color. In "physics simulation," Newtonian physics: *actio est reactio,* inertia, acceleration, and gravitation. In "interaction," touch. Previous work with simulation of gravity includes Piringer's app *Gravity Clock* (2010), which is a whimsical case of a clock whose pointers trigger its numbers to fall, and pile up in the bottom of the screen, as they get continuously rebuilt and destroyed. Other software developed by the poet, browser-based, or in applications, such as *soundpoems* (2002-08), and *Tiny Poems* (2015), fuel letters to fade in and out, to be replaced as if to suggest motion, and to circularly move to create "minimal concrete poems."

Figure 7. Jörg Piringer, performance based on custom software at the symposium Text-World—World-Text, at Forum Stadtpark in Graz, June 17, 2016. Screenshot from personal video recording. http://www.forumstadtpark.at/index.php?idcatside=1086&mod12_1=print&kat=lesung.

Moreover, the poet's long-time development of programming environments and interfaces for sound-text manipulation, such as RealBeat, brings new dynamic characteristics to kinetic poetry and performance (Figure 7). When interacting live, Piringer performs is voice in order to make uttered sounds correspond to letters that collide, collapse, and hit all sides of the canvas, eventually falling and accumulating in a pile—an effect that is a mark of Piringer's coding and visual display.

In the works to which I pay closer attention in this study, Strickland and Jaramillo use scrolling, rotating, and scaling motion effects. Hatcher uses transitions with chaining, fast speed, dilating, and contracting motion. Textual dislocation of atomized linguistic elements, such as letters, is the most common motion technique, a point that has been noted in typologies of kinetic poetry put forward by Teemu Ikonen (2003), Bootz (2007), Funkhouser (2007a), Alexandra Saemmer (2010), and Piringer (2015). Moreover, in generative works, replacement can occur by an ever-changing, never-ending, and never-again repeated textual output. Yet, as the next subsection demonstrates, this diversity can be turned into a channeled and productive task.

4.2.3. Kinetic Poetry: A List of Timers and Motion Properties

The main problem with trying to create a survey of all motion techniques in kinetic poems is that they are fully dependent on coding capabilities, programming languages, animation libraries, and motion graphics. Furthermore, the patterns or common techniques of motion currently being used might be only perceptible in the future. Even if poets develop their own algorithms, they are also dependent on dynamic, animation, and transition libraries, such as JavaScript and jQuery's D3.js, Transit.js, Transition.js, or Velocity.js. This provides an extensive list of effects and classes: bounce, flash, chaining, fades in and fades out, slide, rotate, etc. Programmers working with Version Control Systems (VCS), like the open-source Git, rely on distributed, crowd-sourced, and community-based code, for improving and troubleshooting issues. Using the code repository GitHub is a common practice, since code can be uploaded, commented, branched, and changed. Other people can clone code repositories and fork them. This means that all types of code, including animation libraries, can be easily accessed, and modified.

For this reason, unlike Aarseth's (1997) textual typology fixed in seven points, I have been reluctant to theorize a typology of motion properties and techniques, even if I have been asked for it on different occasions. The last one was following a debate at the University of Bergen (2017), when Jason Nelson suggested that such a typology would be very useful, to which Scott Rettberg replied that Alexandra Saemmer (2010) tried to do exactly that, when analyzing Brian Kim Stefans's *the dreamlife of letters* (2000). Stefans's piece is perhaps the closest to a compendium of motion properties we can find in kinetic poetry written in Flash, the once prevalent platform for animation and kinetic poetry. Saemmer (2010: 173) departs from Genette's *Figures 1* (1966) to re-envision a typology she denominates "figures of animation." Rather than using classes and functions from programming languages as "effects" that command the typology, the author transposes and creates new figures of speech in kinetic poetry.

Starting then from Ikonen, Bootz, Funkhouser, Saemmer, and Piringer, a delineation of motion typologies can pave the way for a cumulative document, where discussions can grow among people with different disciplinary expertise, even if we do

not all agree on what "kinetic poetry" is. Is motion tied to platform? What is the connection between timers and motion properties? Can critics, practitioners, and coders construct a coherent typology?

Therefore, I decided to plant a seed as a code repository called "setInterval()" in GitHub—a starting point for outsourcing this task to the community, as my conviction is that only a collaborative endeavor made of poets, practitioners, theorists, and developers can achieve the goal of creating an organic and growing typology. Since the most practical resource at this point for sharing, copying, and modifying code repositories is GitHub, I have published the README.md file made available below in a markdown transcription:[22]

```
# setInterval()

Kinetic Poetry: A List of Timers and Motion Properties

This file is a tentative approach to create a list of timer snippets
used in scripting digital kinetic poetry works, as well as motion
typologies. Do you think motion typologies should be defined by
theorizers (critical discourse), practitioners, coders, programming
languages and/or animation libraries with their classes and
functions, or by some or everyone out there?

I invite artists, poets, programmers, critics, and a blend of one of
this or another, to modify it, improve it, collaborate.


## Timers>Platforms

### [BASIC](https://elmcip.net/platformsoftware/basic)

PAUSE statement

    PAUSE <milliseconds>
    PAUSE = <milliseconds> TO <milliseconds>

SPEED statement

    SPEED <milliseconds>

Works

* Silvestre Pestana's <em>Computer Poetry</em> (1981-83)
* bpNichol's <em>First Screening: Computer Poems</em> (1984)

Examples

    10 PRINT AT 11,6; "COMPUTER POETRY": PAUSE 100
    290 PAUSE 200: PAUSE 200: INK 4: GO TO 60: RUN
```

---

[22] Please visit, and contribute to the file at https://github.com/AlvaroSeica/setInterval

    (Pestana 1983)

    45   FOR PAUSE = 1 TO 1000: NEXT
    46   SPEED= 170
    (bpNichol 1984)

[ActionScript](https://elmcip.net/platformsoftware/actionscript)
and [JavaScript](https://elmcip.net/platformsoftware/javascript)

setTimeout() and setInterval() methods

    setTimeout(function, milliseconds)
    setInterval(function, milliseconds)

clearing methods

    clearTimeout()
    clearInterval()

duration methods

    transition().duration(milliseconds)

Works

*   Stephanie   Strickland   and   Cynthia   Lawson   Jaramillo's
slippingglimpse (2007)
* [@ihatch](https://github.com/ihatch)'s // [Total Runout]
(2015)
* [@nickmontfort](https://github.com/nickmontfort)'s Una Página
de Babel (2015)
* Jörg Piringer's PHP and JavaScript moveLetterSoup(), animSoup(),
lettersoupanim.php (2011)
* J. R. Carpenter's JavaScript library word.generator.js in, among
others, ...and by islands I mean paragraphs and Notes
Very Necessary (2015)
*   [@jhave](https://github.com/jhave)'s   TSNE-animator   D3.js
Sondheim on BDP: Big-Data-Poetry (2016)

Examples

    clearTimeout()
    var loadingCall:Number = setInterval(preloadSite, 50);
    (Strickland and Jaramillo 2007: line 4)

    setTimeout(grow, (Math.random() * 2400));
    (Hatcher 2015: line 148)

    window.setInterval(render, 0);
    (Montfort 2015: line 134)

    var init = setInterval("animSoup()", 100);
    (Piringer 2011: line 22)

    /**
    * ### Generator.play(Int: interval)
    * Renders and inserts the current frame in its element, and then
every interval miliseconds thereafter.
    *
    * * __interval:__ Interval between generations, in miliseconds.

```
    */
    Generator.prototype.play = function(interval) {
          this.stop(); // Stop generator in case it's running.
          if(interval != null) {
                 this.show();
                 var that = this;
                 this.repeater = setInterval(function(){that.show();},
interval); // Weird stuff to work around scope as detailed here:
http://www.vonloesch.de/node/32
                 this.interval = interval;
          }
          return this;
      }
    (Carpenter 2013 and 2015: lines 179-184)

    isle1.play(23000);
    (Carpenter 2013: line 23)

    var circle = d3.select(this);
    circle.transition().duration(100)
    (Jhave 2016: lines 134-35)
```

###
[Java](https://elmcip.net/platformsoftware/java)/[Processing](https://elmcip.net/platformsoftware/processing)/[Arduino](https://elmcip.net/platformsoftware/arduino)

Create Works and Examples

[jQuery](https://elmcip.net/platformsoftware/jquery)

jQuery $.animate() Method

Works

Examples

[PHP](https://elmcip.net/platformsoftware/php)

Create Works and Examples

[Python](https://elmcip.net/platformsoftware/python)

Create Works and Examples

[Ruby](https://elmcip.net/platformsoftware/ruby)

Create Works and Examples

[Perl](https://elmcip.net/platformsoftware/perl)

Create Works and Examples

[C++](https://elmcip.net/platformsoftware/c)

Create Works and Examples

Motion Typologies

Ikonen's typology (2003)
* object
* mode of motion
* direction
* velocity
* space
* traversal function (Aarseth, 1997)

Funkhouser's typology (2007)
* collage
* mutation
* projection
* dislocation of sequences
* interaction

Bootz's typology (2007)
* syntactic programmed animation: algorithmically transformed syntax
* 3D animation
* digital calligram
* text in movement/kinetic poetry
* typographic animation

Saemmer's typology (2010)
* emergence
* eclipse
* syncope
* isotopy/allotopy
* catachresis
* animated sporulation
* resizing: expansion/contraction
** aphaeresis
* transitional apocope
* transitional gash
* transitional metathesis
* inclusion
* transposition
* kinetic allegory vs. movie-grams
* kinaesthetic rhymes
* morphing effect: transfiguration

Piringer's typology (2015)
* Movement
** x,y
** rotation
* Animation
** transparency
** character
** size
** color
* Physics simulation (Newtonian)
** actio est reaction (action-reaction)
** inertia
** acceleration
** gravitation
* Interaction
** touch (app)

Animation Typologies

CSS transitions

[Animate.css](https://github.com/daneden/animate.css.git)

Classes

* `bounce`
* `flash`
* `pulse`
* `rubberBand`
* `shake`
* `headShake`
* `swing`
* `tada`
* `wobble`
* `jello`
* `bounceIn`
* `bounceInDown`
* `bounceInLeft`
* `bounceInRight`
* `bounceInUp`
* `bounceOut`
* `bounceOutDown`
* `bounceOutLeft`
* `bounceOutRight`
* `bounceOutUp`
* `fadeIn`
* `fadeInDown`
* `fadeInDownBig`
* `fadeInLeft`
* `fadeInLeftBig`
* `fadeInRight`
* `fadeInRightBig`
* `fadeInUp`
* `fadeInUpBig`
* `fadeOut`
* `fadeOutDown`
* `fadeOutDownBig`
* `fadeOutLeft`
* `fadeOutLeftBig`
* `fadeOutRight`
* `fadeOutRightBig`
* `fadeOutUp`
* `fadeOutUpBig`
* `flipInX`
* `flipInY`
* `flipOutX`
* `flipOutY`
* `lightSpeedIn`
* `lightSpeedOut`
* `rotateIn`
* `rotateInDownLeft`
* `rotateInDownRight`
* `rotateInUpLeft`
* `rotateInUpRight`
* `rotateOut`
* `rotateOutDownLeft`
* `rotateOutDownRight`
* `rotateOutUpLeft`
* `rotateOutUpRight`
* `hinge`

```
*  `jackInTheBox`
*  `rollIn`
*  `rollOut`
*  `zoomIn`
*  `zoomInDown`
*  `zoomInLeft`
*  `zoomInRight`
*  `zoomInUp`
*  `zoomOut`
*  `zoomOutDown`
*  `zoomOutLeft`
*  `zoomOutRight`
*  `zoomOutUp`
*  `slideInDown`
*  `slideInLeft`
*  `slideInRight`
*  `slideInUp`
*  `slideOutDown`
*  `slideOutLeft`
*  `slideOutRight`
*  `slideOutUp`
```

CSS, JavaScript and jQuery Animation Libraries

[Velocity.js](https://github.com/julianshapiro/velocity)

[jquery.transit.js](https://github.com/rstacruz/jquery.transit)

[jquery.transition.js](https://github.com/louisremi/jquery.transition.js)

[D3](https://github.com/d3/d3)

[Bounce.js](https://github.com/tictail/bounce.js)

[Anime.js](https://github.com/juliangarnier/anime)

[Magic](https://github.com/miniMAC/magic)

[DynCSS](https://github.com/vzaccaria/DynCSS)

[CSShake](https://github.com/elrumordelaluz/csshake)

[Ani.js](https://github.com/anijs/anijs)

[Three.js](https://github.com/mrdoob/three.js/)

+++++++More+++++

The aim of this file is to open the discussion among the vast community of coders, poets, and scholars in order to receive input, collaborate, and improve the list. Therefore, the list of timer snippets can be expanded; other examples of works and programming languages can be inserted and complemented. Thus, I hope that a

discussion regarding motion typologies can start: Should a typology, or multiple typologies, arise from theoretical standpoints, practice-based standpoints, or terminology coined by developers in functions and classes?

By connecting the list of platforms and software to the catalogue of works already documented in the ELMCIP Knowledge Base, further collaborative work might evolve within the community of electronic literature.

4.3. Multilayer, Superimposition, Juxtaposition, and Palimpsest

Poetry written in digital systems relies on code scripted with algorithms and data structures. Even the files that compose a work are multilayered. For example, an MP3 file stands for MPEG + Audio Layer-3. Environments for the composition and manipulation of sound rely on a timeline made of tracks that can be layered and juxtaposed. Moreover, works of digital poetry are often composed with multiple media: code, sound, text, and video. They tend to be overlaid with multiple inputs, which complicate reading experiences. At the display level, this means that the reader-user-player-listener-viewer is faced with multiple inputs from different sources. This feature provokes a juxtaposition and mashup of text, image, and sound. At times, this might result in an excess of input, or noise. This is the reason why some poets' work is monomedia, that is, they might focus just on one type of media, or one type of channel.

In a collaborative, whimsical, and innovative monograph by Jessica Pressman, Mark C. Marino, and Jeremy Douglass (2015) that analyzes William Poundstone's *Project for Tachistoscope {Bottomless Pit}* (2005), Marino (2015: 15-16) posits:

> So far we have used the metaphor of 'layers' to describe Project's palimpsestic and emblematic on-screen aesthetics. (…) Flash employs layers as one of a set of operational metaphors in its GUI. Indeed, to author a file in Flash is to engage with a constellation of spatial and temporal metaphors for creating and manipulating code. (…) Flash is also built on spatial and temporal metaphors adapted from film and theater.

These metaphors, the author explains, are *frame*, *timeline*, *stage*, *keyframes*, and *tween*. The concept of *layer* is then essential to understand not only the creative composition methods in software such as Flash, Photoshop, Gimp, or Audacity (where layers are tracks), but also their interface metaphors; why artists and writers speak to a simulation of contemporary excess of information, mass accumulation of language, sound, and image.

Multilayered textuality and visuals is a fundamental characteristic of digital poetry. This is achieved by coding, or manipulating authoring software so that elements are superimposed or juxtaposed on-screen. The result can be an ever-

changing texture of poetry that is constantly rewritten. In *Palimpsestes: La Littérature au Second Degré* (1982), Gerard Genette pays close attention to the notion of 'palimpsest' in literary works. Genette's notion is relevant because what once was a system of writing relations between hypotexts and hypertexts, via imitation, pastiche, or parody at the semantic level, is today appropriation and *in vivo* performance powered by code, as we will see in the next section.
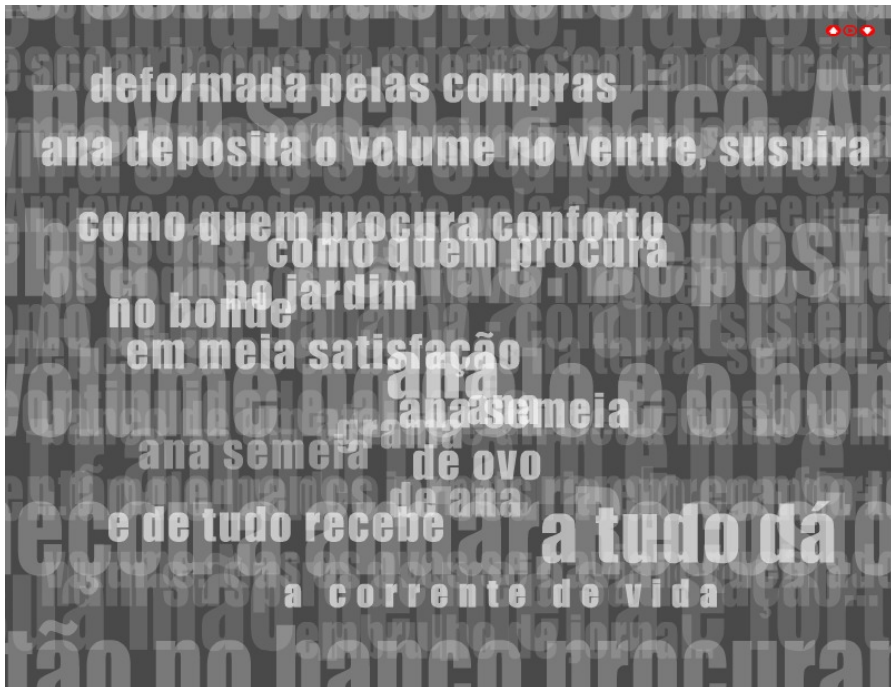

Figure 8. Rui Torres, *Amor de Clarice*, 2005. Screenshot. http://telepoesis.net/amorclarice/amor.html.

Multilayered and palimpsestic textuality can be found in Rui Torres's work. In the kinetic poem *Amor de Clarice* (2005), the screen display becomes progressively filled with layers of text and background image. The combinatorial text is rewritten over and over (Figure 8). Overlapping lines of poetry replace each other, while fades in and fades out methods allow for the multiple sources to stay visible, and gradually disappear. This piece and a growing number of works use juxtaposing media, and superimpose foreground text over background text or image, which is meant as texture, thus complicating or amplifying reading experiences.

4.4. From Appropriation and Anthropophagy to Remix

Editing raw or found material with the use of computers is contradictory, because it is more complex than with analog media, and at the same time simpler and quicker. Copy, paste, duplication, and cut techniques are simple and quick commands given to the computer that foster a culture and aesthetics of appropriation and remix. Appropriation has long been a writing and creative strategy. But storage and transmission has radically changed since the implementation of the World Wide Web. With the increasing pool of data available online, from digitized to computational-born data—book and text databases, sound archives, video archives, code snippet repositories—computational appropriation techniques have consequently entered the set of procedural tools employed by artists. Moreover, the "'greased'" (Moor 1997: 27, quoted in Ess 2009: 28) effect of data transfer radically accelerates dissemination, as distributed practices proliferate.

Artists and writers now use these different media sources—for documentary or fictional outcomes—as corpus to be reworked in their works. In the sound poetry context, samples are mixed and remixed. Furthermore, the timeline of front-end audio and video software, which shares the same conceptual interface and visual structure as animation software, creates a paradigm for scheduling, and layering of multiple tracks, excerpts, and files. Repetition and multilayering become composition strategies and aesthetic principles.

Certainly, works licensed under Creative Commons (Lessig 2004, 2008), copyleft movements, GNU, and other licenses that account for the change of paradigm in authorship and permissions in digital media, foster creativity, dissemination, distribution, sharing, co-authorship, collaboration, remixing, derivatives, and mods on the Web. Growing out of the free software and FLOSS frameworks, licenses granting appropriation, modification, and remix activate a larger network of potential creative usage. Nonetheless, if we look back to poetry's history, we clearly find what Haroldo de Campos called "re-cannibalism" (1981). This tactics of "devouring" sources can be seen from Greek to Roman antiquity, from Baroque labyrinths and anagrams to concrete poetry, from conceptual and experimental poetry to visual poetry and post-conceptual poetry. Moreover, it is also a part of kinetic

poetry: film poetry, videopoetry, and digital poetry. Works dialogue with each other, and need to be seen in affiliation to past creative practices in order to be read. Context is not mandatory, but context can definitively inform us. Works inhabit, and authors live within local, national, transnational, linguistic, artistic, technological, and sociopolitical capsules, or cultural shells, that shape their practices.

As Mark Amerika (2011) and Eduardo Navas (2012) stress, electronic and digital environments have fostered coding and digital techniques that enhance the mix and remix of material. This pervasive tradition of sampling, mixing, and remixing derives from the music scene. Still, literature seems to be always two steps behind music. Mixed tape poetry was not such a popular and well-known practice in the 1960s as mixed tape music was. A practice of mixing tapes gave rise to the 1980s DJ and electronic music scenes, which fuelled and radically altered the way musicians compose—by appropriating other musicians' sound samples, artists mix them in novel styles. Furthermore, current practices of live coding and algoraves are developed within a similar communitarian improvisation setting.

Another type of creative cannibalism can also be observed in jazz. While having a gig at Mezzrow in New York City (Dec. 3, 2015), the jazz musician Spike Wilner elaborated on the notion of 'counterfeit.' A counterfeit takes the refrain from a well-known song, and modifies it, by improvising on top. Say you want to play Duke Ellington and Billy Strayhorn's *Take the 'A' Train*, or Ellington and Milt Gabler's *In a Mellow Tone* (1939), or Thelonious Monk's virtuoso *'Round Midnight* (1944). You will always appropriate the score; modify it through interpretation, mixing it with your own live improvisation. As a principle, jazz is not copyrighted; as Wilner said, any song is an improvisation. Jazz musicians appropriate a refrain, or riff, and improvise. Riffs come without a price, but scores might not. Jazz, as a live art, is radically different from releasing a jazz song or album.
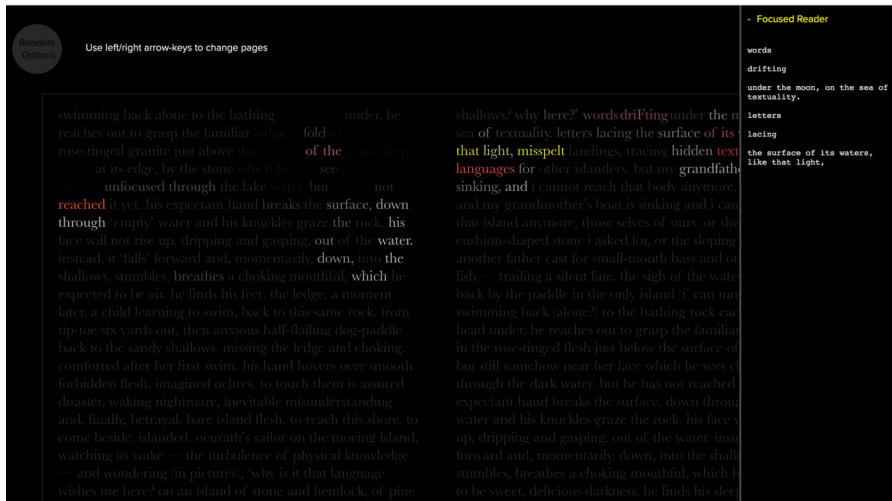
Figure 9. John Cayley and Daniel C. Howe, *The Readers Project*, 2009-, live version. Screenshot. http://thereadersproject.org/live/index.html.

Think then of John Cayley and Daniel C. Howe's *The Readers Project* (2009). The authors appropriate sampled sentences from Samuel Beckett's work (Figure 9), and populate it with search engine results that match those sentences. A number of outputs exist, including the massively footnoted book *How It Is in Common Tongues* (2012). Consider Stephanie Strickland and Cynthia Jaramillo's *slippingglimpse*. Strickland expands on appropriated words and sentences from visual artists Helaman Ferguson, Manfred Mohr, and others, as well as from issues of *YLEM: Artists Using Science and Technology*, and Robert Eisler and W.L. Hildburgh's "The Passion of the Flax" (1950). But perhaps the closest example to sound improvisation is Ian Hatcher's cross-media work. The manifestations of *// [Total Runout]* (2015) make it a particular case in appropriation and remix of sources. Hatcher composes the text with his own textual corpus, but especially by copy pasting from a manual by the UK Ministry of Defense, and essays about artificial intelligence. However, when the work is contemplated on the Web, as a sound file, or as performance, it is a total different experience. These variations, instead of just being seen as remixes and recreation, can in fact be seen at the light of counterfeit.

Aesthetic anthropophagy, or "creative cannibalism," according to C. T. Funkhouser (2007c), is a way to critically approach, and try to understand why practices of appropriation are so prevalent today in digital poetry, but not just. In

other arts, there are common processes of appropriation, re-appropriation, sampling, and remixing that predominate as artistic and aesthetic processes. A straightforward example of reworking with found material can be observed in conceptual works by writers such as Vanessa Place, derek beaulieu, Craig Dworkin, Kenneth Goldsmith, Brian Kim Stefans, and Darren Wershler-Henry. We could argue that appropriation, re-appropriation, and remixing have been present in literary and artistic practices for a long, long time, if we think of citation and collage as appropriation and sampling. Examples of new practices emerged with dada and Tristan Tzara's method "Pour Faire un Poème Dadaïste" ("To Make a Dadaist Poem," 1920), Kurt Schwitters's *Merz* technique, and then Brion Gysin and William S. Burroughs's cut-up techniques. These early analog and manual practices are recreated with computation and software. Found material is still used, but the sheer amount of data is drastically vaster. Copy-paste techniques, but especially the access to enormous amounts of text, sound, and image in databases is used as a trigger point for recreation and re-coding.

Connecting these practices with digital poetry, Chris Funkhouser has focused on the aspects of cannibalism and anthropophagy as aesthetic and composition procedures (2007b, 2007c, 2009, 2012), as did Rui Torres with an essay on "plagiotropia" (2012). Understanding the vanguard rupture, the transfiguration of tradition, and appropriation as creative and critical anthropophagy, or cannibalism, surely has direct links with Brazilian literature and, especially, Oswald de Andrade's work. In the wake of the first generation that instigated the Brazilian Modernist movement (1922-30) at the São Paulo's Modernist week of 22 ("Semana de Arte Moderna de 22"), two main figures, Oswald de Andrade and Mário de Andrade, helped setting its theoretical foundations. Oswald de Andrade published the "Manifesto Antropofago" [Anthropophagous Manifesto] (1928) in the *Revista de Antropofagia*, which he founded. In this manifesto shown in Figure 10, Andrade puts forward a creative and critical attitude of anthropophagy. In order to fully understand Augusto de Campos and Haroldo de Campos's follow-up process of "antropofagia," it is revealing to go back to Andrade's manifesto.

Figure 10. Oswald de Andrade, "Manifesto Antropofago," *Revista de Antropofagia* (1928). Facsimile.

In this monumental manifesto, Andrade (1928: 3/7) declares:

> Só a antropofagia nos une. Socialmente. Economicamente.
> Philosophicamente. (…) Tupy or not tupy that is the question (…) Só me
> interessa o que não é meu. Lei do homem. Lei do antropofago. (…) Queremos
> a revolução Carahiba Maior que a revolução Francesa. (…) Sem nós a Europa
> não teria siquer a sua pobre declaração dos direitos do homem. (…) Filiação.
> O contacto com o Brasil Carahiba. (…) Nunca fomos cathechisados. (…)
> Contra o Padre Vieira. Autor do nosso primeiro emprestimo, para ganhar
> comissão. (…) Já tinhamos o communismo. Já tinhamos a lingua surrealista. A
> edade de ouro. Catiti Catiti Imara Notiá Notiá Imara Ipejú (…) Perguntei a
> um homem o que era o Direito. Elle me respondeu que era a garantia do
> exercicio da possibilidade. Esse homem chamava-se Galli Mathias. Comi-o
> (…) Contra as historias do homem, que começam no Cabo Finisterra. O
> mundo não datado. Não rubricado. Sem Napoleão. Sem Cesar. / A fixação do
> progresso por meio de catalogos e apparelhos de televisão. Só a maquinária. E
> os transfusores de sangue. / Contra as sublimações antagonicas. Trazidas nas

caravellas. / Contra a verdade dos povos missionarios, definida pela sagacidade de um antropogafo, o Visconde de Cayrú: — É a mentira muitas vezes repetida. / Mas não foram cruzados que vieram. Foram fugitivos de uma civilização que estamos comendo, porque somos fortes e vingativos como o Jaboty. (…) De William James a Voronoff. A transfiguração do Tabú em totem. Antropofagia. / O pater familias e a creação da Moral da Cegonha: Ignorancia real das coisas+falta de imaginação+sentimento de authoridade ante a procuriosa. / É preciso partir de um profundo atheismo para se chegar a idéa de Deus. (…) Antes dos portuguezes descobrirem o Brasil, o Brasil tinha descoberto a felicidade. (…) A alegria é a prova dos nove. / No matriarcado de Pindorama. Somos concretistas. As idéas tomam conta, reagem, queimam gente nas praças publicas. Suprimamos as idéas e as outras paralysias. (…) Peste dos chamados povos cultos e christianisados, é contra ella que estamos agindo. Antropofagos.

In a characteristic Modernist move that seeks tribalism, Andrade's quest goes back to tribal roots, but in a very special way, due to Brazilian Amerindian and colonial history. Andrade creates a rupture, demands a revolution, and the cannibalism of obsolete power structures and cultural ideas that have been engrained in, and shaped by crystallized forms of tradition with four hundred and twenty eight years of colonialism—or, as the signature note reads, "Anno 374 da Deglutição do Bispo Sardinha" (Year 374 of the Bishop Sardinha being Swallowed).[23] Andrade rejects Romanticism, Catholicism, monarchy, Inquisition, capitalism, Portuguese and European economic and cultural exploitation, colonial mentality, elitist authoritarianism, oppression, patriarchy, Christian evangelization, and imported culture: from religion to United States popular film taste. Andrade fights for tactics of devouring the enemy, "absorbing the sacred enemy," that is, all of the above-mentioned enemies. He advocates for an idiosyncratic Caribbean creative production, and is being naturally influenced by Amerindian practices of cannibalism and magic rituals. Above all, Andrade demands Brazilian independency at all levels. He proposes that imported traditions should be annihilated; but that native traditions are meant to be appropriated, reused, and recycled. This is the most important aspect of Andrade's

[23] Andrade marks a new calendar that would start in 1556, the year that Pero Sardinha, the first bishop of Brazil, was eaten by the native tribe caetés, together with ninety people on board of his boat. Different versions of this narrative exist. This would give raise to a revengeful mass extinction by a 'holy war' put forward by the Portuguese monarchy and the Catholic Church, which already treated them as slaves. In turn, all their land was expropriated and become Portuguese property—see the Brazilian newspaper *Folha de São Paulo* (March 26, 2000) at http://www1.folha.uol.com.br/fol/brasil500/report_1.htm

manifesto, and the reason why it is insufficient to speak only of blind appropriation. For Andrade, the social and artistic fabric needs to annihilate the old and nefarious structures; appropriate the local, ethnic, and regional culture, and create new ways forward.

Appropriation, in Andrade's case, means a political project, much like you would think today of works by Nathalie Quintane or Sean Bonney. Later on, these ideas would be infused in Brazilian concrete poetry, in the works by Augusto de Campos, Haroldo de Campos, and Décio Pignatari. Haroldo de Campos (1981) refers to practices of "devouring" tradition, themes, and forms by working with, and against the canon. Mentioning the baroque period as a ground for "re-cannibalization," Campos (1981: 13) defends practices of "devouring" as an opposition to the conservative literary canon—an "anti-tradition" that should precisely act as a "a countercurrent opposed to the prestigious and glorious canon" ("contracorrente oposta ao cânone prestigiado e glorioso").

With digital media, literature regenerates these practices, though often with lesser political power. Appropriation and remix of content and form—from older and contemporary pieces—is made explicit. Works are created as artistic pieces that are also interfaces for experiencing and remixing the archive, as in Jhave's *MUPs* ([MashUPs], 2012), where close and distant listening of the PennSound archive meets minimal visuals: a grid divided in squares representing each sound file, and a circular transducer of the volume and pitch. Jhave seeded the Flash interface with 1260 audio files from the PennSound archive, but coded it in such a manner that the listener-viewer now can overlap, say, Lisa Robertson's voice with Bruce Andrews's, or Jackson MacLow and Nick Montfort, Leslie Scalapino, and Tan Lin.

As mashups occur, error and glitch are elevated to artistic status. Felipe Cussen's *Letter Singles (remix)* (2015) does exactly what its title points to. It remixes Jörg Piringer's letter sound album *Letter Singles* (2015) by glitching, and minimizing the points of contact between Piringer's vowels and Cussen's vowels, with a shorter duration, as well as creating new rhythms with them. Danny Snelson's *Feverish Propagations* (2009) is another example of remix. Snelson extracts elements from Rosmarie Waldrop's *The Reproduction of Profiles* (1987) and "deforms" them (Samuels and McGann 1999, Snelson 2014). These examples show how poets

working with sound seem to be the first not only to employ these practices, but also to refer to them with music terminology. Likewise, sound poetry from the post-Second World War up to now has been marked by waves of versioning processes, by means of creating covers and improvising on top of sound poetry scores. This type of recreation of sound and Dadaist poets like Hugo Ball, Tristan Tzara, Raoul Hausmann, Richard Huelsenbeck, and Kurt Schwitters by post-Second World War authors such as Henri Chopin, Bernard Heidsieck, Steve McCaffery, bpNichol, and Bob Cobbing, continues today with poets such as Jaap Blonk, Anat Pick, Christian Bök, Leevi Lehto, among many. Moreover, remix practices can be seen outside sound poetry. The most striking example is the number and variety of remixes of *Taroko Gorge* (2009), a poetry generator created by Nick Montfort in Python and implemented in JavaScript on the web. After Scott Rettberg instigated a new version, *Tokyo Garage* (2009), the code has been appropriated and modified for different textual and visual output, both by established authors and students.

As Stuart Moulthrop (2013: 12) points out,

> Perhaps, as Marjorie Perloff has suggested, we have arrived at the time of 'unoriginal genius' whose primary poetic mode is appropriation, citation, and other clever means of *récriture*. Words beginning with R do seem to haunt this moment: recursion, re-purpose, remix. We are, perhaps to our credit, backwardly brilliant and brilliantly backward animals – the phrases reciprocate.

Moulthrop's sharp associative argument is right, even if there are poignant examples of genius work that appropriate, but that, at the same time, go beyond appropriation and simple recontextualization—re-purposing—in original ways. This leads us to consider that appropriation is different from 'influence' or Genette's (1982) notion of textual relations in 'hypertexts' and 'hypotexts.' In this sense, the paradigm identified by Harold Bloom in *The Anxiety of Influence* (1973) can be perhaps updated. Overflow of information and vast-ready-to-copy databases establish a different paradigm of creation and recreation of found material. Authors recreate transformation techniques that could be taken before as imitation, parody, and pastiche (Genette 1982). They take direct influence from previous authors' works, but they also move away from this paradigm to sample, appropriate, and directly remix

sources. The previously identified "anxiety of influence" is now the reverse, the fever for appropriation.
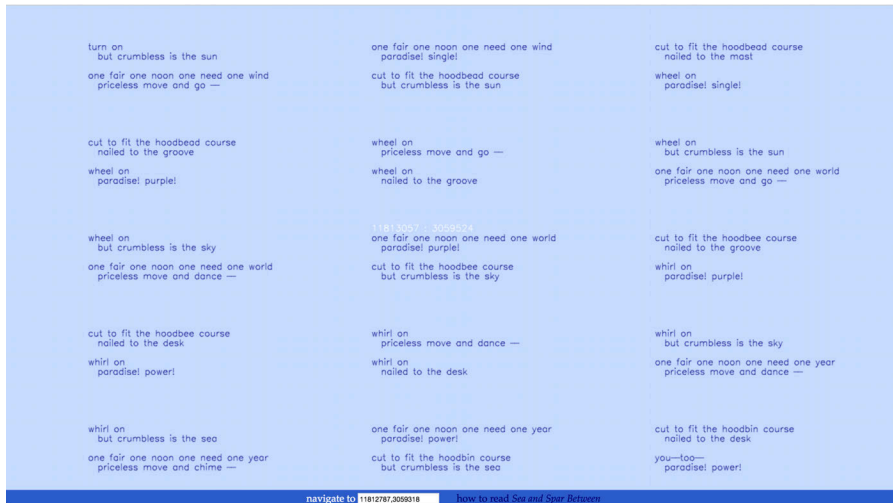
Figure 11. Stephanie Strickland and Nick Montfort, *Sea and Spar Between*, 2010. Screenshot. https://nickm.com/montfort_strickland/sea_and_spar_between/.

A striking case, which connects practices of appropriation of vocabulary, remix, and recreation, is Stephanie Strickland and Nick Montfort's *Sea and Spar Between* (2010, Figure 11). In the source code, the poets explain:

```
// Although our project mainly engages computation, two book-length works,
//  and the small-scale collaboration of two authors, we recognize the
//  potential of the network to foster different sorts of work and new,
//  radical collaborations. By offering Sea and Spar Between explicitly as
//  free software, we make it clear that authors and programmers can take from
//  it anything they find useful, just as we reworked and remixed Moby-Dick
//  with the poems of Emily Dickinson.
```

Strickland and Montfort have copied nouns from Emily Dickinson's poems, sentences from Herman Melville's novel *Moby Dick* (1851), as well as further words from both writers. They then created a modified blue canvas (after Jim Studt's canvastext.js) output, in which the reader can mark or *harpoon* the coordinates of four-line stanzas, and generate new ones. Words move, change, and seem to float in the sea.

4.5. Code, Software, and Interface

Code needs to be understood as the fundamental element of creative works written in and for digital systems. Without code, nothing would exist. Code is read along in this study in order to provide a richer and more informed understanding of the poetic, textual, visual, and sonic output displayed onscreen. As Piringer (2014: n.p.) highlights,

> the majority of textual communication in the net is no longer written and read by humans but rather by machines. communication protocols like http send texts generated by programs to other programs that receive and interpret this written information. additionally algorithms curate and summarize the vast amount of postings that users write on social media platforms like facebook. googles crawlerbots scan the textual information on websites permanently, summarize it and try to make sense to create their best selling product: their search engine. i use the very same algorithms that multinational corporations and intelligence agencies employ in the project "coded poetry" to generate minimalistic texts: encoded, decoded, programmed poetry or codes interpreted as abstract poetry. spoken by computer voices.

Examples of code snippets are considered when trying to understand kinetic poetry: textual temporality and motion effects. The reader will find more in-depth readings of code in the detailed analyses of Stephanie Strickland's, and Ian Hatcher's works.

A great majority of poets relies on programming languages, applications, and graphical user interfaces (GUIs) developed by other coders in order to write their pieces. Another big group of poets acts as a kind of film director, by directing teams of people with different expertise—code, graphic design, motion graphic design, writers, researchers, etc.—or by collaborating on equal grounds with other authors, coders, or artists. Like digital artists, there are some digital poets that program from scratch. Poets-programmers Philippe Bootz, Judy Malloy, John Cayley, Deena Larsen, Jim Andrews, J. R. Carpenter, Mary Flanagan, Nick Montfort, Jhave, Jason Nelson, Judd Morrissey, Brian Kim Stefans, Jason E. Lewis, Rui Torres, among others, are excellent examples of authors who maintain a literary, artistic, and coding activity.

Yet, it is more difficult to find poet-developers. By poet-developers, I mean poets that not only code, but that also develop environments for programming, apps, libraries, and GUIs for other people to manipulate code, text, sound, or visuals. The most well known case in the visual arts, in this respect, is artists Ben Fry and Casey Reas development of Processing (2001-), a program and GUI, written in Java, which is also a community of practitioners and developers. Connected to digital poetry and electronic literature, Jörg Piringer, Eugenio Tisselli, Erik Loyer, Nick Montfort, Ian Hatcher, and Daniel C. Howe are some of the writers and artists that combine all of these areas and expertise on their own. In this aspect, a rich source and review archive about "authoring software" is Judy Malloy's online resource, now called "content | code | process."[24] Because interfaces are a vital part of the composition, but also of the experience of kinetic poems, it is important for these poets to develop their own programs, since they also compose with them. These practices have been present since early poetic experimentations with computers, long before there was GUIs. Software becomes hard-coded, written, that is, planted by the self, for the self, but especially for the community.

Amongst other software and hardware, Piringer developed RealBeat,[25] a software environment and app for recording, manipulating, treating, and processing sound. Tisselli developed MIDIPoet,[26] an authoring software for modifying text and image in real-time, and for transducing audio into image, and vice-versa. Loyer has built diverse software tools—"instruments," in Loyer's words—such as *Scalar* (2013), *Panoply* (2016) for Unity, and *Stepworks* (2017), all concerned with narrative and storytelling. Nick Montfort's poetry generators can be considered as creative works and, at the same time, development platforms, as his programs have been used and modified by many authors in new iterations. A particularly versioned poetry generator and program is *Taroko Gorge* (2009). Ian Hatcher's *occamsparser* (2006) is a PHP parser that serves as a writing tool for the poet, but also for other authors to edit source webpages and text. Howe developed RiTa,[27] a "natural language toolkit" in Java and JavaScript that allows for the manipulation and parsing of text, as well as for

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[24] http://www.narrabase.net/
[25] http://apps.piringer.net/realbeat.php
[26] http://motorhueso.net/midipoet/
[27] https://rednoise.org/~dhowe/detail.html#rita

the integration in Processing for the creation of digital works. Code issues are examined in the context of emulation in section 5.2.2.

4.6. Randomization and Aleatory Processes

Process-oriented artworks. Manifestation, iteration, recursiveness, ephemerality, transition, and event as concepts that shape the ever-changing output of poems. Randomly positioning words in a poem. Procedural methods for outputting text. Aleatory-designed algorithms that change the position of words in a poem. Generative poems that change display at each iteration. These are some of the effects poets use to work with randomization, with aleatory outcomes. These practices follow traditions of chance, pseudo-randomness, and mathematics that are as old as the *I-Ching*, Classical Antiquity, and combinatory practices in the baroque period.

John Morris (1967: 17),[28] an early thinker on the intersection of poetry and computers, discusses the practice of large random outputs in generative poetry: "By the time [the computer] had gone through a dozen trial runs, [it] had produced some four thousand haikus. For one glorious summer month, I was the world's most prolific poet." Morris (18) continues, by asserting the importance of setting instructions and randomness as creative processes: "I want to describe the way to write a really effective poetry-writing program for the computer. Such as program will need two basic ingredients. One of these is algorithmic; the other is random." Morris (19) defines *randomness* "in the sense that the outcome of a flipped coin is random."

In the twentieth-century, Tzara's random cut-up technique for producing a Dadaist poem not only sets the tone for working with found material, but it also invites for aleatory and recombinant processes. The first examples of works that merge computation and literature are generative; typically poems using slots of words that are rearranged and regenerated with a sense of syntactical and semantic coherence. Funkhouser's (2007a) historiographic study provides ample examples and discussion of these works. Theo Lutz was the first. Strachey, Baudot, Alison Knowles, and James Tenney followed. In the 1970s, several authors experimented with aleatory

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[28] I thank Chris Funkhouser for bringing this author and article to my attention, as with so many other cases.

processes, especially Pedro Barbosa. Interestingly, bpNichol and Silvestre Pestana do not use random functions to program generative visual and kinetic poems, but Pestana (1987) suggests that the readers-users can type the BASIC code of *Computer Poetry* with colors selected via the RND function.

There is, roughly speaking, a divide between poets that are more concerned with visuality, and poets that are more concerned with aleatory and generative processes, which could spark a whole study of poetics. Think of poets that come from a concrete and visual poetics tradition, and move to working with, and adapting poems to digital systems, as the first case. Think of Bootz and Montfort as the second. Think of Strickland, J. R. Carpenter, the other side of Montfort, Jhave, and Hatcher as bridging the gap between these two strands. Furthermore, we can point out the case of Marko Niemi's ironic piece *Stud Poetry* (2006) as an example that blends visual poetry, games (chess), combinatorial, and chance-procedural outcomes of players whose literary names the reader will recognize, and have fun with.

4.7. Performative Events

The 'event' is the main unit of perception in a kinetic poem. A kinetic poem is not an object. Though it can be made of, and constituted by digital objects, it is more adequately understood from the point of view of 'events.' Events are performative. Considering poems as events displayed on screen, they are performative in that they are presented to an audience as they evolve over time. Moreover, when poems are live performed they become doubly performative. In this sense, experimental cinema, film and video art, and kinetic poetry share, in some cases, common affiliations. Just like Maria Engberg (2007: iii) claims: "As film scholars long have been aware, writing about kinetic phenomena in a static medium requires a particular mode of ekphrastic writing, one that cannot explain entirely what goes on in the kinetic form." Engberg (45) goes on to theorize a notion of 'poemevent,' in that a "'poemevent' is meant to emphasize that digital poems are spatiotemporal constructions." Even if this new concept—conflating two notions in a compound word—does not seem to add extra value to the discussion, Engberg's considerations could not be closer to the theoretical implications of kinetic poetry.

Connecting living forms, biological behavior, and poetry, Jhave Johnston (2016: 61) writes that practices of conceptual and processual art "instigat[e] complex performative events where excess invites audience/viewers/readers to interpret curated chaos." Johnston's notion of "performative events" can be traced back to other discussions, namely: Steve Benson's (1980, 2013) reassessment of close reading practices as performance events in locative context; Lisa Samuels and Jerome McGann's (1999: 30) claim that Emily Dickinson's "Reading Backward short circuits the sign of prose transparency and reinstalls the text—any text, prose or verse—as a performative event, a made thing;" Stephanie Strickland's (2006) inaugural exposition of eleven dimensions of digital poetry, which posits that "writing and receiving are real-time performative events with some resemblance to improv and to traditional oral performance, which depend on ergodic [Aarseth 1997] contributions from their reception-communities;" and Mario Aquilina's (2014) discussion of games and electronic literature. The deepest critical attention given to digital poems as temporal

events, which are performative, has been Strickland's (2001, 2006, 2007c), and Katherine Hayles's (2006) discussions of literary works as time-based events.

These positions pave the way for a greater awareness in making clear that kinetic digital poems are not objects; they are events that are made of objects: files with code, images, video, and sound. However, it is difficult to resist a long-standing tradition of regarding artworks as objects, particularly if we think about classical discussions in the humanities, arts, and philosophy. Mieke Bal's (2002) widely used "travelling concepts" framework is—as a migration function within the humanities, arts, and architecture—an elaboration that makes the case for concepts migration along different areas of knowledge. Even if Bal's notions are highly relevant, especially for cultural theory, her discourse still centers on researching a unique and unchangeable object. Thus, Bal calls for a critical object that ought to be analyzed, in that a "theoretical object" entails different views on what a text or an artwork might mean and signify. If we are to develop critical positions about generative, time-based, and distributed media artworks, we need to adopt a reading and analytical perspective that disregards objects, but that it rather considers the notions of process, event, instantiation or manifestation. Philippe Bootz, Samuel Szoniecky, and Abderrahim Bargaoui (2009, 2013) assert that the reception of digital literary works cannot comply with an objectual view, since the work or artifact is no longer a consistent and identifiable element, and because several processes and variables—code, data, network, surface, text, image, sound, input, and output—constitute it. These elements operate on different levels of performative presentation. Time-based poems are events that behave differently over time. Being platform and machine-dependent, poems that ran over a particular duration in 1981, surely run with a radically faster processing speed today. If we further consider regenerative works, the onscreen output might be always different from view to view. In kinetic poems, the output varies according to temporal parameters, as the time-lapse readings in this study highlight—on the works by Castellin, Strickland, and Hatcher.

Therefore, the emphasis cannot be placed so much in a sole output as a unique object of study, but it needs to emphasize the underlying processes, media outputs, and venues. Those diverse outputs are better considered as 'manifestations.' John Cayley's newsletter "news from @programmatology" from June 9, 2017, points to the

ongoing versions of several of his works of digital language art, particularly *The Readers Project* (2009-) and *The Listeners* (2015-). Entering the updated programmatology.shadoof.net page with documentation about *The Listeners*, we immediately read "manifestations," a sub-header Cayley created to refer to the "exhibited, performed, and published" iterations of the work.[29]

As such, the term 'object' becomes obsolete, just like the affected and stable character of any given text, sound or image in a precise spatiotemporal instance. It is still a fact that when thinking of artworks, whatever the area and context, the majority of theories regards them as objects—objects, that is, in the sense of immutable entities that are ready to be interpreted, analyzed, scrutinized, fragmented, de-structured, and de-contextualized as a closed, non-shifting, and recognizable material "thing." There is though a clear distinction that underlies this critical practice. Throughout historical human inquiry, thinkers have been drawing a clear frontier between 'subject' and 'object.' Ever since Aristotle, objects have been considered the main unit, element or target of study. According to Mieke Bal (2001b: 8), objects are "what you stud[y]," while subjects have been considered as a kind of underlying theme, e.g. the field or subject of study. These arguments have led to the construction of a common idea on the intrinsic nature of objects and subjects, thus deriving the notions of 'objectivity' and 'subjectivity': the first concerning a clear and precise description of "something," a form or object, whereas the latter has become deep rooted in the self's particular perspective of considering or articulating arguments. Narratology theories, such as those developed by Bal, have gone so far as to elaborate different approaches to objects and subjects. Important relations have been established at the level of interdisciplinary studies, or what Bal (2001b, 2002) prefers to call "cultural analysis," in which the idea of "travelling concepts" across disciplines is fundamental. Following Hubert Damisch's critical work, another case is Bal's distinction of a "theoretical object" (2011, 2014), that is, an object that resists to, or seems to supply its own theoretical subject. Bal (2001a: 126) further develops the relation established by a "third-person" narrative, which would emphasize the object over the subject. Finally,

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[29] For a sound essay and voice interaction with *The Listeners v1.0*, installed in the *Brown University Faculty Show*, at the Bell Gallery, List Arts Building, in Providence, RI, see "Listen(speak)ing: A Conversation with AlexaCayley" (Dec. 4, 2015) in https://soundcloud.com/alvaro-seica/the-listeners-conversation

a relevant notion for digital literary studies is that of the "focalized object," by which the same object can be focalized in different ways by different authors. For Bal (2001a: 54), "focalization is already an interpretation, or subjectivized content."

At this point, some questions need to be raised: What constitutes 'content' in a digital poem? Is content the visual-textual-sonic output? (Following the taste of acronyms for capitalization and abbreviation in code semantics, Jhave Johnston [2016] has defined this type of output and work as TAVIT [Textual AudioVisual InteracTive].) Is it the perceived surface of inscription and mediation, between program and user, the sole content to be analyzed? From yet another point of view, which has stirred up debate (see Cayley 2002 and Marino 2006): Is code the sole content in codework?

Are all of these elements, in addition to the manifestations of a work, what we should mean by 'content'? Using the framework of media-specific analysis as argumentation might prove helpful, even if materiality per se can prove reductive as well. By this I mean making the case for digital media as enabling programmed and networked works that are idiosyncratic in their materiality, in which all elements that constitute the material qualities of a work need to be taken into consideration. The same framework can be applied to non-digital media works. For instance, a visual artwork created on canvas would need to be considered by what is painted but also how it is painted, and what kind of role the canvas plays. A work of literature would need to be appreciated not only by the printed text and graphics, but also by the bookbinding and the printed matter, such as the type of paper, format, and paper cuts. In fact, all these elements can be and should be a part of that equation. The computer, code, and the network as media and material systems of inscription need to be regarded from a creative and critical point of view.

To be sure, critics went from 'work' to 'text,' and from 'text' to 'object.' A reinforcement of the notion of 'work' is needed, as neither 'text' nor 'object' account for the current creative paradigm. As Johnston (2016: 5) points out, "Inquiry expands through embracing new terminology. The word *text* (derived from the fourteenth-century root *weave*) is not inclusive enough to incorporate dynamic, animated type." This explains why authors are using the terms 'work' and 'artifact' to describe their creative pieces. The problem in kinetic digital poetry, as opposed to film, for instance,

is not the issue of regarding the poem in movement, but rather the issue of the unstable and variable nature of the poem in movement. A poem programmed to differ over time, or whose presentation will differ over time and space, according to different hardware and software updates—should it be considered an object?

On the one hand, several standard initiatives and systems are embedded with this type of terminology. The DOI (Digital Object Identifier) and other metadata archiving schemata—like the Dublin Core Schema for metadata documentation, or the Library of Congress's MODS (Metadata Object Description Schema)—use the term 'object' in their cataloguing and hierarchical paradigms. One answer to this question might be that professionals working in organizations, libraries, and museological institutions are still trying to find the best strategies for how to catalogue and preserve digital artworks. Therefore, following Bal's suggestion, framing or focalizing the subject of study can *a priori* entail severe consequences. The Oxford English Dictionary defines 'object' as: "A *material thing* that can be seen and touched," or, in the philosophy thread, "A *thing* external to the thinking mind or subject" (emphasis mine). We are informed as well that the word 'object' originates from the Medieval Latin *objectum*, that is, "thing presented to the mind." This takes us back to the discussion above.

On the other hand, some programming languages are Object-Oriented (OOP). Thus, this could mean that their output is object-oriented as well. Objects are nonetheless differently conceptualized, as they ascribe to classes, and those classes can be in some instances developed by recursive functions. The main features of OOP are abstraction and encapsulation.[30] Yet, should the output of these programming languages be considered as an object? According to the online technology dictionary Webopedia, the definition of 'object' is:

> Generally, any item that can be individually selected and manipulated. This can include shapes and pictures that appear on a display screen as well as less tangible software entities. In object-oriented programming, for example, an

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[30] I thank David Jhave Johnston for bringing a more nuanced perspective to my attention. See https://stackoverflow.com/questions/16014290/simple-way-to-understand-encapsulation-and-abstraction

object is a self-contained entity that consists of both data and procedures to manipulate the data.

An object, in the technological sense, is a set of data to be interpreted by the computer program and the machine. Data and code running rely on machine lags, network lags, machine/CPU/hardware runtime, operating system runtime, software/program runtime, query time, etc. Therefore, the time-based effect of a work running and presented on a display or several outputs—a work that evolves over time as distributed media is called—requires a different approach to this established notion of 'object.' Bootz, Szoniecky, and Bargaoui (2009) strongly contest that a digital poetic work must be objectified. The "perennial object" (9) that can be documented, archived, and preserved is the computer program or, in other words, the source code of a program. Thus, the generalized idea that in the digital realm we can consider the program's output as the object is illusory; that is, if being the only instantiation or the only visible manifestation of a work to be ascribed meaning. The processes that allow a digital poem to perform and be read by the machine are indissociable from the semiotic representations occurring in front of the reader-user. In fact, as Bootz et al. (5) point out, the very unstable nature of a digital poem over time, depending on platform updates qualify the work with a "labile" essence. As the authors explain, there can only be an initial state of reference in a work, and that occurs within the author's machine. Each materialization and manifestation of the work—the "observable transitoire"—in another environment is always subjected to what Bootz calls "procedural transformation," a transformation of state due to the effect of the program's subroutines. Considering kinetic poems, which transform themselves during lapses of time, or regenerative poems, which generate different outputs of text that might be unrepeatable, we are perhaps in face of a de-objectification of the work. According to this view, every digital work is always variable and conditional.

Digital art and electronic literature share similar challenges regarding transmission and storage of works. As authors elaborate on issues of preservation, the idea of thinking of an artwork as a *permanent agent* (see Wardrip-Fruin et al. 1998), or as a non-shifting, motionless actor, poses severe constraints:

> The conceptions at work in the present methods of preservation infer a pernicious effect, that of "ossifying" the work, of denying its profoundly procedural and contingent nature, so as to try to refocus it on the safety frame of the object. We keep on thinking about the digital work as an object, but that object does not exist. (Bootz et al. 2009: 6)

This position reiterates the framework of objects as obsolete, as it fails at the level of an understanding of variable media. Several creative works demonstrate this issue. As Philippe Bootz et al. argue, by approaching Jean-Marie Dutey's *Le Mange-Texte* versioning (1989, 1994), the labile or unstable nature of that work shows that processing speed over time affects the onscreen display and perception of the poem. Moreover, the procedural transformation operated on the work's dislocation from the author's machine to the reader's machine fosters an idea of "no original" and "no initial state of reference."

Likewise, Philippe Castellin's *çacocophonie* (2013), as virtually all other kinetic poems by the author, will be read in the near future by machines in a very different way. *çacocophonie* is analyzed in the article "The Digital Diasthima" (article 3). Meanwhile, Castellin published the source text, which reveals that the strings of text are written without spaces between each string's comma, possibly because of the way the function `loadStrings()` is coded.[31] From a semantic and syntactical point of view, it is interesting to note that this practical notation adds to the choking and anxious rhythm of the animation, in the same way that, for example, Gertrude Stein or e.e. cummings composed their repetitive and cascading sentences—think of cummings's diaristic fictionalization from the time spent in prison at a detention camp in France, *The Enormous Room* (1922). If it is already valid that procedural transformation plays a significant role on how the same work is perceived in different machines, that transformation is surely accentuated when thinking about technological development. Thus, the way these works will be perceived as artworks is directly dependent on external factors to the work itself, proving that concepts concerning 'original' and 'object' need to be readdressed. Therefore, it is necessary to pursue a critical de-objectification and to consider the poem as process.

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[31] See http://www.akenaton-docks.fr/DOCKS-datas_f/collect_f/auteurs_f/C_f/CASTELLIN_f/TEXTES_F/Making_Off.html

5. Methodology

The current study, conducted between 2013 and 2017, is an interdisciplinary and mixed-method approach to research in the humanities. This section discusses the methods of research in theory and praxis.

5.1. Theory and Research

The fields of electronic literature and digital poetry demand interdisciplinary expertise. Thus, the theoretical frameworks developed in these fields reflect this aspect. Adjacent fields, such as interface studies, platform studies, software studies, critical code studies, and media archaeology interweave their methodologies with literary studies and digital humanities. Furthermore, media studies and comparative media studies can pave the way for an understanding of the relations between media, culture, technology, and art. A media-oriented perspective can serve the purpose of facing complex artifacts, be those created by digital poets, experimental poets, or modernist poets. For the critic, the need to pay attention, and to be skilled in a variety of areas such as typography, graphic and web design, literature, video, visual arts, computer science, sound art, and performance studies is the biggest challenge. Poets that before would trust a book's layout to a graphic designer are now doing this and other tasks by themselves, or else depend on collaborations with other artists.

Electronic literature is a field of creative practice and scholarly study that has been increasingly growing in quantity and quality for the past decades, both outside and inside academia. The inclusion of works that connect literature and technology in experimental literature festivals, as well as conferences and academic conferences such as the E-Poetry series (2001-) and the Electronic Literature Organization Conference series (2002-) attest this consideration. Moreover, journals and publishers have long contributed for the dissemination of creative work and the inscription of arenas for criticism. Journals that publish(ed) digital poems include *alire*, *DOC(K)S*, *BYTE*, *Born Magazine*, *The New River*, *Nokturno*, *Beehive*, *Poems that Go*, *cauldron &*

net, *bleuOrange*, *Afsnit P*, *Drunken Boat*, frAme, *Hyperrhiz*, *inFlect*, *The Little Magazine*, *The Iowa Review Web*, *SpringGun*, and *Digidicht.*[32]

As the field—an area of practice and study—matures, an international community of writers, artists, programmers, researchers, and scholars paves the way for more diverse language and cultural paradigms, a broader intersection of arts, humanities, and sciences, as well as more sophisticated creative production and critical thought. The field revolves around dependencies—constraints and affordances— motivated by fast technological obsolescence, replacement, and novelty. Precisely because of this aspect, as well as the fact that the artworks being studied might be very recent, the canon is in permanent reconsideration, as it expands and contracts. This reassessment is perhaps one of its biggest challenges, but, at the same time, what makes it so exciting. Moreover, the opportunity to debate and collaborate with authors that are alive creates additional stimuli.

In order to read kinetic poetry on diverse levels of analysis—see point 6. Articulation of the Articles—theoretical methods are reflected upon the following case studies: micro-reading, that is, in-depth reading of digital kinetic poems; meso-reading, that is, contextual reading that revises the history of kinetic poetry; and macro-reading, that is, macro-analytical readings of digital poetry's relations between critical discourse and creative works. What follows is a description of these different levels.

5.1.1. Micro-Reading

Micro-reading digital kinetic poems involves an awareness of previous criticism, in terms of modes of reading, but also the contribution of new methodology that explores the combination of methods, or the development of novel methods. In section 3, the review of viewpoints within digital poetry's criticism helps setting part of the methodology followed in this study; especially C. T. Funkhouser's (2007a 2012) diachronic and synchronic frameworks, which are fundamental pillars for an understanding of digital poetry.

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[32] A full ongoing list, which documents journals and publishers in the field, can be found at https://elmcip.net/publisher. Thanks to Patricia Tomaszek, who covers paratextual information and journals in great detail in her PhD dissertation, for bringing some of these journals to my attention.

Funkhouser (2007a) carefully explores the typologies of digital poetry since 1959, by raising a broader historical spectrum that allows him to consider clusters of works, association of themes, and relationships between programming and literary antecedents. Conversely, when taking a closer look on post-World Wide Web creative works, the productive distinction between "projected" and "participatory" poems helps setting a differentiated method to approach a variety of sub-forms in order to read digital poems. Yet, what is Funkhouser's recipe for reading these artifacts? In an unpublished manuscript (Funkhouser 2014: n.p.), which was planned to come out with his 2012 monograph, the author presents the following seven points:

1. Review the interface presented. Are instructions provided? (…)
2. (…) Immediate immersion into a digital poem, without establishing its meta-design, may have benefits in terms of enhancing personal discovery and developing primal sense of what the poem is made out of (…) Yet interacting with literary texts, even if they are posed as games, is usually (although not always) different than gaming. (…)
3. After determining what sorts of viewer input are required, enter (…) the environment of the poem. (…) viewers best develop a sense of the structure of a work through direct engagement. Moving the computer mouse across the entire screen is an exploratory technique (…)
4. Determining an endpoint to a digital poem may be difficult, if not impossible. (…) What will typically terminate the viewing experience when a word does not feature built-in start and finish points, is that a critical threshold is reached. (…)
5. Multiple readings of complex work are recommended, if not required.
6. Those who are, or wish to become, familiar with program coding and computer languages may benefit, in terms of understanding how a digital poem is built, by reviewing the available HTML (and other) code. (…)
7. (…) viewers may wish to search the WWW for secondary materials.

Funkhouser's seven points in "How to Read a Digital Poem" recall Tristan Tzara's ten points in "Pour Faire un Poème Dadaïste" [(How) To Make a Dadaist Poem] (1920), a self-reflexive poem that gives a recipe for how to employ a method of randomization and cut-up in order to create poems. Instead of the writing process, Funkhouser addresses the reading process. The author highlights one of the main problems in digital poetry: how to read them? His proposal entails a set of procedures that aim at avoiding frustration, and empowering the reader.

The problem of how to read digital poems, how to interpret them, and how to write criticism about them is closely tied to what kind of methodologies the reader and scholar use. Some of these methods can, and should require practical engagement with the works, a point that Funkhouser highlights. In fact, that is the type of "computational poetics" methodology that, in "operating" the code and interface, Stephanie Strickland and Nick Montfort (2013) call for—a kind of praxis that is discussed in more detail in the subsection 5.2.2. Versioning: Modifying Deformances. This study contributes to an analysis of kinetic poems, which are changing events, with an exploratory reading of the code and display of those creative works. It builds a method for enriching an analysis at the level of scripted code and interface, by developing experiments with modifications of output in terms of temporal and spatial transitions. It further connects this intervening practice with methods of experimental literary criticism theorized and practiced by Lisa Samuels and Jerome McGann (1999). Their "deformative" approach also employs analysis through alteration of creative works, but at the textual level, in order to isolate and alter content that reinforces practices of reading and interpretation. The theoretical methodology of this thesis essentially combines the insights from Samuels and McGann's methods with digital literary studies (Funkhouser 2007a, 2012; Jhave Johnston 2016). Other methodology that informed it includes materiality and media-specific analysis (Glazier 2001, Hayles 2002, 2006, 2008, and Pressman 2014), critical code studies (Marino 2006), media archaeology and interface studies (Emerson 2014), collaborative, and multi-approach studies (Pressman, Marino, and Douglass 2015).

Media studies are gradually expanded by an entanglement of areas that engage approaches from comparative studies to methodology described as media-specific, media archaeology (Huhtamo and Parikka 2011, Emerson 2014), alien phenomenology (Bogost 2012), phantasmal media (Harrell 2013), geology of media (Parikka 2015), among others. Specifically connected to the field of electronic literature, an emphasis in media has provided deeper attention to the inner material qualities of literary works; how and where they are written and read. Interpretative approaches that redirect the gaze to the materiality of environments, and media involved in the production of digital poems bring an added value to traditional methodologies in literary studies, which often neglect surfaces of inscription. But in

digital poetry, surfaces of textual inscription are also surfaces of scripting code. The concern with the display of kinetic poems then needs to be complemented with how, and for which purpose, the inner workings of a poem function. What is the "interface effect" (Galloway 2012) of scripted functions? How does the program affect the textual, visual, and sonic display? What are its broader implications? Are interactive functions setting any critique of culture and politics?

Methods in digital literary studies concerned with understanding practices, and critical analysis of works that combine literary, visual, sonic, and computational aspects, as endorsed by Hayles and Pressman as "media-specific analysis," reveal that a complementary "exploratory programming" (Montfort 2016) criticism can in fact enhance the type of questions we do, and the type of answers we might get. My argument, in terms of method, goes pretty much in the line of thought of Johnston's (2016: 32) identification of a paradigm change in literary criticism:

> Close reading is/was literary criticism's scientific method. (…) according to materiality critics (who descend from McLuhan), media DNA (frequently conceived as code) controls surface content. Prior to digital media, literary analysis most often viewed surface content (…) as primary, and media (…) as secondary; materiality (…) inverts that paradigm.

Johnston (33-34) refers to a lack of critical tools to analyze digital poems, which evolves to a subsequent critique of the dominant paradigm of "materiality and media determinism as central dogma:"

> At a fundamental level, this [materiality theory] stratagem constitutes the triumph of objective science over fallible subjective vision. From within this perspective, in order to be valid, digital poems must investigate media. Interpretations of poems that bypass questions of authorship consolidate media and systems theory at the core of credible literary criticism. (…) it privileges modes of academic discourse, highlights works that are amenable to critical modes of appreciation (…)

Thus, I argue for a constructive notion that seeks new models and tools, which need to be experimented in order to read digital poems in a more complex, and perhaps multivalent way. Yet, that was precisely the aim of Glazier's (2001) focus in the material features of innovate poetries, and Hayles's "media-specific analysis," in that it

emphasized the need for literary critics to develop an all-encompassing perspective of content, form, and media that create, shape, and disseminate literary works. If Hayles, Pressman, and others managed to bridge that gap, and to seize the opportunities for literary criticism that such models carry, new modes need to be put forward; modes that involve not only identifying the importance of code, but also what an analysis of code might bring anew for an understanding of processes and interface, but also poetics, aesthetics, and politics.

A new approach can then combine the sociocultural, historical, and design implications of software (Fuller 2008, Wardrip-Fruin 2009, Manovich 2013). It can incorporate what Nick Montfort and Ian Bogost (2009) call Platform Studies, that is, the study of creative computing from the point of view of the software and hardware as platforms involved in its production and experience. And it needs to directly address code, what Mark C. Marino (2006) has termed Critical Code Studies, that is, reading and interpreting programming languages by analyzing its semantics, syntax, and execution procedures in light of expected or unexpected output. A brilliant monograph that bridges the areas of digital humanities, software studies, platform studies, and critical code studies is Nick Montfort's et al. *10 PRINT CHR$(205.5+RND(1)); : GOTO 10* (2012). The project, also available at 10print.org, develops microanalyses of only one line of code, in opposition to work in the digital humanities that engages with large corpora. Through trial and error, a group of ten authors develop a multidisciplinary approach to a unique 38-character BASIC program for the Commodore 64, which is the homonymous title of the book. By reading *10 PRINT* in detail, they manage to consider and explore a multitude of layers that such a compressed form entails: a symbolic paradigm for the observation of the relations between code and displayed form, and the cultural implications of code, in that the program outputs a graphic and patterned maze.

These notions are presented in terms of practice in 5.2. Praxis and Research, especially in the methods developed in 5.2.2. Versioning: Modifying Deformances, which will be applied in the readings of Strickland, Jaramillo, and Hatcher's works.

5.1.2. Meso-Reading

If 'micro-' relates to small—case studies that analyze the oeuvre of an author, only one creative work, or even one line of code (Montfort et al. 2012)—and if 'macro-' relates to big—case studies that analyze large amounts of works—then 'meso-' relates to the middle ground. Meso-reading, in an analogy with the levels of analysis in sociological inquiry (Blackstone 2012), represents an in-between reading, a middle reading.

In the case of literary studies, it represents a contextual and comparative reading of the cultural, artistic, aesthetic, and technological aspects of poetry created across media. It is a historicizing reading of the production and reception contexts in which kinetic poetry has been created. This narrative revises the history of digital kinetic poetry in connection to previous kinetic poems produced with film, video, and holography—more in line with Eduardo Kac's (2007) notion of 'media poetry.'

This contextualization of kinetic poetry follows a method that could be perhaps described within Hayles and Pressman's (2013: xii-xiii) open perspective of comparative textual media:

> Our purview here (…) is broader than the digital humanities because it advocates *comparative study of all text-based media*, not only the digital. (…) A media framework (…) supports work that explores connections between different media forms, including film, installation art, electronic literature, digital art, emergent narratives, and a host of other computational and analogue media forms. (emphasis original)

The authors (xv) emphasize the practice of criticism by doing, that is, writing through practicing: "This is self-evidently true of digital media, where the practices of making digital objects are deeply interwoven with theorizing about them." The relevance of textual media becomes though enhanced by the treatment and readings of visual, sonic, and code elements that root kinetic poems in cultural and political context, from dada and experimentalism to contemporary practices—an abbreviated history of kinetic poetry that is presented in "Kinetic Poetry" (Article 1).

5.1.3. Macro-Reading

The discussion of the field of digital poetry, in terms of critical and creative work, as it has been documented in the ELMCIP Knowledge Base, can be enhanced by an investigation of the relations of cross-references in theory and practice. For that matter, exporting this type of network of references into visualization software can open analytical debate, and hopefully introduce new findings. That is precisely what "Digital Poetry and Critical Discourse: A Network of Self-References?" (Article 6), which is further explained in point 6, attempts to contribute to.

In so doing, what Franco Moretti (2003, 2005, 2013) calls "distant reading" can be crossed with electronic literature, because quantitative and qualitative research of large corpus can be drastically magnified, least to say, speed up, from the engagement with computational tools and processing. This approach does not mean that the critic is invited not to read the works themselves, but rather that the type of macro-analysis implemented by Moretti and Matthew L. Jockers (2013) can complement the investigation of, for example, particular works within a study of canon, common practices, clusters of themes, gender, race, or ethnicity.

The broader implications of Moretti's theoretical and practical frameworks follows on to direct application methodology developed by Jill Walker Rettberg (2012, 2013, 2014) and Scott Rettberg (2013, 2014) for the analysis of PhD dissertations and the works they reference, issues of canonization in electronic literature, and the study of genre in tandem with platforms. All these problems derive from hypothesis generated from the sheer amount of records compiled in the ELMCIP database, as well as the observable relations they exhibit through cross-references between authors, critical writing, creative work, platform/software, publishers, journals, organizations, and events. Data exported from the database can lead to the verification of hypotheses, to the discovery of patterns that were not predictable in the beginning of a study, or to the emergence of new research questions.

5.2. Praxis and Research

This study has been complemented, and in great part grounded and developed through practice-based research. Humanities research is aided by computational tools and coding. Exploration of processes, testing of experimental data, and validation of findings is intensified via the relation of reading, thinking, writing, and coding. Qualitative and quantitative methods can potentially achieve significant results through the critical use of software.

Thus, digital humanities projects such as digital archives and online electronic literature databases became main points of entry for finding sources, curating research collections, but also for exporting data into visualization software in a macro-analytical perspective. The databases and archives in the fields of experimental literature and electronic literature that are relevant for this study are the ELMCIP Knowledge Base, Po-ex.net, the Electronic Literature Directory (ELD), the NT2 repository, and the Consortium of Electronic Literature (CELL) project, the aggregating resource umbrella for all of these international databases.

In addition, case studies were followed by transcriptions and preservation of source code, as well as the emulation of early works of digital kinetic poetry. Modifying the code of open source digital poems was another strategy followed with the purpose of conducting experimental criticism that would allow for a fitter understanding of reading practices. Finally, a series of interviews and conversations with practitioners and theorists contributed for valuable insights about praxis and theory of electronic literature, and more specifically digital kinetic poetry. To that extent, the methods and processes employed with the aim at enacting, questioning, and improving theoretical considerations are described below.

5.2.1. Emulation

Emulation is a mode of preserving works that cannot be accessed anymore. It might be as well that they can be of difficult access because accessing them might require running them in the same platforms in which they were programmed. There are though many strategies for recovering and preserving digital artworks. Emulation is different from versioning in the same or newer platforms (Hartman, with "Diastext" and "Prose"); forensic and retrocomputing approaches that try to rescue legacy media (Kirschenbaum 2007, 2016); media archaeology labs that aim at preserving vintage software and hardware in their "original" state (Emerson 2014, Grigar and Moulthrop 2017); and porting (Andrews et al. 2007, Montfort et al. 2012), which means transcoding a specific program to another programming language or platform. Emulation means using software that reproduces, restages, and encapsulates old environments inside new ones, that is, an older operating system running inside a newer one.

In the case of BASIC code for Sinclair ZX Spectrum and Commodore 64 machines, there is a growing community of programmers and hobbyists, who mainly preserve games, that make possible for other creative authors to update systems and software. At the same time, alternative communities, such as the demoscene, get together in specific events to modify older games, present new programs, share games and artworks, and expertise. Retrocomputing becomes not only a restaging of older pieces, but also an opportunity to create new work in older platforms. An example is Nick Montfort's *Over Sing*, a program created in 2017 in an old VIC-20, and released at the demoparty @party in Somerville, MA.

There are several cases of works rescued through strategies of retrocomputing, media archaeology, and emulation. A notable case is the digital preservation of Paul Zelevansky's *SWALLOWS* (1985), written in Forth-79 for Apple IIe and II+. Matthew Kirschenbaum (2012) rescued the DSK file and emulated the work via an Apple II emulator. Lori Emerson (2012, 2014) in turn further wrote on Zelevansky's literary game. Porting early works of electronic literature is also a strategy of preservation. In many cases, this task consists of recreating original versions in different platforms. Examples of digital poetry include Theo Lutz's *Stochastic Texts*

(1959) Zuse Z22, ported and recreated in PHP by Johannes Auer;[33] Alison Knowles and James Tenney's *The House of Dust* (1967), ported and "simulated" by Zach Whalen.[34] Cases that are relevant for a history of digital kinetic poetry include: Silvestre Pestana's *Computer Poetry* (1981-1983), bpNichol's *First Screening* (1984), and the recovery of poems published by several authors in *alire* (1980s) by Philippe Bootz for the ELO 2013.

     First Screening is a series of twelve poems written by bpNichol in AppleSoft BASIC for an Apple IIe. Jim Andrews, Geof Huth, Lionel Kearns, Marko Niemi, and Dan Waber emulated, ported, and documented the source code, original print and floppy disk media on Vispo.com/bp/index.html (2007). The collective emulated the piece (DSK file), created a video recording, and ported it into HyperCard (J. B. Holm, 1993) and JavaScript (Andrews and Niemi). In 2016, all this material was published in the *Electronic Literature Collection*, Vol. 3.

     Pestana's *Computer Poetry*, written in BASIC for a Sinclair ZX81 and ZX Spectrum, has been emulated in 2015 by Sindre Sørensen and Álvaro Seiça for the exhibition "p2p: Polish-Portuguese E-Lit," due to a practical last minute reason. The Timex machine and the cassette with the BASIC code were not available for Pestana to assemble, and send them in time from Portugal all the way to Norway. As such, in one night, the creative work had to be emulated, in order to be shown in the context of an exhibition whose name was already in the catalogue, and about to be printed. A presentation and discussion of *Computer Poetry*'s manifestations, transcriptions of all the source code versions, and emulated work can be found in Appendix 3. Emulation: The Case of Silvestre Pestana's *Computer Poetry*.

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[33] See https://auer.netzliteratur.net/0_lutz/lutz_original.html
[34] See http://zachwhalen.net/pg/dust/

5.2.2. Versioning: Modifying Deformances

Modification and versioning is a set of methods used in software development that can be adapted to reading kinetic poetry. Reading kinetic text and kinetic poetry is a challenge because it demands interdisciplinary approaches and critical openness to engage with artifacts that are complex and difficult to be read. This stems from the sheer realization that, sometimes, it is impossible to read them. It might happen that reading a poem inscribed in a moving surface, or a medium that can embody kinetics, will not give the reader enough time to read letters, words, and shapes, or listen to sound in a meaningful way. It might happen that this effect was pre-conceived, pre-composed, and programmed by the author. It might also happen that the effect is caused by network and machine speed, platform issues, or that the author did not really take these problems into deep consideration.

Therefore, strategies other than the traditional methods literary critics are used to, need to be tested in order to solely read, but also to put forward richer analyses. As such, the methods I explore in-depth in the time-based readings of kinetic poems by Strickland and Hatcher involve the layers of output—text, image, and sound—interface, and source code. Because spatial and temporal dimensions such as onscreen speed and textual behavior are topical concerns that affect the reading experience, this study develops a type of experimental criticism that implies modifying and versioning the poems. What I call 'modifying deformance' is no less than a practice that emerges out of software development and literary criticism. Merging the two areas means reflecting upon, and engaging with the modifications and versioning of source code, a practice that is current in game mods, and code development in general. The main achievement is the awareness of how coding affects display, process, and event, rather than modifying works for purposes of development, improvement, total conversion, remake, overhaul, support, or art mods.
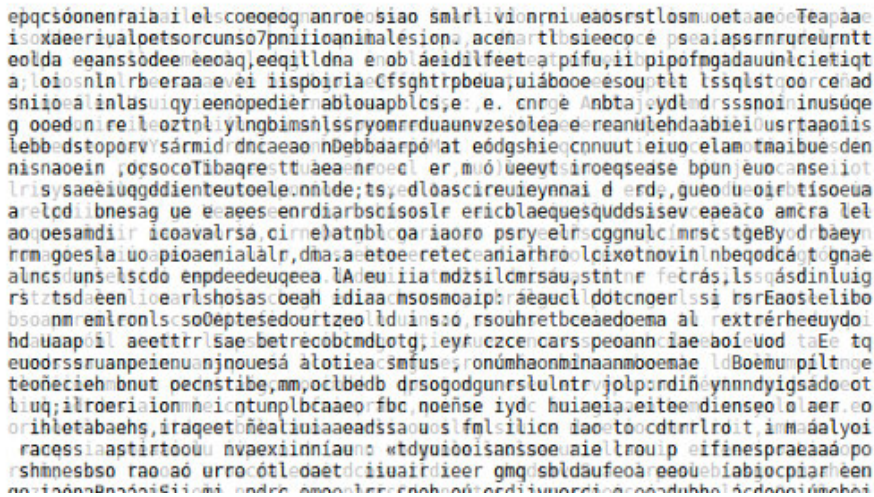
Figure 12. Nick Montfort, *Una Página de Babel*, 2015. nickm.com/poems/babel.html. Screenshot.

Figure 13. Álvaro Seiça, *Una Página de Babel Mod*, 2017. http://alvaroseica.net/setInterval/babel-mod.html. Modification of Nick Montfort's 2015 code. Screenshot.

Figure 12 shows Nick Montfort's *Una Página de Babel* (2015), a program released on August 25, 2015, which renders all the glyphs of Jorge Luis Borges's short story "The Library of Babel" (1944) at very high speed with the method `window.setInterval(render, 0);`. The 15,881 glyphs are activated by the `function glyph()`, which recombines and breaks the monospace font in a minimalistic manner. In order to read the work, since it is a conceptual piece, I explored the source code by trial and error, modifying its parameters with the goal of

understanding what would happen when the code would be re-uploaded, and run again in a browser. On March 25, 2017, I experimented with several versions, and tested the piece with all the words from this study, "setInterval()," precisely because the timer method used by Montfort is `setInterval()`. The resulting mod is online, and presented as a screenshot in figure 13.

As other practitioners and theorists have highlighted, literary and artistic works that are written in digital systems cannot be fully understood and explored without the praxis of those same processes. This entails creative and critical code practices. It is the case of Stephanie Strickland and Nick Montfort's "cut to fit the toolspun course" (2010, 2013) glossing of code. Their elegant essay was published in the source code of the creative work *Sea and Spar Between* (2010). Strickland and Montfort (2010: lines 880-906; 2013: lines 904-930) point out in `sea_spar.js`:

```
// It is clear that works of electronic literature and digital art need to
// be studied by operating them, examining not only their outputs but also
// their interfaces. By writing about Sea and Spar Between within its main
// code file, we mean to invite critics to also look beneath the interface
// and consider the code level. Considering code allows those interested
// in aesthetic and poetic computing to learn more about the literary and
// technical decisions that were made with regard to appearance, interface,
// and underlying function.
//
// While we think that many types of poetic, aesthetic, and humanistic
// code deserve consideration, we also want to present our work in Sea
// and Spar Between as something that is related to, but distinct from, a
// typical digital humanities project. We are working to develop a
// computational poetics. In creating Sea and Spar Between, we were
// more concerned with poesis, with making, than with the analysis of
// texts. In this edition, "cut to fit the toolspun course," we have
// extended the project to show how critical discourse can be added at the
// code level. In this particular case, it is a gloss by the authors; but
// in the future, comments-as-commentary might also be written by critics,
// editors, and curators.
//
// In closing, our final claim: the most useful critique is a new
// constitution of elements. On one level, a reconfiguration of a source
// code file to add comments -- by the original creator or by a critic --
// accomplishes this task. But in another, and likely more novel, way,
// computational poetics and the code developed out of its practice
// produce a widely distributed new constitution.
```

Therefore, we are faced with a "computational poetics" proposal that invites critics, editors, and curators to engage with code. The essential notion of their invitation is that exploratory procedures and programming are fundamental for an understanding of poetics. This "new constitution of elements" might mean reflecting and writing about, and in the source code: "a reconfiguration of a source code file." This reconfiguration can also mean novel ways of exploring the source code and the output of specific works.

By exploring code and displayed output, I have been creating new versions of Strickland and Hatcher's works by *deforming* temporal and spatial parameters. These deformative techniques were at first tried out within a context of open source software, game mods, and remix culture, which reflects why mods, or modified versions, were the closest cultural forms to the experiments. Later on, experimental literary criticism provided further discussion and insights. For Lisa Samuels and Jerome McGann (1999: 36), the notion and methods of "deformative criticism," as a model for rethinking a critique of textuality, involve deforming poems at the formal level in four different ways:

> reordered (for example, reading backward), isolating (for example, reading only verbs or other parts of speech), altering (exteriorizing variants—potential versions—of words in the work; or altering the spatial organization, typography, or punctuation of a work), and adding (perhaps the most subjective of our deformative poetics).

Similarly, the method I was employing in kinetic poetry seemed to have common traits with Samuels and McGann's proposals, and with creative approaches of sound deformance, such as those created by Danny Snelson, for instance in *Feverish Propagations* (2009), which consists of deformances of Rosmarie Waldrop's poetry, and in his PhD dissertation "Variable Format" (2015).

In Strickland and Jaramillo's *slippingglimpse*, I recorded and changed the displayed output of screencasts. In Hatcher's *TRO* I modified the source code, by changing the timers, and the output, by recording the displayed poem and altering the speed of the work. These modified versions deformed the presentational modes of the works at the level of source code and surface. I hope that they contribute to an overall problematization of textual kinetic behavior. In Strickland's case, the regeneration process of text's rotation and scaling becomes strikingly evident. In Hatcher's case, the process of chaining and entanglement of different sources of text reveals new insights. These examples are read in detail in "Polymorphic Reading in Strickland and Jaramillo's *slippingglimpse*" (article 4) and "A Critique of Control and Black Boxes: Modifying Deformances of Ian Hatcher's *// [Total Runout]*" (article 5). These experimental readings reconsider and expand the toolbox of the critic.

5.2.3. Interviews

In order to get acquainted with the process of creating kinetic poems, and the heterogeneous theoretical points of view that different authors have, I conducted informal interviews with poets. Better understood as conversations, and less as strict interviews from a perspective of cultural studies, the "setInterval() Conversation Series" were recorded face-to-face, during 2013-2016, with the following poets: Manuel Portela, Rui Torres, Judd Morrissey, Philippe Bootz, J. R. Carpenter, Nick Montfort, Richard Kostelanetz, Stephanie Strickland, John Cayley, Ian Hatcher, and Jaap Blonk. The interviews were recorded in video or audio files. They follow methodology discussed by Brinkmann and Kvale (2009: 147), in regards to "interviews with elites" (even if the term is rather unfortunate), and ethical considerations such as informed consent: "qualitative research interviewers work in an area where it often is more important to remain open to the dilemmas, ambivalences, and conflicts that are bound to arise throughout the research process" (69), "rather than attempting to 'solve' the problems of consent, confidentiality, and so on once and for all," a case that was important to have in mind in Strickland's interview.

The "setInterval() Conversation Series" draws inspiration from similar work developed in the field by other poets and scholars, namely Jhave Johnston, who created the "Conversations with Poets about Technology (CAPTA)" series (2012), and by critics in the visual arts, such as Hans Ulrich Obrist's "The Conversation Series" with artists. [35] The aim of the conversation series was to collect not quantitative, but rather qualitative data about each poet's composition, delivery, and reception strategies. This fact meant creating a pattern questionnaire that would be flexible enough to be adapted to each poet's *ars poetica*. The central questions dealt with issues of tempo and spatial composition, as well as the impact of these decisions in terms of output, for instance, audience reception in performative settings.

The "setInterval() Conversation Series" tries to better understand creative and critical standpoints about writing, coding, reading, and performing live digital kinetic poems, as well as their experimental antecedents. The material provided additional

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[35] See Jhave's work at http://glia.ca/2012/capta/ and Obrist's work at http://www.artbook.com/huoconv.html

sources for comparative studies, and the possibility of thinking through, and using unpublished documentation from the studied authors in the writing process of this thesis. Except for Philippe Bootz, Stephanie Strickland, and Jaap Blonk's conversations, which were tape-recorded, all the video conversations are fully available in a dedicated Vimeo channel: https://vimeo.com/channels/setintervalconversations. The index of the series, detailed information of the questionnaires and resource location, as well as an edited transcription of the interview with Stephanie Strickland, "Against the Grain," can be found in Appendix 4.

In addition, a number of videos documenting interaction with pieces by, and with other poets and scholars are documented in the ELMCIP Vimeo channel.[36] These video recordings gather dialogues and presentations in conferences, festivals, performances, and exhibitions.

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[36] https://vimeo.com/elmcip

5.2.4. Collections and Exhibitions

Part of the praxis involved curating research collections and exhibitions. The research collections at the ELMCIP Knowledge Base—introduced in more detail in the next subsection—are mini-databases that filter content, and organize it around a specific topic. These topics can revolve around any of the content types of the database, but also themes, language, platform, or composition techniques.

The three collections I curated are: *Portuguese Electronic Literature Collection* (PELC, 2013-15), the *please combine me combine please me: A Collection of Factorial Literature [l!]* (2013-), and the *setInterval() Kinetic Poetry* (2017-).[37] Descriptions for these collections, which are research tools, can be found in Appendix 1. The filtering of content from the ELMCIP KB focused on the themes of Portuguese experimental and electronic literature, combinatory and factorial literature, and kinetic poetry. Because this process involves detailed search inside and outside the database, it allowed for an improvement of knowledge, practical concentration of dispersed records in one URL, and dissemination of research, since the collections become available to be edited or used by other researchers.

Curating exhibitions is another aspect that fosters a better understanding of thinking through the themes and platforms involved in the creation of works of digital poetry and electronic literature. It made possible the materialization of some aspects of the online research collections. Moreover, mounting and assembling creative works, designing trajectories, and organizing space in a gallery fostered a better knowledge of the practical and material sides involved in the process of creating such artworks, as well as the challenges of exhibiting them in machines in a physical space. Outside academia, I had already developed similar work since 2009, with the Bypass and Bypass Editions projects, which involved editing an annual journal and books, and curating works in print and gallery spaces. Commissioned works,

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[37] URLs: https://elmcip.net/research-collection/portuguese-electronic-literature-collection, https://elmcip.net/research-collection/please-combine-me-combine-please-me-collection-factorial-literature-l, and https://elmcip.net/research-collection/setinterval-kinetic-poetry

exhibitions, and performances included artists Pavel Brăila, Carlos Bunga, Ana Cardim, Taylor Ho Bynum, Vasco Gato, and net and code artist André Sier.

Curating digital and kinetic artworks has a long history outside academia since the 1960s: *Nouvelle Tendance* in Zagreb (1961);[38] *Arte Programmata* in Milan (1962), with texts by Umberto Eco; *The Responsive Eye* (1965) at MoMA, NYC; *Kinetika* (1967) in Vienna; *Cybernetic Serendipity* at ICA, London (1968); and *SOFTWARE* at the Jewish Museum, NYC (1970). Yet, inside academia, at least in the field of electronic literature, is has a shorter one. Still, notable scholarly and practical work in this area has been developed by Dene Grigar (16 exhibitions, among which, *New Text* at ISEA2015, Canada, and the course "Curating Exhibits and Archives"), Philippe Bootz (*Littératures Numériques d'Hier a Demain* at the ELO 2013/Chercher le Texte Festival, France), María Mencía and Zuzana Husárová (*Repurposing in Electronic Literature*, 2013, Slovakia), etc.

The co-curation of two exhibitions—*p2p: Polish-Portuguese E-Lit* (with Piotr Marecki, ELO 2015, Norway) and *Affiliations—Remix and Intervene: Computing Sound and Visual Poetry* (with Daniela Côrtes Maduro, ELO 2017, Portugal)—was done in tandem with the theoretical research developed for this study. A presentation and discussion of all these materials can be found in Appendix 1. Curated Collections, and Appendix 2. Curated Exhibitions.

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[38] See Armin Medosch's groundbreaking study *New Tendencies* (2016).

5.2.5. Electronic Literature Databases

This study would have been impossible without using, editing, contributing, and developing online database resources. Databases have turned into the main entry points for research in the field of electronic literature and experimental literature. The creation of several collaborative and open access databases attests to this trend. As Manuel Portela (2010: 26) observes, methodology in digital literary studies involves "online resources devoted to experimental literary practices, including (…) digital archives." This subsection reflects therefore on the user's interaction with online literary archives, and databases, by presenting reviews of the Po-ex.net and the ELMCIP Electronic Literature Knowledge Base.

The ELMCIP Knowledge Base is the largest collaborative research database dealing with all aspects of documentation of international practices in electronic literature, and its antecedents. It contained 12,000 records as of June 7, 2017. Po-ex.net is the sole archive of Portuguese experimental literature, and electronic literature. In a networked context, authors and general public produce, catalog, tag, access, research, analyze, preserve, and share knowledge by means of crowd sourcing and folksonomies. Thus, practice-based work with the ELMCIP and Po-ex.net databases informed much of the methodological part of this study's research.

My aim is to contribute to an informed view on how these online literary databases are shaped, and how they are shaping the field: What is their scope? How do they operate? What kind of navigation and user input exists? Finally, I use these insights to develop critical considerations concerning the relations between memory and archive, and different perspectives on electronic literature preservation.

Change of Paradigm in Literary Databases

For the past decades, an increasing number of online archives and databases have been developed, marking an unprecedented change of paradigm in the way knowledge is transmitted, and users access physical archives, library resources, artistic, and literary works. There are digitization, preservation, and archiving models of e-books, such as the Project Gutenberg, and multimedia resources such as the Perseus Digital Library.

There are core library databases of artistic and literary periods: from digital archives of writers' collections—such as Shakespeare, Blake, Dickinson, Pessoa, Borges, bpNichol or Wah—to archives, databases, repositories, wikis, and weblogs of media art, avant-garde art, new media art, digital art, sound poetry, and digital poetry. Important examples include the V2_Archive, [39] mediaartbase.de, [40] UbuWeb, [41] Rhizome ArtBase, [42] Monoskop, [43] compArt daDA, [44] PennSound, [45] NetPoetic, [46] DigLitWeb, [47] and I ♥ E-Poetry. [48] The diversity of domains, metadata, structure, platform, and ideological approaches is very diverse and rich. Furthermore, the proliferation of labs and metalabs manufacturing archiving techniques and visualization software shows how the accumulation of data is being treated. Filtering, mining, exporting, and visualizing data is a common practice in macro-analytical approaches.

In the field of electronic literature there are currently several online databases that stress the need to record, store, describe, map, cross-reference, preserve, and disseminate creative works and critical writing: the Electronic Literature Organization's Electronic Literature Directory (ELD), [49] the NT2 Canadian Hypermedia Art and Literature Directory, [50] the Po-ex.net, the Digital Archive of Portuguese Experimental Literature, [51] and the ELMCIP Electronic Literature Knowledge Base. [52] The directories and collections of entries assembled by these databases, either by contributory and open submission, or by closed submission, help to disseminate the available content online, and to promote the search and enhancement of relations between authors, works, and readers. At the same time, they

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[39] http://v2.nl/archive/
[40] This database gathers the directories of ZKM, the European Media Art Festival Osnabrück, the dOCUMENTA archive, and the Kassel Documentary Film and Video Festival.
[41] http://ubu.com/
[42] http://rhizome.org/artbase
[43] https://monoskop.org/Monoskop
[44] http://dada.compart-bremen.de/
[45] http://writing.upenn.edu/pennsound/
[46] Former URL in http://netpoetic.com. See http://www.net-art.org/netpoetic
[47] http://www.ci.uc.pt/diglit/DigLitWebAboutDigLitWeb.html
[48] http://iloveepoetry.com/
[49] http://directory.eliterature.org/
[50] http://nt2.uqam.ca/
[51] http://po-ex.net/
[52] http://elmcip.net/

drastically change modes of access to textual, sound, and visual digital artworks. More importantly, they create new ecologies for reception theory—what Hans-Robert Jauss would call the "horizons of expectation" in literary studies. The feature of cross-referencing records, which is one of the distinguishing attributes of ELMCIP, and the CELL project interoperability conveys a diverse kind of reception history. This allows for an instantly viewable relation between a creative work and critical writing that references it, which opens for a greater macro analysis of its ultimate repositories—metadata shapes literary pieces. Electronic literature evolves on the Web, and so do its archiving, preservation, and researching environments.

Although digital media is contingent on technological update, code is portable. Developers of databases know that Content Manage Systems (CMS) and platforms need to constantly updated and maintained. Likewise, users know that a valid Uniform Resource Locator (URL) can be broken very easily, but also very easily updated. Obsolescence is part of the process of working with digital artifacts. Therefore, resourceful directories like the following online literary databases need to be maintained, funded, hosted, and retrievable from library catalogs in order to be available, and expanded upon, for years to come.

Po-ex.net: The Digital Archive of Portuguese Experimental Literature

Po-ex.net is a digital archive of Portuguese Experimental Literature that began in 2005. This literary database is coordinated by Rui Torres, at the University Fernando Pessoa in Porto, Portugal, and it was funded by the Fundação para a Ciência e Tecnologia [Foundation for Science and Technology] (FCT) and the European Union, under two main research projects: "CD-ROM da PO.EX: Poesia Experimental Portuguesa, Cadernos e Catálogos" [The PO.EX CD-ROM: Portuguese Experimental Poetry, Chapbooks and Catalogues] (2005-2008), and "PO.EX'70-80: Arquivo Digital da Literatura Experimental Portuguesa" [PO.EX'70-80: Digital Archive of Portuguese Experimental Literature] (2010-2013).

The first project sought to conduct a survey—inventorying, documenting, researching, and spreading knowledge—about Portuguese experimental literature. This initiative has collected and digitized materials from the PO.EX movement, a

movement of EXperimental POetry launched in the 1960s. With the publication of two main anthologies or *cadernos* (chapbooks), *Poesia Experimental* 1 [Experimental Poetry 1] (1964), edited by António Aragão and Herberto Helder, and *Poesia Experimental* 2 [Experimental Poetry 2] (1966), edited by the same authors and E. M. de Melo e Castro, an active group of writers, artists, and musicians was settled. Retrospectively named PO.EX by E. M. de Melo e Castro (1981), the group consisted of Álvaro Neto (Liberto Cruz), Ana Hatherly, António Aragão, E.M. de Melo e Castro, Herberto Helder, Jorge Peixinho, José-Alberto Marques, and Salette Tavares. The heterogeneity of these authors is visible in media and content output. Melo e Castro further edited the magazines *Operação* 1 (1967) and *Hidra* 2 (1969), in which several of the authors from *Cadernos de Poesia Experimental*, but also Silvestre Pestana, collaborated. The spectrum of their creative production was extended, which today needs to be seen from a perspective that acknowledges that Portuguese experimentalism cannot summarize itself, nor be summarized by critics, as a concrete poetry movement, but rather as a proliferation of creative vectors with an open and truly experimental character. These experimental practices clustered around visual poetry, conceptual poetry, conceptual art, sound poetry, "object-poetry," "poetic action" (or happening), and exhibitions.

Taking this perspective into account, the first research project of PO.EX focused on these practices and genres, building a digital archive of the main works, particularly the 1964 and 1966 chapbooks, catalogs, literary magazines and publications from the 1960s. In addition to boosting the engagement of several researchers and a number of published articles, book chapters, and monographs (e.g. Baldwin and Torres 2014, Portela 2013), key outcomes of the first stage include the digital remediation or recreation of concrete and visual poems in ActionScript (*releituras*, i.e. reinterpretations, literally meaning 'rereadings'). Moreover, the production of a CD-ROM whose contents were published in open access online, allows the public to access these reenactments, as well as the theoretical volumes that contextualize the project, and the original digitized editions.[53]

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[53] The CD-ROM is available online at http://po-ex.net/evaluation/.

The second research project assimilated the continuity flux of the experimental movement in the 1970s and '80s, by collecting new material related not only to experimental fiction and intermedia poetry (visual, sound, and videopoetry), but also to cybernetic literature, or cyberliterature (Barbosa 1996a). Indeed, experimental practices expanded in number and genre. Therefore, from the 1960s until the late 1980s, among several new magazines, anthologies, publications, and exhibitions, a whole new group of authors joins the conversation.[54] They widened the creative scope with performances, happenings, installations, videopoetry, computer-generated literature (CGL), and infopoetry (electronic poetry). Thus, in this context emerges the first version of the Po-ex.net database, built in DSpace, providing biographies of the authors and a theoretical framework.

In 2014, after nearly ten years of effort to rescuing, digitizing, and emulating, the full archive is posted online. Great part of the assembled material, which had long been out of print, inaccessible, or only accessible via print monographs (e.g. Melo e Castro 1988) is impressively and freely disclosed to the public. Among these works, the user will find E. M. de Melo e Castro's videopoems (1968, 1980s, '90s, '00s) and infopoems. Pedro Barbosa's first works of computer-generated poetry and fiction (1970s and '80s) were documented, emulated, and recreated. Mainframe experimentalist rolls and punch cards, containing the source code programmed in FORTRAN, ALGOL, NEAT, and BASIC can now be studied. Moreover, emulations of Silvestre Pestana's *Computer Poetry* (1981-83), a series of kinetic and visual poems programmed in BASIC on a Sinclair ZX-81 and ZX Spectrum, become ready for publication via the archive. Pestana's work could only be studied via screenshots, photographs, and printouts found in the print anthology *Poemografias: Perspectivas da Poesia Visual Portuguesa* (1985).

The generation of such a vast corpus establishes an unprecedented work of cataloging experimental Portuguese literature. All of this material creates Po-ex.net's unique feature, and it contributes for its singular documentation program with regard to other literary databases in the field. The documented works and their multimedia

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[54] These authors include Abílio-José Santos, Armando Macatrão, Antero de Alda, António Barros, António Dantas, António Nelos, César Figueiredo, Emerenciano, Fernando Aguiar, Gabriel Rui Silva, Pedro Barbosa, and Silvestre Pestana.

files are primary sources created directly by the project's team. Furthermore, there are also structural differences, at the level of the deep cross-reference record system, and the degree of user-generated content. Collaborative effort is part of Po-ex.net, but not at the level of non-credential users. The creation of new records by any user is one of the valuable points of the ELMCIP KB and, in lesser degree, of the ELD, whose content is peer-reviewed and more controlled. The consequences are that Po-ex.net and ELD have less, but more curated content, whereas ELMCIP has more, but less curated content.

The CELL project was born out of the necessity to integrate different databases that, in some regards, have been working with the same types of artifacts and, in many instances, have documented exactly the same works, but in different manners.[55] CELL embodies a higher interoperability among these and other databases. A team of researchers from the NT2 lab developed the SYNAPSE shared database search engine, through the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), which permits cross-implementation of a common taxonomy, and the display of creative works via the same framework. The taxonomy of the Po-ex.net database (Branco, Portela, and Torres 2013) has been considered as an important theoretical contribution for coherently articulating the diversity of materials and genres, which are divided in two major areas: materialities and transtextualities. As with the PennSound archive, which presents a short manifesto by Charles Bernstein, the CELL project has a detailed explanation of its theoretical implications that Joseph Tabbi highlights in the context of the semantic web.[56]

The role that Po-ex.net has been developing has proved critical in Portugal, Portuguese-speaking communities, and the international network of electronic literature. Having in mind that the experimental poets were the first and main theorizers of their own work—in an effort to combine praxis with theory (Hatherly and Melo e Castro 1981)—the Po-ex.net project is its first systematic and comprehensive survey.[57] It enables that researchers and the general public access the

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[55] http://eliterature.org/cell/ and http://cellproject.net/
[56] See Bernstein's manifesto in http://writing.upenn.edu/pennsound/manifesto.php and Tabbi's in http://cellproject.net/manifesto
[57] Important studies and anthologies edited by external critics have though been published. See Ribeiro and Sousa (2004).

original works, biographies, bibliographic data, and critical writing. Moreover, its impact has been crucial in disseminating the practices from the margins of literary canon (the "marginal ized" [sic] fields, Saraiva 1980, Torres 2008) within literary studies. By fostering Luso-Brazilian research, via the associated research groups and the journal *Cibertextualidades*, the project establishes important synergies for study of common practices in both sides of the Atlantic. Current goals comprise the English translation of the archive's paratexts, as well as the ongoing reassessment of the source materials, through virtual exhibitions, and the appropriation of the archive for creative outputs. This has consequences at the level of an expansion of the archive in order to include younger authors and contemporary practices.

The ELMCIP Electronic Literature Knowledge Base

Electronic Literature as a Model of Creativity and Innovation in Practice (ELMCIP) started as a 3-year research project (2010-13), by gathering several European academic partners from Norway, Sweden, Finland, the Netherlands, Scotland, England, Slovenia, and a non-academic institution, New Media Scotland. Funded by the HERA Joint Research Programme and by the Socio-economic Sciences and Humanities Programme from the European Commission, the project was led by Scott Rettberg (University of Bergen, Norway). In addition to conferences, exhibitions, workshops, seminars, anthologies (e.g. the ELMCIP Anthology of European Electronic Literature),[58] videos and numerous publication, the project's main outcome was the development of the ELMCIP Knowledge Base (KB), an ongoing database that is active in the field of electronic literature.

The ELMCIP KB was initiated with the goal of becoming an open access and collaborative online database, which was built in Drupal for that purpose. Since then, it was established as the benchmark project of the University of Bergen Electronic Literature Research Group. ELMCIP hosted circa 9,000 records as of December 3, 2013. As of June 7, 2017, it contains more than 12,000 records. The database constitutes a digital humanities project, in that it is structured with distinctive

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[58] https://anthology.elmcip.net/

features. First, its content is user-generated, open access, and collaborative. It allows the submission and addition of new entries by any user, as well as the edition of preexisting records. Second, it promotes the preservation and archiving of digital works, by mapping the field of electronic literature with various content-types: person (people), creative works, critical writing, platform/software, events, organizations, publishers and journals, databases and archives, teaching resources, and research collections. Finally, it deepens the attestation and contextualization of the submitted records with multimedia files (documents, images, videos), which are directly or indirectly attached in its website.[59]

Stirred by Theodor Holm Nelson's proposal of an "ongoing system of interconnecting documents" (1981: 2/9), and following on the concepts of agency and actors in the Actor-Network-Theory (ANT) by Bruno Latour (1987, 2005) and Michel Callon, one of the ELMCIP's main practical contributions is the expanding cross-reference created by several content-types. Having a similar structure to that of a wiki, records autocomplete when the user adds references that pre-exist in its nodes. This feature creates hyperlinks with one-to-many records, many-to-many, and many-to-one records. It fosters a broader reception history of the field of electronic literature, and it builds over time a productive and long-term documentation of each creative work's criticism.

Another aspect that seems relevant to stress is ELMCIP's pedagogical purpose. First, the database contains records for courses already taught, including descriptions, syllabi and used references, acting as a worldwide learning tool in the classroom. Second, by enabling research collections, it enhances further research on a free topic, increasing and aggregating knowledge about a given theme, whether it may or may not be already present in the database. The research collections developed so far, especially those concerning issues of nationality, cultural region or language, have provided greater activity in the database, because their curators have inserted thousands of new records on countries and languages hitherto less addressed in research. Due to ELMCIP's initial American focus, the addition of these collections

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[59] For a detailed description, see the "Project Report" by Eric Dean Rasmussen, former editor of the database, and Scott Rettberg (2013), or the monograph *ELMCIP Report* (Rettberg and Baldwin 2014).

has gathered dispersed records and lead to groups that had little critical coverage, such as the collections on Polish references, electronic literature in the Nordic countries, Brazil, Russia, Portugal, France, and the Spanish-speaking world.

As an organic database that diachronically keeps growing, ELMCIP achieved its initial objectives by fostering hybrid analyses of practices in electronic literature: to "understand how creative communities form and interact through distributed media," to "document and evaluate", and to "develop pedagogical tools."[60] ELMCIP hosts an accessible, participatory, and shared research platform. This fact not only encourages new ways of analyzing individual works, but also of building on its bibliographic archive of creative and critical records. This led to macro-analytical criticism using visualization software and network analyses.

ELMCIP's impact as a translinguistic, transnational, and transcultural-networked site is no longer merely European. ELMCIP is the main available online database about digital literary arts. There are visible analogies between ELMCIP and the Electronic Literature Directory (ELD), in terms of open access and user collaboration. The ELD has a scholarly-driven record system, but it lacks in deep cross-references between creative work and critical writing. It gains in the peer-review process and the discussion field a forum for contributions and exchange. Moreover, unlike ELMCIP's open folksonomy, the ELD's initial controlled tagging taxonomy helped restricting the records' classification, even if the peer-reviewed ELD 2.0 grew out to allow a folksonomy system (Tabbi 2007). In the same way, the NT2 Hypermedia Art and Literature Directory aims for a comprehensive review of each creative work, highlighting information, themes, and platform with a striking web design layout, considering tagging taxonomy as an "inductive system" (Gervais et al. 2009: n.p.). Although it expands the field towards digital artworks and it presents excellent reviews, the NT2 directory neglects critical writing as a direct resource and, more importantly, a policy of collaborative user input. Likewise, the Po-ex.net, in spite of having a much more narrow scope, lacks the same collaborative user-generated input, but increases its potential by cross-referencing creative work and critical writing, and especially by preserving and emulating original source material.

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[60] See http://heranet.info/elmcip/index

The development of the CELL consortium is one of the ways to ground collaboration and develop ELMCIP's impact. Future goals lay ahead, especially hosting the database in a library resource that will allow for permanent housing, maintenance, and user access.

Preserving the Fear of Loss

The Po-ex.net and the ELMCIP databases change the paradigm of traditional archives, the interaction with distributed media works, and the reception of digital literary works. They take on an idea that is both valued and undervalued by electronic literature authors, that is, the relation between memory and archive. Bordered by an immediate sense of loss, issues regarding preservation need to be addressed in order to assure the works' lifetime and its continuous access. The archive is an attempt to preserve memory; in this case, to preserve digital literary works from being lost. The creation of multiple archives and databases fosters practical methods for preservation.

Critical considerations indicate that some authors are not especially concerned with preserving their own works; that they might even program them to become obsolete. This is the case of works that actively criticize the tech industry; the origin of the raw materials, the source and conditions of labor involved, overproduction, and programmed obsolescence—as in the work by Eugenio Tisselli. Thus, counteracting their wishes might indicate a fever of preservation from the critic point of view, that is, it might indicate a state that fears loss. As researchers try to preserve works from oblivion, they are also preserving their fear of loss.

Going back to the radix of the word 'archive,' Jacques Derrida (1996: 2) points out that its etymology derives "from the Greek *arkheion*: initially a house, a domicile, an address, the residence of the superior magistrates, the *archons*, those who commanded." It becomes then essential to question the role and power structures of the archive. What is being selected and deselected? What does a specific archive include and exclude? Who does it? How and why? These questions raise important issues of funding, institutionalization, and legitimation. Derrida continues, by positing: "The archons are first of all the documents' guardians. They do not only ensure the physical security of what is deposited and of the substrate. They are also

accorded the hermeneutic right and competence. They have the power to interpret the archives" (2). This notion of self-assigned hermeneutic authority, inscribed by a physical and closed perspective of the archive, is very relevant today. Has this self-legitimizing power changed with the open forms of digital archives?

If it is still "in this *domiciliation*, in this house arrest, that archives take place," causing the fact that "the dwelling (…) marks [the] institutional passage from the private to the public" (2), the truth is that current models of digital archiving, even if located in a unique URL, entail a decentralized domiciliation, a virtual or immaterial character. This open perspective—encompassing a path that tends to substitute the concept of 'archive' for that of the 'database'—is literally the promise of a model of collaborative and open access, which the online archiving database invites for. Derrida's (1996: 14-15) conception[61] for the future of science is closer to today's paradigm: "As techno-science, science, in its very movement, can only consist in a transformation of the techniques of archivization, of printing, of inscription, of reproduction, of formalization, of ciphering, and of translating marks." In reality, even when methods and platforms change, "the archivization [still] produces as much as it records the event" (17), not to say that in some cases it might produce more metadata than it records data. In this regard, it is worth mentioning John Durham Peters's historical study of the figure of the cloud, *The Marvelous Clouds* (2015), which encompasses cloud computing, and Google's God-like metaphors, and J. R. Carpenter's *The Gathering Cloud* (2016). Carpenter's creative work is a critique to overproduction, cloud computing, and the over storage of data, given the negative consequences it entails for the environment. The tech industry's commercial rhetoric behind ubiquitous, and cloud computing gives a grandiose narrative of the powerful storage capabilities of these services. Privacy and surveillance issues aside; the fact is that data is physical, not ethereal. Data and server farms are real. They occupy hundreds of hectares all over the world, and consume huge amounts of electricity. Thus, the overabundance of stored and newly created information should directly target fundamental and alienable needs—either to provide general and non-

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[61] Although I acknowledge the fact that Derrida's theory is primarily dealing with a different kind of archive, the archivization of psychoanalysis, it still sheds light on the notion and power relations we finds in archiving models today.

hierarchical access, dissemination, and contextualized knowledge on electronic literature, or to engage actors in sustainable strategies concerning preservation.

Given the unstable nature of distributed, networked, and programmable media, as well as the fragility of digital artworks, the issue of archivization and preservation has raised a lot of debate and different critical angles. As Matthew Kirschenbaum (2013: 58) points out, "The idea of archiving something digitally is thus an ambiguous proposition, not only or primarily because of the putative instability of the medium but also because of fundamentally different understandings of what archiving actually entails. Digital memory is, as the German media theorist Wolfgang Ernst (2002) has it (…), a simulation and 'semantic archaism.'" When dealing with digital artifacts, the fear of loss takes a higher magnitude, insofar as the tech industry updating fever ravages everything much faster, and accelerates the obsolescence of electronic literature pieces, making authors and readers either dependent, or careless of the so-called 'vintage' hardware and software to access original works. [62] Otherwise, strategies like versioning, retrocomputing, media archaeology, reedition, recreation or emulation "take command," as shown by the Po-ex.net project and Philippe Bootz's reenactment of digital literary works. Bootz reprogrammed the collections of the *alire* electronic journal for the exhibition *Les Littératures Numériques d'Hier a Demain* (2013) at the Labo from the BnF, in Paris, and made them available in a virtual machine.

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[62] The concept of 'vintage' acquires a blurred meaning, since what is new today might be vintage tomorrow. As Stuart Moulthrop (1993: 70-71) thoroughly noted, "Staring down at our desktop, laptop, or palmtop machines—which we know will be obsolete long before we have paid for them (…) We are the generation (and generators) of nextness."
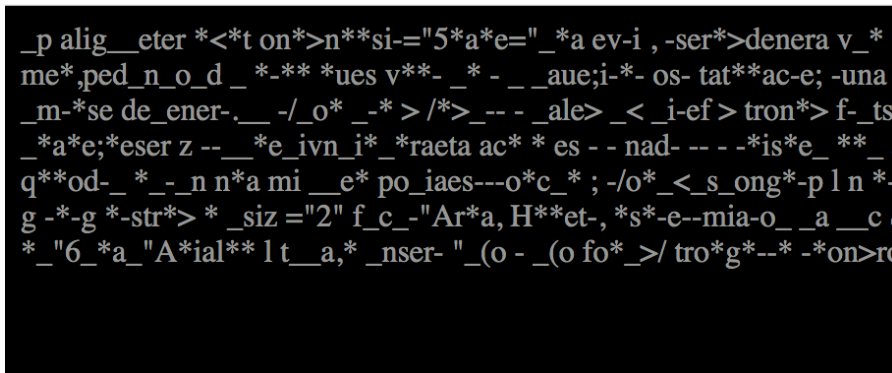
Figure 14. Eugenio Tisselli, *degenerative*, 2005. Degeneration of the webpage by the 960th day. http://www.motorhueso.net/degenerativa/dia960.htm. Screenshot caption detail (2017).

The perspectives of media archaeology and media emulation are important because they can preserve works in a closer state to their origin. However, as degeneration is both thematized and structurally experienced in real-time—think of *degenerativa* (2005) by Eugenio Tisselli, Figure 14—it is perhaps relevant to re-envision a third perspective, which is deeply connected to the second. This would be the variability of the work over time, as a process that needs to be taken into consideration. This mutation needs to be highlighted as an inevitable factor. It is a problem that has been mostly discussed by Philippe Bootz et al. (2009, 2013). According to their position (2013: 159), "it is impossible to define the original version of a work." Even if archival techniques of the code-program resist, the reader will always need to handle the fact that the "execution process" changes the perception of the work, because updated transcoding provokes what the authors (159-160) call the

> labile characteristic. From then on, one cannot freeze the execution process to make it reproduce the same specific state (…) This goes against the idea of preservation, because it destroys that lability. Therefore, preservation should not be regarded as a problem of reconstruction of a state. Of course, the problem of preservation remains, for obsolescence constitutes a borderline case of lability. Obsolescence shall be defined in semiotic terms, without reference to any technological evolution. (…) A work is obsolete as soon as its visible components no longer undergo any semiotic process. Defined as such, obsolescence characterizes the "semiotic death" of the work and does not necessarily superimpose on the obsolescence of the technological system.

If "the problem of preservation remains," new paradigms of archiving and edifying online databases should promote diverse organizational structures that account for a deep need to keep record of the work's versioning. Instead of strict classification, typified by hierarchical modes of representation and indexation, these new paradigms of literary databases present a "decentred and reconfigurable network of texts" (Portela and Torres 2013: 9), amplified by multimedia files. The ELD, NT2, Po-ex.net, and ELMCIP directories, different in scope, content, typology, and user-generation, gather a common objective of documentation and preservation, pinpointing user's searches, but also fostering new tools and concepts specific to networked and programmable media.

The impetus to store, collect, preserve, and make accessible the archival transmission of digital literary artifacts is no doubt a consequence of the rapid and changing conditions in technology: hardware, software, and the network. It is surely the demand of an eager community that seeks to question the environment in which electronic literature is created. These proposals enable authors, critics, scholars, and a wide public audience of users and readers around the globe not only to take direct contact with works, but also to engage with new ways of thinking and analyzing older and newer computational transitional works.

6. Articulation of the Articles

The six articles that constitute this dissertation are in-depth analyses of works of kinetic poetry in context. For this purpose, the themes, practices, and problems addressed and interwoven throughout the summary are presented in critiques of praxis and theory. Three modes of reading guide all the articles, since they directly or indirectly reply to what we could think of as a common spine or uniting thread: the degrees and levels of reading. The articles provide focalized criticism, and are an inquiry to micro-, meso-, and macro-readings:

1. By *middle or meso-reading*, I mean contextual reading—a cultural, artistic, aesthetic, and technological historiographic narrative that relocates digital kinetic poetry in light of its antecedents. This approach entails being attentive to poetic and kinetic forms created with different media: 35mm film, 16mm film, 8mm film, video, holography, and computers. Going beyond comparative media studies, and comparative textual media (Hayles and Pressman 2013), this reading takes on the importance of textual and visual surfaces, and the way their media inscription is rooted in cultural context. But they do so by reading not only text, but also sonic, visual, code, and semiotic components against the backdrop of experimental poetics. Thus, a brief history of kinetic poetry is presented in "Kinetic Poetry" (Article 1), an essay specifically commissioned by Dene Grigar and James O'Sullivan, editors of *Electronic Literature: Contexts, Forms, and Practices.* The contextual anthology-handbook entry form was initially commissioned to Rui Torres, who invited me to collaborate on the article. Torres delineated the structure of the essay and suggested works to be included. As the essay progressed, the dual authorship was dropped. I must make the disclaimer that this was caused by practical reasons, because in that same year Torres and I were collaborating on another article about Portuguese experimentalism that was a truly dual endeavor: "O Experimentalismo como Invenção, Transgressão e Metamorfose: A PO.EX Revisitada Através de Po-ex.net" (2016). This enriching collaboration demonstrates, as Hayles and Pressman (2013) also note, that humanities projects and article writing gain in taking lessons from the sciences, where teamwork is a common practice. The history of kinetic poetry was, to my knowledge, still unwritten, at least in terms of cultural, artistic, and technological

context. Contextualization of kinetic forms in digital systems requires a merge between the history of visual arts and literature. When Marcel Duchamp stages rotoreliefs in the 35mm Dadaist film *Anémic Cinéma* (1926), he arguably sets a precedent for questioning the role of documentary art, and text in motion as poetry. Dada artists and poets were particularly keen on experimenting with different channels for the expressive recreation of language and art, and that meant working with different media as well. But, in my point of view, it is in the 1950s-60s that another wave of transmedia exploration happens with the experimentalists. It is no coincidence that two of its major figures, Marc Adrian and E. M. de Melo e Castro, who see themselves as artists and poets, created the first kinetic poems in film and video. A younger artist and poet connected to the Portuguese experimentalists, Silvestre Pestana, would create in the beginning of the 1980s what is perhaps the first kinetic poem using programming languages and a computer. Due to this seemingly peculiar pioneering vector coming from Portugal, a deep investigation of the heterogeneous *ars poeticas*, sociopolitical implications, and media-oriented practices in Portuguese experimentalism resulted in "The Freedom Adventure of Portuguese Experimentalism and Kinetic Poetry" (Article 2), for the *The Bloomsbury Handbook of Electronic Literature* edited by Joseph Tabbi. This essay argues that the diversity and concentration of media practices in self-nominated 'experimental' groups of artists, such as Fluxus, *Poesia Experimental*, and OuLiPo, opens terrain for fertile work in kinetic poetry, which nonetheless has singular traits in Portugal due to the country's long dictatorship, cultural isolationism, and periphery. The essay reads *Roda Lume* (1968-86) by E. M. de Melo e Castro and *Computer Poetry* (1981-83) by Silvestre Pestana in the light of their production and reception contexts.

2. By *micro-reading*, I mean reading creative works of digital kinetic poetry in-depth. These analyses pay deep attention to the poems' code, interface, output, sonic, textual, and visual aspects. The two deep analyses of digital kinetic poems are presented in "Polymorphic Reading in Strickland and Jaramillo's *slippingglimpse*" (Article 4) and "A Critique of Control and Black Boxes: Modifying Deformances of Ian Hatcher's *// [Total Runout]*" (Article 5), respectively under submission in the *Electronic Book Review* and forthcoming in *Poetics Today*. The works that constitute the corpus are *slippingglimpse* (2007) and *// [Total Runout]* (2015). They

were selected due to their diverse time-based characteristics, and textual behavior qualities. Strickland and Hatcher belong to different generations, and have a rather heterogeneous artistic and poetic project. They have though collaborated in a number of instances: in the iPad app *Vniverse* (2014) and in *House of Trust* (2014), a reconfiguration and expansion of Alison Knowles and James Tenney's FORTRAN *A House of Dust* (1967). An initial attempt to emphasize the importance of timers in the composition, but especially, in the reception of kinetic poems is presented in "The Digital Diasthima: Time-Lapse Reading Digital Poetry" (Article 3). Written for the *Proceedings of ISEA2015: Disruption*, the short paper addresses the issue of reading moving text that might or not provide interactive interface mechanisms for the reader to control the reading pace: timer controllers. The output text in kinetic poetry often imposes a reading dynamism that is at odds with print poetry. In trying to find solutions for this problem, the essay draws a general approach to reading time-lapse textual events, focusing on Philippe Castellin's poem *çacocophonie* (2013). What was a preliminary way of proceeding methodologically is then fully proposed in the methods of operating the works by Strickland and Hatcher. The reader will find practice-based reading approaches to kinetic poetry by being able to experiment with modifying displayed temporality at the level of "interface text" (Cayley 2004c) and source code. The deformative versions of *slippingglimpse* and *// [Total Runout]* open new strategies that complement media-specific analysis, in that manipulating the processes underlying the display of kinetic poems fosters an understanding of mechanics, but also raises new questions to the problems of reading animated text.

3. By *macro-reading*, I mean macroanalysis of critical and creative works from a point of view of an overview of the field of digital poetry. This type of macroanalysis is close to the notion of "distant reading" in terms of theoretical standpoints, namely by Franco Moretti (2005, 2013) and Matthew L. Jockers (2013), though digital methodology differs from the types of computational techniques and visualization tools experimented at the Stanford Literary Lab. In this lab, criticism of literature with the aid of software is used for very large corpora—an example being the "Trans-Historical Poetry Project"—when compared to the corpus or dataset studied in "Digital Poetry and Critical Discourse: A Network of Self-References?" (Article 6). This article departs from intense development with the ELMCIP database in order to

question creative and critical work in the field from 1995 to 2015. Via network and visualization analyses, the article addresses critical discourse, by extracting a dataset of 26 monographs and PhD dissertations, and 401 creative works. The object of this pilot project (2015) problematizes issues of canonization, and self-referentiality. Surely, if the study would be redone today, by adding the new monograph by Jhave Johnston (2016), and trying to update the cross-references of creative works in all the 27 nodes, the relation of most cited poems, as well as cited poems per author, and individual critical writing, would present new findings.

7. Conclusion

Sandy Baldwin (2013) polemicized at the Electronic Literature Organization conference in Paris that deep and engaging theory about electronic literature was yet to be born. But out of the many authors writing about electronic literature and digital poetry, there have been strong theoretical frameworks put forward that can, and should be contrasted. Part of Baldwin's assessment stems from a critique of the application of old models and methods from the humanities that do not take into consideration the specificity of studying creative works developed in digital systems. As such, Baldwin's provocative argument was straightforwardly calling for new theory. Another aspect in this equation may be the fact that futurology and clairvoyance are not necessarily the task of the critic. Due to the proximity to the publishing date of digital artworks, the endeavor of developing theory, as creative works are being developed in tandem, becomes harder. Thus, the critic's perception might be veiled, and a clear picture of paradigms may not be as discernible as it could, for instance, if the critic was writing about literature with a history of one hundred years old. Jhave Johnston (2016: 32) echoes Baldwin's position, in affirming:

> After centuries of experimentation, the surface of printed poems, their aesthetic or experiential qualities, reflect habituated poetic modes that are well populated, domesticated, and comfortingly familiar. (…) The critical toolkit of literary theory refined and resilient is like an old, visiting doctor's bag: it opens to reveal close readings, technical autopsies, biographical biopsies, and the occasionally controversial associational dissection. Yet when applied do digital poems, these tools don't heal the split between reader and poem; they inflame it.

Certainly, the critic's toolbox needs to be readdressed. This study carries the hope that the method presented—merging critical inquiry with the manipulation and modification of kinetic poems—might "heal the split between reader and poem."

Though there is plenty of theory to analyze text in print and digital literature, there is a lower awareness on how to approach temporality in time-based works. Film studies can be useful in order to understand works that are events unfolding over time and space, but concepts would have to be borrowed since digital kinetic poetry is

enhanced by interactivity. Cinema is a necessarily time-bound experience that, besides its narrative time, is physically connected to frame-by-frame temporality. In time-based works, especially those published on the Web, different systemic, network, and execution times co-exist. Furthermore, the intervals scripted to animate text pose other levels of questions. Addressing temporality onscreen cannot be pursued without a perception of the effect of the event as a semiotic construct. This study unfolds from that tentative reflection on spatial and temporal dimensions of kinetic poetry. It researched what methods can critics engage with when critically analyzing them, and what new methods can be developed. Collaborative enterprises, which benefit from the different skills and disciplinary expertise of their authors, are already exemplifying attempts to seize these issues—these include Strickland and Montfort's (2013), and Pressman, Marino, and Douglass's (2015).

As posited in the beginning of this study, kinetic poetry has a long trajectory. Why and how is the history of kinetic poetry embedded in literary and artistic movements? Answering the first research question that guided this project would entail a sole study on its own. I hope that the recontextualization of digital kinetic poetry in a larger flow of media practices that include film, video, TV, electronic billboards, holography, and computers can serve the purpose of enacting a constructive location of experimental, and pioneering works in relation to contemporary ones. The brief history of kinetic poetry and experimental poetics presented in articles 1 and 2 replies to this goal, though this research can be expanded.

Despite the fact that a comprehensive study of kinetic poetry in English-speaking countries still needs to be written, German poet and scholar Klaus Dencker has already surveyed multiple works in various media in his colossal monograph *Optische Poesie* (2011). If my focus throughout this study was drawn towards pioneer works in video and microcomputers by E. M. de Melo e Castro and Silvestre Pestana, with discussions of Dada film in the 1920s, and experimental film poetry by Marc Adrian in the 1950s, surely other pioneers of kinetics in cinema, visual art, and poetry have created tremendously original work in the twentieth century. These include Sergei Eisenstein's, Dziga Vertov's, and Len Lye's 1930s textual and typographic animation techniques, for instance, in Vertov's 1931 *Symphonie of the Dunbass*, and Lye's 1937 *Trade Tattoo* (Dencker 2011, Rettberg 2011). In the 1950s, Saul Bass

turned the titles and credits of movies into live artistic and semiotic animations (Cayley 2005). In the 1950s-60s, a new wave of Lettrist and experimental films include those of French Maurice Lemaître's *Le Film est Déja Commencé?* (1951), Isidore Isou, and Gil J. Wolman's; Finish filmmaker Eino Ruutsalo, especially *Kineettisiä Kuvia* (1962), and collaborations with Erkki Kurenniemi. Besides Marc Adrian's pioneer film poems, Klaus Dencker (2011: 132) mentions *textfilms* by Daniel Szczechura, Dieter Roth, Ernst Schmidt Jr., and Gerhard Rühm. Moreover, Ferdinand Kriwet created films in the 1960s, and billboard installations in the 1970s, the same decade in which Jenny Holzer developed *Truisms* (1977-). Finally, because all media can be used to inscribe and rework language, David Antin's 1980s *Sky Poems*, a series of poems written in the air by an airplane, demonstrate how open the notion of kinetic poetry can be.

But how do spatial and temporal dimensions configure the composition and reading of kinetic poems? On the one hand, there are distinctive creative practices, which the set of interviews with poets in Appendix 4 accounts for. On the other hand, authors show commonalities in the design of spatiotemporal elements, as well as in the explorations of the expressive craft of time-based poetics. These issues, which section 4 debates, are further questioned and studied throughout the case studies of Strickland and Hatcher's works in the articles section. Their study discusses the way space is laid out, and the different temporal levels that are at stake in the composition and reading of kinetic poetry, particularly execution time and reading time, which are clearly affected by a number of variables, such as software and machine dependencies, network, and real-time databases, which are characterized by a "non-indexical" (Strickland 2006) notion of time. The clock time is different from the machine time, as it is from the internal and external spheres that shape all the processes of human-machine interaction; which, as Strickland (2015) so aptly points out in "Against the Grain," create "concurrent times." These spheres involve perception time as affect, what Mark Hansen (2006: 254), following Francisco Varela's work, defines as the "sensorimotor embodiment of time-consciousness."

The research in this study responds to what Koskimaa (2010) considers to be one of the most underdeveloped topics of study in digital literary works. In computational systems, moving poetic forms exist because time is scripted and

displayed. As Strehovec (2010: 76) emphasizes, "The language in textscape is not based solely on kinetic text – knowing temporal syntax as well as the syntax of film language is essential to its understanding. It is based also on highlighted visual features, which imply a consideration for spatial syntax, for within a digital textuality the spatialization of textual components comes to the fore." To these notions, the study highlights the semiotics of movement, because motion has meaning, as it does the interaction of the reader and its effects. Pierre Alferi (2013: 310) argues: "Only a sentence can maintain the beat of a thing." In kinetic poetry, words, and especially letters, seem to ping as much as sentences. Alferi claims that the "syntactical rhythm" of sentences is fundamental, and that "Syntax reanimates elementary rhythmical cells." Moreover, what is the "weightlessness of reference," which "lasts only as long as the duration of the sentence," is also the weightlessness of letters and words: screening and running language. Alferi's notions can be transposed, because the poet has a deep knowledge of language's self-referentiality and cinepoetry. Because, as Alferi marvelously states, "Reference assures the hanging of words onto things in their own sites." The question of execution time and motion derives then in the question of reading time, which is inextricably linked with perception and fruition. Perception and fruition are, in themselves, also linked to timers, that is, the time poets set to display their poems. The types of motion employed in poems open as well the debate about what kinds of critical frameworks and methods should the critic employ.

So, how can we read poems that display at extremely high speed? I asked in the beginning of the study, as well as, What methods of criticism can be set in practice in order to read kinetic poems? The notion of modification is at the center of the study as a critical and practice-based method that hopes to foster an understanding of the inner workings of digital poems, as well as promoting a way to read, analyze, and reassess them. It becomes evident that readings of kinetic poetry need to critically engage with coding, mechanics of movement, and timers. The project of reading kinetic poems needs to consider the development of methods that reflect their specificity. The resulting approach, by particularly stressing temporality, opens the possibility of more expressive ways to observe, and to question transitions and transformations of displayed text. But how can this be obtained? One of the answers might be the one proposed in this study: time-based readings that modify the

output and give an account of the time-lapses occurring onscreen. Thus, exploring works by manipulating their code, processes, and output can mean modifying its timers, that is, the parameters that shape tempo. If we are to record, alter, and speed up a time-lapse experience of Strickland and Jaramillo's work; or to modify Hatcher's code, will we manage to pose different questions, or to raise a more informed awareness of moving text and image? What if we slow down the tempo?

On a political level, by altering Hatcher's work, I am precisely putting in practice Hatcher's critique. As a statement, the alteration is an intervening act on an open source computer program that criticizes black boxes, and closed computer systems developed by secret agencies, the military industry, and public defense organizations; the same institutions that perpetrate the tactics they want to prevent on other countries' programs. The principle of protective security aims at preventing the breach of confidentiality, integrity or availability, according to the United Kingdom MoD's Manual of Security. As a result, in this worldview, the ultimate violation is leakage, espionage, sabotage, or "unauthorized alteration to a computer programme." Digital artistic work, according to Hatcher (2014: n.p.), can serve for cross-disciplinary dialogues, and for "grappling with the digital power structures of our time. The politics of data mining, privacy, and language collection/filtration (Google) seem especially crucial for us to be seeking avenues of engagement with, as digital literary works could be incisive and useful tools of cultural intervention on those fronts."

The full implications of the method of modifying deformance will be put in practice in articles 4 and 5. As they demonstrate, modding works of kinetic poetry in order to study them implies a constructive and effective method for the reassessment of their spatiotemporal, rhythmic, conceptual, and semiotic dimensions. These experimental case studies attempt to contribute to existing criticism of electronic literature. The key finding of modifying works suggests the promise of expanded study. Reading and analyzing kinetic poems via this method means that future application in the modification of other creative works is possible.

Finally, I will end this summary with a note of hope that our sense of the histories of digital poetry will continue to evolve. As I was concluding this study, I heard from researcher Rebecca Roach (2017) that South African Nobel Prize-winner

J. M. Coetzee was writing poetry with FORTRAN, and the Atlas 2 machine back in 1962-65, in the United Kingdom. In 1963, while working for IBM, Coetzee wrote a randomized "Computer Poem" on a 1401 machine by feeding it with 800 words from Roget's Thesaurus, according to Peter Johnston (2013). It turns out that Johnston had already noticed this fact in his PhD dissertation (2013), and in an article published in the *DHQ: Digital Humanities Quarterly* (2014), but he had not disclosed the extent of what this meant, at least to those studying the field, including printouts and files, as Roach now did. Apparently, not many people paid attention to these findings, either. Incredibly, I got to know this via J. R. Carpenter's Twitter feed, because my *very* "smartphone" indicated that Matthew Kirschenbaum, and hundred other people, favorited Carpenter's tweet. Later on, via Johnston's research, I realized that Coetzee even published "Computer Poem" in a magazine in 1963. This adds another, until recently unknown, benchmark to a tradition of digital and computational writing that stretches back to, as far as we know, 1952. But who knows? Coetzee's poems speak precisely against those of us who had already framed the timeline of digital poetry in the wall, with golden and carved embroideries.

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Publications

Article 1

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Kinetic Poetry

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The term 'kinetic' derives from the Greek verb *kinein*, 'to move.' Hence, kinetic poetry describes poetic forms that deploy motion. In digital poetry, movement methods—such as transitions, timeouts, and intervals—incorporate temporality in the process of coding and display of writing. A discussion of current forms of kinetic poetry must be situated in the wider flux of aesthetic, artistic and material antecedents. These antecedents inform us about the will to move beyond the static linearity of the printed page. We also need to take into consideration that many animation mechanisms preceded film. Kineticism can be traced back to the invention of technical apparatus such as the kinetograph and the kinetoscope, developed by Thomas Edison and William Dickson at the end of the nineteenth century.[63]

I will introduce four different forms of time-based kinetic poetry: film poetry, videopoetry, holopoetry, and digital poetry. These four media-specific forms have different characteristics, yet they all rely on temporal and spatial dimensions to achieve literary and artistic expressiveness. They are operative insofar as they execute a set of instructions or algorithms, being that of the time slot between frames, or the interval set for transitions in digital poetry.

A brief history of kinetic poetry could not be grasped without trying to understand some of its antecedents: Mallarmé's exploration of the white page, Apollinaire's *calligrammes*, the Futurists' goal to 'set words free' (Marinetti's *parole in*

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[63] These machines were envisioned upon earlier chronophotographic techniques developed by Marey, Reynaud, Demeny, Anschutz and Muybridge, as well as others, in order to build stop motion devices that would set the illusion of movement: the magic lantern and the flip book (kineograph), the thaumatrope, phenakistoscope, zoetrope, praxinoscope, zoopraxiscope, electrotachyscope, and the "photographic gun." Dickson would also develop the mutoscope.

libertà), the Dadaist quest for typographic, spatial, random and sonic experimentation, the abstract films of the Modernists, sound poetry, and the experimental organization in constellations by the Concrete, Spatialist and, later, visual poets.

Kinetic Origins

Throughout the history of writing, modes of textual inscription have been dependent on space, but rarely on time. The printing process activates text as a discrete element to be displayed on a planographic surface. In film, video, and the computer, textual inscription is presented in different outputs, and potentially acquires new forms of artistic expression—given that it allows for displacement, tridimensional space, time scheduling and media integration.

Certainly, poetry's progressive transition from static media to kinetic media owes its roots to transgressions and investigations done by poets and artists in the baroque period, the late nineteenth century, and the Modernist period. Stéphane Mallarmé's work is symptomatic of a search for stretching the boundaries of conventional experimentation with words in the printed page. Mallarmé's poem "Un Coup de Dés jamais n'abolira le Hasard" [A Throw of the Dice Will Never Abolish Chance] (1897) is notorious for the displacement of words in space, creating voids and pauses in the free poetic line. The suggestion of movement in the printed page was later enhanced by Guillaume Apollinaire in *Calligrammes* (1918). In this book, dynamic visuality is a very important feature by virtue of reframing words as typographic and calligraphic elements that are syntactically and graphically arranged as images relating to semantic properties. It is within the Modernist period that kinetic forms start to be technically activated. Futurist writers, in the 1910s, envisioned a world in which the machine and speed would freed words, literary expression, spatial composition and cacophonic phonemes. In the 1910s and 20s, painters, sculptors, architects, photographers, and filmmakers, more accustomed to working with different media, started to engage with objects or technical media that allowed for motion techniques. Futurist abstract films from the 1910s and Marcel Duchamp's 'assisted readymade' *Bicycle Wheel* (1913) can be seen, in this sense, as

some of the earliest kinetic artworks. Duchamp's piece is a sculpture that simply modifies two objects. In 1920, with an engine, Duchamp developed *Revolved Glass Machine*, or *Rotary Glass Plates (Precision Optics)*, an installation which produced both kinetic and optic rhythms. Naum Gabo's *Kinetic Sculpture (Standing Wave)* (1919-20) is a further step in kinetics, insofar its mechanical and real-time input allows for the object to gain tridimensionality by means of motor vibration. Naum Gabo and Antoine Pevsner's *Realisticheskii Manifest* [The Realistic Manifesto]— where the ideas of kinetic art were introduced on August 5, 1920—paved the way not only for the establishment of an abstract Constructivism, contrasting with the Soviet Constructivists, but also for what would follow in kinetic arts: "Space and time are the only forms on which life is built and hence art must be constructed. (…) We affirm *in these arts a new element the kinetic rhythms as the basic forms of our perception of real time*." (Gabo 1957: 152 [Gabo and Pevsner 1920], emphasis original)

Kinetic arts have long traversed a multifaceted number of experiments in diverse artistic forms, literary genres, and media. Kinetic art emerges in the 1920s and remerges in the 1950s. Always connected to advances in science and technology, kineticism rapidly became a source of fascination: from László Moholy-Nagy's lumino-kinetic sculptures and abstract films, to Hans Richter, Man Ray and Fernand Leger's movies, to Marcel Duchamp's kinetic mixed media objects, sculptures and films, to Alexander Calder's *mobiles*, which just required air streams to move. In 1955, a landmark event took place at Galerie Denise René, in Paris. The exhibition *Le Mouvement/The Movement*, curated by René and Pontus Hultén, compiled kinetic and op works by Agam, Bury, Calder, Duchamp, Jacobsen, Soto, Tinguely and Vasarely. Today, it can be reread as a pivotal point in kinetic art, signaling and institutionalizing two different branches of artistic motion genres: kinetic art, involving applied physical movement, and op(tical) art, meaning suggested and implied movement, or illusion.[64]

The post-World War II era certainly provoked a need for artistically reimagining the world and experimental art soon blended even more media. Sound

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[64] Future exhibitions such as *Nouvelle Tendance* (1961) in Zagreb, *Arte Programmata* (1962) in Milan, *The Responsive Eye* (1965) in New York, *Kinetika* (1967) in Vienna, or *Cybernetic Serendipity* (1968) in London, would depart from this landmark exhibition, or expand the field around constructivism, concrete art, and cybernetics.

poetry arose from the Dadaist tradition of phonetic experimentation, and playful and performative randomness, embedded in works by Tristan Tzara, Hugo Ball, Raoul Haussmann, and culminating with Kurt Schwitters's *Ursonate* (1922-32). Following upon innovations in electroacoustic music, such as Pierre Schaeffer's *musique concrète*, sound poetry debuted as a concerted movement in France in the 1950s, with Henri Chopin and Bernard Heidsieck placing emphasis in literature's oral tradition, declutched ephemeral poetry and the performance of phonemes in movement in the sonic environment. The 1950s also marks the debut of research with suggested movement in the printed page. The typewriter began to be used by poets to establish patterns and linguistic signs in a new semiotic reading experience. Concrete poetry, initiated by Eugene Gomringer and Öyvind Fahlström in Europe, and the Noigandres group in Brazil—Décio Pignatari, Haroldo de Campos and Augusto de Campos—pushed forward in radically transforming the disposition of letters and words in a static space that required new compositional strategies in order to question space, time, and meaning. Compelling examples of flipbooks, object-poems, and scroll poems, such as those made by Japanese Vou group member Takahashi Shohachiro in the 1960s *Poésieanimation* series (see Toshihiko 1977 and Donguy 2007: 227, 236), seem to suggest that the scroll and the signifiers could be set in motion. The 1950s and 60s—with its experimental attitude towards genres and media—announces the beginning of a new exploration, from the angle of both technical and semantic concretization. Kinetic poetry would emerge with film poetry, videopoetry, holopoetry and digital poetry.

Kinetic Forms

Antecedents: Abstract Films

Abstract films from the 1920s developed a unique language in relation towards moving image, shapes, expressive time, spatial movement, and light. However, even if lost today, by the 1910s Futurist artists and brothers Bruno Corra and Arnaldo Ginna were already pioneering abstract films: Corra's *Musica Cromatica* (1912) and Ginna's

Vita Futurista (1916). In the same year, their manifesto "The Futurist Cinema" (2009: 233) called for "filmed words-in-freedom in movement."

In the 1920s, the concern with film as a dense and pictorial medium, and the camera as a mechanical apparatus to be unconventionally explored, became primary directions for artists working in Weimar's Bauhaus, Berlin, and Paris. Walther Ruttmann's *Lichtspiel Opus I* (1921) acquires cinematic flow by way of organic and dancing forms. Temporal dimensions and light are clearly investigated in Hans Richter's *Rhythmus 21* (1921), in that squares are used to reinforce and choreograph the frames' transition like a breathing organism. Viking Eggeling, Richter's companion, developed *Symphonie Diagonale* (1924), a highly dynamic film of shape shifts and musical-like time gaps. Richter's *Filmstudie* (1926), on the other hand, differs by combining abstract film with Surrealist collage in a non-linear narrative manner. At the same time, Man Ray, who directed and collaborated in many experimental films, also signed *Le Retour à la Raison* [Return to Reason] (1923), a Dadaist film which incorporates kinetic *rayographs*, or photograms, a photographic technique used by Ray to create images without camera, that is, solely with light exposure. Fernand Léger's *Ballet Mécanique* (1924), a film without scenario, operates by non-linear, but also sequential association of abstract geometric shapes and figurative depictions, in line with Léger's Cubist paintings.

Figure 1. Marcel Duchamp, *Anémic Cinéma*, 1926. 35mm film, b&w, silent. Video still.

Using moving *rotoreliefs*, that is, double-sided 40 rpm discs with geometric patterns, Marcel Duchamp's *Anémic Cinéma* (1926) combines cinematic montage, optical tridimensional illusion, and text movement. The film's composition (Figure 1) features whimsical and witty lines of text turning in spiral circles mounted on discs. The film is as ironic, hypnotic, and self-reflexive. László Moholy-Nagy's experiments in lumino-kinetic sculpture, e.g. *Light-Space Modulator* (1921-30), would openly influence his own filmic production. In *Ein Lichtspiel, Schwarz-Weiss-Grau* [Light-Play Black-White-Gray] (1930), likewise Richter's *Filmstudie*, Moholy-Nagy uses photographic techniques, such as multiple exposure and negative image, but develops a very specific vocabulary of light, shades and geometric sculptural patterns.

Early abstract films[65] thus signal Cubist, Dadaist, Expressionist, Surrealist and Constructivist approaches, which would resonate in modes of appropriation in experimental film of the 1950-60s.

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[65] The *First International Avant-Garde Film Exhibition* (1925) at the UFA Theatre in Berlin denotes the first prolific decade in regards to experimental film production. The "Absolute Film" show included Richter's *Rhythmus 23* and *Rhythmus 25*, Eggeling's *Symphonie Diagonale*, Ruttmann's *Opus III*,

Film and Videopoetry

Videopoetry is a form of kinetic poetry that directly derives from experimental film and film poetry as being time-based and dependent of screen projection. However, its creation and recording relies on aspects specific to the medium of video. It is neither cinema nor television, even if it relates to both in a critical way, in regards to the use of text, the construction and representation of time and memory. It employs not film, but magnetic videotape (VT), and electronic tools such as computational generators, synthesizers and editors.

Figure 2. Stan VanDerBeek and Kenneth C. Knowlton, *Poemfield #2*, 1966. 16mm film, color, sound. Video still.

Animated movies influenced videopoetics. Additionally, the increasing immersion of artists in computational environments contributed to the experimentation with moving image and text. In the 1960s, at the Bell Labs, Kenneth C. Knowlton developed diverse computer-generated films in collaboration with pioneer artists Lillian F. Schwartz and Stan VanDerBeek. Faster animations became possible, as

Léger's *Ballet Mecánique*, Hirschfeld-Mack's live performance, and René Clair and Francis Picabia's *Entr'acte*.

electronic computers and microfilm recorders could process and integrate more diverse data. Knowlton's collaboration with Stan VanDerBeek resulted in the *Poemfield* series. *Poemfield #2* (1966) is a fascinating 16mm "study in computer graphics." The computer-animated film (Figure 2) makes use of vibrant magenta, jazz music, and blinking text.

Figure 3. Paul Sharits, *Word-Movie (Fluxfilm #29)*, 1966. 16mm film, color, silent. Video still.

Poemfield and Paul Sharits's *Word-Movie (Fluxfilm #29)* (1966)—a fast-pace letter replacement 16mm film (Figure 3)—have been highlighted by Jeroen Gerrits (2014) and Steven Wingate (2015) as examples that complicate boundaries between experimental film, computer-generated animation, and electronic literature. To that extent, another cited work by Wingate (2016) is John Whitney's *Permutation* (1966), with computer coding by Jack Citron. Arthur Layzer's *Morning Elevator* (1971), a kinetic film poem programmed in FORTRAN, further signals the entanglement of film poetry with programming languages used as creative platforms.[66]

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[66] At the juncture of visual art and literature, we should also note Ferdinand Kriwet and Jenny Holzer's LED kinetic textual installations.
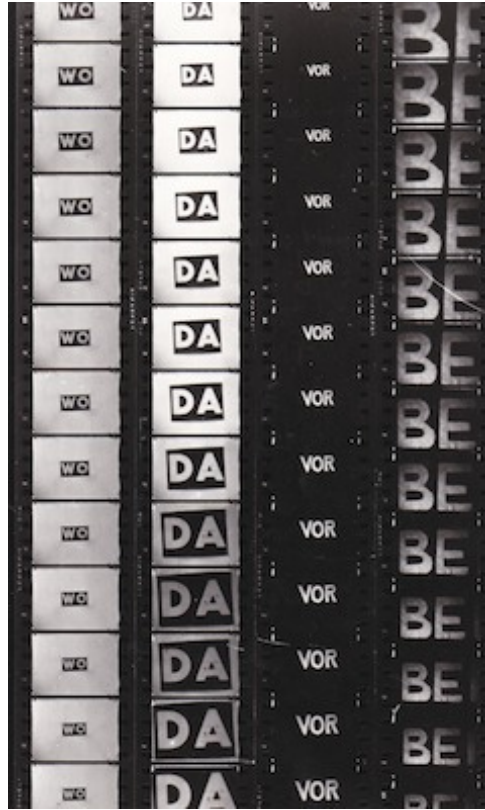
Figure 4. Marc Adrian, *WO-VOR-DA-BEI*, 1958. 35/16mm film, b&w, silent. Source: http://www.sixpackfilm.com/en/catalogue/show/2166. Courtesy of Sixpackfilm.

The other important influence for Experimentalist videopoetry and film poetry was Surrealist and Lettrist film, and Concrete poetry. One of the pioneers connecting these traditions with computer-generated randomization was Marc Adrian. In the silent, and black and white 35/16mm film poem *WO-VOR-DA-BEI* (1958), Adrian creates movement by alternating close-ups and distant images of permutated syllables (Figure 4). In *Schriftfilm* (1959/60), the artist makes use of word replacement with combinatorial game at the level of substantive and verb, whereas *Random* (1963), *Text I* (1964) and *Text II* (1964) are permutation films, with sound, developed in Berlin with a Zuse.

The possibility of animating letters, words, signs and images became an exciting thread for poets who then saw a transition from static concrete poetry into dynamic concrete poetry. Poets, such as E. M. de Melo e Castro, had the chance not

just to suggest movement in time and space, but rather to let letters and signs "gain actual movement of their own [and] at last be free, creating their own space." (2007: 176) Melo e Castro's poem *Roda Lume* [Wheel of Fire] (1968) is a pioneer work and, to the best of my knowledge, the first videopoem described as such.[67] This videopoem draws back from the poet's earlier experiments in film poetry, such as *Lírica do Objecto* [Lyric of the Object] (1958), a self-reflexive black and white 8mm film poem. *Roda Lume* is also displayed in black and white, but it was developed in a video machine at the Rádio Televisão Portuguesa (RTP) studios. After being broadcast in a 1969 literary program, the public broadcasting company—which at the time was under fascist ruling—deplorably destroyed the recorded reel. Following the 1974 Carnation Revolution, Melo e Castro reenacted the piece in U-Matic as *Roda Lume Fogo* [Wheel of Fire Flame] (1986), since he had preserved the original storyboard. Shapes, signs, syllables, and vowels, combined with a sound poem, construct a semiotic dimension that can be read as the power of art to unlock alternative worlds and paths to freedom. Multimodality, juxtaposition of sound, moving image, and kinetic text create a particular reading experience, in that temporal, spatial and mnemonic dimensions are activated and evoked in new ways. As Eduardo Kac notes:

> O ponto central da criação videopoética é o tempo e suas múltiplas formas de manipulação, como a retenção da memória, a duração, a permanência breve, o corte abrupto, a compressão, a aceleração, a interrupção, a passagem lenta, e muitas outras formas que, conjugadas às cores sintéticas, ao som electrônico, aos osciladores e a outros equipamentos, estabelecem novos parâmetros para a arte poética. (2004: 332)[68]

Throughout the 1970s and 1980s, many poets engaged with the medium of video in different poetic styles. Tom Konyves's *Sympathies of War: A Postscript*

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[67] Christophe Wall-Romana has exposed a long history of cinepoetry in *Cinepoetry: Imaginary Cinemas in French Poetry* (2013), but as far as my research could establish, even Lettrist poets such as Lemâitre, Isou, Dufrêne, Wolman, Brau or Pomerand, who would initiate experiences in the 1950s in film poetry, did not engage with videopoetry—though Isidore Isou's *Traité de Bave et d'Éternité* (1951) is clearly an experimental film that can be seen within this lens.

[68] "The central point of videopoetic creation is time and its multiple forms of manipulation, such as memory retention, duration, brief permanence, abrupt cutting, compression, acceleration, interruption, slow passage, compression, and many other forms that combined with synthetic colors, electronic sound, oscillators and other equipment set new parameters for poetic art." (free translation mine)

(1978) is a good example of how video and poetry can be combined in a different vision of poetic production and documentary recording. Richard Kostelanetz experimented in the 1970s with fiction and literary video; by the 1980s he compiled anthologies of videopoetry. Having worked at the Experimental TV Center, Kostelanetz anthologized *Partitions* (1986), *Kinetic Writings* (1988) and *Videostrings* (1989), which employ an exploratory attitude towards different typologies of kineticism, the electronic effects made possible by the video editing studio, and Amiga 500 computational lettering.

Videopoetry is a form that still captivates poets, and it has special hubs of creators and festivals across the world. With the migration of video into digital platforms, the very conception and presentation modes have suffered a stylistic and aesthetic transformation, inasmuch as video processing and editing software plays a dominant role in the creative environment.

Holopoetry

While non-documentary videopoetry might suggest 3D spaces as 3D objects in a 2D screen, holopoetry creates a clear rupture in visual perception, as it introduces a third dimension in letters and shapes. In the late 1970s and 80s, Richard Kostelanetz and Eduardo Kac combined visual poetry and holographic technology, hence expanding the realm of experimental poetics.[69] Kostelanetz's *On Holography* (1978)—a stereo 360-degree multiplex holographic work—is a spinning cylindrical sculpture that does not use laser, but rather film, by animating a self-reflexive text, frame by frame, that can be horizontally and vertically read. Kac's *Holo/Olho* (1983) is the first in a series of holopoems that engage with light as a medium, tridimensionality, and two important specific characteristics of holography: the possibility for the viewer-reader to see multiple volumes in the same spatial point, and the fact that in a hologram, the part contains the whole, and the whole contains the part. As such, *Holo/Olho* is physically, semantically and syntactically structured with that purpose, whereas the

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[69] Wagner Garcia, Frank Popper, Moisés Baumstein and other artists worked as well with the medium. For further information on holography and poetry, see C. T. Funkhouser's "Appendix B" (2007: 265-270).

"olho" (eye) is contained within the "hol(o)-" (*hólos*, the whole) and vice-versa, thus creating both a material and content synecdoche. In Kac's words, the "holokinetics" and "lumisigns" (2004: 287) arising from this poem, but also *Abracadabra* (1984/85), *Zyx* (1985), and *Oco* (1985) establish a peculiar relation between verbal and visual signs, as well as re-envisioning kinetic forms in space. Moreover, *Wordsl* (1986) is created in a curved space, using integral holography, whilst *Chaos* (1986) and *Quando?* (1987/88) are computer-generated.

Holopoetry takes advantage of vertical and horizontal parallax, and the dematerialization of the word in space. Kac's poems impress for the interplay between virtual (hologram) and real image (in front of the hologram), and the gradation of colors produced by the visible light spectrum. They experiment with discontinued space and the movement of letters in order to produce a new reading experience. The very movement of the viewer around the hologram transforms the text, thus implying a physical and embodied reading process. Due to their technical apparatus, they do not allow for an extensive output of words. In that sense, they question and redefine visual and kinetic poetry.

Kinetic Digital Poetry: Algorithmically Programmed Animation

As Philippe Bootz (2007) has emphasized, digital poetry is not videopoetry. Kinetic poetry specifically written with the computer, and meant to be read and presented via a computer is comprised of textual, visual, and aural elements, but also its underlying code. Furthermore, it often requires interaction or participation from the reader-user. There is some divergence about the first example of kinetic digital poetry, but to be sure, it technically started with the change of usability from institutional mainframe computers to personal computers in the 1970-80s. Another important development was the dissemination of simpler programming languages, such as BASIC, and the invention of the Graphical User Interface.

Concomitantly, we can situate the emergence of kinetic digital poetry with works by Silvestre Pestana, Roger Laufer and Michel Bret, Marco Fraticelli, Jacques Donguy, bpNichol, Tibor Papp and João Coelho. Most of these poets were already affiliated with some of the major literary and artistic experimental movements of the

1950s and 1960s: sound poetry, Concrete and visual poetry. In 1981, Pestana wrote the first two poems of the *Computer Poetry* suite in BASIC, for a Sinclair ZX81, with white words waving on black background. The final poem (1983) was programmed in a Sinclair ZX Spectrum with more features and symbolic dimensions: color, circular movement suggesting tridimensionality, and the word-shape *dor* (pain) replacing all the potential of the *new people*, Pestana's view of social and political freedom. Using the statement PAPER and BORDER for blue background and frame, and INK for white, yellow, green, and red squares and font, the artist represents the Portuguese and EEC flags in a critical stance to the aftermath of the Carnation Revolution and the prospect of joining the EEC.

Fraticelli's *Deja Vu: Poetry for the Computer Screen* (1983) compiles kinetic haikus to be read onscreen, whilst Donguy and Loizillon's *Poème Ordinateur* (1983) outputs an endless stream of consciousness (Donguy 2007: 331). Like Pestana, bpNichol's *First Screening: Computer Poems* (1983-84) draws from the visual exploration of words in motion, and is set in white font over black background. The series of twelve poems written in AppleSoft BASIC for an Apple IIe operates with different kinetic behavior: blinking, vertical and horizontal dislocation, letter replacement, and TV script-like scrolling transitions. One of the surprises is the fact that the last poem is hidden in the source code, therefore acting as a piece of codework as well. Computer poetry animation at this time was in many ways a reenactment of the experimental practices of the poets in the 1960s, when working in the realm of Concrete and visual poetry. As such, Nichol writes about "filmic effects that I hadn't the patience or skill to animate at that time." (in Huth 2008) As Geof Huth asserts, "Earlier kinetic digital poetry tended to use the computer to illustrate the poems; Nichol used it to animate them, to make them live." The first wave of kinetic digital poetry can be further exemplified by Tibor Papp's *Les Très Riches Heures de l'Ordinateur n° 1* (1985), a live performance at the Polyphonix 9 festival in Paris, in which Papp, using an Amstrad, projected the "visual dynamic poem" onto ten screens (Donguy 2007: 314, Bootz 2014: 11). It is relevant that all these works contain the word 'computer' in their titles, attesting the need to disclaim the specificity and novelty of creating poems with and for the computer medium, but also

extending the notion that all these authors perceived the computer program as a poem in itself.

The second half of the 1980s marks the beginning of a productive stage in algorithmically programmed kinetic poetry. Paul Zelevansky's *SWALLOWS* (1986) crosses genres with video games, while Geof Huth creates in BASIC the long poem *Endemic Battle Collage* (1986-87), and the French review *alire* is launched as the first electronic journal dedicated to digital poetry. The journal, initially stored in floppy disks, was published by the L.A.I.R.E. collective, founded by Philippe Bootz, Tibor Papp, Frédéric Develay, Jean-Marie Dutey and Claude Maillard in 1988. Many of its issues contained *poèmes animés* (animated poems) by these authors, Jean-Pierre Balpe, Christophe Petchanatz, Jacques Donguy and Philippe Castellin. Dutey's *Le Mange-Texte* (1986, 1989) and Philippe Bootz's *Amour* (1989) clearly testify the pixelated kinetic aesthetics of the 1980s.

Throughout the 1990s, the development of new platforms, that is, hardware, software and programming languages, and the real-time network World Wide Web gave rise to a new flux of kinetic digital poems. Annie Abraham's *comprehension/understanding* (1997) mixes GIF animations, whilst time-based poems such as John Cayley's *windsound* (1999), developed for HyperCard, and *wotclock* (2002-2005), instantiate a different form of kineticism, transliteral morphing. The Flash platform, in spite of being close source, revamped the way poets made use of kinetic strategies, by opening up a cinematic timeline environment. Brian Kim Stefans's colorful *The Dreamlife of Letters* (2000) addresses moving letters and words in order to achieve a high degree of composition and new forms. Flash became the 2000's most popular animation software, being intensely used by artists and writers. A particular case is Young-Hae Chang Heavy Industries' work, which seams black and white aesthetics with narrative puns. Superimposing poetic text with video, David Jhave Johnston's interactive piece *Sooth* (2005) is algorithmically generated, while Stephanie Strickland, Cynthia Lawson Jaramillo, and Paul Ryan's *slippingglimpse* (2007) departs from the rhythm of waves (*chreods*) to motion-capture and display calligraphic lines in juxtaposition with videographic waterscapes. Collaborative endeavors show how Flash was used for grand-scale projects, such as David Clark's *88 Constellations for Wittgenstein* (2009). Other authoring platforms,

such as Director and Shockwave, were also influential in terms of allowing for the reader's interaction, and the interplay of sound, image and movement. Jörg Piringer's *soundpoems* (2002-08), drawing from sound poetry and Lettrist traditions, or Philippe Bootz and Marcel Frémiot's *La Série des U/The Set of U* (2004) keep the necessary brevity for onscreen reading display with generative sound and image.

New releases of dynamic programming and scripting languages, such as JavaScript, and open source software, such as Processing, greatly contributed for transition interfaces, and media integration. Collaborations between writers and programmers, such as those by María Mencía and Zuzana Husárová, have the potential to enhance expressive qualities. Mary Flanagan's 3D *[theHouse]* (2006), Judd Morrissey's collaborative browser-dance *The Last Performance [dot org]* (2007), Stephanie Strickland and Nick Montfort's navigable *Sea and Spar Between* (2010), Montfort's vertiginous "Alphabet Expanding" (2011)—a Perl program; just run `perl -e '{print$,=$"x($.+=.01),a..z;redo}'` in your terminal—or Ian Hatcher's equally dizzying *U [Total Runout]* (2015) are some of the many works that are currently redefining space, interface, flow, kinetics, and poetic output.

Conclusion

This exposition recognizes cross-artistic influence in the visual arts and literature, along with their technocultural context, from the end of the nineteenth century up to now. In doing so, it points out kinetic poems in relation to their media, but also to their artistic antecedents. Kinetic poetry is therefore understood as poetry in motion, which is time-based, and incorporates spatial dimensions that seem to be recreated each time poets engage with new styles and platforms. Forms in kinetic poetry are diverse, as much as text behavior. C. T. Funkhouser's historical overview of digital poetry and kinetic digital poems (2007: 85-149) establishes different typologies, such as collage, mutation, projection or dislocation of sequences, and interaction. Philippe Bootz's (2007) distinctions open up as well for debate, as the author proposes: syntactic programmed animation, 3D animation, digital calligrams, text in movement/kinetic poetry and typographic animation. According to this model, kinetic poetry would be a part of animated poetry, and not the same, as Bootz

considers that kinetic poetry consists of displacement in space, with no linguistic mutation, while animated poetry deploys algorithmically transformed syntax.

In spite of divergent theoretical and creative positions, which are beneficial for the development of new approaches, the number of motion effects and generation—which today poets can achieve—is so vast that creating a fixed taxonomy would inevitably turn into an outdated task. To be sure, different degrees of motion techniques in the arts and poetry install kineticism as a vibrant field that will continue to incite creation.

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II

Article 2

Seiça, Álvaro. "The Freedom Adventure of Portuguese Experimentalism and Kinetic
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The Freedom Adventure of Portuguese Experimentalism and Kinetic Poetry

ÁLVARO SEIÇA

Experimentalism from the post–Second World War period and, especially, from the 1960s erupted as a quasi-scientific, vanguard, and cultural mash-up of literary and artistic practices that is still being reinvented today, in visual arts, music, literature, dance, theatre, architecture, and performance arts. By blending the arts and fostering associations in magazines, exhibitions, happenings, and singular *ars poeticas*, the experimentalist tactics to a collective and individual writing program attempted to confront the mainstream literary and artistic discourse with such principles as: formal, visual, structural, technical, and content rupture, invention, a poetics of synthesis, rereading, recreation, irony, playfulness (*ludus*), and artistic practice understood as research process. On a cultural and political level, the intent was transgression, subversion, and provocation—all in the name of a critique of institutionalized artistic power structures and, in totalitarian countries, as an opposition to a common enemy, the dictator's regime, and a possible path to freedom. This impetus took shape as a global set of artistic[1] practices and interdisciplinary approaches around groups of artists with common affiliations. The ideological trait of their agenda set experimentalism to be created or adopted on the basis of a rejection of *movement*.

Experimental literature in France was certainly marked by the Oulipo group and their procedural techniques, but experimentalism does not equate to Oulipo. In Portugal, it was associated with the two issues of *Poesia Experimental* (1964, 1966),[2] but this was only a starting point, which would grow until the 1980s. Given the eclectic nature of artistic positions, its authors have denied any intention of embodying a literary movement, praising freedom instead. In the Unites States, we have, at least, the fully expressed spectrum of Dick Higgins's pluralistic intermedia approach, focused on format and medium. Thus, Higgins (1967) rejects an idea of movement. In "Against Movements," he states:

> It is only an illusion that there is a Happenings movement or ever was. The same can be said, I think, of Concrete Poetry. Both merely represent Intermedia, which in turn

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[1] During the 1940s–1970s, other process-oriented artistic programs took place: Lettrism, Situationism, COBRA, Spatialism, Concretism, Fluxus, Conceptualism, and Minimalism.

[2] The issues can be accessed in digitized form in Torres (2008b).

reflect the new technical and social possibilities within society. [. . .] I suspect that in twenty years the [. . .] illusion of little movements will have disappeared into the reality of an overall format of the period, within which the differences of the various artists can be seen uniquely rather than just as types. If we do not speak of movements then, we will need another way to describe similarities between work, and what used to be names of movements may, in some cases, be applicable as names of formats for work. [. . .] The artist is whoever researches aesthetic functions in practice. Each work is an experiment [. . .] To say that a researcher belongs to one or another movement is not really, then, very enlightening, any more than to say that Pasteur was a silkwormist. (1–3)

From another pole, John Barth (1984 [1967]: 68) claims that Borges's 1920s magazine *Prisma* was "the great decades of literary experimentalism." While Barth acknowledges the avant-garde ruptures of the beginning of the twentieth century as experimental, he criticizes at the same time the non-newness of "The Something Else Press crowd."

Undeniably, groundbreaking work in poetry, film, performance, and the visual arts in the 1960s was, in turn, informed by Futurism, Imagism, Modernism, Dada, and Surrealism; and even baroque practices. Moreover, praxis and theory were always seen as part of the same quest—a quest for agitating, counteracting, and repurposing the "glorious and prestigious canon" (Campos 1981: 13). For the Portuguese experimentalists, the international twentieth-century vanguard movements and pivotal critical theory were of the utmost importance: concrete, sound and experimental poetry, structuralism, semiotics, cybernetics, philosophy of science and language, Abraham Moles's information theory, and Max Bense's information aesthetics. Furthermore, the awareness of calligraphic and visual poetics—reading and viewing—running from Greek Antiquity to the baroque period; the discovery of Oriental ideograms; the context of new visual forms, in advertisement and the embedded information society—all caused great impact. António Aragão (1963), Herberto Helder (1964), Pedro Barbosa (1977), Ana Hatherly (1978), José-Alberto Marques (1985), E. M. de Melo e Castro (2007), among others refer to the "experimental attitude" (Hatherly 2001: 7) and their project as an *adventure*—a poetic, literary, artistic, sociologic, interventionist, and political adventure, but also a media-oriented and technological one.

In 1959, Hatherly highlighted the influence of concrete poetry as part of a new poetics project for discursive synthesis and graphic composition. Hatherly (1981 [1959]: 91) points out that "[A poesia concreta], suprimindo a descrição, cria a imaginação" (Concrete poetry, suppressing description, creates imagination). Describing concrete poetics as the exact reverse of ultra-romanticism, the poet considers concrete lyricism to be internalized. Such notions are echoed years later in the critical analysis of Salette Tavares's (1957–71) poetic *œuvre*, as Luciana Stegagno Picchio (1992: 13) stresses: "A ressemantização de hoje funciona no plano gráfico, dos 'brancos,' dos silêncios mallarmeanos."[3] Also, in 1963 Aragão (1981 [1963]: 105) defines "art" as a process of chance discovery and "poetry" as a game, in the sense of a "new field of possibilities" marked by a "new spatial-visual syntax." Aragão identifies some of the influential figures for the self-reflexive experimentalist project: Mallarmé, Apollinaire, Sá-Carneiro, the Brazilian concretists, Pound, cummings, Joyce, Roussel, Arp, and contemporary "electronic poetry"—Nanni Balestrini's

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[3] Translation: "Today's ressemantization functions at the graphic level: the 'blanks,' the Mallarméan silences." Unless noted, all text has been freely translated into English by Álvaro Seiça.

IBM "experiments" with combinatory poetry, which fascinated Aragão. All these authors, as well as the procedural writings of Oulipo, especially by Raymond Queneau, had a great resonance in what the 1960s experimentalists saw as the "novíssimas experiências poéticas" (newest poetic experiences) (Aragão 1981 [1963]: 105).

The experimentalist project left a strong legacy behind. From the 1980s onward, the attachment to this legacy by new authors proves the project's resistance. Manuel Portela and Rui Torres, whose work matured in the 1990s and 2000s, were influenced by a direct contact with the experimentalists, and still reinvent or appropriate their previous works by inscribing them in an experimentalist lineage. The visual input in the literary process brought by the generation of the 1950s and 1960s has not been forgotten. In fact, it plays a direct role in the practice and theory of these authors—working about and with the works of the experimentalists. Even a much younger generation, composed by Liliana Vasques and Bruno Ministro—part of the collective aranhiças & elefantes (with Rita Grácio) and devisers of the Candonga project—label their work as "experimental." Therefore, it seems as if *experimental*, as opposed to other demarcations, is a wide enough modifier appealing to and resonating in a diversity of authors' writing and artistic programs, somehow connected to an idea of rupture.

However, it seems highly anachronistic that authors still feel comfortable with such a label, when the technical, social, political, cultural, and historical context is not the same. Consider poets such as Joan Retallack (2007) or Felipe Cussen (2010), who work in the line of, and are influenced by, the experimental program, referring to the relevance of a trans-temporal experimental poetics. Yet, today's variables are staggeringly different. Over much of the planet, poets live in a media-saturated, networked, wired-in, real-time, and ubiquitous society. The geo-sociopolitical context has shifted. Hopefully, more intersectional approaches will be set in motion. Therefore, can we still speak of experimental poetics? Or have we not yet found a new, broad enough, effective label? Terms such as "electronic," "cyber," or "digital" do not really help. To be sure, in the developed world the greater part of the millennial generation see themselves as networked, ubiquitous, and hyper-tasking. Moreover, the pervasive computational and digital context has created a new sociopolitical order that is instigating a renewed creative approach, as well as resistance to new forms of abusive corporative monopolies and governmental totalitarianism, corruption, surveillance, control, and lack of transparency.

Will the institute of canonization cherry-pick "networkism" (Lima 2011), "connectivism" (Siemens 2005), "connectionism," or "autonomism"? What about considering other possible taxonomies—ubiquitism, ubicomputationalism, codicism, programmablism, metadataism, or remixologism? Will today's taxonomy arise from human, artistic conditions, and ideology, or from media-specificity, formal, and techno-determinism? Will it arise from the inside of the artistic process, as it happened with the experimental poets—the main theorists of experimental poetry?[4] Sure enough, *-isms* are out there in a grand diversity, they were always out there, and they will continue to be. Conceptualism is another movement still prevalent today, which also knots its roots from the 1960s conceptual art practices. Though it does also seem anachronistic to consider one's work as "conceptual," some writers and artists feel comfortable with this label, and work within that tradition in the same way experimentalists do. Yet, many do not, and even as we consider *tradition*, in the experimental or conceptual arts, we come to realize that such a

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[4] See, for example, Melo e Castro (1965a).

rupture is inexistent. Otherwise, there would not be a tradition, but rather a new starting point. Or, as Ana Hatherly once suggested in a talk,[5] the concretists were not doing much that was really new; what these early practitioners did was to recycle forgotten styles of the baroque poets. This loop included the reemergence of graphic forms, shapes, and patterns visually combined and arranged with language. Even more, many works today are not prescribed or aligned with a rigid sense of group, movement, or ideology, while others do. What today's digital poetics will be known as, in 50–100 years, only institutionalization forces will tell. The fin-de-siècle spirit will perhaps be seen as ultra-experimentalism, ultra-conceptualism—just as late nineteenth and early twentieth century was marked by a wave of ultra-romanticism, while symbolism was taking place with both old and new features, and just before Modernism emerged. It is, then, impossible to know how creative or critical discourse will frame part of today's artistic and literary practices.

Claiming literature, at all, to be *experimental*, as an interchangeable adjective for *avant-garde* or *innovative*, has certainly raised opposition: From standpoints arguing that all literature is experimental, to concrete examples of how the term "experimental" highlights a scientific or quasi-scientific approach to understanding the process and work of art. According to Alberto Pimenta (1978: 9), literary art can be divided in two modes of creative practice: the "degree of dependence," which perpetuates the norm, and the "degree of transgression," which founds a new norm.[6] Jacques Donguy (2007: 7) writes along similar lines and establishes a simile between poetry and science research: "Par poésie expérimentale, on entend toutes les recherches sur le langage, par opposition à une poésie qui reprend et continue les formes héritées du passé, de même qu'il y a une recherche en science."[7] Surveying this fact, the editors of *The Routledge Companion to Experimental Literature*, Joe Bray, Alison Gibbons, and Brian McHale (2012: 1) posit: "Experiment is one of the engines of literary change and renewal; it is literature's way of reinventing itself." They add:

> Experimentalism's connotations, by contrast, are scientific. Experiment promises to extend the boundaries of knowledge, or in this case, of artistic practice. Strongly associated with modernity, it implies rejection of hide-bound traditions, values and forms. To call literature experimental is in some sense to aspire to compete with science—challenging science's privileged status in modernity and reclaiming some of the prestige ceded by literature to science since the nineteenth century. (2)

The 1960s Portuguese experimentalists, even if influenced by Modernism, Dada, and Futurism, did not find themselves comfortable with situating their project in the Modernist lineage, which would entail perpetuating a fifty-year tradition. *Orpheu* appears in 1915, *Poesia Experimental* in 1964. There was a second generation of Modernists, with *presença*, in the 1920s–1930s, but by the end of the 1950s and 1960s, the postwar generation was certainly playing with other variables. The same happens today, fifty years after *Poesia Experimental* and their happenings: Do authors think of *experimental* as a technical, artistic, scientific, and sociological *experimentation*, but not as a perpetuation

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[5] Unfortunately, I cannot locate the exact date, but the talk was given at the Faculty of Social Sciences and Humanities, Universidade Nova de Lisboa, around 2005–2006.

[6] For an in-depth discussion about the practices of invention, transgression, and metamorphosis in Portuguese experimentalism, see Torres and Seiça (2016).

[7] Translation: "By experimental poetry, we mean all research about language, by opposition to a kind of poetry that resumes to and continues the inherited forms of the past, just as there is research in science."

of *experimentalism*? Experimentalism, no less than Modernism, has its own connotations of scientific procedures, technical, semantic, syntactic, sonic, and aesthetic novelty. If, as in many other countries, Portuguese poetic production has been marked by a domination of normative lyricism, discursive poetry, and waves of reinvention of lyrical tradition, the fact is that even the ruptures—such as Futurism, Surrealism, and experimentalism—arrived with a chronological delay and were marginal.[8] Silvestre Pestana (1987: 10) rightly points out in an interview the non-dominant character of the experimental arts:

> E nunca foram campos dominantes no nosso país, porque Portugal não é criador de tecnologias ou de saberes. Nós somos importadores de saberes. Mais que fundadores do movimento, nós somos continuadores, introdutores, actualizadores do que se passa lá fora. No entanto, é natural que isso aconteça porque o contexto cultural [do] país é agrário, semi-industrial, e as problemáticas deste campo [artes experimentais] que trabalhamos são todas pós-industriais.[9]

We know nevertheless that even in "post-industrial" countries where many movements were founded, the same type of experimental arts were, and still are, marginal[10]—in terms of production, dissemination, critical reception, and negligence by cultural actors. Even though some independent publishers might find "marginal" an absurd term, as they see themselves as part of a publishing ecology—that is, living inside the same sphere, but with a different agenda—center and periphery are influential notions. There is much to be reflected upon cultural capital, the innocuous love for bourgeois art, institutionalization, elitist power structures, funding mechanisms, and academic representation, which play a decisive role on how the experimental, underground, or marginal arts are projected within the mainstream discourse, with how they are absorbed, and diluted, by the center. Still, in this particular case, we should be aware of three levels of margin, or periphery: first, the periphery of the experimental arts; second, the peripheral geo-cultural position of Portugal; and third, the fascist and repressive political context. At the time that Pestana is being interviewed, only twelve years had passed since the 1974 Carnation Revolution. On the one hand, in the international context, the Portuguese experimentalist project was less about founding than it was about updating. Artistic tendencies and movements spread, branch out, get isolated, and mutate. Isolationism, especially in the 1960s, when Portugal had for sure a much bigger gap in relation to industrial countries, did mean something for the experimentalists' output. Adding to the isolationist factor, fascism and the colonial war, a deep agrarian society, and poverty, we can see how this context was adverse to their project. Yet, on the other hand, it was also a *field for new possibilities*, creating pioneering artworks that are specific to their contextual idiosyncrasies. Moreover, the exchange of ideas and contact with foreign authors and milieus was crucial. Melo e Castro studied and lived in England in the 1950s and traveled to Brazil in the 1960s;

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[8] Dick Higgins (1987: 125) notices this fact, though considering the baroque: "Two things impress us immediately about the Portuguese pattern poems. One is their late date, since so many come from the eighteenth century when most literatures were moving away from pattern poetry. The other is the preoccupation with labyrinths."

[9] Translation: "And they were never dominant fields in our country, since Portugal is not a country that creates technologies and knowledge. We import knowledge. More than founding the movement, we follow, introduce, and update what is happening out there. However, it is natural that this happens because the country's cultural context is agrarian, semi-industrial, and the problems of this field [the experimental arts] in which we work are all post-industrial."

[10] There is also productive discussion around the term "marginal" and "marginal literature" regarding genres that receive less critical attention, or are dismissed by reception mechanisms.

Tavares in France and Italy in 1959–1961; Aragão in France and Italy in the 1960s; Pimenta in Germany in the 1960s and 1970s; Hatherly in England and the United States in the 1970s; Pestana in Sweden in 1969–1974. Pestana's argument can be partially felt by earlier experimentalists. Aragão (1981 [1963]: 103) claims the "rareness" of Melo e Castro's *Ideogramas* (1962) as a book of concrete poetry, even if Brazilian concretism of a first phase had been already in "decline." Another feeling of discrepancy between the outside world, the Portuguese experimentalists' world, and their cultural context is mentioned by Hatherly (1985: 15), when the poet declares that the experimentalist project was a reaction to "um meio que vivia ancorado na acomodação e no marasmo," in which the "mandarins das letras [. . .] fomentaram um clima de tão duradoira sanha que não se dissipou completamente ainda" (Hatherly 2001: 9).[11]

My reading recognizes that experimentalist practices in Portugal continued the flow of European, South American, and Asian visions. At the same time, it points out the ambivalent fact that—perhaps due to a delay, to not being the epicenter—the peculiar characteristics of each one of its authors, and the contextual fascist and repressive regime they lived in, created a need to break from oppression. Consequently, one answer for such rupture would be to transgress genres and forms, and to radically create novel work. An unusual case happened with kinetic poetry, since new hardware and software provided new possibilities. Freedom became equivalent to open forms, content, and moving text, which is signaled by the works in video and Spectrum I am highlighting below. Far from being an original position, my emphasis on the experimental character of many digital literary works—and stretching its roots, at least, to the 1960s experimentalists—is shared by other critics and practitioners writing across the junctures of literature and technology. Take, for instance, Steve Tomasula's (2012: 484) bold observation: "Like poetry (and unlike movies or print novels), its [electronic literature's] lack of mass-marketability has allowed it to be more *wildly experimental*, more art than product, more literary, especially in an avant-garde conception of the raison d'être of literature or art" (emphasis mine).

In discussing part of the contemporary landscape of digital poetics, what stands out in a vast range of works is, precisely, a similar concern of approaching the unknown, by transgressing norms, experimenting as rupture, rereading as appropriation, remixing as creation, and recreating conventions in form, content, interface, and media. The engagement of today's writers and artists with media is undertaken as an *adventure*, meaning a relocation of experimental practices, in the sense that digital literary arts continue to be more than verbal arts—they are indeed synesthetic experiences of verbal, visual, and sonic blending, scripted with code. These topics are pursued in the following analyses of works by E. M. de Melo e Castro and Silvestre Pestana, the latter's after emulation and code forensics.

As Melo e Castro (2007: 180) explains, "Concrete Poetry in 1960 was for me not an arriving point but rather a launching platform." This statement reflects his eclectic working method, which spans over sixty years in several literary and artistic fields, genres, but also media. The author, whose writing project always aimed at developing open forms in poetry, as much as experimenting with physical media—the way to the "peso pesado do átomo" (atom's heavy weight, in Cruz 2006) such as paper, textiles, canvas, wood, metal, stone, and plastic—soon broadened the exploration of qualities given by words

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[11] Translation: "a society living anchored in accommodation and marasmus" (Hatherly 1985: 15), in which the "mandarins of literary culture [Humanities] . . . fostered a climate of such a long-lasting hate that it has not been yet completely dissipated" (Hatherly 2001: 9).

FIGURE 9.1   E. M. de Melo e Castro's videopoem *Roda Lume Fogo* (1986), b/w, 2' 43'' (screen-shot). Courtesy of E. M. de Melo e Castro and Po-ex.net.

and images, their dematerialization, their grammar, and their sign systems. This aspect became apparent, from the outset, in the pioneer work with film poetry, performance, and videopoetry. Melo e Castro (1958) debuts with the self-reflexive and ironic 8mm "filmic poem" *Lírica do Objecto* (Lyric of the object). Later, the performance *Música Negativa* (Negative music, 1965b) would be restaged as a soundless "sound film," and directed by Ana Hatherly (1977). Melo e Castro (2006) alludes to the poem's score as a visual and conceptual "semiotic poem." The lack of sound—"psychovisual vibrations"— acts as a symbol of a reaction to his childhood's "paternal authority" and, at the time of its first performance during the happening *Concerto e Audição Pictórica* (Concert and pictorial audition, 1965), "as a metaphor against the sham of silence and Salazarian censorship" (Melo e Castro 2006: 208).

A great leap happens in 1968, with the creation of the videopoem *Roda Lume* (Wheel of fire) at the RTP (Rádio Televisão Portuguesa) studios. The poet had been asked by Eduíno de Jesus to create "an animated concrete poem" to be originally broadcast in a 1969 cultural TV program. Moreover, there was a "new machine" in the studios: video. Enthusiastic, he replied: "That's great! I don't think of anything else! Each time I see a concrete poem, I imagine all the letters and geometric shapes—which somehow characterize concrete poetry—moving" (Melo e Castro 2012).[12] Regrettably, the video recording of the "experimental animated poem" was either "robbed or destroyed" by the public broadcasting company, though the storyboard had been preserved by the poet (Melo e Castro 2006: 202).

[12] Full transcription of the interview's excerpt: "Eu estou neste momento, dizia o Eduíno de Jesus, a coordenar um programa, chamado 'Panorama Literário,' suponho que era esse o título do programa, para a Rádio Televisão Portuguesa, e gostava que tu me fizesses um poema concreto animado. Bom . . . eu fiquei bastante surpreso, por esta proposta, e disse: 'Olhe, isso é óptimo! Eu não penso noutra coisa! Cada vez que vejo um poema concreto, eu imagino as letras todas e as formas geométricas—que, de certo modo, caracterizam a poesia concreta—a mexer.'" Available at http://po-ex.net/exposicoes/nas-escritas-poex/e-m-de-melo-e-castro-do-leve-luz?showall=&start=2.

In 1986, in collaboration with a student from Fine Arts, Melo e Castro recreated the lost piece in U-Matic, as *Roda Lume Fogo* (Wheel of fire flame, Figure 9.1), with a new soundtrack reworking the original and recalled by memory, which made possible today's screening of this multimodal kinetic poem. *Roda Lume* draws from a tradition of sound and concrete poetry, and Surrealist and Lettrist experimental film. Highly self-reflexive of the mechanics of physical and electronic video broadcasting—the reel and the I/O function—it intensifies sign relations, signifier and signified, with elementary geometric figures. This strategy is obtained by the transfiguration of vowels (a, e, i, o) and consonants (v) into open forms and shapes, and through the exploration of spatiotemporal dimensions and the sonic interplay of vowels and syllables. The piece opens with the utterance of the syllables "ar-co" (arc) and "ro-da" (wheel), while at the same time animating their geometric shape representations. Here, the reader-listener-viewer might combine these syllables into "co-da" as a concluding addition to the sound segment. The title is actually used by the poet to produce combinatory readings of "ro-da" and "lu-me" (fire) as "ro-da-lu," "ro-lu" and "ro-da-me" (wheel/move me). New words, spoken syllable by syllable, are added: "fo-co" (focus), "fo-go" (fire), and "á-gu-a" (water).

The poet emphasizes the excitement of working with the new medium in this way:

> When I began using video technology to produce my first videopoem, *Roda Lume* (Wheel of Fire), in 1968, I did not know where the limits were and where my experiments would take me. I was really experimenting on the most elementary meaning of the word experience. A sense of fascination and adventure told me that the letters and the signs standing still on the page could gain actual movement of their own. The words and the letters could at last be free, creating their own space. (Melo e Castro 2007: 176)

The 2' 43'' black-and-white reenacted videopoem is surprising, precisely due to the sense of freedom associated with movement. This sense of freedom is even more acute if we think about the repressive and censoring regime, the prejudice and vigilante social context. Jesus asked Melo e Castro to explain such a strange artefact to the public, in a talk to be broadcast immediately before the piece. At the time the public talk was recorded, the poet was warned by one of the fascist voices in studio: "Sir, are you aware you will be speaking to 2 million spectators?" As Melo e Castro elucidates, he had to be very careful not to "say horrible things, according to the morbid mentality of the censors." In the next days, the poet received life-threatening messages and phone calls, from taxpayers who were angry about the bad usage of public money, and the "subversion of [their] culture." As a further consequence, the poet was forbidden to ever enter again the RTP facilities, something that lasted up until the 1974 revolution. Jesus, the coordinator of the biweekly "Convergência" TV literary magazine, was "probably censored and expelled from RTP" soon after, according to Melo e Castro (2012).[13]

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[13] According to the RTP website and the 28° Colóquio da Lusofonia, Jesus directed and produced the biweekly literary TV programs "Convergência" (1969–72) and "Livros & Factos" (1972–74). See http://www.rtp.pt/acores/local/medalha-de-ouro-do-municipio-para-eduino-de-jesus_8772, https://museu.rtp.pt/livro/50Anos/Livro/DecadaDe60/Do2ProgramaALuaEAo/Pag14/default.htm, and https://coloquios.lusofonias.net/XXVIII/28%20AUTORES%20PRESENTES.pdf. Until 1992, RTP was the only TV broadcaster in Portugal. The RTP digital archive has been launched on March 6, 2017. Its contents are being progressively digitized. I am currently researching access to the public emission of the "Convergência" program where Melo e Castro's work was presented; hoping that somehow a copy might have been preserved.

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On the one hand, the poem overlaps text, kinetic text, image, moving image, and sound, anticipating and influencing various genres of digital hypermedia poetry mainly launched after the World Wide Web. On the other hand, it constructs a different notion of space-time, opening a "visual time" (Melo e Castro 1993: 238) of unfolding images and text that necessarily invites for a new reading perception, as each image is given a different frame tempo. In the image sequence, the two invoked elements—fire and water— become entangled. The visual representation and sound utterance of "cha-ve abre" (key opens) can be read as the decoding correspondence presented in the medium itself in order to access a new function (input/output) and paradigm of experiencing word-image-sound relations.

By the 1970s, personal computers (PCs) began to be introduced in corporate environments, and by the 1980s, specifically in Europe, the prices of microcomputers such as Sinclair ZXs became more accessible for individual acquisition. Pedro Barbosa (1996: 147)—the pioneer of computer-generated literature in Portugal, who in 1975 was working within an institutional and academic environment with mainframe computers— refers to this change, at the level of literary output, as "poesia doméstica" (domestic poetry). In fact, Barbosa (1977, 2016) had collaborated with the engineer Azevedo Machado in the coding of extensive source codes in FORTRAN, ALGOL, and NEAT in an NCR/Elliot 4130 machine, whereas such sarcasm meant to acknowledge the simplicity of coding small programs in BASIC.[14]

It is in a post-Carnation Revolution techno- and sociopolitical context that Silvestre Pestana created his computational kinetic poems. Pestana's development of *Computer Poetry* (1981–83) established an unprecedented mark in kinetic poetry. His exploration was not generative and aleatory, but rather visually animated. The *Computer Poetry* series reimagines the material side and the spatiotemporal dimension of visual poetry. Programming in BASIC for a Sinclair ZX81 and ZX Spectrum, the author emphasized light and color as important features of moving poetry. The series is made of three poems: the first and second (1981), developed in the ZX81 machine with black-and-white output, were dedicated to E. M. de Melo e Castro and the sound poet Henri Chopin; the third poem (1983), already with chromatic lighting, was developed in the ZX Spectrum machine with a dedication to Julian Beck, cofounder, with Judith Malina, of the Living Theatre.

Pestana, a visual artist, writer, and performer, had returned from exile in Sweden, after Portugal's Carnation Revolution of April 25, 1974. Before that, though, the author had already collaborated with the experimentalists in *Hidra* 2 (1969), with *Atómico Acto*, a conceptual collage poem, or "poema objecto" (object poem), in which a red deflated balloon contains a black painted letter *H*, in a reference to the hydrogen bomb. The piece departs from the debate connected to the 1968 disappearance of the American B-52G plane, over Greenland, with four hydrogen bombs. (The mission's code name was "Hard Head.") The balloon's lower part is held by an incision in the white paper, and it is overlaid with the statement "construir o poema," followed below by "destruir o objecto" (to construct the poem / to destroy the object). Creation, in this case, emerges from a deconstruction of normative meaning, or by metamorphosis, and the reframing of objects. Literally, if you want to inflate the balloon and, by consequence, the work of art, you will destroy it,

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[14] Nick Montfort's work proves the exact reverse point: extremely small programs can have equal or even more complex output than extensive ones. Barbosa, Pestana, and Montfort's cultural, artistic, and technological context is, of course, diverse, and so are the platforms.

even if it does not explode—a political critique of the destructive powers of humankind's military technology, radioactive contamination, and the ephemerality of artworks.

The five-year period of political exile as conscientious objector in Sweden, where Pestana avoided being drafted to the colonial war in Africa, was a pivotal stage, since it exposed him to video as an artistic medium, to the Fluxus practices, and, in particular, to the work of Nam June Paik (Sousa 2013). These influences were put forward in his subsequent work with video, photography, performance, and computer. From the post-exile creative period, the iconic conceptual piece *Povo Novo* (New people, 1975) should be emphasized, as it engages with a minimal use of means to maximize possible meanings—a constant in Pestana's practice. In some sense, this piece was remediated in the *Computer Poetry* series of kinetic visual poems (Figure 9.2),[15] or "infopoems" (Melo e Castro 1988: 57). Working with the McLuhanian proposition that the medium equals the message (Pestana 2013), the expressiveness and exposure of the intrinsic qualities of the medium dictate the operative scripts for TV display. The series oscillates between recognizable shapes and the reading interpretation of the words themselves. In the third poem (1983), the circular shapes are given by the BASIC cosine and sine mathematical functions "COS" and "SIN," which are formed and animated by squares and the small-sized words "povo" (people), "novo" (new), "ovo" (egg), and "dor" (pain).[16] In this new reading perceptive mode, a semiotic understanding of the signs and their movement is vital, inasmuch as layered semantics: "ovo," the unity, but also the potential; "povo," labor, the collective, the mass; "novo" and "dor." The play of semantic relations and the words' trajectories translate the potential of a "new people" in a historic, sociopolitical, and artistic transition period. This period of freedom and action is, however, built upon the people's pain, and it is hard to construct.

In BASIC, the spatial composition is defined by a cell-like grid, where characters are positioned (in this case, coordinates operate in the X-axis and Y-axis as "X,Y") and "printed"—the PRINT statement informs the machine what to display onscreen. Given the fact that Spectrum is an 8-bit computer, the color graphics are scaled 0–7. If today's programming languages, and especially operating systems, heavily rely on inherited physical metaphors such as "windows," "desktop," and "folders," imagine in 1964, when BASIC was first implemented. Therefore, BASIC statements transpose concepts from print and video legacy media into the computational environment. The time-based statement used by Pestana in the source code is PAUSE 100 and 200, that is, frames running on this command will have an interval of 100 or 200 milliseconds. For the chromatic dimension, Pestana uses the statements PAPER and BORDER, with 1=blue, and INK, with 2=red, 4=green, 6=yellow, and 7=white. Thus, the poem's words and squares are set in red, green, yellow, and white, being displayed on blue background. This represents the colors of the Portuguese and EEC flags. According to Silvestre Pestana (2015), the piece aimed to critique the Portuguese economic leaning toward the EEC, the lack of a true political revolution, and the dawn of the digital revolution. The poem ends with the word "dor" (pain) devouring most of the background, which is populated with the words "povo" (people), "novo" (new), and "ovo" (egg). Then, line 290 in the source code sets a loop, and creates iteration. The poem reruns. It resumes from line 60. In an interview, Pestana (2011) claimed having researched more than thirty languages, only to find in

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[15] Pestana (1985: 205) even calls it "video-computer-poetry," in a clear reference to videopoetry he created during the 1970s and 1980s.

[16] The first poem (1981) in black and white, dedicated to Melo e Castro, includes the word "cor" (color), besides "dor" and "povo."
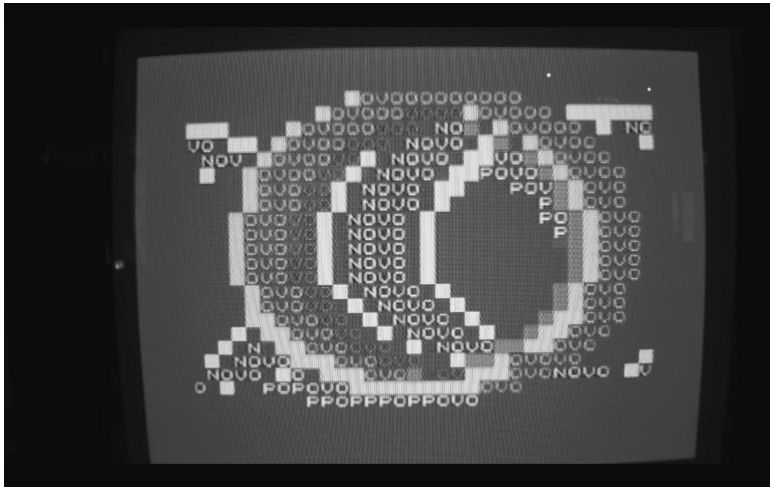
FIGURE 9.2 Silvestre Pestana's *Computer Poetry* (1983) programmed in BASIC for a Sinclair ZX Spectrum. Work emulated by Sindre Sørensen and Álvaro Seiça. Exhibition view, *p2p: Polish-Portuguese E-Lit*, curated by Álvaro Seiça and Piotr Marecki at 3,14 gallery in Bergen, Norway (August 4–23, 2015), during the ELO 2015 festival. Courtesy of Silvestre Pestana. Photo: Álvaro Seiça.

Portuguese the possibility of traversing the singular and the plural, the individual and the collective, the past, present, and future, by just dislocating a letter: ovo / (p)ovo / (n)ovo.

The fact that the Spectrum's console was connected to a TV screen, a visual and luminous device par excellence, turned out to have a greater symbolic meaning, to the extent that *Computer Poetry* became associated not only with the content, but also with the cover of one of the most significant anthologies of the 1980s, *Poemografias: Perspectivas da Poesia Visual Portuguesa* (Poemographs: Perspectives of Portuguese visual poetry, 1985). Despite being a collection on visual poetry, the cover's composition did not use any printout of the work, but rather the photography of the work's image on a TV screen, that is, a picture of the moving image, as narrated by Fernando Aguiar (2009: n. p.), who coedited the anthology with Pestana:

> I designed the book cover based on a computer poem by Silvestre Pestana (who had created the first computer-poems [*sic*] in 1981/83 for "Spectrum"). And if now it seems something almost banal, in 1985 it was really "different" to present an anthology of poetry and poetic theory with a computer "generated" work on the cover. (Since we had no access to a printer—I do not even know whether back then there was a printer for Spectrum—we went to a household appliance store and we asked to connect the "computer" to a TV set, and right there I took several photographs of one of the poems, whereof the cover of "POEMOGRAFIAS" resulted.[17]

[17] Original: "Desenhei a capa do livro com base num poema de computador do Silvestre Pestana (que tinha criado os primeiros computer-poems em 1981/83 num 'Spectrum'). E se agora parece uma coisa quase banal, em

The rupture introduced by Portuguese experimentalism in the 1960s was a sharp reaction to cultural models, fascism, and colonialism. By then, the transgressive and subversive act meant that experimentation served a sociopolitically engaged project. Accentuated by cultural isolationism, geographic periphery, and the repressiveness of a totalitarian regime, linguistic and artistic forms certainly acquired specific idiosyncrasies. Authors needed to find ways to express themselves without being trapped by the different censoring departments and the political police PIDE. The circumvention of explicit political meaning called for an allegoric approach to the artistic and literary program in different fields of practice, whose core shows a clear hybridization of genres, forms, and artistic languages, which blend poetics, science, and technics.

To come back to my initial argument, the adventure of the experimentalists meant the creation of groundbreaking works as critical reaction and a quest for freedom. Today, different generations of authors who identify their works as having an experimental character—such as Antero de Alda (2011), Rui Torres (2005a, b, 2008a, 2011), Manuel Portela (2011), Liliana Vasques (2016), and Bruno Ministro (2014, 2016a, b)—explore a range of media that includes digital literary works, but not only. Experimental practices are visible in the field of electronic literature by the way authors still continue to reinvent forms and media. Similarly, today's practices do not cluster around a movement, but rather as individual *ars poeticas* that show a clear experimentalist root. Furthermore, appropriation, remix, recreation, and rereading of antecedents act at the level of a continuous creative metamorphosis. The critical and parodic side seems to be more dispersed in the absence of the nefarious dictatorship. However, we can still locate reminiscences of a past collective mentality and a common understanding seems to emerge on topics related to the full meaning of democracy, the malign effects of capitalism, hyperconsumerism, society's alienation, social, gender, and economic injustices, and inequalities.

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1985 foi realmente 'diferente' apresentar uma antologia de poesia e de teoria poética com uma obra 'gerada' por computador na capa. (Como não tínhamos acesso a impressora—nem sei se havia naquela altura alguma associada ao Spectrum—fomos a uma loja de electrodomésticos e pedimos para ligar o 'computador' a uma televisão, e ali mesmo fiz várias fotografias de um dos poemas, das quais resultou a capa de 'POEMOGRAFIAS.' " See the cover at http://po-ex.net/taxonomia/transtextualidades/paratextualidades/poemografias-capa

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III

Article 3

Seiça, Álvaro. "The Digital Diasthima: Time-Lapse Reading Digital Poetry."
ISEA2015: Disruption. Proceedings of the 21st International Symposium on
Electronic Art. Vancouver: ISEA, 2015.
http://isea2015.org/proceeding/submissions/ISEA2015_submission_315.pdf

The Digital Diasthima: Time-Lapse Reading Digital Poetry

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Abstract

In moving texts, such as digital kinetic poetry, the reader-user might no longer control the duration of their reading, unlike the traditional and static nature of printed texts. The user deals with readable time versus executable time, the human time-line versus the machine time-line. By having an imposed and fixed number of milliseconds to perceive the text on the screen, the user might find themselves completing or imagining the unread text, following the dynamic forms with an imposed dynamic content. Yet, to understand the shifting reading patterns of digital poems, one has to consider another methods or tools that may complement traditional models. Therefore, performing a critical approach solely based in close reading methods might not accomplish a fully comprehensible reading of digital poetry. In this sense, following upon methods taken from other areas, e.g. time-lapse photography and R. Luke DuBois's concept of "time-lapse phonography" (2011), I introduce the notion of time-lapse reading as a complementary layer in order to close read disruptions in reading processes that demand a set 'experiencing' time when letters, words, lines or stanzas are replaced, with a case study on Philippe Castellin's *çacocophonie* (2013).

Keywords

Electronic Literature; Digital Poetry; Digital Diasthima, Time-Lapse Reading; Philippe Castellin.

Introduction

I am taking into consideration a critical reading of kinetic text, namely kinetic digital poetry. Kinetic digital poems are *performed* with time-based media as both a creative and a critical practice, e.g. onscreen running piece and live performance. In this paper, I am focusing on the critical *performance* executed when reading onscreen pieces, but also how its live performance might affect the very reading process. Time-based parameters operate as functions in diverse programming languages, allowing for a text or poem to run human language and/or code onscreen with a temporal interval determined by a precise number of milliseconds. Therefore, coding these functions helps creating dynamic text which, in turn, might result in diverse nuclei of creative practice: generative text, fiction and poetry, Flash-based or animated/kinetic poetry using other software, distributed/hybrid piece/practice, installation, site-specific installation, performance, real-time sensor-actuator work, and so forth.

Interactivity, Generation and Time-Lapses in Kinetic Digital Poems

One of the complex issues of close reading poetic text in motion is precisely and, first of all, 'just' reading. There are though two main modes underlying this issue: interactivity and non-interactivity. Interactive kinetic poetry often employs a degree of user participation or interaction, by means of mouse movement, keyboard input, joystick, haptic peripheral, touch-screen, sound or movement input captured by sensors (micro, camera, etc.), if one thinks of gallery-mounted pieces, database-pulling interference, etc. Nonetheless, interactive poetry might use several of these features and/or simply contain a speed controller, e.g. Rui Torres's *Mar de Sophia* (2005), Stephanie Strickland, Cynthia Lawson Jaramillo and Paul Ryan's *slippingglimpse* (2006) or Johannes Heldén and Håkon Jonson's *Evolution* (2013), which allows readers/users to change the speed at which the poem runs onscreen, in order to fully read the lines. [1] [2] [3] Hence, one is able to accelerate, slow down and sometimes even pause the unfolding poem. Non-interactive kinetic poetry presents no controller and, therefore, the reader/user might not be able to fully read the lines or words on the surface/onscreen level, if the running time is programmed to be quicker than human reading perception/cognition's skills – e.g. Philippe Castellin's *çaco-cophonie* (2013), Pär Thörn's *I Am* (2011), Scott Rettberg's *Frequency* poems (2009) and Young-Hae Chang Heavy Industries' *The Lovers of Beaubourg* (2007). So, if the reader is not able to fully read, how can they even close read? [4] [5] [6] [7]

Before replying to this question, there is another important distinction to be made, between generative and non-generative kinetic poems. Generative kinetic poems instigate a type of time-lapse, let us say, time-lapse α, which resides in the fact that the poem one reads or tries to read can always be different from screening to screening or, simply, if one refreshes the browser. Time-lapse α might then carry two problems: 1) one does not have sufficient time to apprehend the poem; 2) one tries to apprehend something always divergent. As of problem 2 some writers would vindicate that their pieces are intended to be conceptual, and, therefore, their argument relies mainly in the process, rather than in the output, which some would expect to count the most. However, other writers would advocate for the process as well as the degree of craft

achieved in the difficult task of creating poetic output out of a limited or unlimited pool of data, e.g. words. Non-generative kinetic poems, thus, might prompt a type of time-lapse β, which is precisely that of the above-mentioned problem 1: textual replacement might occur at a speed rate difficult for our (still) biologic eyes to cope with. Consequently, and returning to our question, how can one read something not totally readable, slightly readable or unreadable? Shall one create screenshots of parts of a poem evolving over time? Shall one screencast a complete running cycle of the poem? Yes, we can adopt one of these strategies. Yet, isn't this method – as Patricia Tomaszek (2013) referred – going against the very motional property of the poem? [8] Let me reformulate it, does one try to critique a poem's intrinsic dynamic and unfolding nature with a static and print-based reading paradigm? And, more, what if we consider a generative poem supposed to run over 2 x 60 minutes, 24 x 60 minutes, 1 year, 4 years, 23 years, 1000 years, n^x years? Can one actually critically perform close readings based on screenshots, lest to say, screencasts or video recordings? No, one cannot. So, I shall argue here, as I did before (2013), that generative art (visual, sound, textual, performative) is meant to be partially read, that is to say, insofar as one needs to extract a sample or pattern as a representation of totality. And that should be generally accepted, since the process fierce fully needs to be stressed. You wouldn't want to be in front of a machine neither for 4 years in a row, nor 1 week, so that you could experience a work of art, would you?

The Digital Diasthima: 7 Proposals to Approach Time-Lapse Reading

It is exactly at this point that time-lapse emerges as a significant reading method. In fact, one needs to acknowledge that same impossibility in non-controllable kinetic poems and allow for a meaningful time-lapse experience to fully flow within its creative matrix. That said, an interval or disruption is created when reading – what I have been defining as digital διάστημα, or *diasthima*, that is, a spatial or timely extension, dimension, interval, gap. The digital *diasthima* is a void, a blank moment in time and space, forcing a quicker human reading, which often ends/begins as a creative process itself by way of incomplete association, metonymy, and metaphor. If we can't read everything, what do we read then? We read what our brain selects and, if we start running the poem several times, we can then begin to read other paths as well. To sum up, I would pinpoint a time-lapse reading approach in these terms:

1. Don't be afraid of not reading everything.

2. Engage with the interface and reject frustration.

3. Be open to discomfort and don't skip the poem.

4. Avoid extracting meaning by merely considering static strategies.

5. Read the source code.

6. Read the surface(s).

7. Allow for *diasthimas* to performing a relevant role in your reading.

Time-Lapse Pho(n/t)ography Informs Time-Lapse Reading

Two good examples of a certain kind of *diasthima* are time-lapse photography and comic strips. One watches a movement scene evolving over time but one does not exactly know what happens in-between moments – it is unknown and uncertain, therefore requiring a shift in perception that erects meaning by association, either narrative thread, metaphoric denotation or synecdoche. And yet, the moments are static. Now, if one has *diasthimas* evolving with dynamic moments, the problem of reading becomes even more complex. Taking a different framework, but nonetheless relevant to our purpose, R. Luke DuBois's (2011) notion of 'time-lapse phonography' deals with "computing the spectral average of a sound over time" to achieve a system, or "temporal momentum," but also a transcoded reading (listening), in order to appropriate their sense of totality with partial episodes:

> How about if you've ever skipped to the next song on an album because you don't like the one playing. Even if you do like the song, do you always listen to the end?
> Like so much else these days, our listening experiences are becoming increasingly under siege by the funny feeling in the back of our minds that we don't have time to waste listening to things we don't necessarily want to hear. So we switch stations, skip to the next track, and cut off the song after the second chorus because, to paraphrase Gordon Gano, the third verse is usually the same as the first, more or less. (DuBois 2011: 248) [9]

If we consider non-controllable kinetic poems, in which the reader has no possibility to interfere with the reading duration, such as Young-Hae Chang Heavy Industries' *The Lovers of Beaubourg* (2007), a Flash-based poem, Scott Rettberg's *Frequency* poems (2009), a poetry generator created with Ruby, Pär Thörn's *I Am* (2011), a poem pulling real-time lines from Twitter Search API with the expression "I am," or Philippe Castellin's *çacocophonie* (2013), we can conceive, for now, a particular kind of reading experience that comprises time-lapses as necessary for close reading the work.

Figure 1. Philippe Castellin, *çacocophonie*, 2013 (screenshot).

Time-Lapse Reading Philippe Castellin's *çacocophonie*

I will thus focus on Philippe Castellin's *çacocophonie* (2013), presented on September 23, 2013, at the Centre Pompidou's BPI in Paris as a "lecture assistée par ordinateur" [computer-assisted reading], during the festival "Chercher Le Texte." Throughout the debate, Castellin showed how reading the same work (Figure 1), or, to be more precise, the same source text, varies depending on the speed and coding parameters attributed, whose outcomes are, in fact, different works, or different speed variations/versions of the same work.

Initially, with a word processor, the author read a static and plain text version of *çacocophonie*, pausing and performing, on a human readable level, the effects of a cacophonic dialogue poem between two characters. The work's utterance disclosed a strong sound poem, with the alliteration on "ça," "ce," "s," "ss," which stresses another thematic disclosure – that of a parody of an episodic conflict between "je" [I] and "tu" [you]. Moreover, the interplay between "ça" [this, it] and "là" [there] helped creating an atmosphere of resembling and opponent forces, which addresses the absurd construction of everyday love conflicts over small things. Now, the second stage of the computer-assisted reading comprised a dynamic and rich text version of the work. Built with Processing, the poem was animated in order to perform lines at a given on-screen speed. Whilst being machine readable, the execution of the code entailed still a fairly human readable experience, in which certain

portions of the first version were visually and cognitively dismissed and others highlighted, by force of human brain selection. Finally, the third stage of this event used exactly the same process, although now the speed of each line appearance was drastically accelerated. By reducing a simple parameter, such as the number of milliseconds for line display, this time-based poem displayed on the Web is still readable by the machine. However, it stops being human readable, or on the verge of non-human cognition, as the speed rate allows only for certain words to emerge as meaningful, at least, at the conscious level. Even if this version does not use sound, all the different crafts around code, moving text and image create a synesthetic awareness. The quick juxtapositions of kinetic text displayed via software, hardware and network remain tacit features as if to understand that such poetic and reading interplay needs to be addressed in a different way.

Conclusion

Digital poems often bridge visual, sonic, and literary content. More, their *performance* is often an instantiation and extension of their distributed materiality. On some occasions, digging into the source code might provide new insights, comments (in *çacocophonie* there are only some indications about optimized browsers), that is, language or artwork which is still part of the code – some works have other works hidden in the source code, ASCII art, etc. – but not machine readable, and the discovery of codework, that is, creative and critical code that is manipulated in order: 1) not to be executed by the machine but to be read by hu-

mans; 2) not to be executed by the machine nor to be read by humans; 3) to be executed by the machine and to be read by humans. On other occasions, database aesthetics forecast the ground for input from real-time data sensors, SNSs APIs, user's input, and/or blended databases.

As evidence shows, digital works cannot be analyzed with the same critical tools as non-digital works. There-fore, it is imperative to research new models and methods, and to engage with discourses pertaining to the scope of works one is set to critique.

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Conversation

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Biography

Álvaro Seiça (b. 1983, Aveiro, Portugal) is a writer, editor and researcher. He published four poetry books, the most recent being *Ö* (2014) and *permafrost: 20+1 zeptopoemas sms* (2012). He holds a MA in Contemporary American Literature, with the thesis "Transduction: Transfer Processes in Digital Literature and Art" (University of Évora, 2011), winner of the Moser Prize 2013. Seiça has published several poems and essays on different jour-nals. In 2007, he co-founded Bypass (http://bypass.bigcartel.com), a nomadic editorial and curatorial project. He currently lives in Bergen, Norway, where he is a PhD fellow in Digital Culture at the University of Bergen, Humanities Faculty, Department of Linguistic, Literary and Aesthetic Studies.

IV

Article 4

Seiça, Álvaro. "Polymorphic Reading in Strickland and Jaramillo's *slippingglimpse*."
Electronic Book Review (under submission, 2017).

Polymorphic Reading in Strickland and Jaramillo's *slippingglimpse*

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Abstract

This essay explores the different modalities of reading in Stephanie Strickland and Cynthia Lawson Jaramillo's *slippingglimpse* (2007). It responds to the challenge of analyzing poems that behave like events. *slippingglimpse* is a collaborative, kinetic and generative digital poem composed of text and moving image that "reads" and departs from multiple sources. One of these is Paul Ryan's videos of wave patterns, also known as *chreods*, to which words and phrases are mapped, rotating and scaling as they move. Complementarily, source texts act as thematic threads, but also as corpora that Strickland appropriates. The reading processes and modes involved in the poem's output are complicated by a feedback loop introduced by the authors: "water reads text, text reads technology, technology reads water, coming full circle." This polymorphism is accentuated when read alongside the textual sources and themes, some of which are here discussed at the level of cycle, capture, self-reflexive vocabulary, environment and fabric, with the source story of "the torture of the flax" acting as an allegory for women's oppression. In sum, this essay reads *slippingglimpse*'s various elements: interface, source code, text displayed onscreen, spatial and temporal dimensions. This approach is accompanied by an experiment undertaken during the reading process: a fast forward modifying deformance. By modifying the temporality of the poem's presentation, this essay adds another reading method for analyzing kinetic text behavior.

Keywords: Stephanie Strickland, Cynthia Lawson Jaramillo, Paul Ryan, slippingglimpse, Digital Poetry, American Poetry, Ecopoetry, Polymorphic Reading

The Song is never at an end.

—Hans Christian Andersen, "The Flax" (1853: 148)

Introduction

Stephanie Strickland and Cynthia Lawson Jaramillo's *slippingglimpse* is a poetic work that enacts polymorphic modes of reading.[70] A critical analysis of these modes—involving different aesthetic modalities and composition strategies—can be undertaken from several angles. This essay focuses on the strategies employed regarding the composition and the very act of reading, which are reinforced by notions of cycle and capture. These issues become more complicated when we write and read in a "complex surface" (Cayley 2006). Therefore, instead of using a top-down method, encircling the poem in a specific critical framework, I have adopted a bottom-up method. This essay does so by crossing different conceptions of reading. From this perspective, how can we then interpret poems that behave like events? The approach here is to analyze *slippingglimpse*'s interface, source code, text displayed onscreen, spatial and temporal dimensions.

I argue that the modalities of reading presented by the authors—as well as their particular conceptions of what reading means—provide an original environment at the kinetic and systemic level. At the same time, the reading environment is complemented by conventional elements of language inscription, which cannot be dismissed at the functional level. The composition strategies match text behavior and motion of recorded water. Furthermore, I argue that a critique of the text behavior can be explored by deforming the onscreen temporality. This kind of experimental data invites new ways of analyzing poems that evolve over time, that is, poems that behave as events, in that their time-based transitions can be observed from a novel point of view. This brings us to our main questions: How is space and time framed and inscribed? What modes of reading are set in tension and complementarity?

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[70] The work was published on the Web at http://slippingglimpse.org/ (2007) and was first presented at e-Poetry 2007 in Paris. It has since appeared in *hyperrhiz: new media cultures* 4 (2008), at The Electronic Literature Organization 2008 Media Art Show, and at e-Poetry 2009 in Barcelona. *slippingglimpse* appears in the *Electronic Literature Collection*, Vol. 2 (2011), edited by Laura Borràs, Talan Memmott, Rita Raley, and Brian Kim Stefans.

slippingglimpse is a collaborative, kinetic and generative digital poetic work, developed in Flash, which combines static text, moving text, and moving image. Strickland wrote the text and Jaramillo coded the scripts with motion tracking image-to-text algorithms. Paul Ryan recorded the videos off Maine's Atlantic Coast. The videos capture wave patterns, which the authors, following Paul Ryan, refer to as "chreods." *Creode* or *chreod* is a term coined by the British biologist C. H. Waddington (1957), when describing embryonic development and its "equilibrium, which is restored after disturbance" (1957: 32). Waddington, working within theoretical biology, reflects about living systems, natural selection and genetic "polymorphism" (1957: 108), that is, genetic variation. On reviewing Waddington's *The Strategy of the Genes* (1957), Hans Grüneberg refers to the notion of *strategy* used by Waddington as pertaining to "the long time-scale of evolution" (1958: 75).

Following Ryan, Strickland and Jaramillo (2007b) signal an idea of "reading chreods," and connect it to French mathematician René Thom's extended study of chreods in catastrophe theory (1975, 1983). "For Thom," they continue, "all creation or destruction of forms can be described by the capture of one set of attractors by another." *Chreod* is a neologism originated from two Greek words: *chreon* (necessity) and *hodos* (way, road). Thus, it describes an "obligatory path" or pattern to which dynamical systems, after disturbance, return. Therefore, two important aspects lie in *slippingglimpse*'s foundation and presentation: the notions of cycle and capture. Yet, it remains to be discussed whether this work succeeds in fully giving shape and agency to "the inherent trajectory of a system," as Waddington (1957: vii) would put it. Moreover, Strickland and Jaramillo's notions of "reading" seem to suggest that the interaction between the living systems presented in the work—biological systems, nature, language and code—could be problematized in the light of the "evolutionary model" referenced in the poem's sequence 10. Strickland contends, however, that the work

> is not an attempt to enact living systems; if anything, the opposite, an attempt to engage with non-living systems. It acknowledges, or shows, that the nonliving systems (the video affordances, the wave motion) are themselves intelligent systems that absorb and emit patterns that can be read as messages.

> (…) I specifically set out to engage the non-human, e.g. waves and
> mathematical patterns, the non-organic, the abstract, the technological.
> (2017a: 5)

Is then the text in the poem referring to evolutionary technology but no trying to
enact it? By drawing lines from morphogenesis, such as those put forward by Thom—
who in turn draws from Waddington's work—*slippingglimpse* attempts instead to
enact strategies of behavior that replicate Thom's dynamical systems' descriptions.
The polymorphic nature of writing and reading needs then to be investigated.

Exploring the Interface: How "to Module" Agency and Navigation?

Figure 1. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Opening screen.
Screenshot.

The opening screen of *slippingglimpse* (Fig. 1) presents us with 10 thumbnails and an
invitation: "select one to start." In fact, given the non-linear but relational structure of

each sequence of the poem, the instructions suggest that the choice of entry point is trivial. Since the thumbnails are neither titled nor numbered, for the sake of articulation and the reader's clarity, I would number them as follows:

1	2	3	4
5			6
7	8	9	10

However, the available source code reveals a different file notation system, which I will follow:

1	2	3	4
10			5
9	8	7	6

Figure 2. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Modified opening screen with superimposition following the work's cyclical numbering. Screenshot.

The spatial organization emphasizes how the system, even if non-linear, follows a cyclical configuration, a circle—an option, Strickland argues, that is related to modes of reading:

> This order provides a default mode of reading in three senses: 1) in lieu of the readers refusing to choose, it accommodates the rational/linear convention of starting in the upper left corner; 2) it mirrors the order of the pages / screens as printed in *Zone : Zero* (2008); 3) if in playing the piece you choose the forward carat for 'next,' the 'simplest' choice, it enforces that cyclic order. (2017b: 1)

Figure 2 illustrates the chosen direction. The numbering of the poem's fragments and thumbnails is clock-oriented, perhaps suggesting a clock time analogy and clockwise motion that is already pointing to the divergent, but "concurrent times" (Strickland 2015) the piece foregrounds. At the level of spatial composition, it is worthwhile to note that the array of 10 rectangular thumbnails forms, in turn, a larger rectangle. In the center of this arrangement, we find the phrase "select one to start." And so, by clicking, we start.

One of the major issues in Web-based works of digital writing is precisely the creation of the structure, mechanics and skin that will mediate between the user-reader and the work. That mediation takes shape as an interface. Since every work is idiosyncratic, in that it is a project bounding writing and programming, every new work tries to redefine the interface and the experience the user will have. To that extent, it is in the early stages of conceiving a new piece that decisions that will drastically affect the work are taken. These decisions, at the level of code, will inform the mechanics, visual appearance, the reading experience, and the capabilities offered to the user-reader to navigate, read, and see text and image.

The interface, as Emerson's study (2014) investigates, can either be rendered invisible—a black box, whose inaccessibility does not allow for an understanding of its inner-workings—or visible, in that many authors try to account for the exposure of the errors and glitches of its underlying processes. Reading kinetic text onscreen involves complex time-based and spatial decisions, and possibly new approaches. In creating new pieces, reading strategies often demand unique interfaces. Therefore, these strategies often transgress previously known work from the point of view of text behavior and speed, and the way it will affect the reader's engagement. In *slippingglimpse*—Strickland stresses—the challenge was to acknowledge and question the water's role and agency: "How do you give agency to what isn't normally thought of as having agency? (…) How do you model that in an interface?" (2015) Thus, there is a primary attention given to nature's agency, as well as an invitation put forward to the reader so that the exploration of the interface is done in such a way as to replicate an experience of the organic and active nature of the water. Strickland's question resonates: "How does the water read the text?"

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Figure 3. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Full-screen mode of sequence 6, "lettuce". Screenshot.

As Figure 3 shows, selected words and phrases of the poem's textual corpus—stylized with Scriptina—are called to specific pixel locations related to the transitions in the water video's pixel brightness. They are not superimposed in the video, since they are not layered. Instead, the Scriptina and video co-exist and co-evolve according to a "hard-coded [table from which] locations are randomly assigned to words/phrases." (Jaramillo quoted in archive documents, Strickland 2017a: 9). These words and phrases open up for tensions and multiple reading combinations in its display, but also for a level of unreadability. Since the interface is developed in Flash and the main body of the source code is not accessible—positioning this work in-between a visible and invisible interface—Strickland and Jaramillo (2007b) explain that at each 10-pixel color change in the water, a new location calls the Scriptina. This feature prompts interaction between the color of the water, moving image and text. If the user-reader clicks "regenerate," the Scriptina refreshes its path, mirroring, according to the authors, the chreodic patterns of Thom's attractors: "The simplest attractor of a dynamical system (*M, X*), after the point, is the closed generic trajectory." (Thom 1975: 96). The words and phrases are seemingly animated according to three states: floating, hanging and scaling. Reading the code, we will see

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how the authors annotate two motion properties: rotation and scaling (growing and shrinking). If the user-reader selects "scroll text" mode, the thin calligraphic-like font Scriptina, enhanced by its organic features, is now complemented by the stable and total version of that sequence of the poem. The scroll text can also be set in motion, much like film credits. It can be sped up, slowed down, stopped, and its direction reversed. Whether the scroll text functions as a complementary reading mode, a stabilizing reading, or if it perverts the innovative motion behavior of the text and water in the upper part of the canvas, or if it does both, is something we need to consider.
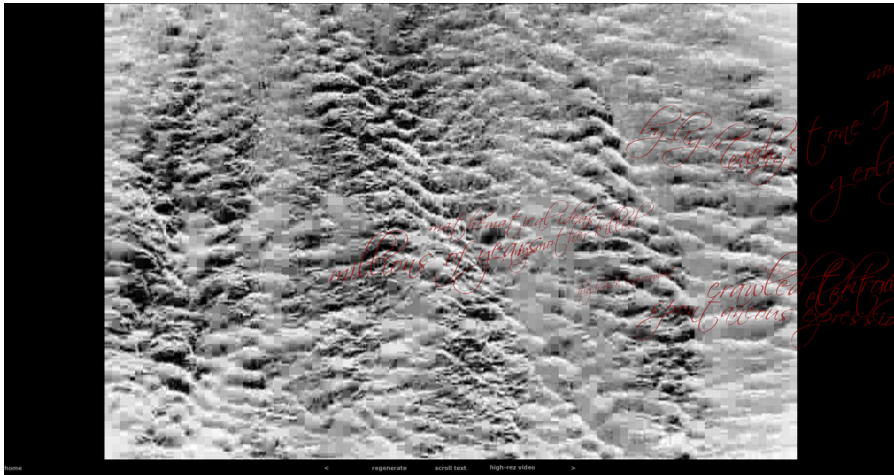

Figure 4. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Full-screen mode of sequence 1, "upward". Screenshot.
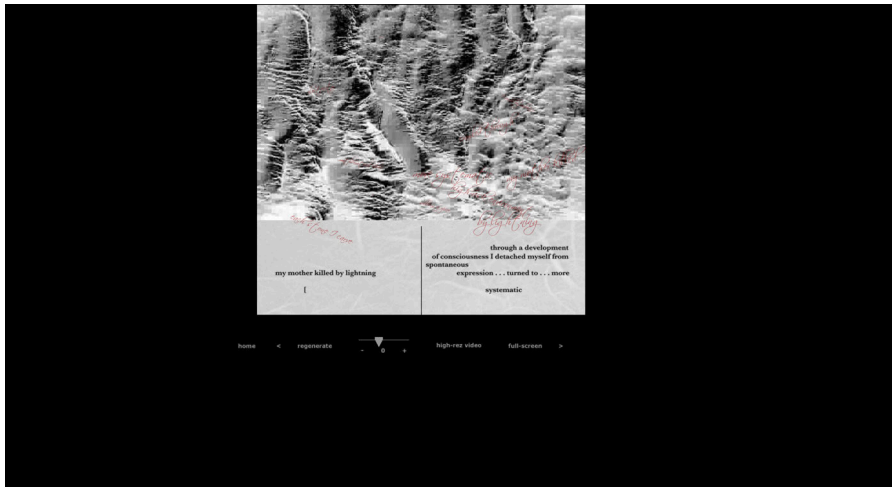
Figure 5. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Scroll text mode of sequence 1, "upward". Screenshot.

Contrasting two images from sequence 1, "upward," in full-screen mode (Fig. 4) and scroll text mode (Fig. 5) can help open up the discussion. On the one hand, the full-screen mode presents a full screen resolution of the video with the kinetic Scriptina. On the other hand, the scroll text mode presents a smaller video canvas with a scroll aligned with the video frame, visually split in two columns. The text shown in the scroll is static, but the presence of a controller allows the reader to vary the reading pace and direction: forward, pause, or rewind. Perhaps this attempt to stabilize the text and present it in its entirety is also set, as Strickland (2015) comments regarding speed, "against the grain" of many works of electronic literature. For Strickland, "the point of poems or art works is to break down inhibiting or oppressive habits of language and vision and thought." (2017a: 8)

An important aspect in the work's interface is its 3-way reading mode, an aspect analyzed into more detail below. According to the authors, "The poem is structured as three 'readers'—who, in a ring, read each other's readings, performing both mutuality and interdependence" (Strickland and Jaramillo 2010). This aspect is relevant when set in the context of Paul Ryan's "threeing" social theory applied to cybernetics, ecology and art. To Ryan, the dynamic dialogue that is established between three persons—in opposition to the classic back and forth dialogue between

two that excludes the third—demands a triadic approach to relational speech: initiator, responder, and mediator. In *Video Mind, Earth Mind* (1993), Ryan exposes this semiotic model—following C. S. Peirce's predicaments of firstness, secondness, and thirdness—in human relations and artistic projects, in that a common notion influences and is being influenced by each actor. The interface structure then speaks to a non-hierarchical conception of communication and behavior in dynamic systems.

Polymorphic Reading Strategies

slippingglimpse is marked by a hyper-rationalized lyrical subject. In the scroll text mode of sequence 1, "upward" (Fig. 5), we are given entry points to a personal account that has undergone a process of breaking away from confessional expression: "through a development / of consciousness I detached myself from / spontaneous // my mother killed by lightning // expression (…)."[71] This thematic thread is further intensified by Strickland's recurrent use of mathematical and computational vocabulary.

---
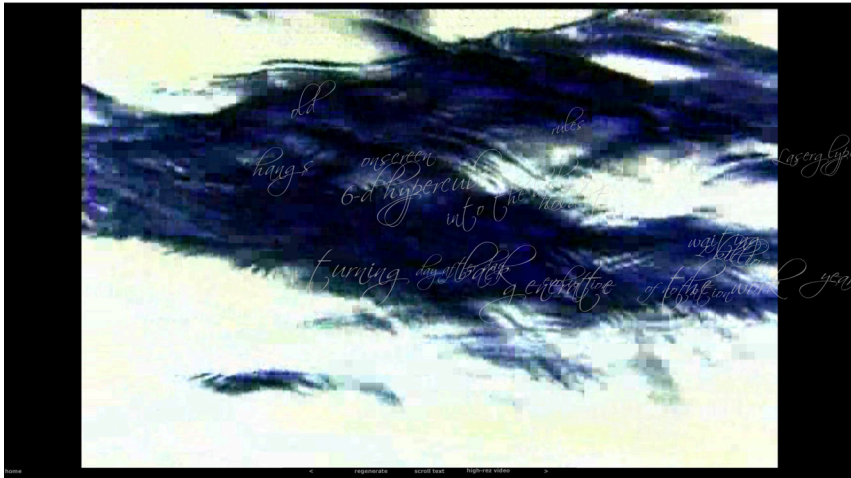
[71] I use the convention of virgule ("/"), in addition to a new notation with the double virgule ("//"), to respectively mark line break and column break. I am aware this notation can be problematic, especially in poems with spatial and visual syntax. In all possible occurrences, I will try to add a screenshot of the work instead of citations.

There is, on the other hand, a self-reflexive concern weaving together the whole, in terms of allusions that subvert the primary sense of vision: "seeing is forgetting the name of what you see" (2, "blueFeather") or "I finally learned to see beyond the retinal experience" (3, "green"). Vision is extended in terms of capture technologies, in "harvesting plants for food and flax for paper," photography, videography and scanner references. It is further amplified by the very form and motion properties of the poem: "very slow-motion / flicker // animation / hangs onscreen" (2, "blueFeather," Strickland 2008: 92). The work's self-referentiality is thus elaborated at the level of a writing program and process that attests to a "reflect[ion] on the materiality of their production" (Hayles 2006: 181).
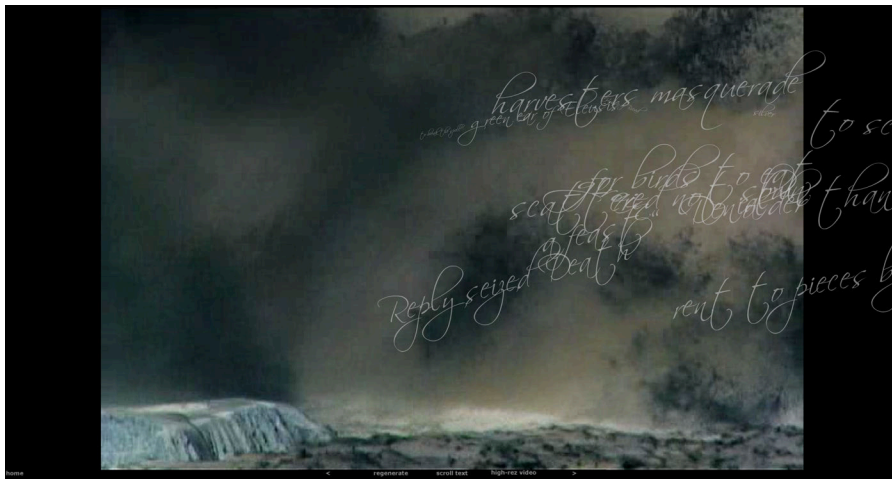
Figure 7. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Full-screen mode of sequence 8, "inkCrash". Screenshot.

The reading strategies complement each other and create tensions and ambiguities in the way readable and intelligible text is perceived and plays out in the reader's cognition process. They also address nature, human and non-human agency, and the machine "reading" process, that is, execution. "What is multivalent and flickering in code emerges from its being read, simultaneously, by many entities. For

code to be read is for it to come 'alive,' to run, to work, to do something. This coming alive is called 'execution,'" the authors state in "Dovetailing Details Fly Apart" (2007b), an explanatory essay about the work published at the piece's online domain. (As a matter of fact, this webpage[72] contains one, of only, two partial records of the source code; it shows a screenshot of lines 95-146 set as background image.) In trying to understand these diverse reading strategies and layers, we need to make a distinction between modes of *writing* as reading, modes of *reception* as reading, and modes of *reading* as reading.

First, the piece's composition draws upon several textual sources, which Strickland sampled, appropriated and remixed. Then the poet rewrote them by adding new text as well. Content sampled and recombined includes the words of visual artists working with digital means (e.g. Helaman Ferguson, Manfred Mohr, others) as found in two issues of *YLEM: Artists Using Science and Technology*, one focused on "Art and Programming" and the other on "Photo-Based Experimental Work." An important source is the Silesian folktale, "The Passion of the Flax," dealing with technology used to capture food and flax (for paper), and its analysis by Robert Eisler and W.L. Hildburgh (1950). Yet another inspiration was the existence of Hildegard of Bingen's constructed language, *Ignota Lingua*, and her saying, "The air lives by turning green."

Second, critical reception of *slippingglimpse* has been quite generous, addressing the form, mechanics, apparatus, interface, human and non-human cognition, and nature-human agency. Theoretical approaches by Hayles (2008a), Funkhouser (2012), Swanstrom (2014), and Le Cor (2014) have built upon the work's cybernetic, multimodal, nature-human ecology, mathematical and scientific references to extract relations with textual content. Yet, a deeper analysis of the poem's *text* is vital and cannot be seen as secondary. The text is being sampled and recombined, true, though the text is not any random text. How is the text being read and what does the text speak of?

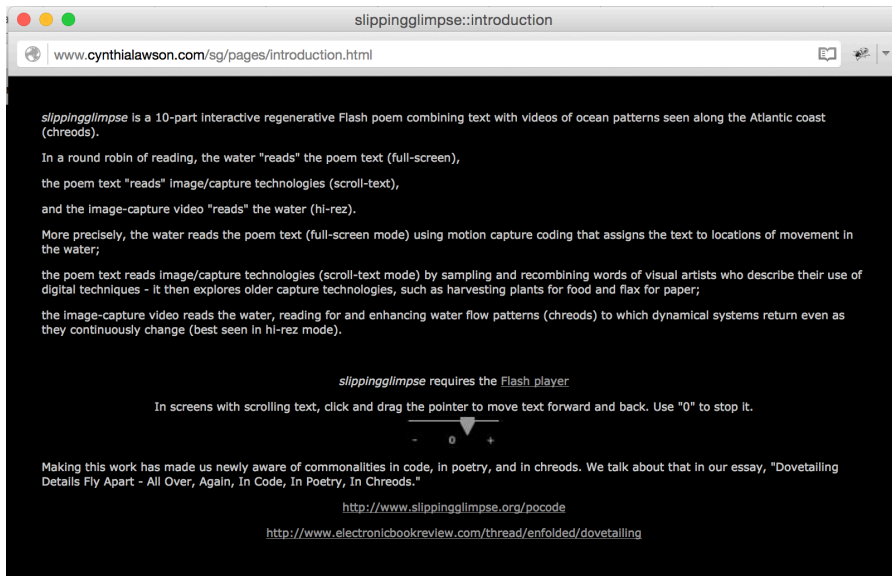[72] See http://www.slippingglimpse.org/pocode

Figure 8. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Introduction presented as a pop-up browser window. Screenshot.

Third, another reading layer is emphasized by the authors in the "introduction" (Fig. 8) and summarized in the synopsis of the piece (Strickland and Jaramillo 2007b) when they claim that "water reads text, text reads technology, technology reads water, coming full circle." The idea of cycle is then further accentuated by these reading loops, and by the very forward and rewind movement of the videos. Whereas the text behavior replicates the water movement, the scroll mode replicates the videos' animation direction, back and forth. In the "introduction," the authors refer to "commonalities in code, in poetry, and in chreods." In fact, the loop figure can be seen as the cycle of recursive function in code, the loop in poetic expression and the pattern to which the flow of waves returns. Coding and writing co-evolve as an "*evolution* of notation" (Strickland 2008: 92). This aspect has been further developed in David Jhave Johnston's model of "aesthetic animism" (2016). Johnston elegantly elaborates on the relation between life, language and computation:

> Reading poetry is innately recursive (as in program execution in a computer). The eye enters the poem, follows a line of meaning, feeds what is found back

into what is seen (what has been known, felt, touched, or heard), and this loop occurs again and again, in an iterative, cyclic process. Semantic epiphanies are proximal to chaotic blossoms in the brain. Code and poetry, poets and programmers, share a common concern with efficient, taut, resilient language (…) (2016: 12)

Poetry and code's recursion is in fact grounded in semantic and functional loops that can be considered as "iterative, cyclic process[es]." These processes lie in the foundation of *slippingglimpse*'s coding and in the visual and reading strategies presented in the interface. Strickland (2015) stresses this facet by mentioning it as "a cycle of reading experiences." Analyzing all these "reading" notions entails then systematization:

Strategies: Modes, Functions and Layers of Reading

Modes

- Full-screen + high-rez video: unstable; degree of Scriptina unreadability; chaotic
- Scroll text: degree of stabilization; horizontally and vertically readable text

Functions

- Regenerate function: the video is refreshed with random Scriptina selection
- Scripted kinetic functions: rotating and scaling Scriptina with size changes
- Resulting kinetic states: floating/hanging and scaling Scriptina
- Scroll text pointer: speed, pause, and reverse direction controller

Layers

- Video "reads"/captures water
- Water "reads"/assigns Scriptina
- Text "reads"/appropriates other texts

Figure 9. Schema presenting modes, functions and layers of reading in *slippingglimpse.*

As the diagram in Figure 9 indicates, *reading* can be understood under many guises. These strategies can be grouped under modes, functions and layers. The modes of reading are full-screen, "high-rez" (high-resolution) video and scroll text, though according to Strickland (2015) the high-rez mode is not entirely high-

resolution. The full-screen and high-rez reading modes are unstable. They are chaotic and the Scriptina features a degree of unreadability. Strickland (2015) notes, "if we look at the 'high-rez,' you can kind of see the pattern, you can feel the water, just what the water is doing. And to me, in 'full-screen' you start reading the language." This suggestive reading points at a complementary relation between pattern, fluidity, vanishing points, and language. While in the high-rez mode the videoed water motion patterns acquire more prominence, in the full-screen mode the text acquires more prominence. The co-existence and "co-processing" of water and Scriptina motion prompt a cinematic experience, as the Scriptina's "calling of location from the lookup table [is] keyed to *changes* in pixel brightness." (Strickland 2017a: 7, emphasis original). The reader cannot control the output of the scripted kinetic functions. As Strickland (2017a: 20) points out, the "camera and the coding control them." The third reading mode—the scroll text—can be stabilized and destabilized. If the reader runs it too fast, it also features a degree of unreadability. However, the scroll text is more stable, since it can be controlled. The text lines are static, but the scroll can be moving or still. It can be horizontally and vertically read, being divided in two columns. This strategy, though, is not new. As Quentin Meillassoux's *The Number and the Siren* (2012) reminds us, Stéphane Mallarmé's groundbreaking "Un Coup de Dés Jamais n'abolira le Hasard" (1897) uses the double-page spread as a unique canvas, as if they were two columns to be horizontally and vertically read. In *slippingglimpse* we are not faced with a page, but with a scroll. Still, these are practices that experimental poets have tried out, whether in scroll or page exploration.

The scripted functions and methods are multiple. "Regenerate" restarts the video. The water and Scriptina motion is refreshed with a method that randomly picks selected words and phrases. At the kinetic level, the Scriptina behavior is scripted with different font sizes. The Scriptina rotates and scales: growing and shrinking. The resulting display effect is comprised of floating, hanging and scaling Scriptina states, modeled after the attractors. The Scriptina "text fields" behave as if they would breathe, expanding and compressing, inwards and outwards, in and out of the frame, like an organism retracting and expanding. At times, some phrases assume diagonal or oblique trajectories, though they are always flickering. In some sequences,

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this choreography assumes fast intercepting animations. On the one hand, the regeneration and scripted kinetic functions occur in all modes of reading. On the other hand, the pointer is only presented in the scroll text mode. The pointer allows the reader to control the scroll text with the following parameters: speed; pause by placing the pointer on "0;" and direction, forward or rewind, by moving the pointer toward "+" or "-." Unlike other kinetic poems whose onscreen reading pace the reader cannot control, the scroll text mode presents a speed controller whose function does also formalize Strickland's writing program. It facilitates a slower mode of reading, as "it's very much against the grain of what a lot of e-lit [electronic literature] is, which is how fast can you do it" (Strickland 2015). The scroll text reading experience then features "reversibility and replay" (Strickland and Jaramillo 2007a). As Christopher Funkhouser points out, "This is not only an example of poetry in motion, but digital poetry reflecting nature in motion." (2012: 173)

Finally, reading—from the authors' perspective—comprises multiple meanings. *Reading* is a polysemic verb that accounts for seeing, interpreting, capturing, assigning, coding, appropriating and remixing. These layers deal with water-image-text loops, and represent the video *reading* water, the water *reading* text and the text *reading* text. That is, the video has captured a possible reading of the water, enhanced by filters used by Paul Ryan. In return, the motion-tracking code, whose parameter is pixel color change, runs through the video and sets different locations for the Scriptina "text fields" movement. Completing the cycle, the Scriptina "text fields" are composed by sampling, copying, writing and remixing other texts. This source reading acts at the level of reworking appropriated text, such as the folktale "The Passion of the Flax," which we will examine below. These cyclic strategies then behave as "a circuit-loop feedback operation" (Strickland and Jaramillo 2007b), which Katherine Hayles (2008a) has stressed, by considering the feedback loop from a perspective of human and non-human cognition.

Crossing Critical Frameworks

Hayles's contrast between "deep" and "hyper attention" (2008b) is a useful critical framework to engage with when reading *slippingglimpse*'s static and kinetic text. We can certainly see the scroll text mode as a tribute to "deep attention," and the full-screen mode as "hyper attention." All combined, the reader is doing "what anthropologists call polychronic time, [and] software engineers call multitasking," to borrow an expression by Strickland (2007c: 28), which Chris Funkhouser reminds us of. Funkhouser's distinction between "projected" and "participatory presentational strategies" (2012: 14) is highly relevant, in that projected poems are non-interactive, while participatory poems involve input from the reader. Since there is a low level of interaction required from the reader in the traversal—participation acting when the reader decides which thumbnail she chooses, which part to regenerate, which mode to engage with, and at what speed and direction she reads the scroll text—we can consider *slippingglimpse* a participatory poem that contains a high level of projection, that is, cinema-like qualities. The poem's multimodality unequivocally serves the purpose of complicating the way we perceive and read moving text onscreen. For Anna Schaffner and Andrew Roberts, "The illusion of complex surfaces and multiple strata of visual and linguistic signs is a specific feature of the new medium [digital], which many digital poets exploit creatively." (2006: 40) Therefore, reading a multilayered and multimodal work requires critical action at all levels.

Best and Marcus (2009) present a notion of "surface reading" as a direct reading of what is visible in the text, as opposed to "symptomatic reading" approaches that extract meaning from hidden elements. Yet, the potential of their "surface reading," literally meaning the digital surface, versus, or in complementarity to, what I would call an *underground reading*—accessing and trying to understand the inner workings of the source code, as a functional and paratextual layer—is not taken into consideration. Best and Marcus's "surface reading" is not equivalent to Strickland's "reading surface" (2009). For Strickland, the interface, a "transient screen *state*"—or Philippe Bootz's "the *transitoire observable* (…) the physical event" that propels a

"narrow reading" (2013: 57-58)—contrasts with the "storage surface." The poet underlines the importance of reading the source code and re-reading the surface:

> If she [the reader] learns to read code, she will know better, but still not entirely. She actually must reread to know anything at all beyond *a surfing glimpse or glance*, which may prove satisfying, but may also prove intensely frustrating. She must, in many respects, become a metareader, reading her reading, her reaction to this new reading-condition, in order to experience the work fully, to judge where the creativity and point of the work lies. (Strickland 2009, emphasis mine)

This conception of the "metareader" is different from Bootz's notion (2006, 2013). Bootz focuses on a procedural model that implicates reading the surface as a "narrow reading," that is, "interpreting the texte-à-voir only" (2013: 57), and metareading as deepness:

> (…) meta-rules are not "technical rules", but the expression of a complex esthetical intention that lies in programming and can only be perceived by looking at the program. This intentionality is not addressed to the reader but to a 'meta-reader': reading is a limited activity that is unable to give a complete knowing of the work. (Bootz 2006)

Though we are presented with two different positions, both acknowledge reading and meta-reading surface and code as reception experiences that provide a sense of incompleteness, despite their complementary nature. Because they are complementary, my reading of *slippingglimpse* entails displayed text and image, and code. For as Strickland and Jaramillo aptly note:

> For a traditional poet, there is a comparable need for awareness of historical, etymological, dialectical, regional, class-based, craft-based and musical aspects of speech and writing. Most poets begin with their mother tongue. […] But a programmer chooses a language like a composer chooses instruments, for the things it does well or quickly, for its affordances, those fundamental properties that determine just how a thing could possibly be used. (2007b)

A reading "excavation" method—taken in a different sense from that of media archaeologists Erkki Huhtamo and Jussi Parikka (2011), or from Jessica Pressman's exposition (2014: 59-60), where there is no code interpretation—involves the

metaphor of digging underlying layers, but also the actual practice of understanding what code does as a distinct set of files and data that structures the mechanics of a piece. This method is closer to the notion of critical code studies developed by Mark Marino (2006). Therefore, we consider two levels: the seen and the unseen, the surface and the underground, or in Schaffner and Roberts's analysis of digital rhetorics (2006), surface and depth.

Underground Reading

Reading *slippingglimpse* at the source code level provides little information, if we consider what is available on the Web. The source code in ActionScript, Adobe's Flash scripting language, is inaccessible, a fact that a critic can explore if the FLA files are available. The few video frame parameters can be found by viewing source. Also, the formatter—inside the HTML `<head>` tag—provides metadata:

```
<META   NAME="Generator"   CONTENT="(c)1998,   1999,
2000, 2001, 2002, 2003, 2004 All rights reserved.">
```

Given that *slippingglimpse* is programmed in the closed-source authoring platform Flash, I can only continue commenting on the poem's generator because I was supplied by Strickland and Jaramillo with a source code plain text file named "slippingglimpse_code_rtf."[73] The gift code comes with annotations as well.

Time is vital in kinetic poetry and scripting time involves setting intervals, timeouts, delays, `while` or `sleep` conditions. In the Object-oriented programming (OOP) languages JavaScript and ActionScript, these conditions are often translated by scripting the methods `setTimeOut()` and `setInterval()`:

```
\f1\b0 //code for preloader (percentages increase on screen as
flash file is loading)\
```

---

[73] Otherwise, as many who programmed in Flash know, we cannot access the compiled ActionScript SWF files in the data structure. These files contain detailed information on the work and are archived in "Stephanie Strickland Papers, 1955-2016," at the David M. Rubenstein's Rare Book & Manuscript Library, Duke University. See http://library.duke.edu/rubenstein/findingaids/stricklandstephanie/ The files can also be accessed and downloaded in the ELMCIP KB.

```
stop();\
var loadingCall:Number = setInterval(preloadSite, 50);\
function preloadSite():Void \{\
        var siteLoaded:Number = _root.getBytesLoaded();\
        var siteTotal:Number = _root.getBytesTotal();\
        var                    percentage:Number              =
Math.round(siteLoaded/siteTotal*100);\
        percentDisplay.text = percentage+"%";\
        if (siteLoaded>=siteTotal) \{\
                clearInterval(loadingCall);\
                gotoAndStop(5);\
        \}\
\}
```

The variable `loadingCall` calls the function `preloadSite` and is set with the method `setInterval` every 50 milliseconds. We can read both in the coded function and in Jaramillo's comment that the loading percentage is displayed onscreen, and once loaded, the interval is cleared out. What the source code reveals of interest for my analysis is, for example, the name of the calligraphic-like font, Scriptina, and the scripted functions that include the motion detection code developed by Guy Watson from FlashGuru.[74] When trying to understand how pixel color changes act as intervals in calling and assigning the array of Scriptina text fields, we find the C++/Java comment syntax:

```
//"pixels"x variables contain pixel arrays from the motion
tracking code.  Every 10 seconds, a new matrix of arrays is
produced.  There are as many matrices as there are 10 seconds
in the video.\
```

The function `initialize`, together with 30 "pixels" variables with numbered pixel array combinations—bitmap data matrices—grant that the variable `textArray` is randomized in the X and Y axes accordingly to pixel variation. In the RTF file, we find excerpts of words and phrases from sequence 10, "leaf":

```
//this gets called once.  Everything are initialized\
function initialize() \{\
     //     \
     moveTextsX = new Array();\
     moveTextsY = new Array();\
     fadeTexts = new Array();\
```

---

[74] See http://www.adobe.com/devnet/archive/flash/articles/webcam_motion.html
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```
     allPixels = new Array();\
     randomArray = new Array();\
     //textArray has selected words/phrases from the poem\
     var textArray:Array = new Array("algorithmic      art", "but
then", "who\'d5s to   say", "genetic      brushes", "Denial", "slender
reeds", "to come", "numerical          image        zone", "I find
myself", "alone", "animation             industry", "no  human
intervention", "info", "luminance", "living on light", "food chain",
"slipping glimpse");\
     //\
     numTexts = textArray.length;\
     //\
     //for loop dynamically creates text movie clips for each word\
     for (i=0; i<numTexts; i++) \{\
          var r = random(500);\
          textClip0.duplicateMovieClip("mc_red"+i, i+1);\
          this["mc_red"+i].myText = textArray[i];\
          this["mc_red"+i]._x = random(600);\
          this["mc_red"+i]._y = random(300);\
     \}\
```

We realize that the text array is incrementally randomized and it has, in some cases, larger spaces between words in order to allow a more efficient reading and recombination at the display level. Inside the loop function onEnterFrame = function () that initializes when the frame is loaded, we find the code for the slider in scrollingText and the full operative conditions for text behavior, that is, rotation and scaling:

```
//If 10 seconds have past, then increase pixelArray to read next
matrix with location points.\
     if (pixelTimes>150) \{\
          pixelArray = pixelArray+1;\
          pixelTimes = 0;\
          for (var i = 0; i<numTexts; i++) \{\
               randomArray[i] = 0;\
          \}\
     \} else \{\
          pixelTimes = pixelTimes+1;\
     \}\
     //\
     //behaviors for the individual text fields\
     for (var i = 0; i<numTexts+1; i++) \{\
          var whichfield = this["mc_red"+i];\
          var whichText = this["mc_red"+i]["red"+i];\
          //\
          //some will rotate back and forth - gives an "organic"
feel to text in water\
          t = random(15);\
          if (t == 1) \{\
               whichfield._rotation = whichfield._rotation+1;\
          \}\
          if (t == 2) \{\
```

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```
                    whichfield._rotation = whichfield._rotation-1;\
            \}\
            //randomized scaling - growing and shrinking.    \
            t = random(1);\
            if (t == 0) \{\
                    if (whichfield._width>=500) \{\
                            scalerArray[i] = -10;\
                    \}\
                    if (whichfield._width<=10) \{\
                            scalerArray[i] = 1;\
                    \}\
                    whichfield._height                           =
whichfield._height+scalerArray[i];\
                    whichfield._width                            =
whichfield._width+scalerArray[i];\
            \}\
            //\
            if (randomArray[i] == 0) \{\
                    r = random(this["pixels"+pixelArray].length);\
                    randomArray[i] = r;\
            \}\
            //\
            //each field will move to the location designated by
"pixels"X and will not stop moving until it gets there, or until
another location is designated (updated every 10 seconds)\
            if
(whichfield._x>(this["pixels"+pixelArray][randomArray[i]][0])) \{\
                    whichfield._x = whichfield._x-textSpeed;\
            \} else \{\
                    if
(whichfield._x<(this["pixels"+pixelArray][randomArray[i]][0])) \{\
                            whichfield._x = whichfield._x+textSpeed;\
                    \}\
            \}\
            if
(whichfield._y>this["pixels"+pixelArray][randomArray[i]][1]) \{\
                    whichfield._y = whichfield._y-textSpeed;\
            \} else \{\
                    if
(whichfield._y<(this["pixels"+pixelArray][randomArray[i]][1])) \{\
                            whichfield._y = whichfield._y+textSpeed;\
                    \}\
            \}\
    \}\
\};
```

The selection of words and phrases that live inside `var textArray:Array = new Array` are generated as Scriptina, while the scroll text displays the full text with regular spacing between words:
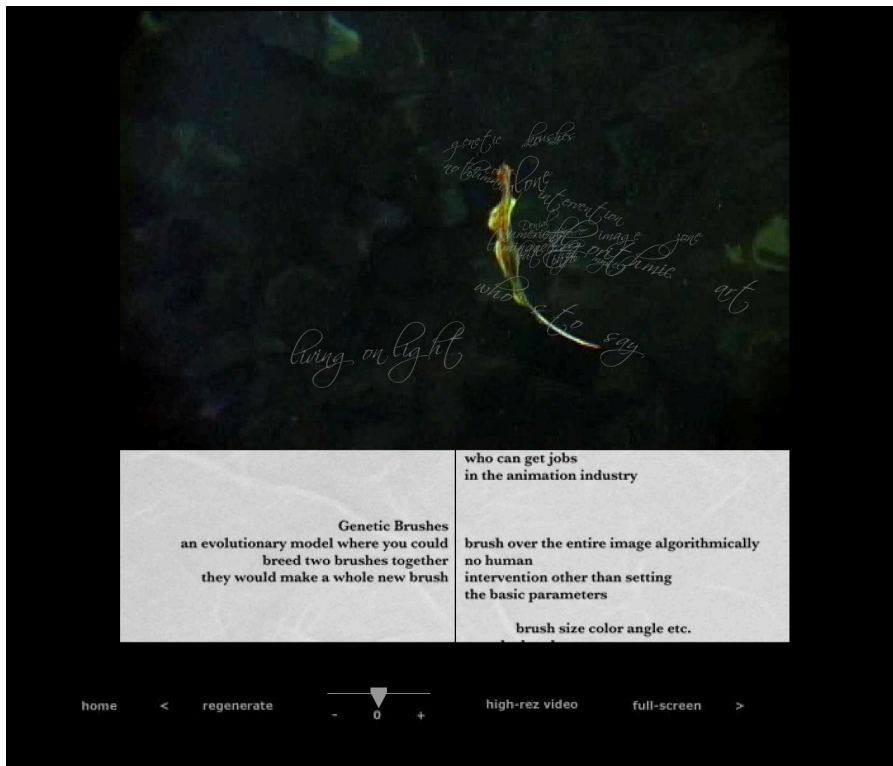
Figure 10. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Scroll text mode of sequence 10, "leaf". Screenshot.

The self-reflexive "leaf" sequence (Fig. 10) and the description of *slippingglimpse* seem to point to an "evolutionary model" and behavior of text and water. The image, while recording the patterns of waves, captures and is captured by the onscreen language. The processes involved in `scalerArray` and `randomArray` are based on aleatory and generative methods. These methods produce generation and regeneration, but they do not mutually respond to each other by varying in behavior as they are executed. As Strickland (2017a: 5) clarifies, "We do *not* suggest that the cycle of reading behaves in an evolutionary way. There is no changing environment, no time course of an evolution. The poem is a closed system. What we describe is closer to a game of telephone—the agency of each element, interfacing the next, impacts the output." That is, the text movement is mapped and in synch with matrices of pixel variation, but the pattern formation is neither evolutionary, in the Darwinian sense,

nor does entail prediction and self-reproduction. What Strickland describes reinforces notions of action-reaction and responsiveness. Ryan's threeing model is then being applied in an artwork. An open system would require that the recorded water would be regenerative or fed in real-time. This is no doubt the promise of future electronic literature and digital poetry. In *slippingglimpse* the feedback cycles in fact exist, yet they are not evolutionary, and thus need to be considered from a trope, rather than a functional, perspective.

By reading the source code available in the online implementation of the Flash files we are able to understand as well the video source (`src=`). The video frames run through the servers of dotEarth.com, an early Web registrar which in itself can be regarded as a trivial detail, unless we think about Paul Ryan's homepage, Earthscore.org, his book *Video Mind, Earth Mind*, and *slippingglimpse*'s own themes: ecological systems, testimony of ecological crisis, and artistic intervention at the level of cybernetic and ecological cycles of integration. When inspecting the source, we find Jaramillo's website as pointer. By having a closer look into the hyperlinked HTML pages, it is, at least, possible to read further details in JavaScript, which give us some clues about the poem's interface. Mouse over, click, preload image and swap image are some of the scripted functions in order to navigate the image and text interface. The parent directory at http://www.cynthialawson.com/sg/pages/ allows us to understand the underlying data structure upholding and indexing the piece. Here, we find "large" and "scroll" HTML and SWF files. These source files are behind the enlargement of the video in full-screen mode and enable the scroll text, which unfolds upwards, like TV credits, under the video frame.[75]

Even if, on the display level, the thumbnails are neither numbered nor named, their HTML file extensions (.html) and their respective Flash files (.swf) need to be named in order to be called by the program's functions. Further inspection at http://www.cynthialawson.com/sg/pages/videos/ reveals video files with the format extension .flv (Adobe Flash Player's video format). Below, I list Strickland and

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[75] The Flash object detection and embed JavaScript code, developed by Geoff Stearns, is uploaded at http://www.cynthialawson.com/sg/pages/swfobject.js.

Jaramillo's HTML page nomenclature system in the left column, which lives inside sg/pages, and what I first thought was Ryan's video files namespace in the right column, which lives inside sg/pages/videos:

```
1_upward.html               1_6_upward.flv
2_blueFeather.html          2_21_blueFeathervane.flv
3_green.html                3_7_green.flv
4_bladderwrack.html         4_4_bladderwrack.flv
5_sepia.html                5_8_calmSepia.flv
6_lettuce.html              6_16_lettuceLeaf.flv
7_sideways.html             7_3_sideways_Plant.flv
8_inkCrash.html             8_19_inkCrashing.flv
9_aquaGalaxy.html           9_13_aquaGalaxy.flv
10_leaf.html                10_1_turningLeaf.flv
```

By interviewing Strickland (2015), I learned the file namespace was solely authored by Strickland and Jaramillo, and not by Ryan. Attending to the names of the files separately might not reveal much. Yet, comparing their renamed file structure in the left column, upon the initial video file namespace, suggests the following semantic interpretation: sequence 2 moving tide reminds the authors of a feather vane (the flattened web-like part of a feather, consisting of a series of barbs on either side of the shaft); sequence 5 transmits tranquility; sequence 6 recalls a lettuce leaf shape; sequence 7 does not contain a synthetic rope-like material, but rather bladderwrack, a floating seaweed; and sequence 10 records a turning leaf.

Spatial Dimensions and Text Behavior: "Breaking the Frame"

I started discussing composition at the spatial level in the beginning of the essay, when considering the opening screen. The layout of the starting page is reminiscent of a "splash" screen, as the user is given a logo, credits and access to instructions in the form of an "introduction." When questioning Strickland about the importance of space in relation to content in her works, and especially in this piece, the poet referred to the relevance of the looping relation between the visual and written elements, and the frame. Framing is a basic bi-dimensional characteristic of designing a webpage or

a program that will run on a browser, as the canvas dimensions need to be set. Furthermore, the canvas is made out of possible image, text or video framing. To frame is also to set a point of view on a theme or an image.

Strickland replied that the text "keeps *breaking the frame*, when the image goes away, then it's like, it's this text which is being generated and generated, and generated and generated…" (2015, emphasis mine). Therefore, we become aware of an effect, or condition, in which the text runs over the frame, through and outside the frame. This visual effect is more visible in some sequences (Fig. 7) than others (Fig. 3), due to an interdependency contrast between the Scriptina font color, video color and the black background of the canvas. Strickland (2017a: 8) clarifies: "the words break through the edge of the full-screen. (When they are red, purple, or black on black this is hard to see; easier when green or silver). This possible bug was not planned but was seized by us as a feature—the straying of the text past set borders, not only when co-occuring with the video, but when the video runs out, and the text lingers."

The composition becomes even more complex when certain parts of the Scriptina text in the scroll text mode interfere with the scroll, as Figure 5 demonstrates—"Like drying up and leaving the seaweed. The video (…) can only live within its tech parameters—but the entrained text persists in the margins. When it dips down into the scroll (…) it actively solicits co-reading with the text there." (Strickland 2017a: 8) Text is 2D, but the attractors' location and the scaling states raise a tridimensional aspect, which is further enhanced by the 3D affordance of the moving water videos, where the piece gains an unexpected Z-axis. René Thom posits that "all morphogenesis [is attributed] to a conflict, to a struggle between two or several 'attractors.'" (1983: 26) As such, the interface elements seem to propose a new organism or living system, a pattern formation or morphogenesis, in that they try to model the water's agency and text as a form that cannot be framed. But this oscillation in trajectory returns to a common pattern, the chreod. Therefore, what has already been explored at the level of source code can now be explored at the surface display level, by changing the temporality of presentation.

Modifying Deformance

For Lisa Samuels and Jerome McGann (1999: 36-37), "deformative criticism" is a research methodology that means acting on a work by deforming it in order to highlight certain characteristics or to find new insights. At the time I was writing about Strickland and Jaramillo's work, I was experimenting as well with source code modifications (mods) and altered screencasts of Ian Hatcher's fast kinetic poems. In hindsight, I found Samuels and McGann proposals quite convincing as a broader approach similar to mine. However, they do not explore the methods of source code deformance—common within remix and open source culture—and screencast deformance. If the authors had done experimental criticism in this area, the modifying deformation would certainly fall, or share affiliations with their "altering deformation" category.

The method used to enable a modifying deformation of *slippingglimpse* is explained as follows. With screen recorder software, I created a screencast at 60 fps, during 30 minutes, while interacting with its interface. In order to produce a surface modified version, I set the screencast sequence timebase to 30 fps and sped up the whole duration of the clip to 275%. As a result, the 30-minute fast-forward recording becomes 10-minute long.[76] If we now regard the text behavior, we can more aptly observe the forward and backwards movement of the water and plants. The aesthetic expressiveness of the video's reverse motion is emphasized, as well as the choreography of the Scriptina text, which becomes strikingly evident. Moreover, the choreography—in a fast and seemingly chaotic way—shows how its trajectories are constantly intertwined with the water movement by dislocation, rotation (X, Y) and scaling (X, Y, Z). These transitions, when sped up, reveal that the attractors are tied to pixel color variation: when the water videos stop, the Scriptina continues scaling, but the scaling effects stabilize in one pixel location. Furthermore, it is clear that the content inside the Scriptina text fields do not randomize among each other, but they get entangled at the display level and can be restarted as a new sequence if we

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[76] The video can be accessed at https://vimeo.com/207029923

"regenerate" it. Thus, this modifying deformance of the temporality displayed reinforces, and makes even clearer, observable qualities of the text behavior and the effect of the code running.

Temporal Dimensions: "Concurrent Times"

If space is one of the crucial elements in the composition of a kinetic poem, the other, as we have just seen, is time. Kinetic poems are dependent on a tension between the text's readability and unreadability. This might happen in part due to temporal intervals set when programming a piece. Additionally, these dimensions necessarily relate to timescales; that is, the granularity of time when thought of, and framed, from different points of view (Waddington 1957). In *slippingglimpse*, the experience of time and renewal states is complex and multimodal. Sandy Baldwin's position on the fictional pact, or the conditionality of literature's "as if," resonates here: "Think of Jean-Paul Sartre's description of 'the poetic world' as 'love of the impossible.' Think of catastrophe theory, a la René Thom: the point is *changes of state*, intensifications of distended surface" (2015: 71, emphasis mine). As Strickland points out:

> The tracing of a heartbeat over a period of milliseconds (…) exhibits a pattern that remains the same. The concept of fractal shifts here from self-similar structure in space to self-similar dynamics in time. Thus, though you cannot tell what timescale you are looking at simply by seeing, or hearing, these patterns, the pattern's persistence does become a means to travel between timescales [as] it smoothes and destroys the huge amount of information hidden in the micro-measures, in the fluctuations, the interbeat intervals. (2007c: 26-27)

The patterns of the heartbeat and its changes can be related to the patterns of the waves and their changes, by the fact that both are dynamic systems that undergo stable changes. Samples of water dwell with instants in time and space—*glimpses* that our eyes apprehend and quickly lose, as the image *slips* away. These transition moments—passages from one condition to another, shifts in "temporal scales" (Strickland 2001)—are accompanied by the flickering Scriptina, which co-exists with

the moving image. Thus, Strickland expands her practice-based creative work through her essays. In fact, the exploration of "superposition" (2007c) used in quantum mechanics might correlate to the way the Scriptina is superposed in the video, in that "interpenetrating waves all co-present in the 'same space.'" (2017a: 8) In *slippingglimpse*, the Scriptina's words and phrases are programmed to inhabit the same space and time as the pixel.[77] But do they really inhabit the same space and time or a concurrent time?

Much like reading, time in digital poems is problematic. Our experience, as readers, dictates part of it—what Raine Koskimaa has described as "experienced, remembered and read time." (2015) Thinking through and with time is a fundamental topic in Strickland and Jaramillo's essay on *slippingglimpse:* "As Gregory Bateson [*A Sacred Unity: Further Steps to an Ecology of Mind* (1991)] explains, the difference between white and yellow paper, say, is not in them, nor in the space between them, but in the time between them—not their time, our time, *our* interaction time, our scan time." (2007b) Yet, an event perceived onscreen encompasses all three: first, perceptual characteristics of literary time at the fictional level—metalepsis, prolepsis, etc.; second, cognitive and experienced time as part of the act of reading—scanning, receiving, memorizing, participating, interacting; and third, time that has been built, created and coded sources of the multidimensional event. Strickland has elaborated on temporal dimensions regarding events in digital poems in quite a few essays (2001, 2006, 2007c), acknowledging different conceptions: the time lag of the network, the time for the code to run, the reading time and the intervals at which words are set and animated. All these inputs act and converge to an event made of "concurrent times" (Strickland 2015). This convergence of multidimensional experiences of time is further complicated by time delays:

> There will then be multiple places in the code that are being read at the same time (…) However, parallel actions can only truly be parallel in a machine with more than one processor. This raises the interesting issue of human

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[77] Strickland explored different notions of movement in an intervention at the panel "The Pixel/The Line: Approaches to Interactive Text" at Siggraph 2001, with "Moving Through Me as I Move: A Paradigm for Interaction" (2007c: 42).

perception of machine delays. What may be a quite significant delay in executing code can be imperceptible to the person at the interface. (Strickland and Jaramillo 2007b)

Time delay is then distinct from the point of view of the machine or human being. Furthermore, time delay influences the reading tempo:

Assumptions about language presentation, from typography to context, determine coding decisions. For instance, *timing to present text* is very different from that used for video or image. If we want a viewer to read text, we must consider layered temporalities in which the detail of the detail can begin to resonate. While it is the human reader who brings reading tempo to both printed and onscreen reading, *it is the machine that sets the tempo in code.* Machine-based pauses or delays will function differently on computers with different processing speeds or slower internet connections. *Code is meant to control time. Animations and interactions would not exist without scripting of time. Coding, without time, is esoteric language on a page, unable, unlike page poetry, to unfold itself to the unwired reader. Time differences ultimately undergird the entire writing-compiling-processing system.* (Strickland and Jaramillo 2007b, emphasis mine)

Strickland and Jaramillo's acknowledgement comes from the shared experience of working with programming languages and natural languages. Their careful thinking about the necessity of keeping a reasonable amount of time for text display onscreen is complemented with critical analysis of the "human reader who brings reading tempo," which, as Alberto Manguel would argue, depends on diverse "acts of reading."

Acts of Reading: How Does the Water Read the Text?

In *A History of Reading*, Alberto Manguel reminds us, "reading (…) is not an automatic process of capturing a text in the way photosensitive paper captures light, but a bewildering, labyrinthine, common and yet personal process of reconstruction." (2014: 39) It is precisely a "process of reconstruction," powered by association, which the full-screen mode invites us into. Reading is then polymorphic. It entails the senses, memory, perception and, above all, decoding or deciphering. Manguel continues, "not only these skills but the time, place, and tablet, scroll, page or screen on which the act is performed affect the reading" (34). Reading can be understood in a plurality of ways that depend on its channel or material of inscription. In *slippingglimpse*, image and text—what W.J.T. Mitchell (1994) called "imagetexts"— are read in different but rather interconnected and amalgamated manners, a fact that its title points to. We can recall Robert Scholes's observation in *Protocols of Reading* (1989) that it is not just text that we read, but also photographic images, paintings, and film. For Scholes, we even "read" or ought to read our lives. Although Manguel seems to think along similar lines, the writer gives a broader notion than that of Scholes:

> Reading letters on a page is only one of its many guises. The astronomer reading a map of stars that no longer exists; (…) the dancer reading the choreographer's notations (…) the lover blindly reading the loved one's body at night (…) *the Hawaiian fisherman reading the ocean currents by plunging a hand into the water*, the farmer reading the weather in the sky – all these share with book-readers the craft of deciphering and translating signs (2014: 7, emphasis mine).

Manguel's enumeration—on reading's multidimensional or polymorphic interpretative acts—connects with Strickland's perspective on the subject. In an email exchange with Lisa Swanstrom, the poet clarifies:

> I think a deep meaning of reading the water and the water reading comes from my early experience on boats with my father. He would read the color of the water as relating to the depth (…) I never restricted reading to a symbol

system. Reading was a way to wade and proceed in an environment, whether of literary symbols, mathematical symbols, or physical signs. (Strickland, in Swanstrom 2014)

Reading becomes a sensory experience and an interpretative, decoding skill, independent of which "symbol system" is practiced upon. Swanstrom underlines that "instead of having one of these dominate—image, text, code, water, chreod—the work cycles among them, each on[e] interpenetrated by and mingled with the other. (…) *Slippingglimpse* effaces the authority of language by showing its dependence upon visual, natural, and computational sign systems." (2014) In *slippingglimpse*, the reading system consists of nature, video, language, machine, code and network, prompting a co-habitation of elements that recalls Johnston's model of aesthetic animism (2016). It is polymorphic, that is, it acquires many forms. Yet, since the piece is described in the introduction as a "poem combining text with videos of ocean patterns," the "authority of language" is not completely effaced. Even so, the reader might recognize Strickland's emphasis on the agency of water: "How does the water read the text?" (2015).

Thus, there is an objective to distribute agency, which is, we might say, an Aristotelian and Brunian ideal. Strickland partly disagrees, arguing that the work "is not Aristotelian (nor Darwinian), but it is Brunian. It *is* focused on the non-human, the non-organic" (2017a: 21, emphasis original). As Gilbert Simondon reminds us, the distribution of agency "is another aspect of the Aristotelian biology: the notion of identity or equivalence between animal, vegetal, and human functions." (2012: 44) Continuing on Giordano Bruno's cosmos theory, Simondon stresses: "According to his doctrine, animation, which is to say life, is not merely a fact for beings at the life scale as we know it, but it can also be a fact for stars (there are animated stars), life can exist in elements where we don't believe it to exist." (67) This distribution presupposes an equitable relation between human, non-human, natural and artificial actor-systems, by diminishing the prevailing notion that connects agency with anthropocentrism. Strickland further argues: "At a certain scale all life and all machines are all quantum waves. What is being controlled and/or presented is the computed scale of space and of time as they necessarily jointly appear present to a

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certain scale of reception." (2017a: 21) Thus, the piece sets off to explore life at a common scale. Yet, isn't life organic? Aren't humans building machines and coding their software? Isn't *slippingglimpse* coded and written by two humans? Where can we, the readers, locate the human element in *slippingglimpse*?

Furthermore, paying tribute to a culture of slowness and deep attention span, the piece depicts the scroll as much as it asserts language as a primary sign system in human communication, though the different modes of reading put forward do not need to be seen as oppositional. "In an intelligent world," Manguel argues, "electronic devices and printed books share the space of our desks and offer each of us different qualities and reading possibilities. Context, whether intellectual or material, matters, as most readers know." (2014: x) Such is the space that *slippingglimpse* opens, as it explores how reading processes can be reconsidered, but also how new strategies of writing and reading can be set in *motion* in poetry.

The Story of the Flax as a Metaphor for Writing's Inscription and Allegory for Women's Oppression

Reading other texts is the major source of *slippingglimpse*'s writing process. Sampling and appropriation dictate most of the poem's compositional technique, as we learn from the notes on the poem published in *Zone : Zero*.

Sampling/Appropriation: "The Passion of the Flax" in *slippingglimpse*

buried blue-eyed flowering plucked root & branch retted soaked to partial rotting scorched over fire bound battered dressed rippled with hackle combs and thorns drawn fiber spun thread woven *linen* bleached on grass pierced needles sewn shirt worn to rag rent drowned calendered dried to paper written on

them in these words : " Sit down my sons and let me tell you of the torture of the flax [*Flachses Qual*] ". When they have seated themselves she tells them how the flax is sown, grown, pulled, rippled with flax-combs, retted, washed, beaten, broken and scutched, drawn into fibres, spun, woven into linen, cut, sewn, worn and torn and mended, until the rags are discarded and made into paper by still further tortures. When their

Many of us know Hans Christian Andersen's children's story (1843) telling the sad experiences of the flax : how the flax-seed is buried in the dark earth, then to raise its head and penetrate to the light of the sun ; how its blue flower has to withstand the sun's heat and lashing by the sweeping rain, until one day wicked people come and pull the poor plant, root and all, out of the ground by its hair ; how then they torture it by drowning in water, roasting over a fire, beating with sticks, breaking and dressing it, heckling and combing it with hackle-combs and thorns, spinning it to thread, weaving it into linen, cutting it, piercing it with needles, sewing it into shirts which are worn till they are rags, drowned and pulped and calendered and dried into the paper upon which its story is written.

Figure 11. Samples of *slippingglimpse*'s sequence 7, "sideways," and Robert Eisler and W.L. Hildburgh's "The Passion of the Flax" (1950: 119-120). Yellow highlights words appropriated from one text into another.

Figure 11 attests this very notion, by comparing and highlighting a detail from the poem's sequence 7, called "sideways," and excerpts from Robert Eisler and W.L. Hildburgh's essay "The Passion of the Flax" (1950: 119-120). The yellow marks highlight how, in this particular passage, words—especially verbs pertaining to the violent process of transforming flax into linen, and linen into paper—are appropriated: buried, plucked, retted, soaked, scorched, battered, dressed, rippled, drawn, spun, woven, bleached, pierced, sewn, worn, rent, drowned, calendered, dried, written. Springing from "The Passion of the Flax" is a pervasive theme of the linen's fabrication process, its changes of state from flax to linen,[78] as a method of torture causing suffering and mourning. This theme has been explored in many folktales— including Hans Christian Andersen's reworked version in the short story "Hørren"

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[78] For an elucidative picture of these changes, and videos on the fabrication process, see http://www.lifegivinglinen.com/flax-to-linen-display.html

(1848) ["The Flax" (1853)]—and it operates as metaphor and allegory for three further threads in the discussion of *slippingglimpse*.

First, from Eisler and Hildburgh's historical study, we learn about the ekphrastic nature of these elegiac stories, in different cultures and throughout the history of literature and iconography, around the mourning of the flax. Eisler and Hildburgh present several stories in which the storytelling about the *línon*'s (rye, flax) fabrication and recycling process delays the horror, or prevents it by boring the listeners. Their study and Andersen's tale are particularly revealing, if we think that the song of the linen—"Linos Dirge" (*ai línon*, "a weaver's song")—is a *dirge*, that is, "a lament" or "mournful song." In this light, we could read *slippingglimpse* as an elegy or "a mournful dirge" in tone, even though the poem is soundless. Perhaps now it becomes clear why Strickland (2015) insists that including sound in the poem would duplicate its aural qualities.

H. C. Andersen's "The Flax" (1853) personifies the plant,[79] while presenting its several evolving stages of fabrication and metamorphosis: "One day however people came, laid hold of the Flax by its head, and pulled it up by the roots—that hurt it; it was then laid in water, and kept there till it was almost drowned, and after that it was put over a fire and absolutely boiled: it was dreadful!" (1853: 142) The violent treatment process continues: "But things become worse. The Flax was squeezed and broken, hacked and slashed; and truly it got knowledge enough of suffering. It was then put upon the wheel, and that went whiz! whiz! so fast round, that it was difficult for the poor Flax to collect its thoughts; (…) in the midst of its torture" (142-143). Andersen, differently from Strickland, turns suffering into a positivistic, religious and morally useful, good outcome: "If I have suffered a good deal, it was not for nothing: what I am now makes up for it" (143) or "'One cannot always be in prosperity,' said the Flax; 'one must encounter some trials to gain wisdom.'" (148) But the pervasive "old ditty—'Snip, snap, snurre, / Basselure! / The song is at an end'" plays like a dirge.

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[79] According to Eisler and Hildburgh, Josef Murr's (1890) study of mythology is the first to note the personification of the plant with the name *Linos*.

The song plays in a loop back to the beginning of the story: "*The Song is never at an end*" (1853: 148). Thus, it retains the same cyclic aspect as *slippingglimpse*.

Second, in all these fictions, flax as a fabric is relevant in that it becomes a metaphor and self-reflexive story about the inscription of writing—in the sense of documenting the passage from plant to garment and from garment to paper. Thus, the story of the flax becomes a fictional story of the creation of the medium in which fictions are indeed inscribed and materialized—a metaliterary short story. A history of fabric that goes from flax to linen and from rag to paper is a common denominator in all the flax stories, as well as in *slippingglimpse*. If we pay attention to the background of the scroll text mode, we notice that it seemingly replicates a microscopic view of a physical material. It seems an organic surface, reminiscent of linen texture. Strickland explains however that it is Thai Unryu White paper, "which appears to have flax in it, a sheer paper we photographed over plain white" (2017a: 8) Capturing—photographing paper—is present again. The material of inscription, where poets write, derives directly from linen, as the Andersen and Strickland narratives reminds us. Moreover, the story of the flax fully embodies the cyclic process of fabrication, and the weaving process bears an antecedent to computation as the arena of female labor. The weaving recalls the Jacquard loom (1804-05): "And it repeated the same to itself when it was placed on the loom, out of which it came a long beautiful piece of linen. The whole of the Flax, every inch of it, was now in that web!" (Andersen 1853: 143) From here, "The piece of linen was then taken into a house, and it came under the infliction of the scissors. How it was cut up, and chopped, and pierced with needles!" (144) Finally, it was turned into paper:

> A year or two passed; the linen was worn out. (…) They were then torn up into strips and bits, and they thought it was all over with them; for they were hacked and rent with wires and iron spikes, till they were reduced to mere atoms, and then regularly cooked in hot water, until (…) they became beautiful fine white paper! '(…) now people will write on me. (…)' An excellent history *was* written upon it, and it contained so much of goodness and truth, that it made those wiser and better who read it; it was a great blessing that the paper could record such useful ideas. (Andersen 1853: 144-145, emphasis original)

Third, Strickland uses the flax story as a connecting trope on the theme of embodied female knowledge and labor. In Eisler and Hildburgh's account, amongst others, there is a particularly telling Oldenburg story, in which:

> Giants playing on the shore with great stones find workers occupied with tending the growing flax. The giants ask 'What do you want with this plant?' The workmen reply: 'We want to make shirts of it.' (…) 'Is that then all now?' 'No, then it must be retted.' (…) 'Then it is spun and then woven and then the linen is bleached and our wives cut it and sew it together and only then have we shirts.' (1950: 121-122)

As part of *slippingglimpse*'s narrative seems to suggest, aggression and oppression inflicted over the less powerful are pervasive, exerted upon plants or human beings. The torture of the flax and the associated folktales become an allegory for women's suffering and torture, but also a reminder of their agency and specific gender-divided labor—labor that is solely done by women—often associated with caring, which is a construct of patriarchal society. In "Quantum Poetics," Strickland remarks:

> Both multitasking and microprocessing, as Sadie Plant points out in *Zeroes + Ones*, are activities associated with the work of women in many societies and eras. This interruptible ability to do many "little" things at once is contrasted with monochronic male time, a time in which only one task is addressed, no matter its mental, physical, or ritual character. In a digital age, all are interruptible, and digital art often takes on the "never done," always renewable quality of so-called "women's work". (2007c: 28)

These thoughts can be complemented by the poem's sequence 7, "sideways" (Strickland 2008: 97), presented in Figure 12, and extracted from Eisler and Hildburgh's descriptions of Tyrolese, Slovene, and Lithuanian folktales:
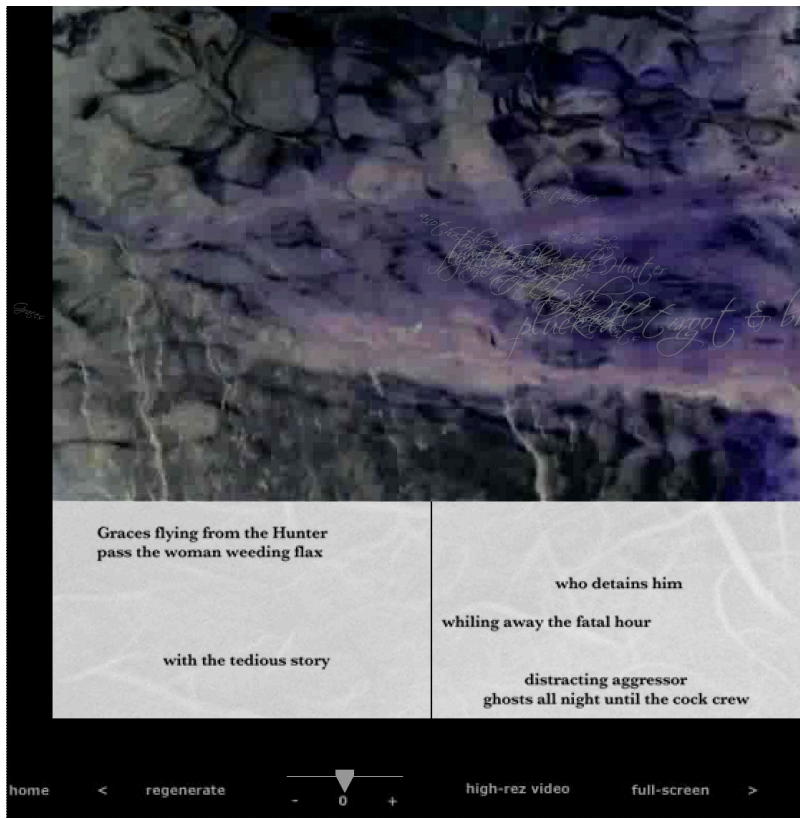
Figure 12. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Scroll text mode of sequence 7, "sideways". Screenshot (detail).

It is rather telling that, from the appropriated, remixed and modified passage by Eisler and Hildburgh:

> When their [the specters'] time has been thus wasted a cock crows, and the ghosts have to return to their graves. (120) (…) In the Tyrolese Valley of the Upper Inn a story is told of how the gentle *Saligen Fräulein* and their queen Hulda—the Teutonic equivalent of the Greek *Charis*, Latin *Gratia*—flying from the Wild Hunter who pursues them, are borne on the air past a woman weeding flax. When their pursuer arrives and asks the woman where the soul-maidens have gone and what she herself is doing she detains him until Queen Hulda and her maidens are safe by reciting the tedious story of the broken, skinned, heckled and spun flax which is woven into linen, bleached and stored in the chest, cut and sewn into shirts and skirts. (1950: 122)

Strickland adds a phrase—"distracting aggressor"—referring to the way the woman is distracting the male figure of the "Hunter," while modifying "cock crows" to "cock crew," and "Gratia" to "Graces." In this sense, the woman's narrative power in storytelling the "torture of the flax" serves the delaying effect, and perhaps the cancellation, of aggression by the ghosts and the hunter. Language and storytelling—Strickland's poetry—can be tools of beauty against violence. As Sophia de Mello Breyner Andresen's poem "A Forma Justa" reframes, "Por isso recomeço sem cessar a partir da página em branco / E este é meu ofício de poeta para a reconstrução do mundo." (Andresen 1991: 238 [1977])[80]

While Katherine Hayles (2008a) contends that the story of the flax is another example of human cognition *vis-à-vis* non-human cognition, it seems to me that the sampling method Strickland employs to extract meaning out of the Silesian folktale is more problematic. I argue that Strickland extends and amplifies the flax's allegory as an additional layer to encompass the cruelty of women's oppression, rape, torture, and further liberation by means of transformation, hence opening new reading dimensions, which would not be unfamiliar in the scope of Strickland's *œuvre*. Consider the main themes of the poet's print collections and digital works: *Give the Body Back* (1991), *The Red Virgin: A Poem of Simone Weil* (1993), *True North* (1997), *V : Vniverse* (2002), and *Dragon Logic* (2013).

In fact, the image of the aggressor (Fig. 12) appears as a "distracting aggressor / ghosts all night until the cock crew" (7, "sideways"). Evidence of the association between the torture of the flax and the embodiment of female torture is most remarkable in sequence 8, "inkCrash" (Fig. 13), when Strickland, again, appropriates Eisler and Hildburgh's essay. The poet rewrites the passage regarding the Christian mythological story found in the Latin hymn "Life of St. Blaise," by Symeon Metaphrastes, "the saint [who] lives in a cave, and, like another Orpheus, tames all the wild animals. In this version it is not he who is torn with combs, but (…)" (Eisler and Hildburgh 1950: 133) the "seven virgin disciples."

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[80] Free translation mine: Therefore I restart without ceasing from the blank page / And this is my craft as a poet towards the reconstruction of the world
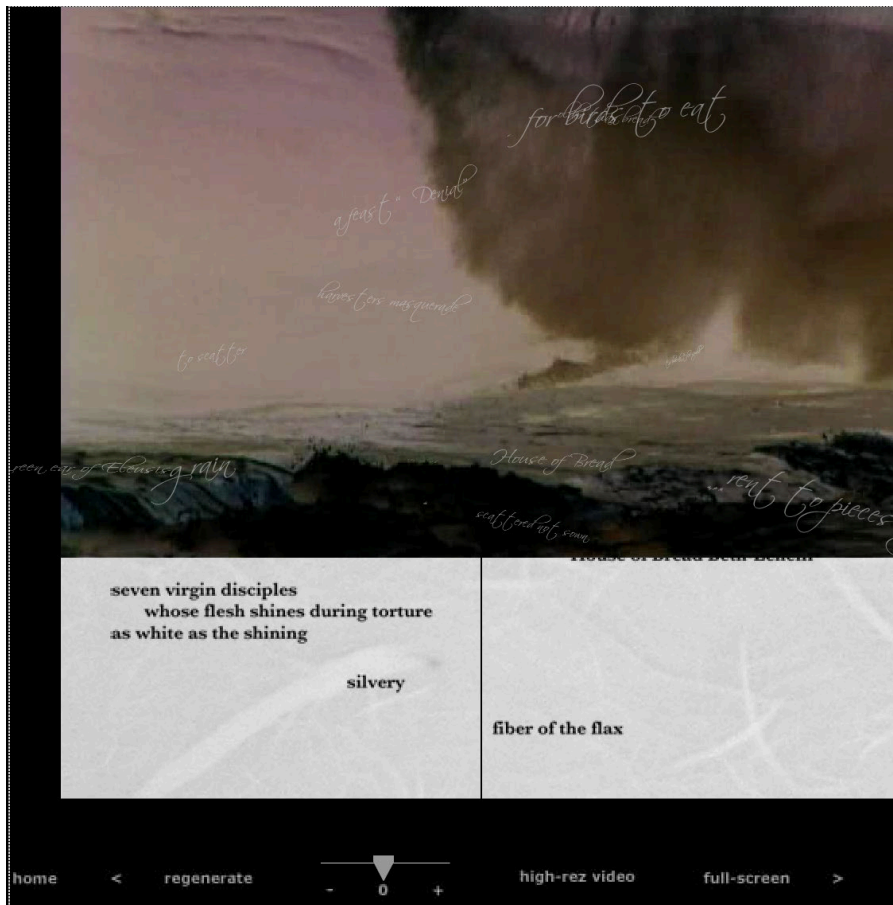
Figure 13. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Scroll text mode of sequence 8, "inkCrash". Screenshot (detail).

The verses in Figure 13 reveal how the allegory of the flax is literally rewritten as a direct comparison between tortured women and tortured flax: "(…) virgin (…) / (…) flesh shines during torture / as white as the (…) // fiber of the flax." Stylistically, the comparison is reinforced by alliterative verse, which is elegantly read in a combination of images that resound with "s" and "f" phonemes. The flax reminds us again of another main theme of the poem: nature. If the flax, as Funkhouser (2017) rightly points out, represents the earth element, the waves, the main agent throughout the piece, represent the water element.

Ecopoetics: The Last Turning Leaf?

Figure 14. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Full-screen mode of sequence 10, "leaf". Screenshot.

Images of nature, and metaphors regarding nature's destruction, as well as the focus on oceanic waves as places for regeneration, establish an ecological and environmental concern. Therefore, they can locate the poem within an ecopoetics framework.[81] This is particularly visible in a statement written by the authors and published in *Poets for Living Waters*, an "ecopoetics" website forum started as a response to the 2010 Gulf Oil Disaster: "This poem is based in the profound conviction that we need to be in conversation with the waters of the world. Needless to say, pouring oil on, over, or through their self-directed motions is the act of a speaker who does not listen" (Strickland and Jaramillo 2010). The authors continue, by making explicit their ethical concern regarding environment and human co-habitation: "Where does exploitation of earth resources start, and how do we justify it to ourselves, is a question asked implicitly here." This claim relates to the massive exploitation of fossil

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[81] Consider, for instance, the work by Denise Levertov, Louise Glück, Susan Howe, Forrest Gander, John Kinsella, Juliana Spahr, Jonathan Skinner and the *Ecopoetics* journal. See also Scigaj (1999) or Bryson's *Ecopoetry* (2002), though Bryson (2002: 7) claims that ecopoets show "skepticism toward hyperrationality and its resultant overreliance on technology." (2002: 7) Due to the scope of this essay, I cannot elaborate a discussion on ecopoetry, ecofeminism, and their relation to technology.

fuel reserves, and to the lack of political and corporate will to drastically and completely move away from non-renewable energies towards renewable ones.[82]

      The poem's last numbered sequence, called "leaf" (Fig. 14), *ends* with "a realm // of slipping glimpse." This phrase recalls the omnipresent ecological concern and the aim of regarding the environment as a shared *situ* where human beings and technology can co-exist in a responsible way, as equal agents in a natural world. Therefore, *slippingglimpse* has the striking effect of reminding us that, if drastic changes in human behavior are not put forward—not in 50 years, but rather now—the consequences for animal species, environment and human beings are likely leading to their extinction. It seems as if the nostalgia transmitted when observing the leaf floating and turning in the water, forward and backwards, contains a clear message: We do not want this leaf to be the last turning leaf. Thus, the poem forces us to consider that we urgently need to engage in a process of deep awareness about the planet's destruction and change the harmful behavior towards environment.

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[82] An aspect that has been largely dismissed in the United States—one of the biggest emitters of carbon dioxide—and opposed by several environmental organizations and activist art groups, such as The Yes Men. See, for instance, the rhetoric presented at the U.S. Department of Energy website: "scientists at the Energy Department's National Labs are developing technologies to reduce carbon emissions and ensure fossil energy sources play a role in America's clean energy future." Source: https://www.energy.gov/science-innovation/energy-sources/fossil
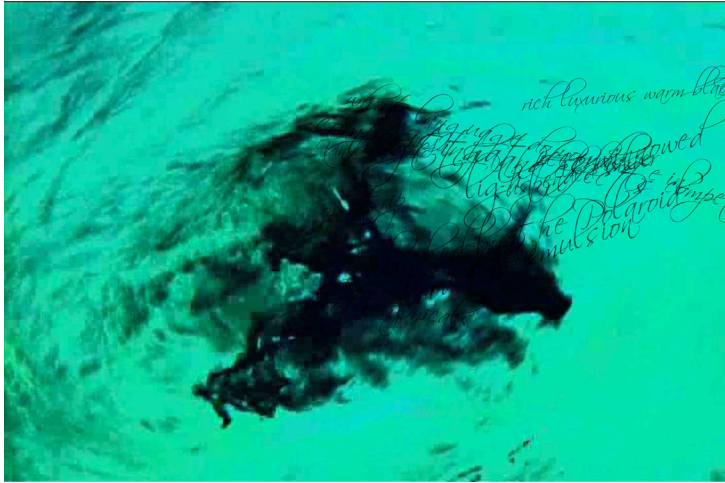
Conclusion

Figure 15. Stephanie Strickland and Cynthia Jaramillo, *slippingglimpse*, 2007. Full-screen mode of sequence 9, "aquaGalaxy". Screenshot (detail).

The words *slipping glimpse* are possibly—depending on the reading order—the work's last words. They reinforce the innovative character of the poem's motion properties and its spatial syntax. The compound noun in the title of the work opens up for a possible explanation of the reading experience—"slipping glimpses" of text— but also the fact that the Scriptina runs in tandem with the videos, in and out of the video frame, enlarging and contracting according to the water flow patterns. These "slipping glimpses" can be understood in the light of what Hayles has called "flickering signifiers," in that signifiers in digital literary works are "characterized by their tendency toward unexpected metamorphoses, attenuations, and dispersions." (1999: 30) The signifier becomes a random pattern that "exists as a flexible chain of markers bound together by the arbitrary relations specified by the relevant codes." (Hayles 1999: 31) Moreover, we observe the 'flickering' of signifiers and even the word "flicker" in the very text of the poem (Strickland 2008: 92), which has been taken from an YLEM text. As we saw, there are two sides of the Scriptina that stress its self-reflexive character: floating and flickering. The cognitive notion of "slipping glimpses" emerges: The "electronic word [contains] glances and glimpses [that] can

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begin to assemble themselves across many levels of reference and embeddedness, across many types of text." (Strickland 2007c: 28)

The title of the work reinforces the problem of human cognition when absorbing and reading kinetic poems, while presenting a novel and remarkable cohabitation of text and image. Kinetic poems, being activated bodies of textuality in movement, have many times a level of unreadability. They also present diverse sensory stimuli that complicate and intensify the viewing and reading experience. They are transmitted, specifically in high-speed motion, as glimpses—glimpses that slip through our eyes at a readable or non-readable pace. This is why the interface of *slippingglimpse* should not be seen as paradoxical at the structural and conceptual level, but rather complementary. If it were not for the scroll text mode, the reader would definitely be left only with "glimpses" of words and verses. As such, these glimpses occur as time-lapses over which we are not granted control. They problematize notions of completeness, full reading and meaning, when writing occurs in novel or experimental dynamic environments. Therefore, *slippingglimpse* differs from other digital poems in its multimodality and kinetic presentation. At the same time, it allows for a functional, stable and meaningful apprehension of language due to the conventional presentation of the scroll text.

Insofar as our perceptive senses do not have time to apprehend each pixel and significant moment of the videos, they do not totally apprehend the Scriptina. The level of unreadability caused by the speed of the animation—at times, by the similarity of video and Scriptina color, canvas black background, and thin font lettering—is a feature that the reader-viewer is faced with from the outset of the reading traversal. It is fair to acknowledge that such a feature is aimed at transmitting the sensible, delicate and elusive texture of the water patterns, and the same fleeting quality of water and text in motion, in a non-linear way. Thus, as a programmatic point of view about moving image and text qualities, the scroll text provides the reader with a further way to control the speed of the text in a contemplative and pausing way. This seems to point to a critique to speed in society and art. As Strickland (2017a) emphasizes, it is also a tribute to meditation and attentive reading. Given that we can find the stable versions of the text in the print anthology *Zone : Zero* (2008), which

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enacts a deep sense of reading, we could think of the scroll text as a redundant strategy. Yet, a reader would need to have access to the book to encounter them, if it had not been for the scroll text. In *slippingglimpse*, then, both kinetic and static text co-exist and serve different purposes. Moreover, the scroll invites the Scriptina to mingle, to enact new readings in double-column, to be paused, reversed; to be read together with the water.

Polymorphic reading is suggested in various ways, but it is also implemented by the fact that the reader is presented with three modes of reading. At times, they are in tension, in other occasions they complement each other. These many forms of reading are represented in a cyclic manner, to the extent that they come to mean capture, dialogue, and interaction: "water reads text, text reads technology, technology reads water, coming full circle." (Strickland and Jaramillo 2007b) These strategies have a clear objective of materializing an action-reaction between water and text, a responsive environment that is mediated by technology. *slippingglimpse* reinforces the very act of reading as a multimodal and polymorphic craft.

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V

Article 5

Seiça, Álvaro. "A Critique of Control and Black Boxes: Modifying Deformances of
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A Critique of Control and Black Boxes:
Modifying Deformances of Ian Hatcher's *// [Total Runout]*

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Abstract This essay analyzes Ian Hatcher's online and kinetic poem *// [Total Runout]* (2015) from a point of view of a critique of corporate and governmental black boxing, at the level of its code, text, visual output, and live sound performance. The multimodal poem is part of the series *Drone Pilot*, and it is presented in different versions: a Web-based work, a sound piece, and a performance. It remixes appropriated text from a WikiLeaked manual by the United Kingdom Ministry of Defense, essays on artificial intelligence, and Hatcher's own text. The overall versions of the work, understood as variable events, boldly problematize communication and cognitive processes in networks—whether they are implemented in computer systems by secret agencies or corporations. Hatcher's critique of black boxes entails recreating issues of security, control and surveillance, as controlled systems are increasingly paving the way for less privacy and less knowledge about their inner workings. As a result, the poem questions the essence of privacy, redaction, and systemic violence, when access is a privileged asset of agents with security clearances or those with a deep knowledge of programming. This essay presents *// [Total Runout]* in the scope of the poet's aesthetic program. It analyzes its Web version's interface and source code. Moreover, the kinetic poem's spatial and temporal dimensions are discussed via experiments that modify the source code. The method here presented deforms the poem's temporal display, by means of several modifications. It proposes an approach for a more informed reading and understanding of digital kinetic poems, since they are ever-changing events. Finally, this essay locates the work's aural and performative versions in cultural and political context.

with no correlations in behavior there can be no common code
—Ian Hatcher (2015) *apud* Claus Emmeche (1996: 125) *apud* Chris G. Langton (1990b: 31)

Ian Hatcher's *// [Total Runout]* (*TRO*) is unreadable.[83] The work is impossible to be read closely because its text defies conventional modes of critical analysis. Its text is unreadable from a human point of view, if we consider the cognitive processing of the fast-forward onscreen textual surface and its live sound output. From a human point of view, the work only permits a time-lapse reading, in that glimpses of letters, syllables and words emerge as perceptible entities, from time to time. The eye skims through the text, while the text runs at a fast, unfathomable pace. From a machine point of view, however, the issue is meaningless, as the work is "readable," that is, its code is executable.

Yet, as we will see, the kinetic behavior of the text is part of the poem's functional and symbolic dimensions. My argument is that reading *TRO* against a background of critical discourse surrounding control societies helps fostering a relevant contextualization of its cultural, aesthetic, and processual layers. In doing so, a field of possible meanings can perhaps emerge, if we further consider the poem as a manifestation of utterances that relate to a specific political moment.

Hatcher's Aesthetic Program

Ian Hatcher's body of work encompasses code, language, print, screen, web, apps, sound and performance. Code is used to reflect a thematic, conceptual and tactical writing program. It becomes embodied writing and sound experience. This aspect is part of the author's transmedia and artistic approach. The same piece can be manipulated as a source for different versions. These derived events depend on their output and venue. For instance, the screen can become an extension, a complementary or contradictory visual element, or ambient. As the author (Hatcher 2015d) elucidates:

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[83] From now on, the work's title will be referred to with the same initialism used by Hatcher in the source code: TRO.

> I like reading alongside animations where there is not a direct connection between the text and what I am reading. And so it creates a separate stream where the text becomes more ambient, or becomes a kind of flow that can't be followed. Because I find reading something, that is on a screen, really directly… does an intentional thing for an audience—or does it to me, anyway—where I am following it but, on some level, it feels sometimes redundant, or it feels exhaustive… whereas if I create separate streams it gets that feeling of overflow or excess (…)

Ever since *occamsparser* (2006), Hatcher has been working with source texts as points of departure for his work. *occamsparser* is a "prose poem," but also a writing, visual and displaying tool, a PHP parser which takes inspiration from the Occam's razor paradigm. Other writers can also use it as a composition tool, since it allows for the treatment, modeling, and parsing of any given Website. The user can control, manipulate and mask a source text by algorithmically changing parameters. These parameters are excision, disintegration, and integration of words and characters that can be outputted in 'redaction' or 'constellation' view (figure 1). When augmenting the percentage of excised characters, the constellation view echoes Eugen Gomringer's conception, while at the same time it creates an "isolating deformance" (Samuels and McGann 1999: 51) of any given text, which is clearly performative. *occamsparser* reveals some of the strands of the author's writing program: incompletion, censorship, and erasure poetry,[84] or "incompletion and excavation of language," in Hatcher's words (2015d).

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[84] This piece shares affiliations with various works. Consider, for example, Jen Bervin's *NETS* (2004) or *The Deletionist* (2013) by Amaranth Borsuk, Jesper Juul, and Nick Montfort. See also Craig Dworkin's study *No Medium* (2013).
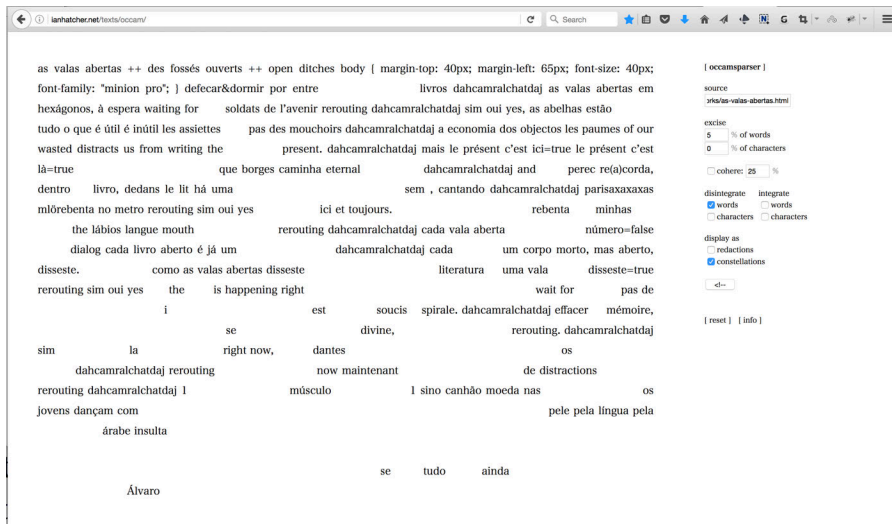
Figure 1 Ian Hatcher, *occamsparser*, 2006. Screenshot caption, 2016. Courtesy of the artist.

By writing and rewriting text that can be displayed in redactions, the poet's work recalls the censoring of documents and encourages a process of thinking with, and through language. It highlights how language is treated at the level of institutions, governments, as well as the private and public spheres. Issues regarding access and black boxes are thereby already contained in this early piece, in that redacted documents prescribe a sociopolitical worldview. They evidence what is made available to be seen by the public, and what is *covert* (Melley 2012). On the one hand, it seems as if Hatcher is making the case for transparency and open access documents; positions that mean opening sources with no restrictions—precisely the title of *Opening Sources* (2008). On the other hand, according to the author (Hatcher 2017b), "the prose poem text is intended to undercut that reading, as it's about inherent impossibility of open-sourceness in documents ('diaries'). In a similar way, *Opening Sources* is undercut by its formatting constraints and the blackboxiness of its coding... it's making the open source argument somewhat facetiously." Thus, the two-sided complexity of the open-source regime is embraced in the theme and concept versus its infrastructure.

 Opening Sources (figure 2) is an online poem that is rewritten in real-time by

users that are readers and writers, in a collaborative pad-like system that allows for the continuous replacement of words. Moreover, when reading live, the poet vocally performs the text that the audience is editing in real-time.
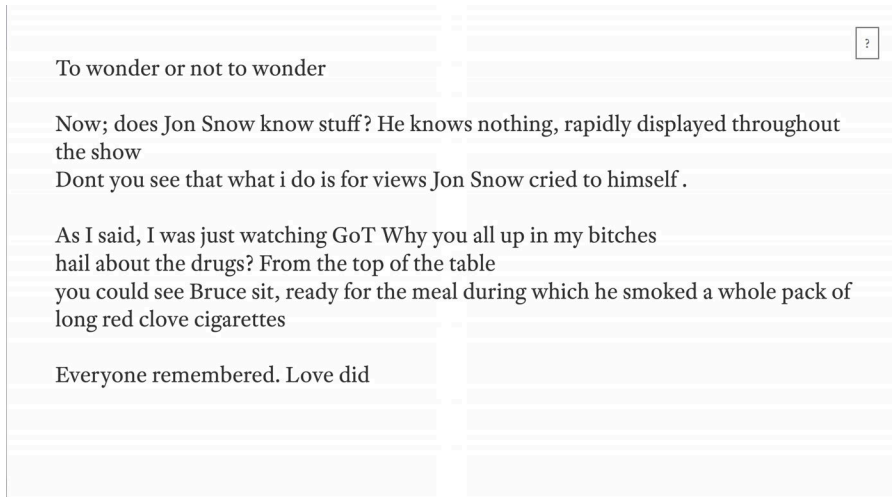
To wonder or not to wonder

Now; does Jon Snow know stuff? He knows nothing, rapidly displayed throughout the show
Dont you see that what i do is for views Jon Snow cried to himself .

As I said, I was just watching GoT Why you all up in my bitches
hail about the drugs? From the top of the table
you could see Bruce sit, ready for the meal during which he smoked a whole pack of long red clove cigarettes

Everyone remembered. Love did

Figure 2 Ian Hatcher, *Opening Sources*, 2008. Screenshot caption, 2016. Courtesy of the artist.

Hatcher thinks of his pieces less as fixed forms—be that of the strict unchangeable and final output at the written and visual levels—and more as how processes and control mechanisms affect the vocal and sound level of live performance. *Opening Sources*, as Hatcher explains (2015e), opened a space for the performer to be controlled by the audience. This, in turn, is then further taken into consideration as the author engages in subsequent pieces that deal with how control happens at the level of language, body, society, politics, media, and the Web.

Ping (2009) is a sound poem that deals with the connecting relation between human user, network and host machine. Connectivity represents a social and psychological effect, but also a human-machine relation. Moreover, the anxiety of connection we live in is translated in the piece as a claim about the network's recurrent ability to propagate both systemic violence and affect. The piece's textual and aural dimensions reinforce the exposure of that imperceptible feature "in discourses surrounding networks, [where] the tropes of connectivity, collectivity, and

participation obscure the material practices of networks" (Thacker 2004: xviii). *Ping* can be listened to as an MP3 file, but when performed live it can include a screen projection of a pulsing white grid superimposed over a black background and a rotating tetrahedron. Within the Internet Protocol network, a *ping*[85] provides a test connection to a host machine. It measures and informs if an IP address is accessible, that is, if it is connecting to a server and accepting incoming and outcoming packet messages, since the Internet is based on packet-switching transmission processes. Developed in 1983 by Mike Muuss at DARPA,[86] PING is a program for UNIX that effectively detects if an IP address can be reached and what is the round-trip time of data transmission.[87] Hatcher's *Ping* draws from the pinging effect in sonars and networks, taken as a symbol of connection and file transfer via protocols. Furthermore, it meshes those analogies with references to the human "ping" of heartbeats, and the connective bounds between human beings—networks of signals syncing human-machine relations. At the same time, it makes us aware of the historical relation between governance and governments, military compounds, technologic development, and the very beginnings of the Internet, the ARPAnet

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[85] A *ping* is an Internet Control Message Protocol (ICMP). The reader can run the command line 'ping domain' (where 'ping' is followed by a specific domain) in the computer's terminal. For example, if we want to ping the domain of the sound poem *Ping*, we can type 'ping ianhatcher.net.' The result would be: 'PING ianhatcher.net (64.111.126.223): 56 data bytes' and then a sequence of message pings informing about the amount of data transferred, the IP address, and the round-trip time in milliseconds, which is always changing: '64 bytes from 64.111.126.223: icmp_seq=0 ttl=47 time=144.172 ms.' Aborting the program, provides average statistics: '--- domain ping statistics --- xx packets transmitted, xx packets received, x% packet loss round-trip min/avg/max/stddev=xx/xx/xx/xx ms.'

[86] The U.S. Army Research Laboratory, former Advanced Research Projects Agency (ARPA). The relation between the military industry, national security, and technological development is clear in the agency's mission statement: "The genesis of that mission and of DARPA itself dates to the launch of Sputnik in 1957, and *a commitment by the United States that, from that time forward, it would be the initiator and not the victim of strategic technological surprises*. Working with innovators *inside and outside of government*, DARPA has repeatedly delivered on that mission, transforming revolutionary concepts and even seeming impossibilities into practical capabilities. The ultimate results have included not only *game-changing military capabilities such as precision weapons* and stealth technology, but also such icons of modern civilian society such as the *Internet, automated voice recognition and language translation, and Global Positioning System* receivers small enough to embed in myriad consumer devices." (Source: http://www.darpa.mil/about-us/about-darpa, emphasis mine)

[87] Muuss named it after an analogy with the sonar's echolocation, as "ping" represents the sound sonars emit. See http://ftp.arl.army.mil/~mike/ping.html

(1969), developed as well at DARPA, where the set of protocols TCP/IP (Transmission Control Protocol/Internet Protocol) were first implemented.

Hatcher's *Ping* is read in a computerized manner that highlight its cybernetic character, and the feedback loops of human-machine interaction, with intercalations of vocoder-like synthesized *ping* signals turned into speech sounds. The poem's semantic and aural dimensions emphasize the network as a space of fear and violence. Moreover, it stresses how *de facto* digital information is "'greased'" (Moor 1997: 27; quoted in Ess 2009: 28), that is, a major property of digitally captured, stored, and transmitted data is its rapid spreadable effect. This is not, however, an apologia of the benevolent capacities of information transmission, but rather a bold critique of violence, and the power of such apparently un-harmful networks to replicate ubiquitous killings. In the United States of America post-9/11 era, the reproduction of violence via networks has in fact increased. From direct invasion, such as the Iraq war, indiscriminate civilian mass surveillance and preemptive attacks,[88] United States governmental agencies under the Bush and Obama administrations, like NSA (National Security Agency) and NSA's counterpart division Cyber Command, have put forward a whole new dimension of cyber warfare, of which drone attacks are a distinctive case.[89] A set of instructions written in a physical part of the planet is run via a server in a device elsewhere, connecting streams of data for specific attack purposes, and alienating the individual's responsibility over a strike. So coding is not just a mere abstract and logic way of reasoning about the world with programming languages. Algorithms are not a-contextual and apolitical, that is, politically neutral. They are written and edited by humans, with specific needs, goals, and agendas. Therefore, they partake in a sociopolitical context. From this follows that programmers are secretively and non-secretively hired by governmental military intelligence to put in practice information, corporate and political spying, and warfare

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[88] Consider, for instance, attacks as the so-called "Stuxnet" implant, or code name operation "Olympic Games." See Sanger 2012.
[89] For a visualization of drone attacks in Pakistan visit http://drones.pitchinteractive.com/ or access an API here: http://dronestre.am/ The increase in recruitment of people with high coding skills, such as former army personnel or academic students, is reinforced by the creation of curricula at universities under the rhetoric of "national security." See, for instance, "Hacking for Defense" at http://www.h4di.org/

operations, in order to monitor and track persons, to script drone programs and exploits, and to install malware, that is, malicious code or virus. As Alexander Galloway (2004: 141-142) points out,

> the exact opposite of freedom—that is, control—has been the outcome of the last forty years of developments in networked communications. The founding principle of the Net is control, not freedom. (…) It is a type of control based on openness, inclusion, universalism, and flexibility. It is control borne from high degrees of technical organization (protocol), not this or that limitation on individual freedom or decision making (fascism).

In devising *Ping*, Hatcher questions the very essence and potential of coding as a type of labor with positive and negative sides, and the network as a space where such practice is activated.[90] As Eugene Thacker (2004: xv) makes clear, "Understanding networks not as metaphors, but as materialized and materializing media, is an important step toward diversifying and complexifying our understanding of power relationships in control societies." Galloway and Thacker's theory of networks (2007), and Thacker's critical work on biopolitics can be related to the point expressed by Chris G. Langton (1990b: 31) on cellular automata and artificial life: "Correlations in behavior imply a kind of common code, or protocol, by which changes of state in one cell can be recognized and understood by the other as a *meaningful signal*. With no correlations in behavior, there can be no common code with which to communicate information." (emphasis original) This fact raises further implications to an understanding of Hatcher's œuvre—in particular *TRO* and *Ping*—as a critique at the level of a common grammar in communication, "of common code, or protocol." Protocol allows for information exchange and control. As we will see, Hatcher appropriates Langton's final line in *TRO*.

At the sonic level, *Ping*'s performative strength relies on the turbulence and streamlined contrast enacted as a single-track utterance. The MP3 file contains a recording of a single voice—with modulations—flexing a text with punctuations of

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[90] Perhaps it might be worthy noticing that Hatcher is a professional daytime programmer at an IT company.

"ping," a collage that could seem machine-based, when in reality it is human, not software-generated. The direction is, in fact, inverted. Instead of recreating his voice with software, Hatcher embodies network and software glitches using his own human voice. Thus, he transforms text by assembling and imitating the sonic features of software-generated voice. The piece ends with: "another steady stream, resolving into another steady stream, which, which will continue, which will continue, which will continue, which, which, which, which will continue long after we are gone."
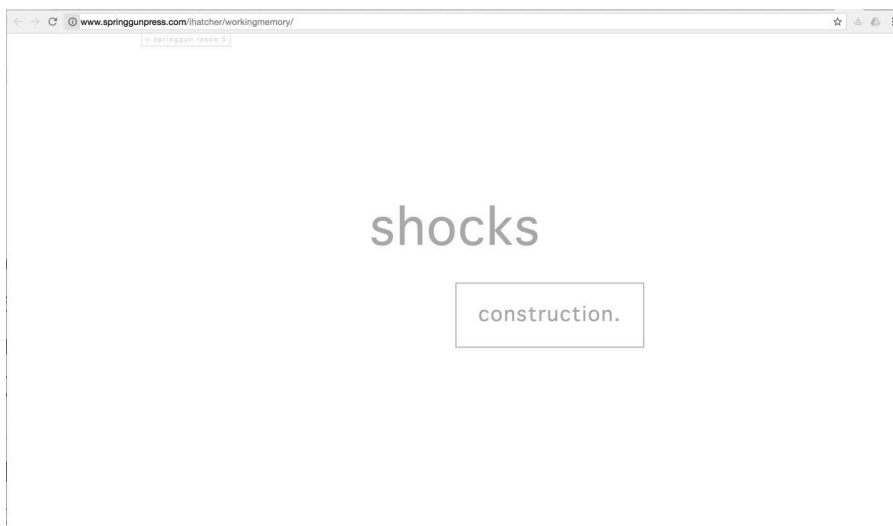
Figure 3 Ian Hatcher, *Working Memory*, 2010. Screenshot. Courtesy of the artist.

As Hatcher explains (2015d), in *Working Memory* (2010) the corpus of text displayed onscreen is pre-composed, procedural and generated. The same compositional remix technique appears in other pieces, such as *TRO* or *Plexus* (2014), where the verses are fixed as strings, but the number of lines (2-5) presented onscreen progressively augments and diminishes, as they bounce up and down. Hatcher's *Working Memory* source text—available as a variable called "membox," which deals with the polymorphous nature of memory[91]—gets reshuffled, a process

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[91] The full source text, now called variable "rem," was published as well as "Working Memory Array" (2013). See http://glasschord.com/ian-hatcher/working-memory-array/

that informs his common performing practice of speed-reading and enacting voice stutters. Using two blocks that help creating two points of eye fixation (figure 3), *Working Memory* addresses the capacity of the brain to retain and relate blocks of information at high speed, what cognitive scientists, psychologists, and vision researchers call "working memory." The self-reflexive text explores the capacity to apprehend a high number of words per second, in an attempt at "finding recognition of a system when moving." The piece's spatial composition can be seen to simulate message blocks or packets being transmitted in a network, in that information gets unified in the moment of the reading act, that is, coherence is given by its destination machine—Hatcher's host voice.

Employing mixed text composition techniques, *The All-New* (2015)—a chapbook that is an offshoot from the *Prosthesis* (2016) series—presents appropriated text sourced from search engine results for "the all-new." As the readers might try to search online, they will find an overwhelming amount of hit results that show nothing more than products, mainly "all-new" car models. *The All-New* speaks to "the huge overflow of newness, novelty, in culture itself, that is so big you can't follow it, and it just becomes insane," argues Hatcher (2015d). The poet refers to 4chan.org as one of the sites where the overflow of information per second becomes impossible to cope with. Hatcher is not trying though to sell its readership and audience easy ways to read information faster, but rather to critically emphasize the very nature of contemporary society: overproduction of goods, distributed, tracking, and tailored advertisement, hyperconsumerism, and waste. These conditions are felt, and engaged with in a higher level by the netizen, who lives in times of a superabundance of data streams and screens. From a sociocultural point of view, these symptoms are identified and discussed, among others, by Gilles Lipovetsky (2004, 2011), for whom the 'hypermodern' age is redefining what individualism and privacy mean, and conducting the *homo ecranis* and the *homo connecticus* towards cultural regression. These issues become relevant as we approach the multimodal work *TRO* from the standpoint of Hatcher's previous writing and layered artistic practices.
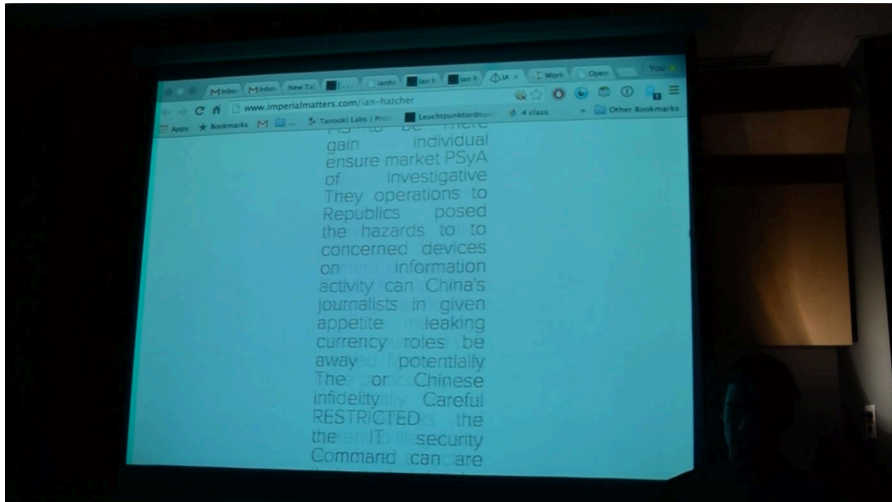
read-source: Reading *TRO*'s Source Code

Figure 4 Ian Hatcher giving an artist talk at the New Jersey Institute of Technology in Newark, on November 10, 2015. The caption shows *⫽ [Total Runout]*. Courtesy of the artist.

The interface of *TRO* (figure 4) is quite simple, though the programmed functions are complex. Mies van der Rohe's functionalist dictum "less is more" could well be applied here. It is precisely in the scarcity of its elements that the work's powerful aesthetics resides. As it is a mark of Hatcher's design, the elements and the overall composition are minimalistic, clear, and the rectangle is the preferred shape. Rectangles reflect the shape of boxes and blocks that Hatcher uses in many instances, but they are also the meaningful shape embodied in words—consider his earlier website URL address: clearblock.net.

In *TRO*, the spatial composition divides the screen canvas in three parts: a center-aligned stripe of justified text—that expands, like a curtain, back and forth, and assumes the shape of a long vertical rectangle, which can be scrolled down—and two white rectangles that border the text block from each side. Typographically, the open-source poem is styled using thirty-two pixel black Proxima Nova font over white background. Viewing the source code allows us to understand that Hatcher has embedded the JavaScript library of the typeface via Typekit, a former independent

company now owned by Adobe, and styled it with CSS (Cascading Style Sheets). Without the library, the poem would be presented in the OS (Operating System) default font. The style of Mark Simonson's 2005 Proxima Nova provides a thin font, which is sans-serif, elongated, light, and elegant.[92]

```html
<!DOCTYPE html>
<html>
<head>
    <title>&#9008;</title>
    <meta name="viewport" content="width=device-width, initial-
scale=1">
    <script src="//use.typekit.net/ckn7wkp.js"></script>
    <script>try{Typekit.load();}catch(e){}</script>
    <script src="jquery-2.1.1.min.js"></script>
    <script src="jquery.transit.min.js"></script>
    <style>
        body {
            font-family: "proxima-nova";
            font-weight: 100;
            font-size: 32px;
            text-align: center;
            padding: 0;
            margin: 0;
            }

        #black_box {
            text-align: justify;
            width: 1px;
            margin: -15px auto;
            padding: 0 2px;
            height: 7038px;
            overflow: hidden;
            cursor: default;
            opacity: 0;
            -webkit-transition: opacity 2s ease-in-out;
            transition: opacity 2s ease-in-out;
            }
            #black_box.ok {
                opacity: 1;
                }
        #black_box:hover,
        #black_box.black {
            background-color: #000;
            }
    </style>
</head>
```

Let us now consider the interactive functions of the work. The reader-user's interaction with the piece takes two modes. First, as figures 5 and 6 illustrate,

---

[92] See http://www.marksimonson.com/fonts/view/proxima-nova

hovering over the text creates a transition to a black box—see `#black_box` above in the source code—in which the screen turns into a white-like canvas with a middle black stripe. Second, clicking on the text opens a black curtain that propagates over the screen until it is 100 percent black. This action is irreversible. The reader-user cannot undo it, as there is no undo command, except for refreshing the browser, and restarting the piece, that is, running the source code from line 1 again. This happens because once the browser window is all black the text can no longer be seen.
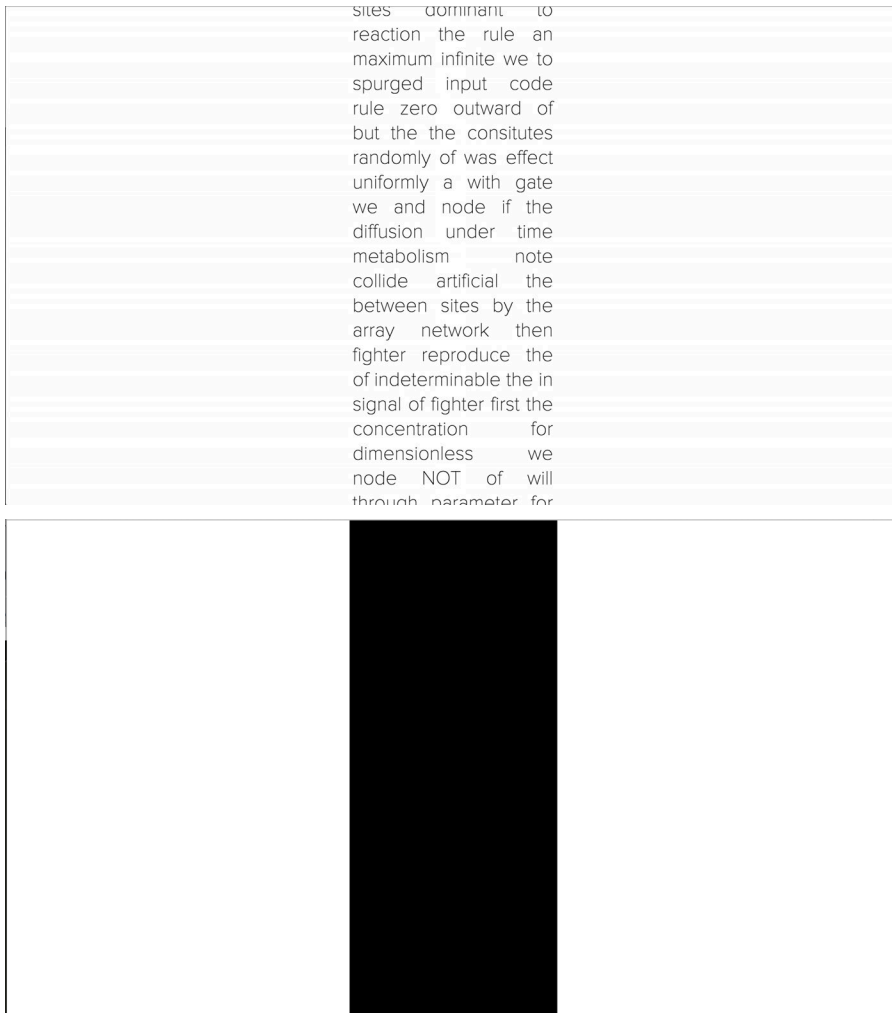
Figures 5-6 Ian Hatcher, _//_ _[Total Runout]_, 2015. Two states of the piece: without and with mouse over (hover). Screenshots. Courtesy of the artist.

Therefore, by trying to access more information, as the reader-user may request a sense of interpretation or merely read the material, the system replies with a contradictory granting permission: denial of access. In fact, when systems shut down, one can no longer access anything. This coded function reads as a reference to a symbolic and conceptual process that seems immediately to relate to some kind of hidden meaning in the text.

However, what is that text that cannot be read? According to Hatcher, this text is better perceived as a flowing texture. It is indeed a texture, as it moves at a speed impossible to be grasped by the receptors of brain cognition. David Jhave Johnston (2016: 19) interprets Hatcher's work as "perform[ing] a coded and sonic archaeology on language debris discovered within networks." Still, is this linguistic detritus composed of simple or even random streams of found material available online? Is it mere appropriation of meaningless material? Understood in that light, any text could go. But Hatcher's work is not a case of Danto's "anything goes" (1997). In fact, there are profound stylistic, formal and thematic constraints. Here, appropriated texts, their remix composition, and their mash-up occurring onscreen may have an ultimate saying. They may be, as well, just part of the creative equation. The only way to access the text is to do some 'underground' inspection, that is, reading the source code, which is coined here as "read-source" in an analogy with the Web browser URI protocol "view-source."

```
/* TRO code */
    var nsa = "Non-traditional threats The main threats of this type are posed by investigative journalists, p
    var t = 'with no correlations in behavior there can be no common code meaningful signals a hot gas of rand
    var t2 = 'speak as clearly as you can say what as clearly as you can say what is as clearly as is can say
$(function(){

    $('#page').css('min-height', 1600);

    var $body = $('body');
    var $box  = $('<div id="black_box"></div>');

    var docHeight = $(document).height();

    $box.prependTo($body);
```

Figure 7 Ian Hatcher, *U [Total Runout]*, 2015. A detail of the source code. The detail shows the three variables that contain the text that is generatively combined and displayed onscreen. Screenshot. Courtesy of the artist.

The source texts (figure 7) are declared in three strings or variables (var) inside `<script>`: "var nsa," "var t," and "var t2." The "var nsa" is an appropriated text—a confidential document hosted in WikiLeaks. In fact, it is not an NSA document, but a 2001 "defense manual of security" by the United Kingdom Ministry of Defense (MoD), which sets the military regulations regarding counter-intelligence and security. The report is cleared with level 1 in security standards, that is, "restricted."[93] The report, leaked to WikiLeaks and posted in 2009, opens up with the following explanation about principles of security:

The Definition of Protective Security

0101. Protective security is the protection of assets from compromise. Compromise can be a breach of:

a. **Confidentiality**. The restriction of information and other valuable assets to authorized individuals (e.g. protection from espionage, eavesdropping, leaks and computer hacking).

b. **Integrity**. The maintenance of information systems of all kinds and physical assets in their complete and usable form (e.g. protection from unauthorized alteration to a computer programme).

c. **Availability**. The permitting of continuous or timely access to information systems or physical assets by authorized users (e.g. protection from sabotage, malicious damage, theft, fire and flood). (*JSP 440* 1.2, 2001: 1-1)

The WikiLeaks summary points out that

The document includes instructions on dealing with leaks, investigative journalists, Parliamentarians, foreign agents, terrorists & criminals, sexual entrapments in Russia and China, diplomatic pouches, allies, classified documents & codewords, compromising radio and audio emissions, computer hackers—and many other related issues. (WikiLeaks 2009)

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[93]   The   full   report   can   be   accessed   at https://wikileaks.org/wiki/UK_MoD_Manual_of_Security_Volumes_1,_2_and_3_Issue_2,_JSP-440,_RESTRICTED,_2389_pages,_2001

The manual defines five "threats to security" to governmental assets: espionage, sabotage, subversion, terrorism, and "non traditional threats posed by other individuals or organizations." It is the "non-traditional threats" that Hatcher uses as source text, bundling parts of the manual as they were excerpted by WikiLeaks:

```
var nsa = "Non-traditional threats The main threats of this
type are posed by investigative journalists, pressure groups,
investigation agencies, criminal elements, disaffected staff,
dishonest staff and computer hackers (…) Confidentiality
Compromise of politically sensitive information This threat is
presented by: (1) Pressure groups and investigative journalists
attempting to obtain sensitive information (2) Unauthorized
disclosure of official information (leaks) Investigative
journalists have exploited personal tax information; they also
target commercial and financial information as do criminal
elements seeking financial advantage (…) b The leaking of MOD
correspondence on issues that are controversial at the time c
The leaking of details of overseas defence equipment
negotiations prior to formal agreements being signed (…) The
threat from subversive and terrorist organizations, criminal
activity, investigative journalists, and members of the public
cannot be discounted Malicious software can originate from many
sources such as disaffected staff, foreign intelligence
services, investigative journalists or terrorists (…) BIKINI
Alert States is RESTRICTED but the codewords BIKINI WHITE,
BIKINI BLACK, BIKINI BLACK SPECIAL, BIKINI AMBER and BIKINI RED
are not protectively marked These codewords may be passed by
telephone provided that they are not qualified in any way (…)
Chinese intelligence activity is widespread and has a voracious
appetite for all kinds of information; political, military,
commercial, scientific and technical (…) There is an obvious
economic risk to the UK (…) In certain key military areas China
is at least a generation behind the West The Chinese may be
able to acquire illegally the technology that will enable them
to catch up The real danger is that they will then produce
advanced weapons systems which they will sell to unstable
regimes (…) Chinese intelligence activity is very different to
the portrayal of 'Moscow Rules' in the novels of John Le Carre
The Chinese make no distinction between 'information' and
'intelligence' Their appetite for information, particularly in
the scientific and technical field, is vast and indiscriminate
(…) TRAVEL BRIEF FOR VISITS TO RUSSIA AND THE FORMER SOVIET
REPUBLICS (…) In view of the poor state of the Russian economy,
the Russian Federation Intelligence Services (RFIS) place a
high priority on information to bolster their economy,
scientific and technical information, and on information to
help advance their pol itical influence This extends to the
theft of patents and to seeking detailed information on Western
scientific developments They also have an interest in political
reporting, alongside their more traditional targets such as
Western Defence and Security, eg NATO The SVR (foreign
intelligence service) and the GRU (military intelligence) try
to recruit British subjects to work for them in the United
Kingdom and elsewhere (…) We know it sounds like a spy movie,
but as well as having wide networks of agents and informers,
```

```
the FSB (Russian security service) makes extensive use of
sophisticated technical devices In the main hotels all
telephones c an be tapped and in some rooms visual or
photographic surveillance can be carried out, if necessary
using infrared cameras to take photographs in the dark (…)
Irregularity in personal behaviour may also lead to trouble The
FSB may attempt to capitalise on sexual liaisons between
visitors and lo cal nationals (…) the FSB may attempt to
compromise and subsequently blackmail through knowledge of
marital infidelity or sexual activity (…) RFIS officers may
make approaches using the cover of another nationality, for
example Eastern European or Scandinavian, to disguise their
true allegiance (…) (JSP 440 1: 2, 2001 in Hatcher 2015a)
```

As it may now be clear, this text accounts for a precise secretive worldview and geopolitical tactics exerted by the British government. Moreover, such is the Orwellian dystopian view that it openly describes the danger of journalism and research, the so-called "investigative journalism," as a threat to governance and the "compromise of politically sensitive information," as if journalism and governance accountability should be two uncorrelated notions. Besides the implications at the national and geopolitical level, what this document shows is a deep sense of arrogance and Western superiority, which is a common denominator in descriptions found in the United States cables and the United Kingdom documents leaked by WikiLeaks in 2010-11. While having plain rules and being surprisingly absurd at times ("Chinese intelligence activity is very different to the portrayal of 'Moscow Rules' in the novels of John Le Carre"), it is very different from the source texts contained in the variables "t" and "t2," which have been composed or written by Hatcher:

```
var t = 'with no correlations in behavior there can be no
common code meaningful signals a hot gas of randomly flipping
cells table-walk through a human brain with the ability to mark
and read the environent consitutes an existence proof transient
times decreasing dependence array size as a transition point no
dependence sharp computational classes slicing behavior of the
dynamice (…) and thus 512 sites under the rule of governing
basis for signals interactions between them in the support of
an overall blood system note the manner in which the collision
of a propagating particle with a static periodic structure
produces a particle traveling in the opposite direction every
position where there was a hole in the input stream if 1 then 0
if 0 then 1 if 00 then 0 implement an extendable memory (…) an
artificial chemistry cannot reproduce the behavior of a real
chemistry (…) adding layers of realism as needed kinetic
parameters indeterminable from first principles the logarithm
of the concentration of each is plotted against the logarithm
```

```
of time equivalent to the assumption of a well-stirred reaction
vessel  with  infinite  volume  navy  fighter  drone  promises
pilotless future in rows strings - a sere sky spurged humming
expanding  &times;  &times;  &times;  with  no  correlations  in
behavior there can be no common code (…)
```
(Hatcher 2015a)

This array of text is made out of chunks of text that constitute a whole, and then it has been copy-pasted six times. The text comprises cut-ups from different sources about complex systems, artificial intelligence, biologic systems, and chemistry, and unmanned systems and aerial devices, such as drones, which are appropriated, copied-pasted and reshuffled. For example, the first two segments "with no correlations in behavior there can be no common code / meaningful signals" are taken from Chris G. Langton's "Computation at the Edge of Chaos: Phase Transitions and Emergent Computation" (1990b: 31), possibly via Claus Emmeche's *The Garden in the Machine* (1996 [1994]: 125), a book that reflects on biological and computer systems. Another segment, "a hot gas of randomly flipping cells" is extracted from Langton's (ed.) *Artificial Life II* (1990a: 65), while "an artificial chemistry cannot reproduce the behavior of a real chemistry" appears in the same collection, authored by Richard Bagley (1990: 107), concerning autocatalytic networks—both authors were employed at the Los Alamos National Lab Complex Systems Group. Furthermore, the block of text "navy fighter drone promises pilotless future" is extracted from Eric Niiler's web article "New Navy Fighter Drone Promises Pilotless Future" (2012). It seems as if Hatcher is extracting these texts to establish parallels in seemingly complex autonomous and adaptive networked systems, which are artificially run, self-regulated, self-governed and black box organisms: secret governmental agencies, computer systems, drones, biological systems, L-systems, cellular and code automata, genetic algorithms. This claim is emphasized by the textual array 2:

```
var t2 = 'speak as clearly as you can say what as clearly as
you can say what is as clearly as is can say what is clearly as
is  clearly  say  what  what  is  clearly  as  you  can  speak  in
stability speak in recline speaker speak in clear cans wire
singer speak as clearly as you can transmit over clear-eyed
cable speak as clear as can you as clearly speak can you as
clearly as speak can you speak as clearly as speak clearly as
can you speak clearly you speak speak in a snowstorm speak in
an ice castle speak in a dead computer speak in a diamond mine
speak  in  a  silver  lining  speak  in  an  empty  node  speak  in  a
```

```
speaker i can hear what you are saying i hear what you are
communicating saying as clearly as you can i hear it as clearly
as i can clearly i hear clearly you can speak as clearly as you
can speak as clearly as you can it is the right you have left
don\'t remember last forever don\'t remember last forever
don\'t remember last forever don\'t remember last forever
don\'t remember last forever don\'t remember last forever in a
church of color bars which have lost color which have become
figure on ground stained glass opens a seascape a final dream a
balcony trust forms which come in pairs key values radio storm
flood of cats delineated and taxonomized box them up and seal
them in chambers of the visible or the divisible or the
devisable or the devious or the matter of fact or the allusive
or the allegorical or the spectacular or the tedious or the
aesthetically suspect or the ridiculous or the caustic or the
momentarily beautiful or the toothsome or the narrative or the
comfortingly familiar or the comfortingly unfamiliar or the
disturbing or the incomprehensible or the offensive or the
irritating or the deliberately difficult or the (...) (Hatcher 2015a)
```

Hatcher wrote the text embedded in this array ("var t2"). The cited excerpt was then re-composed by means of copy-paste technique. It is repeated eight times, as figures 8 and 9 attest:

Figures 8-9 The text editor analysis of the variable t2 ("var t2") shows that the same excerpt of text was copy-pasted eight times.

In addressing a second subject, or an "othered" self, the request "speak as clearly as you can"—which is a common sentence that can be found in speech test, educational or employment manuals—refers back to modes of communication in speaking and hearing: "delineated and taxonomized box them up and seal them in chambers of the visible or the divisible or the devisable or the devious or the matter of fact or the allusive or the allegorical or the spectacular or the tedious or the aesthetically suspect." It thus represents an incitement to open modes of communication and to bypass the black box.

Modifying Deformance
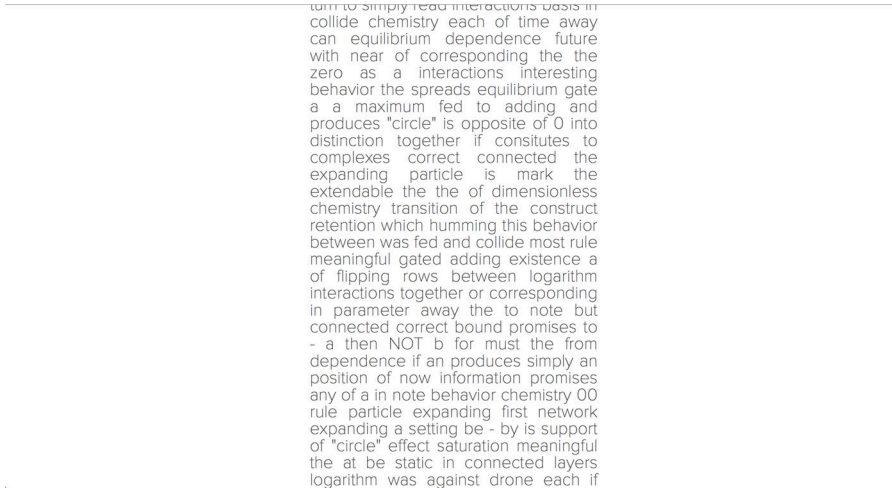
Figure 10 Ian Hatcher, *// [Total Runout],* 2015. Screenshot. Courtesy of the artist.

As the source code reveals, these three variables are generatively entangled and reshuffled onscreen (figure 10). Using the scripting language JavaScript, the open source interaction and animation libraries jQuery, and jQuery Transit,[94] Hatcher codes the temporal and kinetic aspects of the work. In fact, without these two libraries, the work would be a blank canvas. If we view the neatly laid-out source code, we find valuable information in the programmed algorithms and data structure:

```
function shuffle(array) {
    var counter = array.length, temp, index;
    while (counter > 0) {
        index = Math.floor(Math.random() * counter);
        counter--;
        temp = array[counter];
        array[counter] = array[index];
        array[index] = temp;
    }
    return array;
}

var sources = [nsa, t, t2];
```

---

[94] The library `jquery.transit.js` for jQuery creates CSS3 "transformations and transitions." Filipino web developer Rico Sta. Cruz wrote it and released it under a MIT License via GitHub at https://github.com/rstacruz/jquery.transit

```
function touch() {

    var source = Math.round(Math.random() * 2);
    var z = sources[source].split(' ');

    z = shuffle(z);
    z = z.join(' ');
    $box.html(z);
}
```

`Math` is an object that can be used to construct mathematical properties and methods. In this case, the methods `Math.floor`, `Math.random`, and `Math.round` respectively return the largest integer number less than or equal to the counter—which is higher than zero and set in a loop—and the sources, which return a rounded integer pseudo-randomized between zero and one, times two. The two sets of instructions inside the functions (`shuffle` and `touch`) inform the computer to execute a randomization—shuffle—of the arrays contained in the sources—the three different source texts—and to parse these source texts into an array of substrings. In the `split(' ')` case, space is the separator, which means it separates the source texts word by word or whenever there is a space in the text. At the end, the shuffle function rejoins the three source texts. It is important to note that the speed of the kinetic text is dependent on different temporal dimensions. In JavaScript, timing events can be given by the methods `setInterval(function, milliseconds)` or `setTimeout(function, milliseconds)`. The timers Hatcher sets are given with timeouts:

```
var time = 30;
 var stop = false;
 var bb = false;
 var init = false;

[…]

    setTimeout(function(){
        $box.transit({
            width: w + o.left + 1500,
            height: h + o.top + 1000,
            'margin-left': -o.left - 500,
            'margin-right': -o.left - 1000,
            'margin-top': -o.top - 500,
            'margin-bottom': -o.top - 500
        }, 4500 + (Math.random() * 3000), function() {
$box.html(''); });
    }, 30);
```

```
            });

            var timeout = function(){
                if(stop) return;
                setTimeout(function(){
                    touch();
//                    if(time > 28) time -= 10;
                    timeout();
                }, time);
            };

            timeout();


            var grow = function(){

                if(stop) return;
                var w = 90 + (Math.random() * 400);
                if(w < 105) w = 0;
                if(w > 104 && w < 115) w = 15;
                $box.transit({
                    width: w
                }, 3000 + (Math.random() * 3000), function() {
                    init = true;
                    setTimeout(grow, (Math.random() * 2400));
                });
            };

            setTimeout(function(){
                $box.addClass('ok');
                setTimeout(grow, 6000);
            }, 1000);
        });
```

Now, we have onscreen animations due to the JQuery Transit library and the `setTimeout()` calls, and the duration argument given by the timers. The variable `time` sets the 30 milliseconds parameter (0.03 seconds), which is the duration of the textual shuffle replacement, and the 6000 milliseconds parameter as the duration of the block of text (box) to grow.

```
        setTimeout(grow, 6000);
    }, 1000);
```

As we think about the way the text gets reassigned as an event, it clearly cycles too fast to be perceived. Slowing down the speed will surely reveal the entangling behavior of larger portions of language. One way to account for and perceive these changes is by modifying the source code time inscriptions, and explore—through trial and error— the programmed conditions and the effects of temporal functions as they are executed

and displayed onscreen. Manipulation of the time parameters described above, in a modified version of *TRO*, can follow:

```
var time = 7000;

[…]

var grow = function(){

            if(stop) return;
            var w = 90 + (Math.random() * 400);
            if(w < 105) w = 0;
            if(w > 104 && w < 115) w = 15;
            $box.transit({
                width: w
            }, 5000 + (Math.random() * 3000), function() {
                init = true;
                setTimeout(grow, (Math.random() * 2400));
            });
        };
```

This experiment—bold signals interval changes—drastically transforms the textual running speed, but more importantly, it leads to an important discovery.[95] In the original work, the text changes and reshuffles, according to my calculation, 33 times per second, that is, 1 second divided per 0.03 seconds. By increasing that value to 7000 milliseconds (7 seconds)—since the text is justified—we start perceiving that its lines break in different ways concurrently to the curtain-like motion of the block up until 15 units width. In addition, to smooth the curtain expansion, the parameter 3000 milliseconds is changed to 5000. Therefore, it is possible to see the increase of transitions in the text behavior, given that its words are modifying placement as well—the position of words per line. Thus, placement and replacement multiply the dislocations of words in space.

Another way to explore the temporal and spatial dimension of the poem is by using a screen recorder tool. For that matter, it might be useful to create slow motion screencasts of the work, slowing down the speed of the piece running on a browser. A time-lapse movie can be achieved by recording an event at very low frame rate, and then speed it up when exporting it. However, *TRO* is not an event of slow mutations,

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[95] The modified version can be accessed at http://alvaroseica.net/setInterval/tro/TROmod.html

but rather fast, so we need to slow it down. Capturing at an average rate of 0,3 frames per second (fps), the first export of the file was done at 200 fps, which highlights the transition behavior, and then at 20 fps, which would show circa one transition per second. This process creates a time-lapse video in slow motion. These parameters were based on Hatcher's information that the poem cycled twenty times a second. Having studied the source code and understood that it actually cycles at an average of thirty-three times per second, it suggested that a different method was needed. The second method set the screencast sequence timebase to thirty fps, and then reduced the speed duration of the whole clip to 10 percent. Therefore, the initial one-minute recording was slowed down, becoming ten times longer, that is, ten minutes long. As productive as it might be, this surface method did not in fact reveal so much information on the text behavior as the source code modified version did.[96]

While it might be problematic to move away from the intended sequential speed, these mods (modifications)—altered versions of the original work—emphasize vital aspects. Consider these mods as experimental criticism, understood within open source and remix culture, but also as "deformative criticism," according to the notion proposed by Lisa Samuels and Jerome McGann (1999: 36-37). Changing intervals in timers can be understood in the scope of Samuels and McGann's "altering deformation," in that the modifying deformance of the temporality of reading might help us to grasp text entanglements and transitions, and to regard the poem anew. The transcription below accounts for three of those transitions, though without the text's graphic justified layout. A row of letters mutates itself from:

a
a
t
k
n
i
b

---

[96] The video can be accessed at https://vimeo.com/206581420

u
t
t
x
t
f
t
a
0
b
i
w
i
w

Into,

can you clearly
an spectacular
speak is dead
singer clearly
remember speak
the or don't last in
can as narrative
pairs you and
divisible is familiar
up the as can or
castle can
remember clearly
speak speak the
speak chambers
suspect or values
computer speak
what them can
speak cats i in
dead as storm i
balcony or you
forms an

And,

employees the examples talk
would to often visit the probable of

> developments rigorous Technical
> intelligence the intelligence no A
> software are external Def obliged
> Def the Characteristics date,
> preparing Services also details,
> realized given disastrous marked
> from The subsequently cost such
> financial considered any United
> disaffected as locally the voracious
> of of may travellers little influenced
> territory up as where (especially
> either taken to the European
> codewords unwittingly, cannot
> special Or, roles by subversive and
> from used as in telephones
> premeditated might sensitive him
> the to take exploited this extremist
> Chinese to terrorists the political,
> obtain if be reporting Foreign from
> (Hatcher 2015a)

In fact, the reader might see these transitions only once in a reading period. The transcription of these excerpts proves that not much can be said about the text entanglements, when they are frozen as such, but that modifying the temporality of its display, as a live event, can produce a better understanding of the output.

Yet, changing the temporality of the presentational mode also changes the affective experience, and the aesthetic qualities of reception at the level of emotion, and perception from the point of view of the reader and viewer. Art "lasts no longer than its support and materials," claim Deleuze and Guattari (1994: 163). In their point of view, the artistic experience—as an autonomous quality of the work of art—is "preserved [as] *a bloc of sensations, that is to say, a compound of percepts and affects*" (1994: 164, emphasis original). Borges (2014: 143), for whom space can be measured by time, and *nightmare* the oldest of literary genres, when writing on Momigliano's work, considered that "aesthetic comment is the normal method. We judge books for the emotion that they evoke, for their beauty, not for reasons of doctrine or politics." (translation mine) This is Borges, of course, raising *sensu* over *intellectu*. *Sensu* and *intellectu*, though, go hand by hand.

Considering the perceptual and affective side of the tempo Hatcher sets is decisive. Slowing down its tempo, or for that matter, grabbing a screenshot, can help us read some of the mash-ups of text happening onscreen, but more importantly, slowing down the tempo allows for a perception of kinetic behavior, a complimentary reading that further informs the difference between interpreting a static object—such as a book or source code—and an event. As Hatcher (2015d) elucidates, "*TRO*'s behavior is generated and chaining itself over time but it is doing that with pre-set vocabulary that I chose deliberately. And it's flipping between three different texts about twenty times a second when it is running on a system that can do that." Therefore, machine processing time, CPU time, code execution time while the browser reads it, and the network time influence the final display tempo of the work. These "concurrent times" (Strickland 2015) actually define and constrain the perception of any Web-based event. If running on a system that can perform the reshuffling without major delays, "you get these bits of language, that allude to military industrial complexes" (Hatcher 2015d).

The Black Box: Surveillance, Redaction, and Systemic Violence

What is new in Hatcher's œuvre is not the exploration of the documentary form, and subsequent appropriation of secret documents, but rather how these sources are activated; how, for instance, the interaction of the user enacts the redacted technique of the black out. [97] These strategies are dynamically, visually and conceptually put in practice, translated onto the screen, but also translated as embodied voice experience. Cycling through media and languages, *TRO* is striking as a point of departure that forks different iterations of events aiming at creating awareness of black boxes. These events are prompted by expressive translations of code and encoding. First, there is

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[97] The use of documents in artworks has a long tradition in theatre. In literature and the visual arts, the same is true. Consider Jenny Holzer's post-2003 work with declassified documents, under the U.S. 1966 Freedom of Information Act (FOIA). The *Redaction Paintings*, *Archive* (2006) or *Top Secret* (2012) series of silk-screened and oil paintings are composed from confidential memos, emails, or documents concerning Abu Ghraib. They are presented as redacted visual documents, showing marks by government censors or Holzer's color blocks superimposed over text portions.

the coding in JavaScript. Then, there is the onscreen visual and language output, which the author describes as a "screen poem." Lastly, there is the performance of the piece, whose output is another series of language-broken code. Even the title of the work is a code: U+2330. This Unicode character's equivalent decimal HTML encoding entity is ⌰ and it is translated by the browser as ⌰, a symbol that means 'total runout.' 'Total runout' is also a technical variable measuring the tolerance control over the geometric variation of a surface. Thus, it can be understood as relating to the control exerted over a surface of text, or the denial of access, as the piece ceases completely to be accessible, almost as a denial of service attack scenario. This issue is prominent in that *TRO* is part of a larger suite, *Drone Pilot* (2015-).

In the source code of Hatcher's website we find informative paratext as lingering HTML comments:

```
<p>An arc of work concerned with telepresence and systemic
violence.<!--arc of text/sound/live material that traces a path
of telepresent violence. By inhabiting the two primary
subjectivities of a drone strike &mdash; pilot and target
&mdash; and the technical apparatus between them, the project
explores how consciousness, desire, and suffering echo through
nodes of unfathomably huge, expanding, self-protecting networks
of state/corporate power.</p>-->            This clip is
from a performance titled <i>Drone Pilot v0.2</i>, curated by
Rachel Valinsky for NYPAC, 3/29/15 at Judson Memorial Church,
NY.</p>
```

Contrary to *Plexus*, which is a lyric poem, *TRO* stems from the fact that violence needs to be treated—presented and represented—in a strategic way. As Ben Lerner (2016: 62) asserts, when preparing to analyze Claudia Rankine's *Citizen* (2014), "The lyric—that is, the intensely subjective, personal poem—that can authentically encompass everyone is an impossibility in a world characterized by difference and violence." As such, *TRO* and *Drone Pilot* partially "speak" the language of its governmental emitters, and in uttering it they counter it. As Hatcher (2017b) clarifies, *Drone Pilot* (2017a) contains five "sections" or "songs" that are performed in versioned ways: (0) The Base; (1) Connecting; (2) Speak as Clearly as You Can (Total Runout/TRO); (3) Private; and (4) The Hive. These "schematic" parts address the

binomial private/public, in relation to the themes of systemic violence, drones, and black boxes.

The *black box* represents a system that cannot be fully accessed, or whose inner mechanisms cannot be fully graspable. In computer science and engineering, a *black box* is a designed system or object that can be employed with an understanding of input and output, but not of middle processing, that is, without an understanding of how it works. According to the Oxford English Dictionary, a *black box* is a "flight recorder in an aircraft," where typically sonic and flight data is recorded. Its notion extends to "a complex system or device whose internal workings are hidden or not readily understood."[98] As a "technical apparatus," the black box in a drone device directly streams flight data back to its remote control station, or stores flight logs via software. The remote control station, commanded by a *pilot*, operates the device via a network.

As Paul Virilio (1999: 17) warned in a 1996 interview, "ubiquity, instantaneity, immediacy," combined with ever-smaller drone devices diminish democracy. In fact, Virilio quotes Ernst Jünger's *The Glass Bees* in relation to nanotech wasp drones, which is the main topic addressed in Hatcher's "the hive." Wendy Chun (2006: 209), commenting on Virilio's work about speed and politics, remarks: "Virilio argues that because telecommunications networks work at the speed of light, speed becomes as important as, if not more than, time and space." The circulation and escalation of violence via networks becomes even more obfuscated by complex distributed systems. "Protocol's native landscape is the distributed network," argues Galloway (2004: 11), and as such agency and accountability also become distributed, that is, according to Hatcher, "self-protecting and systemic." As Thacker (2004: xiii) emphasizes, "You have not sufficiently understood power relations in the control society unless you have understood 'how it works' and 'who it works for.'" Ultimately, political and financial self-interest, as well as power dominance, can be tracked upstream to governmental agencies in the name of national state security, or to corporations, in the name of free-market ideology.

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[98] See https://en.oxforddictionaries.com/definition/black_box

In performing *Drone Pilot* (Hatcher 2015b), the theme of black boxes as intermediaries in a highly mass surveilled and controlled society, raises the question: What spaces are really private in the private sphere? Not understanding the black box reinforces the deliberate lend of our own language, infrastructures and systems to machines controlled by the state or the corporation. As Galloway and Thacker (2007: 3) highlight,

> (…) the United States has, throughout the last half century or so, dominated the technology driving the world culture and economy, from the Windows operating System to Zoloft to the Boeing 747 aircraft. Thus the idea of "American exceptionalism" is always refracted through two crucial lenses of modernity: rapid technological change that, today at least, center around information networks, versus a continued expression of sovereignty alongside the emergence of these global networks.

The political theory of networks that Galloway and Thacker (2007: 3) develop presuppose that power influence diffused via networks is highly pervasive, in that "processes of globalization" are part of a "a system of control infused into the material fabric of distributed networks." This view goes in line with Foucault's perspective that discourse and language are power, in the sense of being a tool for distributed networks of knowledge. If this was already true in the aftermath of 9/11, it has been definitively exponentiated and made public in the years that followed. After 2006, United States secret documents with more than twenty-five years are automatically declassified, and hence disclosed to the public. However, today's network access makes them more easily hackable and spreadable. Surveillance, control, and the lack of privacy seem to be now more *visible* concerns for a portion of the population. That is why contemporary leaked documents become subject of public attention, dissemination, and rapid creative use.

Two major events in the early 2010s have had a significant impact in terms of citizen privacy and digital rights. In 2010-11, WikiLeaks released a very large amount of diplomatic cables and other documents revealing the pervasive soft and hard power of the United States imperialistic strategies with the goal to controlling regional, national, and continental geopolitical power. Moreover, surveillance shifted from

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being a tactic and operational mode used by governmental secret agencies in order to target suspected criminals, to a generalized system targeting any citizen. Corporate spying programs that aim to increasing knowledge of a competitor's patent and technology development in order to increase profit are entangled with governmental spying programs. These facts became publicly widespread after Edward Snowden's 2013 leakage to *The Guardian* and *The Washington Post* disclosing secret programs undertaken by NSA, and its foreign partners, with semantically-charged and, sometimes, even poetic codenames, such as Fairview, Prism, Mystic, Oakstar, Stormbrew, Shiftingshadow, Orangecrush, Trailblazer, ThinThread, Stoneghost, Gumfish, Turbine, Captivatedaudience, among others. Some of these programs aim at collecting information by any citizen, in emails, web chats, social network sites; at wiretapping, that is, accessing private devices, their built-in cameras, and microphones—with the close collaboration of tech corporations that include Apple, Google, Microsoft, Yahoo, and Facebook—whereas others aim at 'infecting' computers and national "critical infrastructure."

By approaching different black boxes, Hatcher creates an analogy at the level of secret agencies and computer systems, from the subjective point of view of the user and the human as sender and receiver. As such, by thematically, structurally, and conceptually addressing that aspect, he denounces it as much as criticizes it. At the same time, he practices the opposite. As Wendy Chun (2006: 71) points out, "open source and free software, by belonging to no one, makes democratic struggle possible, makes their code functionally analogous to a public place." The inner workings of governmental secret programs and computational interfaces—think of Lori Emerson's (2014) critique of slick interfaces—are increasingly more difficult to understand, and more difficult to access. The public eye and interest is being set more and more out of the picture. More than counter the power relations and control propagated in networks and protocols with activist language and art, resistance—especially in the way *TRO* is performed—emerges from exposure and exaggeration. The hyperbolical embodiment of speed—in the visual and aural performance of textual data streams—reinforces the issue of problematizing surveillance, control, access to privileged information, and the abuse of power that often comes with it.

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Performing the Sound Poem

It is precisely the variables of information overflow, excess, multiple streams of information, transmission speed, denial of access to privileged information, unreadability, and even censorship that the poet embodies and amplifies when performing the piece. However, the reading of the work becomes something else, it becomes a complementary iteration of the online poem, a different version or manifestation, a different event. Hatcher's line "speak as clearly as you can" is paradoxical. When performing, his voice utterances become everything except clearly spoken. The poet performs the piece with audio technology, that is, human technology: his own voice, which he considers to be "code-inflected." The human vocal aspect is injected by an attempt to mimic broken computer-generated voices.

   The sound poem though moves away from the high pitch we can associate with poets such as Steve McCaffery, Jaap Blonk, or Christian Bök, and the lineage their work derives from, that is, post-Second World War authors such as Henri Chopin, François Dufrêne, and Bernard Heidsieck, and especially sound and Dadaist poets like Hugo Ball, Raoul Haussman, and Kurt Schwitters—consider *Ursonate* (1922-32). Sound poetry has relied on quick rhythms, high pitch, phonetic sounds taken as non-linguistic poetry, and powerful utterances. Hatcher's approach to sound poetry is rather different from its predecessors. It is closer to Gertrude Stein's repetitive absurd compositions than to Schwitters's cacophonies. Consider "A Description of the Fifteenth of November: A Portrait of T.S. Eliot" (1924), where Stein reads "he said we and we, he said we, he said he and he, he said, we said, he said, yes he said, he said that was the same as that we had heard (…) surely as much so, please please us, please please, please please us." Stein relies on repetition, anaphoric structures, cycles of iterations, which we can encounter in Hatcher's work as well, when stuttering, when code, text, sound, and live performance come in full cycles. Hatcher's repetitive copy-paste, cut-up technique, and its translation into sharp and short sounds reaches a point in which expressions such as "speak as clearly as you can" achieve both polysemic value and what "psychologists call 'semantic

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saturation'" (Lerner 2016: 80); the loss or removal of meaning that "becomes mere sound." In *TRO*'s performance, the vocal modulations and bass computerized pitch rely on the athletic exercise of speed-reading. In some sense, we can say that Hatcher's performance of his own work is a deformative reading. In other words, performing *TRO* deforms *TRO*. Taken from another perspective, the performance of the base theme, which is the text score, is reenacted as embodied versions.

When Hatcher (2015b) reads the piece as part of *Drone Pilot*, the same strategy used in *Ping* is replicated with the use of the verb "connecting"—an allusion to the fact that the performer and the system are connecting to the host.[99] Then, Hatcher initiates the piece. From the point of view of the performer, it is a very demanding and extreme reading. Hatcher's athletic reading speed becomes a symbol for a whole era of information overflow, angst, and control. Showing the piece in projection behind his figure, the body of the performer stands in front of the audience. At the same time, Hatcher reads from his mobile phone, an iPhone, which is important inasmuch as it becomes an extension of his own hands, the size of the device being relevant as it is easily manipulated by his thumbs, by now almost becoming extensions of the device. If seeing Hatcher controlling the interface and the device, a living proof of Leroi-Gourhan's (1993) notion of adaptive evolution of tools and humans is articulated.

In fact, the development of human behavior becomes entangled and influenced by the technological tools at his disposal. The curtain and its movement direction, closing and opening up, combine a further layer of denotative meaning as they seem to give and withdraw. Code, text, body, sound, interaction, image projection, the disposition on stage and the live performance are a distinctive case of what Chris Salter (2010: xxx) would call the "entanglement" of technology and performance arts. Salter builds up on research of complex dynamical systems: "Just as performance is a time-based, nonrepeatable (…) practice, so too is the behavior of

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[99] See, for instance, Hatcher's performance at Judson Memorial Church, in New York City, on March 29, 2015, at https://vimeo.com/145887878 or at the Mediapoetry Festival 101, in Saint Petersburg, on April 12, 2016, at https://vk.com/video168156452_456239023

fluid dynamics or cognitive systems that defy the scientific cornerstone of exact reproducibility due to their continual variance over time."

With a very personal idiom, Hatcher embodies the cognition of overflow in networks, as a human-machine symbiosis, a cyborg-like presentiment. If, as Stiegler posits, the technical device possesses its own *intratemporality*, the extended or prosthetic nature of Hatcher voice and hands relates to its adaptation to tools. Hatcher's body, more than a cyborg, is a prosthetic device of Hatcher himself, a technical device incorporated in a biologic form. Hatcher, though, plays a trick like a magician. What seems to be a supercomputer brain reading at an impossible speed is, in fact, a vocal technique developed by the author: saccades seem to be inexistent and syllables omitted, so as to appear being read in synchronicity with the visual display. "In the beginning is clearer, and then I start filling in the space with sounds, syllables," explains the author (Hatcher 2015d). What could be taken as Wallace Stevens's "syllable of a syllable" is a voice rewriting the text, a voice dismembering language until a point of no intelligible return—consider Jaap Blonk's "Der Minister I" and "Der Minister II" (1993a, 1993b, 2013 [1985]).

The audience is tricked to think that a responsive environment is set, that text-to-speech or speech-to-text operations are undergoing. Actually, it is a static text that Hatcher is reading from his mobile phone, the same text in another order, and the utterances that initially seem like transparent words gradually transform themselves into syllables and sounds spoken at a very fast pace, resembling words. In a talk at the New Jersey Institute of Technology (NJIT), Eric Katz asked: "Do you think you catch 1 percent of the words?" to which Hatcher replied: "I actually capture almost all of them because I am not reading from the screen, but from the same text, but not this one [onscreen]." (Hatcher 2015d)

Hatcher's intelligent strategy plays with the fact that, at a certain speed, human scales of faster, or even faster, are dismissed. Speed rates become unintelligible. Human brains have no way to dictate if synchronicity is happening or not, as two highly fast rates of speed are unfolding, yet too fast to be measured or articulated in relation to one another. Still, by chunking parts of the words, the poet vocalizes what seems to be a real-time process of speed-reading. Moreover, a further

element in the performance is the relation between the black box and the performer's gesture. When the black box shows onscreen, Hatcher lifts his hand and covers his mouth, hence prompting a moment of silence. The hand seems pulled by a different body, as if a censor, or a censoring system was forcing the subject not to speak up, to be shut down. Then, the reading resolves immediately. At the same time, these breaks act as moments to pause for breath. As the performance progresses the audience fixation on the screen shifts back to the performer's body. Therefore, Hatcher emphasizes human performative qualities, instead of letting hardware and software become the main focus of attention. The rhythm of his voice ascertains that focus. Instead of being outside of the performance, manipulating parameters on his laptop, Hatcher is inside. By integrating the body as presence, screen, and computational system, a higher level of engagement by the audience surely occurs.

This contextual reading of Ian Hatcher's *U [Total Runout]* provides, in itself, a multimodal approach to a work that is published and performed in different manifestations. At the level of theoretical implications, the experimental case study conducted on the modifications of its source code hopes to contribute to a new—or, at least, more informed—way of reading and interpreting digital kinetic poetry. For, as Stephanie Strickland and Nick Montfort (2013: lines 904-905) point out, "works of electronic literature and digital art need to be studied by operating them." The authors glossed the code of *Sea and Spar Between* (2010), that is, they published criticism about "computational poetics" by writing a log on their creative work in the source code of the work itself. In doing so, they invited critics and artists to modify and remix their code. The method of deforming Hatcher's work through modifications explores this potential avenue, with the aim of fostering a novel comprehension of the processes, and expressive qualities of literary works that move and unfold in time.

To conclude, the performativity of the gestures, and the act of reading replicate the structure and theme of *U [Total Runout]*. They point to an embodied denouncement of statal and corporate systems of control, cognition, and violence; systems that following "the socio-technological study of the mechanisms of control"

mean a "crisis of the institutions, (…) the progressive and dispersed installation of a new system of domination" (Deleuze 1992: 7). As Rita Raley (2009: 133) argues, when analyzing electronic network systems, the self-regulatory and self-governance of financial information is that their "function and performance are their meaning." The text behavior and the interactive mechanics—the denial of intelligibility—constitute the very essence of Hatcher's piece in that, as Samuels and McGann (1999) would also argue, they "perform its own meaning." The work's activation, high speed, and prevention of access prove the conceptual take. The meaning relies not entirely in the content, but in the work's processes to act as powerful reminders of the functions behind networked systems, their hidden control, and the human ability to use them in order to propagate violence.

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VI

Article 6

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Digital Poetry and Critical Discourse:
A Network of Self-References?

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Abstract

This article emerges from macroanalysis of several works of critical writing in the field of digital poetry, which have been documented in the ELMCIP Knowledge Base. The problems addressed in this context are the self-referentiality exhibited by authors who are both practitioners and theoreticians, and the need for a wider selection of digital poems in critical discourse. The dataset consists of monographs and Ph.D. dissertations on digital poetry (1995-2015), which have been exported into visualization software. Macro and network analyses enable new debate concerning the outlined problems and new findings. My findings suggest that criticism in this domain is chiefly endogenous and that a limited number of poems is being canonized. Therefore, a meta-discourse perspective can pave the way for an external view of the field, concerning its epistemology and evolution. The dataset is available online for download and can be tested and reconsidered by other researchers. **Keywords:** electronic literature; digital poetry; network analysis; literature and technology.

Resumo

Este ensaio macro-analisa várias obras teóricas, publicadas na área de poesia digital, que estão documentadas na ELMCIP Knowledge Base. Os problemas aprofundados neste contexto fundamentam-se na autorreferencialidade revelada por autores que são poetas e críticos e na necessidade de uma seleção mais vasta de poemas digitais no discurso crítico. A amostra de dados é composta por monografias e dissertações de doutoramento acerca de poesia digital (1995-2015) e foi exportada para *software* de visualização. Os métodos macro-analíticos e de teoria de rede permitem um debate renovado em relação aos problemas delineados e, por conseguinte, novos resultados. Os resultados aqui apresentados sugerem que, nesta área, o discurso crítico é maioritariamente endógeno e tem vindo a canonizar um escasso número de poemas. Desta forma, uma perspectiva meta-discursiva poderá favorecer uma visão externa sobre a evolução e epistemologia da poesia digital. A amostra de dados está disponível para transferência em livre acesso de modo a ser testada e reconsiderada por outros investigadores. **Palavras-chave**: literatura eletrónica; poesia digital; análise de rede; literatura e tecnologia.

Identifying Problems

In one of Ernesto Sábato's *El Túnel* (1948) digressions, Juan Pablo Castel, the first-person narrator, invokes the analogy between the practice of a doctor and that of a painter to question the fact that an art critic, who has never been an artist, can assess a work of art in a profound manner:

> LOS CRÍTICOS. Es una plaga que nunca pude entender. Si yo fuera un gran cirujano y un señor que jamás ha manejado un bisturí, ni es médico ni ha entablillado la pata de un gato, viniera a explicarme los errores de mi operación, ¿qué se pensaría? Lo mismo pasa con la pintura. Lo singular es que la gente no advierte que es lo mismo y aunque se ría de las pretensiones del crítico de cirugía, escucha con un increíble respeto a esos charlatanes. Se podría escuchar con cierto respeto los juicios de un crítico que alguna vez haya pintado, aunque más no fuera que telas mediocres. Pero aun en ese caso sería absurdo, pues ¿cómo puede encontrarse razonable que un pintor mediocre dé consejos a uno bueno? ([1948] 1997: 22)[1]

Sábato's character's point of view is legitimate but does not acknowledge a more refined and sensible distinction about critical thought and inquiry, which has to do with broader intersection lines, and so it can be read in a reductive manner.

In fact, there is a different mode of knowledge production put forward by artists or writers—practitioners—who themselves are theorists, and by critics who are not practitioners. The same is the case for poets who write about poetry and poetry critics who are not poets. Stephanie Strickland and John Cayley develop a poetic practice and also theorize on their own and others' works. This practice-based critical view, seen from inside of the writing process, allows them to consider issues that are sustained and, in many cases, arise from questioning and engaging with their own writing program and processes—what Strickland (2006) calls *poietics*. In American literature, especially following the L=A=N=G=U=A=G=E lineage, this means thinking (*poetics*) through doing (*poiesis*) and doing through thinking. Thus, poetry assimilates poetics and poetics assimilates poetry. However, critical inquiry

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[1] "THE CRITICS. If I were a great surgeon, and some fellow who had never held a scalpel in his hand, who was not a doctor, and who had never so much as put a splint on a cat's paw, tried to point out where I had gone wrong in my operation, what would people think? It is the same with painting. What is amazing is that people do not realize it is the same, and although they would laugh at the pretensions of the man who criticizes the surgeon, they listen with nauseating respect to the charlatans who comment on art. There might be some excuse for listening to the opinions of a critic who once painted, even if only mediocre works. But that is just as absurd; because what could be reasonable about a mediocre painter giving advice to a good one?" ([1948] 2012: 6-7)

that solely focuses on one's own creative work can lead to very subjective appreciations, narrowing down criticism and forcibly fall on an apologia of one's own standards. From a different angle, critics such as Katherine Hayles or Roberto Simanowski hold an external critical view, from the outside of the poetic writing process. This position allows them, perhaps, to be less partial and to try to have a more comprehensive approach, but it can also drive some critics, at moments, to be inflected by over-theorization, that is, paying more attention to the surface than to code, and not reading the inner mechanics of a piece and critically engaging with a practice-based knowledge of what is being reviewed.

Reflecting on the problems of self-referentiality and canonization—by studying a field as a system that can be considered from a macro perspective—I try then to investigate how digital poetic work is being referenced by these two ends of the critical spectrum and what works are being more referenced. These problems originate from an attempt to provide an external or meta-discourse perspective on the field and a concern regarding the need for a wider selection of digital poems in critical discourse.

From Singular and Multi-Documentation to Plural Observation

In order to explore these problems, I have mined data about critical writing on digital poetry documented at the ELMCIP Electronic Literature Knowledge Base (http://elmcip.net). I have extracted a dataset consisting of monographs and Ph.D. dissertations, published between 1995 and 2015, along with their referenced creative works, the majority of which are digital poems. Then, I analyzed those relations by performing network visualizations.

The macroanalytic observation suggests that digital poetry is a domain that has produced a significant corpus of creative works and critical discourse. However, how is critical discourse affecting and selecting the corpus of digital poems? One needs to problematize the difference between practice-based critical writing and critical writing developed by scholars who are not poets, since their frameworks diverge, even though it does not mean that the diversity of case studies is richer. Thus, the two questions I pose are: Is there a prevalence of self-referenced creative works in critical writing? Is there a set of digital poems which is more referenced than others?

ELMCIP is a collaborative and open access knowledge base on electronic literature and one of the most comprehensive databases in the field. Its model allows for users to contribute with new records or edit pre-existing ones. As a database being continuously updated, ELMCIP maps not only the field but also its literary antecedents, both critically and creatively.[2]

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[2] For further information see the white paper "The ELMCIP Knowledge Base" by Scott Rettberg with Eric Dean Rasmussen (2014).

The research presented here originated in three related activities: the Gephi workshop on ELMCIP's visualizations led by Scott Rettberg and the Electronic Literature Research Group in 2013 at the University of Bergen (UiB); my work as editor at the ELMCIP KB, and the course "Digital Humanities in Practice" that both Scott Rettberg and I taught during Spring 2015 at UiB. The data compiled from the ELMCIP KB is a truly collaborative endeavor and it would not have been possible without all the records added and edited by hundreds of researchers and writers across the globe, as figure 1 attests. Moreover, the reflection on digital poetry considered from a macro perspective builds upon Franco Moretti's notion of "distant reading" (2003, 2005, 2013), and the analysis of the selected corpus applies visualization and network methodology developed in the field of electronic literature by Jill Walker Rettberg (2012, 2013, 2014) and Scott Rettberg (2013, 2014).

Figure 1. Revision table showing the different versions of a record as it is edited and reedited. This example highlights the edition history of node 3267, Chris Funkhouser's *New Directions in Digital Poetry* (2012), during three years (2012-15) (screen shot). Source: http://elmcip.net/node/3267.

As of January 2015, ELMCIP already contains more than 11,000 records. Despite its quite significant size as a database of digital literature, it hosts a small sample when considered in the context of big data analyses. As Lev Manovich argues:

At the moment of this writing, the largest data sets being used in digital humanities projects are much smaller than big data used by scientists; in fact, if we use industry's definition, almost none of them qualify as big data (i.e., the work can be done on desktop computers using standard software, as opposed to supercomputers). (2012: 461)

Manovich's statement on how the humanities are still far from natural sciences' big data analyses is accurate. However, the question here is not whether the data sample is big enough to "qualify as big data," but rather if it is big enough to be extracted and benefit from macroanalysis methodology. We can be certain that, for our purpose, we now have a significant amount of entries for data mining, visualization and qualitative reflection. That said, close content analysis of particular works is not to be dismissed, but the possibility of developing new questions—based on patterns or findings that result from network theory and visualization—can surely prompt complementary extrapolation that would be difficult or impossible to reach using only traditional methods.

Dataset Description and Selection

Each record in the ELMCIP KB is assigned with a unique identifier (ID), or a Node ID (NID), which can be viewed on the bottom of the record's page or in the URL path. The fact that the Drupal platform was configured to allow for cross-references of content-types (http://elmcip.net/knowledgebase) —creative works, critical writing, authors, platform/software, teaching resources, publishers and journals, organizations, events, databases and archives, and research collections—enables, among other possibilities, instant access to critical and creative works on a person's record, to creative works referenced by each piece of critical writing (articles, books, etc.), or to critical writing that make reference to a specific creative work.

Therefore, one can track the critical reception of a specific creative work through time and, moreover, understand which creative works have been referenced in a particular piece of critical writing. This network of actors and relations allows for an understanding of key concepts, such as field overview, community development, gender patterns, reception, central and marginal practices, knowledge and creative production, publishing progress, thematic, aesthetic and rhetoric approaches, working platforms, geographic and linguistic similarities and oppositions, and so on.

Data Export Method

An XLS button inserted in the record webpage of each person, creative work or critical writing allows the export of comma-separated values (CSV) tables of cross-referenced content from the ELMCIP KB. The same property is supported for filtered queries on content-type "critical writing." Accessing the URL http://elmcip.net/knowledgebase with "all critical writing" retrieves a webpage (figure 2) with a table of all the records of critical writing documented at the ELMCIP KB. Moreover, on the top of the page, one finds filtering queries menus—language, year and publication type.
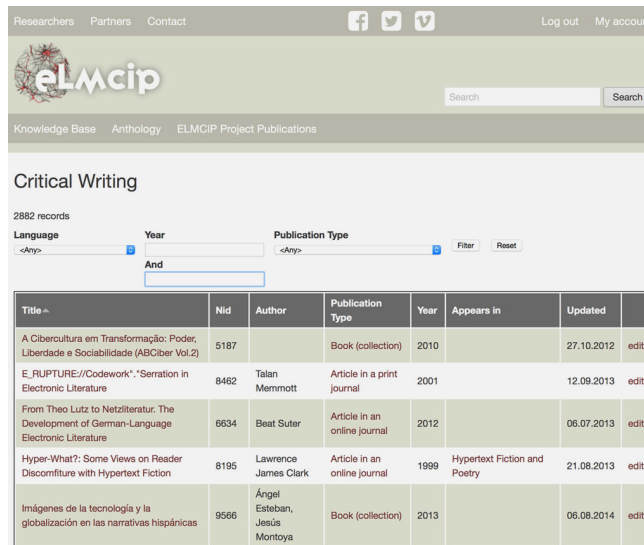
Figure 2. All critical writing documented in the ELMCIP KB, displaying 2,882 records, as of May 14, 2015 (screen shot). Source: http://elmcip.net/critical_writing.

On May 14, 2015, the ELMCIP database contained a total of 2,882 records of critical writing and 2,548 records of creative works. Given the scope of my research, I had two parameters to interconnect on the content-type critical writing: year and publication type. I decided to examine the field of digital poetry during a specific time frame, the past twenty years, for two reasons: first, all monographs and Ph.D. dissertations on the theme and domain were published after 1995; second, 1995 marks an important shift in digital culture and the practice of digital arts, as it signals the emergence of the World Wide Web and Web-based digital poems, a fact that has been highlighted as a turning point by, among others, Katherine Hayles (2008) and C.T. Funkhouser (2007). Thus, filtering all critical writing by time period,

between 1995 and 2015, and by publication type "book (monograph)" retrieved a total of 175 records.[3] Additionally, filtering all critical writing by time period, between 1995 and 2015, and by publication type "book (Ph.D. dissertation)" retrieves a total of 77 records.[4] Exporting the CSV file from each of these critical writing publication types and aggregating the CSV files of both book types—monographs and Ph.D. dissertations published between 1995 and 2015—compiled a total of 252 records.

Now, the next step was to unravel which of these records were critical writing pertaining to digital poetry. In order to discriminate which records fell under the category of "digital poetry," I have algorithmically and manually cross-searched and queried the words "poetry" and "poetics," and the expressions "digital poetry," "electronic poetry," "e-poetry," "cyberpoetry," and "new media poetry" in the titles (all languages). In addition, I inspected equivalent tagging vocabulary in the taxonomy and folksonomy of the 252 records, since filtering the database by frequency disclosed diverse tag results—the taxonomy "digital poetry" hit a higher frequency, 109 records. This higher frequency implies that "digital poetry" is the most used tag for an umbrella describing a variety of practices that unite computation and poetry. At the same time, this tagging has its own limitations, and filtering this way would not retrieve a valuable sample for my questions—neither all the records that may concern the field are tagged in a useful way (some folksonomies were edited as back-work), nor does the total of 109 records solely refer to monographs and dissertations (journal articles, conference presentations, reviews, interviews, forums, lectures, workshops and other categories were also part of this filtering mode).

Once titles and tags had been scrutinized, 26 records that were about digital poetry were manually filtered and reassembled in a new CSV file (master file). At this point, I had to download all the creative works referenced in each (figure 3) of the 26 critical writing records, assembling 26 CSV files (figure 4), and then manually sort them out, eliminate duplicates, and export them into the master CSV file. This process extracted 401 unique creative works referenced by 26 books, that is, it gathered a dataset sample of 427 nodes.

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[3] Source:
http://elmcip.net/critical_writing?field_language_tax_tid=All&field_number_value[min]=1995&field_number_value[max]=2015&field_pubtype_tax_tid=1590
[4] Source:
http://elmcip.net/critical_writing?field_language_tax_tid=All&field_number_value[min]=1995&field_number_value[max]=2015&field_pubtype_tax_tid=1592

in absentia	J. R. Carpenter	2008
Know	Jason Edward Lewis	2012
M.U.C. Love Letter Generator	Christopher Stratchey	1952
Notes on the Voyage of Owl and Girl	J. R. Carpenter	2012
Sea and Spar Between	Nick Montfort, Stephanie Strickland	2011
Shadows From Another Place	Paula Levine	2004
Speak	Jason Edward Lewis, Bruno Nadeau	2010
Still Standing	Jason Edward Lewis, Bruno Nadeau	2005
Stochastische Texte	Theo Lutz	1959
STRUTS	J. R. Carpenter	2011
Taroko Gorge	Nick Montfort	2009
The Broadside of a Yarn	J. R. Carpenter	2012
The Two	Nick Montfort, Serge Bouchardon, Natalia Fedorova, Carlos León	2008
There he was, gone.	J. R. Carpenter	2012
TRANS.MISSION [A.DIALOGUE]	J. R. Carpenter	2011
TRANS.MISSION [UN.DIALOGUE]	J. R. Carpenter	2013
Voyage Into the Unknown	Roderick Coover	2008
Wanderkammer: A Walk Through Texts	J. R. Carpenter	2011
Whisper Wire	J. R. Carpenter	2010

Add a new creative work.

XLS

Critical writing referenced

Title ▲	Author	Year

Figure 3. Detail of ELMCIP's node 9865, record of J.R. Carpenter's Ph.D. disserta-tion *Writing Coastlines: Locating Narrative Resonance in Transatlantic Communications Net-works* (2014), showing the XLS export button with all the referenced creative works (screen shot). Source: http://elmcip.net/node/9865.

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#	Title	Title Nid	Author	Author ID	Year	Language	Tags	Tag ID
2	Wanderkammer: A Walk Through Texts	6893	J. R. Carpenter	271	2011	English	hypertext	200039
3	Wanderkammer: A Walk Through Texts	6893	J. R. Carpenter	271	2011	English	HTML	2000245
4	Wanderkammer: A Walk Through Texts	6893	J. R. Carpenter	271	2011	English	walking	2000786
5	Along the Briny Beach	1748	J. R. Carpenter	271	2011	English	performance	2000115
6	Along the Briny Beach	1748	J. R. Carpenter	271	2011	English	performance writing	2000660
7	Along the Briny Beach	1748	J. R. Carpenter	271	2011	English	e-poetry	2000676
8	Along the Briny Beach	1748	J. R. Carpenter	271	2011	English	generative poetry	2000867
9	Along the Briny Beach	1748	J. R. Carpenter	271	2011	English	intertextuality	2000227
10	Along the Briny Beach	1748	J. R. Carpenter	271	2011	English	remix	2000617
11	STRUTS	2302	J. R. Carpenter	271	2011	English	narrative	200013
12	STRUTS	2302	J. R. Carpenter	271	2011	English	RSS	20001523
13	STRUTS	2302	J. R. Carpenter	271	2011	English	place	2000546
14	STRUTS	2302	J. R. Carpenter	271	2011	English	javascript	2000508
15	Whisper Wire	3189	J. R. Carpenter	271	2010		generative	2000110
16	Whisper Wire	3189	J. R. Carpenter	271	2010		poetry generator	20001551
17	Whisper Wire	3189	J. R. Carpenter	271	2010		haunted media	20001971
18	Whisper Wire	3189	J. R. Carpenter	271	2010		media archaeology	20001972
19	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	generator	2000859
20	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	generative narrative	20001297
21	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	narrative	200013
22	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	dialogue	20001887
23	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	performance	2000115
24	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	script	20002221
25	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	javascript	2000508
26	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	network archaeology	20002222
27	TRANS.MISSION [A.DIALOGUE]	3892	J. R. Carpenter	271	2011	English	media archaeology	20001972
28	TRANS.MISSION [UN.DIALOGUE]	9322	J. R. Carpenter	271	2013	French	computer generate text	20004442
29	TRANS.MISSION [UN.DIALOGUE]	9322	J. R. Carpenter	271	2013	French	electronic literature translation	20004396
30	TRANS.MISSION [UN.DIALOGUE]	9322	J. R. Carpenter	271	2013	French	translation	2000181
31	TRANS.MISSION [UN.DIALOGUE]	9322	J. R. Carpenter	271	2013	French	transmission	2000195
32	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	networked narrative	20002547
33	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	narrative	200013
34	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	multimodal	2000875
35	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	performative	2000206
36	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	map	20002441
37	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	generative	2000110
38	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	QR code	20002583
39	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	dialogue	20001887
40	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	literature	2000335
41	The Broadside of a Yarn	4671	J. R. Carpenter	271	2012	English	performance writing	2000660
42	There he was, gone.	4181	J. R. Carpenter	271	2012	English	generative	2000110
43	There he was, gone.	4181	J. R. Carpenter	271	2012	English	narrative	200013
44	There he was, gone.	4181	J. R. Carpenter	271	2012	English	dialogue	20001887

Sheet1 +

Figure 4. Detail of a CSV file exported from ELMCIP's node 9865, record of J.R. Carpenter's Ph.D. dissertation *Writing Coastlines: Locating Narrative Resonance in Transatlantic Communications Networks* (2014), showing all the referenced creative works with title, title NID, author, author ID, year, language, tags and tag ID (screen shot). Source: http://elmcip.net/node/9865.

Data Import Method

The most time-consuming and demanding part of the method has been editing, processing and composing the master CSV files, as they aggregate different search queries. The master CSV table of 427 nodes (figure 5) contains the nodes ID, label, type (book, monograph or Ph.D. dissertation, and creative works), and year (Seiça 2015a). In the case of critical writing nodes, labels were identified with the author's surname and year of publication, whereas in the case of creative works labels were identified as "title/author's surname." This kind of refinement would facilitate a quicker visualization of certain aspects of the bipartite network, e.g. whether a creative work by a specific author had been self-referenced.

In order to establish the relations of cross-references explicit in the ELMCIP KB a master CSV table with edges needs to be created (Seiça 2015b). The spreadsheet contains 572 connections, also known as edges in network graph theory. The source nodes represent 26 works of critical writ-

ing, while the target nodes represent all the 401 creative works referenced by each monograph or Ph.D. dissertation.

In order to analyze the dataset, both the nodes and edges master CSV files were imported into Gephi, an open-source network visualization software. In Gephi's data laboratory, the ELMCIP's NIDs are created as nodes and the links between nodes—in this case, a source critical writing directed to a target creative work—are created as edges, that is, they provide the network relation between discrete events.

Id	Label	Type	Year
8275	Barbosa 1996	Book (monograph)	1996
6563	Pawlicka 2012	Book (monograph)	2012
3696	Reither 2003	Book (monograph)	2003
3728	Eskelinen 2012	Book (monograph)	2012
775	Simanowski 2011	Book (monograph)	2011
966	Glazier 2001	Book (monograph)	2001
7447	Bootz 2001	Book (Ph.D. dissertation)	2001
679	Hayles 2008	Book (monograph)	2008
2872	Stefans 2003	Book (monograph)	2003
3267	Funkhouser 2012	Book (monograph)	2012
782	Funkhouser 2007	Book (monograph)	2007
9302	Emerson 2014	Book (monograph)	2014
8342	Portela 2013	Book (monograph)	2013
3504	Hartman 1996	Book (monograph)	1996
3732	Jhave 2011	Book (Ph.D. dissertation)	2011
1968	Engberg 2007	Book (Ph.D. dissertation)	2007
1962	Howe 2009	Book (Ph.D. dissertation)	2009
7667	Xiaomeng Lang 2008	Book (Ph.D. dissertation)	2008
4092	Gattass 2011	Book (Ph.D. dissertation)	2011
7449	Mette Sɔrensen 2013	Book (Ph.D. dissertation)	2013
3567	Memmott 2011	Book (Ph.D. dissertation)	2011
3739	Rosario 2011	Book (Ph.D. dissertation)	2011
5859	Dupej 2012	Book (Ph.D. dissertation)	2012
5762	Naji 2012	Book (Ph.D. dissertation)	2012
844	Flores 2010	Book (Ph.D. dissertation)	2010
9865	Carpenter 2014	Book (Ph.D. dissertation)	2014
236	afternoon, a story/Joyce	Creative Works	1990
360	Hypertext Hotel/Coover	Creative Works	1992
2360	Sintext/Barbosa	Creative Works	1993
6854	Tape mark/Balestrini	Creative Works	1961
1539	ELIZA/Weizenbaum	Creative Works	1966
8852	Der XLI. Libes-Ku_/Kuhlmann	Creative Works	1671
4694	Cent mille milliards de pomes/Queneau	Creative Works	1961
7940	Ficciones/Borges	Creative Works	1962
8884	Un Coup de D_s Jamais N'Abolira Le Hasard/Mallarm_	Creative Works	1897
8014	Poemas V2/Carmona	Creative Works	1976
5430	Stochastische Texte/Lutz	Creative Works	1959
6922	La machine _crire (The typewriter)/Baudot	Creative Works	1961

Figure 5. Detail of the CSV file with 427 nodes (screen shot).

The full dataset is available for download in open access, under a CC-BY license, at http://figshare.com/articles/Digital_Poetry_1995_2015_427_Nodes/1428661.
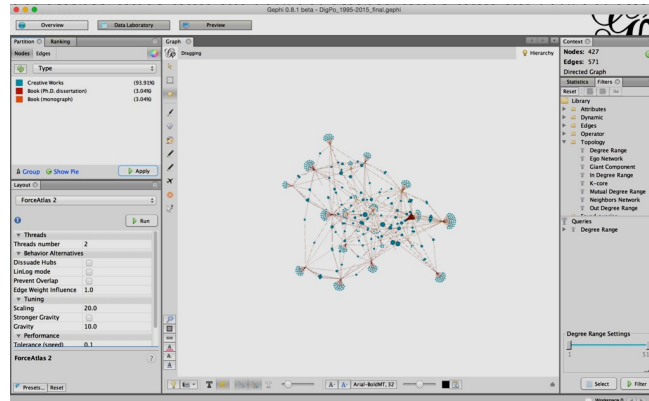
Figure 6. Gephi's interface overview menu displaying (top left corner) the partition of nodes by type and selected color. Creative works are colored in blue, book (Ph.D. dissertation) in red, and book (monograph) in orange. The graph, which is shown in the center, can be customized in different ways, e.g. layout (bottom left corner). The context (top right corner) shows 427 nodes and 571 directed edges (screen shot).

Merging Quantitative and Qualitative Critical Analysis

The bipartite network needs to be conceptualized before importing the dataset into Gephi, as its output is determined by the decisions made when editing the dataset and its labels. Once the software's interface (figure 6) is loaded, the user is able to sort the nodes' partition by type and "automatic" (default) color. Color plays a major role in the functional, semantic, aesthetic and political value of a graph. Creative works were colored in blue, book (Ph.D. dissertation) in red, and book (monograph) in orange. This decision—which can and should be questioned, but would lead us into a digressive discussion—reflects a need for strong contrast and clarity in the network, as most nodes are creative works. As the tonality of selected blue is lighter and cold, it helps us locate these units in relation to darker and warm nodes from which "fans" and "bridges" emerge.
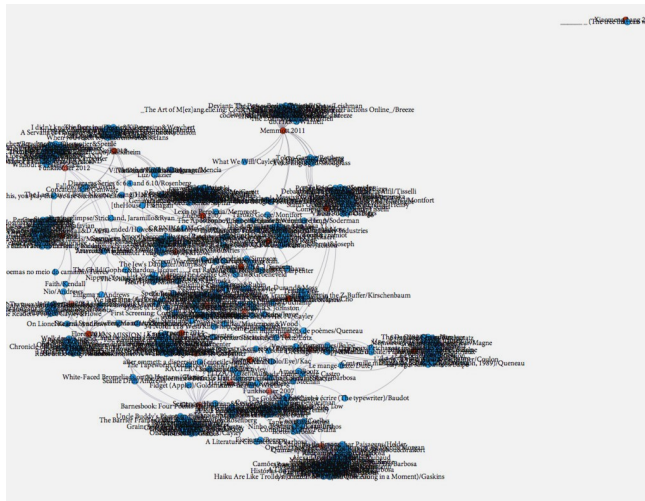
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Figure 7. Image exported from Gephi. As the ForceAtlas2 layout gravity algorithm starts to run, Xiaomeng Lang's (2008) Ph.D. dissertation node (upper right) is gradually pushed out of the network, as it does not reference any creative work in common with all the other books.

Gephi incorporates features and algorithms developed by mathematicians and computer scientists. Therefore, the graph can be customized and manipulated in different ways, e.g. node size, in-degree of connections, and layout. The primary context shows 427 nodes and 571 single directed edges, after running a ForceAtlas2 layout gravity algorithm that moved Xiaomeng Lang's Ph.D. dissertation (2008) node out of the network, as it does not—according to the data entered into the ELMCIP Knowledge Base—reference any creative work in common with all of the other critical writing nodes. The first exported image (figure 7) is fuzzy, but clearly displays the red node's trajectory towards the top right corner of the graph. The ForceAtlas2 layout algorithm can prevent overlap of the nodes; it scales the graph and produces stronger gravity between nodes, consequently pulling nodes with higher in-degree closer. It forces attraction between critical writing nodes that reference shared creative works nodes, from which edges are drawn and create "bridges" or "brokers" (Walker Rettberg 2014). After ranking nodes by size, those having more edges become bigger, meaning that creative works that are more referenced populate a larger part of the graph. This process created a full picture of the most referenced creative works, as shown in figure 8 (Seiça 2015c). Here, the fans around orange and red nodes represent creative works that are only referenced by a single monograph or Ph.D. dissertation. Creative works functioning as bridges—i.e. that are referenced by two or more

critical works—attract critical writing nodes to smaller clusters appearing either in the center of the graph or in the top left and bottom left areas, while creative works commonly referenced by several orange and red nodes start to form a visible network of bigger nodes in the middle.
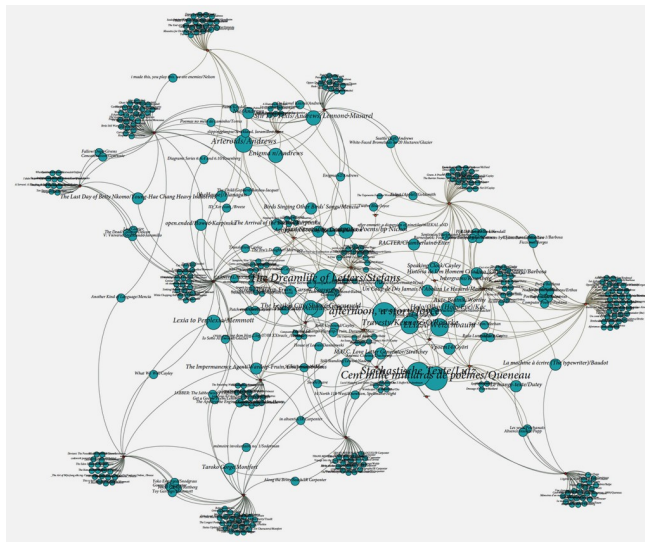

Figure 8. Image exported from Gephi displaying the network filtered by node and label size with a topology created by the ForceAtlas2 gravity algorithm. The creative works are ranked by size according to a scale from 1-7, where a blue node referenced only once by a book is smaller and one referenced by 7 books is bigger. A high resolution PDF is available for download in open access, under a CC-BY license, at http://figshare.com/articles/Digital_Poetry_1995_2015_Network_Visualization/1428662

Visualizations can be used for confirming or discarding hypotheses, and they can also induce recognition of patterns that can be macroanalytically investigated and read from a distance. These patterns, as Franco Moretti (2003: 74) observes, might emerge as "temporary structures," elements that relate to each other by interconnections within abstract models of knowledge representation. However, as Moretti (72) points out, "graphs are not *models*; they are not simplified versions of a theoretical structure in the way maps and (especially) evolutionary trees [are]." We can indeed count discrete units, but the fundamental approach lies on how to be critical towards a representation of a relational set of units, and so, to understand how and what questions to pose, and what answers are worth exploring—combining quantitative and qualitative analysis. "Quantitative research," Moretti continues, "provides a

type of data which is ideally independent of interpretations (…) and that is of course also its limit: it provides *data*, not interpretation." (72)

The reliability of the dataset is another, if not the foremost, arguable issue at stake here. The gathered dataset is biased—the cross-referenced records documented in ELMCIP are human-typed and not script harvested, a point already noted by Jill Walker Rettberg (2013) and Scott Rettberg (2014). This fact has positive and negative outcomes. On the one hand, code can be written in order to harvest all the bibliography from critical works and to allow for a faster and full as possible automatic documentation. On the other hand, since many authors do not reference creative works in their bibliographies, human documentation is needed and so script harvest would still be an incomplete method of pre-parameterized data-minable information.

Some of the records are incomplete, either due to their "stub" state—e.g. Chris Funkhouser's Ph.D. dissertation (1997) was not included in my data sample as none of its references were documented—or due to reasons as trivial as language access, as Walker Rettberg (2014) refers, in the case of Xiaomeng Lang's Ph.D. dissertation (2008). As table 1 (below) indicates, from the 26 records of critical writing here analyzed, 7 records are approved, which means that in principle all creative works should have been documented. In addition, as the ELMCIP KB editor notes reveal, 13 "stubs" and records in need of revision have all or almost all creative works ("cw") inserted, even if some of their critical writing references are missing. Therefore, the incomplete status of some records might compromise my findings, which should be understood as reflecting an overall pilot analysis. It is important to state, though, that the ELMCIP KB is the most complete database documenting cross-references of any of these records.

Author	Publication Type	Year	Record Status	KB editor notes
Barbosa	Book (monograph)	1996	Incomplete record (stub)	Almost all creative works harvested
Hartman	Book (monograph)	1996	Incomplete record (stub)	Harvest all refs.
Glazier	Book (monograph)	2001	Incomplete record (stub)	Almost all creative works harvested
Reither	Book (monograph)	2003	Revisions required	Check and complete refs.
Stefans	Book (monograph)	2003	Revisions required	Refs. missing
Funkhouser	Book (monograph)	2007	Revisions required	Insert full list of refs.
Hayles	Book (monograph)	2008	Revisions required	Are references complete?
Simanowski	Book (monograph)	2011	Revisions required	Refs. should be more complete

Pawlicka	Book (monograph)	2012	Incomplete record (stub)	Harvest all refs.
Eskelinen	Book (monograph)	2012	Revisions required	Add cover and WorldCat info
Funkhouser	Book (monograph)	2012	Approved record	
Portela	Book (monograph)	2013	Not yet reviewed	Added some refs. to cw but not all
Emerson	Book (monograph)	2014	Revisions required	Are references complete?
Bootz	Book (Ph.D. diss.)	2001	Revisions required	Have added refs. to cw up to p. 105
Engberg	Book (Ph.D. diss.)	2007	Incomplete record (stub)	All cw inserted. Harvest critical
Lang	Book (Ph.D. diss.)	2008	Incomplete record (stub)	Harvest all refs.
Howe	Book (Ph.D. diss.)	2009	Approved record	
Flores	Book (Ph.D. diss.)	2010	Incomplete record (stub)	Critical writing refs. missing
Gattass	Book (Ph.D. diss.)	2011	Approved record	
Jhave	Book (Ph.D. diss.)	2011	Approved record	All key critical and cw refs. entered
Memmott	Book (Ph.D. diss.)	2011	Revisions required	Pull info from Web Supplement
Rosario	Book (Ph.D. diss.)	2011	Incomplete record (stub)	Critical writing refs. missing
Dupej	Book (Ph.D. diss.)	2012	Approved record	All cw ref. and most critical writing
Naji	Book (Ph.D. diss.)	2012	Approved record	
Sørensen	Book (Ph.D. diss.)	2013	Incomplete record (stub)	
Carpenter	Book (Ph.D. diss.)	2014	Approved record	

Table 1. Critical Writing.

Zooming in several of the fans, our first question can be explored—Is there a prevalence of self-referenced creative works in critical writing? To be sure, critical discourse affects the selection of digital poems. Yet, is there a difference between practice-based critical writing and critical writing developed by scholars who are not practitioners? In this case, zooming in into each of the 26 nodes of critical writing and trying to understand what creative works they are linked to, and how they relate to each other, reveals thought-provoking findings. First, from the list of authors who are simultaneously poets and theorists, Pedro Barbosa (1996), Charles O. Hartman (1996),

Philippe Bootz (2001), Loss Glazier (2001), Brian Kim Stefans (2003), Daniel C. Howe (2009), Talan Memmott (2011), Jhave (2011) and J.R. Carpenter (2014) do reference their own creative works. This list is composed of 4 monographs and 5 dissertations.
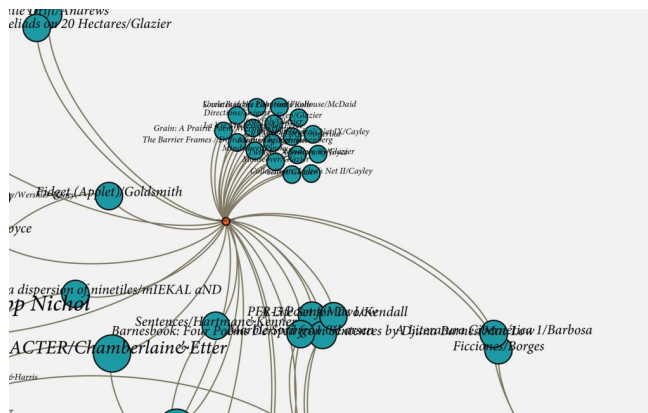

Figure 9. Detail of the network shown in figure 8 (top right). Loss Pequeño Glazier's 2001 monograph (orange) fan illustrates how several of his own creative works are only referenced by him. In the top left corner of the image, the node *White-Faced Bromeliads on 20 Hectares* (1999) acts as a bridge between the nodes Glazier (2001) and Flores (2010).

This can be explained by the fact that the figure of the poet and critic, especially in many of the Ph.D. dissertations, tends to deploy a model of criticism which is practice-based, that is, authors reflect on their own creative process, but they also present it along with other poets' works; or authors reflect about other poets' works and also exemplify certain critical points of view with their own creative works. This aspect is less frequent in monographs. Notwithstanding, when zooming in the fan (figure 9) of Loss Pequeño Glazier's monograph *Digital Poetics: The Making of E-Poetries* (2001), the node proves to be surrounded by multiple creative works by Glazier himself. The only poem by Glazier that is also referenced by another book is *White-Faced Bromeliads on 20 Hectares* (1999)—the bridge shows how the poem is referenced both by Glazier (2001) and Leonardo Flores (2010). It may well be that this finding elucidates my initial argument of an apologia of one's own standards.

Now, if from the list of 12 critical works (7 monographs and 5 dissertations) and 11 authors who represent the group of poets and theorists we subtract those who did not self-reference creative work, we are left with 2. All authors, then, who perform both in the creative and critical stage of the field, except for Chris Funkhouser (2007, 2012) and Manuel Portela (2013),

have in their studies self-referenced creative works. As figure 10 exemplifies, Funkhouser's fan (2012) does not show any linked poem by Funkhouser himself.
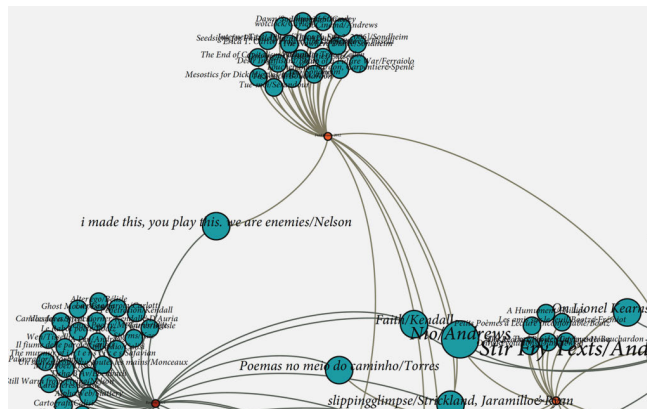

Figure 10. Detail of the network shown in figure 8 (top). Chris Funkhouser's 2012 monograph (orange) fan illustrates how none of his own creative works is referenced by himself.

Nevertheless, both Funkhouser and Portela are poets and, as such, this finding might indicate that the nature of criticism they are engaging with is exogenous and not following the endogenous majority. I would argue that there is no chief point in contending for one type of criticism over the other, since they represent different approaches to essay-based writing. I should mention, though, that the model of serious, historically rooted criticism which Funkhouser and Portela pursue—different in style, but no less serious than that of Hayles, Simanowski, Markku Eskelinen or Lori Emerson— avoids falling into a category of writing in which the author's poems are only being judged by the author herself. This model also suggests an effort to be more objective. However, a closer inspection into Funkhouser's (2007, 2012) and Portela's (2013) monographs reveals that, in fact, Portela does not reference any of his creative works, whilst Funkhouser, contrary to what we can deduct from the graph, does—*MOO poems* (2007: xxiv, 204), *The Idea of Switzerland* (2007: 204), *Selections 2.0* (2007: 317, Note 27) and *13 States of Malaysia* (2012: 182-183). My reasoning behind this circumstance is to recognize the incomplete documentation of cross-references in Funkhouser's records, but also to situate his theoretical practice in a "grey zone," when compared to the previous authors. While all the authors reference their creative works either as a substantial bulk of their theory or as a practice-based endeavor,

Funkhouser positions them far from the central narrative of his critical discourse and does not analyze them in a self-legitimizing way.

In order to address the second question—Is there a set of digital poems which is more referenced than others?—we need to filter out works that are only referenced once. If the network visualization set displays only creative works referenced in two or more critical works, the image of the graph changes. By changing the in-degree level—that is, the number of edges between differently referenced creative works—a filtered visualization of works with specific referenced occurrences is obtained.

Setting the in-degree level to 4 drastically changes the image (figure 11). Therefore, unique works with four, or more than four references, are:

Title	Author	Year
Stochastische Texte	Theo Lutz	1959
Cent Mille Milliards de Poèmes	Raymond Queneau	1961
ELIZA	Joseph Weizenbaum	1966
Holo/Olho	Eduardo Kac	1983
Travesty	Hugh Kenner and Joseph O'Rourke	1984
First Screening	bpNichol	1984
The Legible City	Jeffrey Shaw and Dirk Groeneveld	1989
afternoon, a story	Michael Joyce	1990
Enigma n	Jim Andrews	1998
Stir Fry	Jim Andrews	1999
Text Rain	Romy Achituv and Camille Utterback	1999
the dreamlife of letters	Brian Kim Stefans	2000
Lexia to Perplexia	Talan Memmott	2000
Arteroids	Jim Andrews	2003

Now, setting the in-degree level to 7 decreases even more the number of works (figure 12). Then, creative works with seven, or more than seven references are reduced to:

Title	Author	Year
Stochastische Texte	Theo Lutz	1959
Cent Mille Milliards de Poèmes	Raymond Queneau	1961
afternoon, a story	Michael Joyce	1990
the dreamlife of letters	Brian Kim Stefans	2000

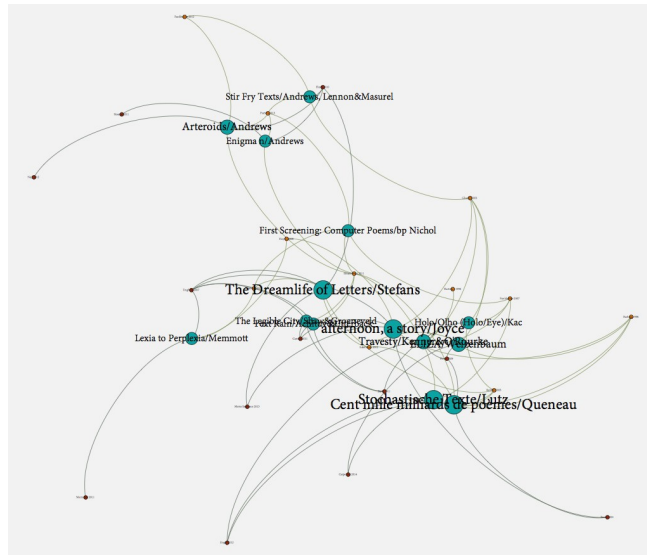Digital Poetry and Critical Discourse   113

Figure 11. Image exported from Gephi displaying the network filtered by in-degree 4, meaning that only creative works referenced by four or more monographs or dissertations are included in the graph.
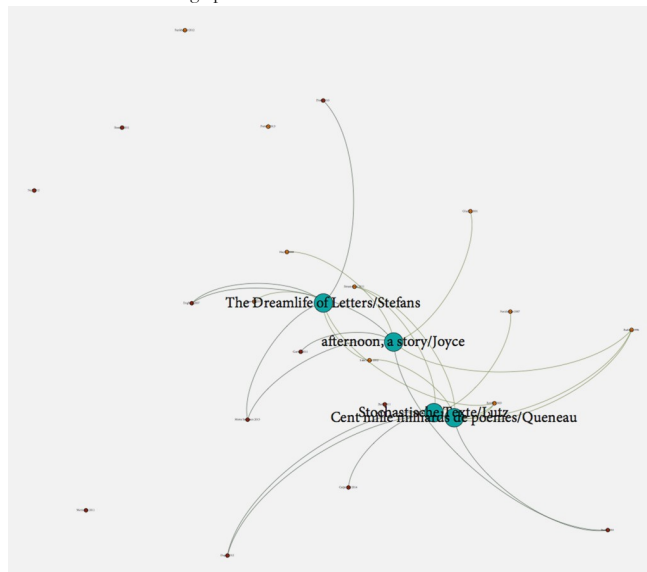

Figure 12. Image exported from Gephi displaying the network filtered by in-degree 7.

From all the creative works referenced by the 26 critical writing nodes, the oldest is Quirinus Kuhlmann's "Der XLI. Libes-Kuß" (1671) and the most recent are J.R. Carpenter's *TRANS.MISSION [UN.DIALOGUE]* (2013) and *...and by islands I mean paragraphs* (2013). Thus, if in the list corresponding to figure 11 we find not only poems, but also two computer programs and one hypertext fiction, in figure 12, out of the four more referenced works, one, *afternoon*, is not poetry. It is surely the case that these non-poetry works are referenced in critical writing whose scope is not restricted to digital poetry, and it is also the case that certain works, such as *ELIZA* and *afternoon* are widely discussed in connection with the critical debate within the field of electronic literature. There is then a set of three poetry works—by Lutz, Queneau and Stefans—which is referenced the most. Again, Queneau's *Cent Mille Milliards de Poèmes* (1961) and the OuLiPo's contribution to constrained writing practices are widely acknowledged in critical discourse. In fact, there are only two digital poetry works that are cited the most: Theo Lutz's *Stochastische Texte* (1959) and Brian Kim Stefans's *the dreamlife of letters* (2000).
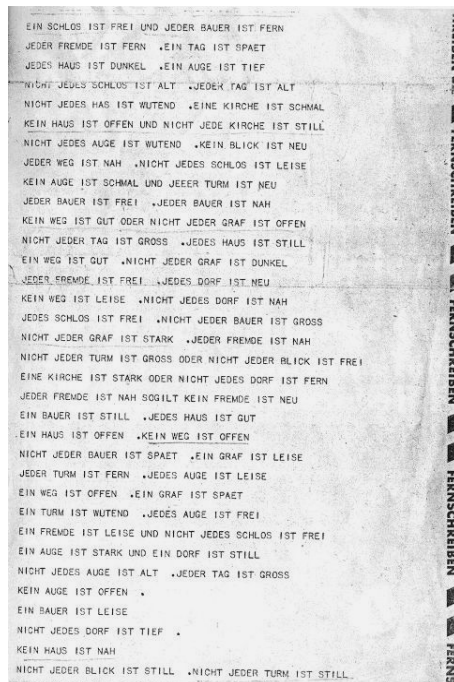

Figure 13. Printout of Theo Lutz's *Stochastische Texte* (1959), a poetry slot generator programmed by the author on a mainframe Zuze Z22, using words from Franz Kafka's *Das Schloß* (1926).

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It is reasonable that Lutz's piece (figure 13), considered as the first example of digital poetry, figures among the most cited works. However, Stefans's work needs to be understood under a different light. *the dreamlife of letters* (figure 14) might have been the *right* work for the *right* platform at the *right* time. By this I mean a poem that takes advantage of the animation capabilities of Flash, and adds striking visual and new kinetic features. On the other hand, its formal approach re-instantiates many old strategies that were implemented in concrete poetry without developing an innovative and complex elaboration of temporality, as in Stephanie Strickland's or John Cayley's work, even if these authors have lesser citations of single works. It also lacks denser exploratory aspects such as multimodality, interactivity and performativity, in which code, network and real-time play a significant role, by enabling new fertile arenas for rethinking modes of writing.
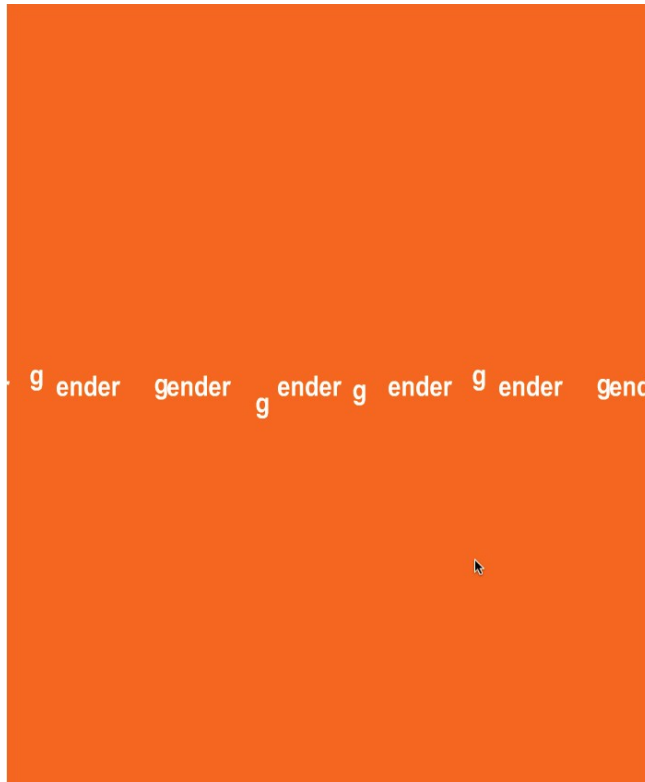

Figure 14. Screen shot of Brian Kim Stefans's *the dreamlife of letters* (2000), a kinetic poem presented in Flash, which is a response to Rachel Blau DuPlessis.

Another interesting finding is that the authors with more varied referenced works are Jim Andrews, John Cayley and Young-Hae Chang Heavy Industries. One hypothesis for Andrews's and Cayley's poems being recurrently cited is their long-standing practice of digital poetry, which is reflected by temporal frame, number, diversity and quality of works. On the other hand, Young-Hae Chang Heavy Industries, in a shorter period of roughly one decade and a half, published a much vaster array of works, even if often using the same platform and kinetic mechanics.

If we compare the previous list with Scott Rettberg's investigation (2013, 2014) about the creative works referenced 8 times or more in all the publication types of critical writing documented in the ELMCIP KB, we find some similar findings, but also some differences. From a pool of 21 works—which was retrieved on July 6, 2013 and would certainly be non-identical nowadays—*afternoon* also shows to be the most cited, with 76 references. It is immediately followed by two other hypertext fictions: Shelley Jackson's *Patchwork Girl* (1995, 57 citations) and Stuart Moulthrop's *Victory Garden* (1991, 37 citations). Regarding digital poetry, it is compelling to verify that *Text Rain* (16 citations) is the most cited work, followed by *the dreamlife of letters* (14 citations). However, out of that list of 21 items, *Stochastische Texte* does not show up, though *Cent Mille Milliards de Poèmes* (13 citations) does; and three other works with 11 citations appear: Jason Nelson's *game, game, game, and again game* (2007), Rui Torres's *Amor de Clarice* (2005) and Jim Andrews's *Arteroids*. This suggests that if we had taken into consideration not only books, but also all the other types of critical writing, the critical landscape of digital poetry would be more diverse. Even though Romy Achituv and Camille Utterback's cross-genre work now dominates it, and Stefans's work still shows up to be the second most cited, Nelson's and Torres's work punctuate it for the first time. To be sure, there is an English-based predominance in the database, which may obfuscate a total picture of the field. At the same time, this contrasting analysis provides a basis to infer that *Stochastische Texte* is most likely to be written about when in conjunction with criticism that addresses digital poetry.

To Conclude Is To Find New Questions

Distant reading methods tend to be consistent in giving account of specific questions that can be quantified, but they also provoke unexpected outcomes. Once we start paying closer attention to certain details of the network's structure, new questions arise. For instance, what is Funkhouser's (2007) fan doing so close to Barbosa's (1996)? And what is that nest around Nick Montfort's *Taroko Gorge* (2009) node comprised by Memmott's (2011) and Dupej's (2012) fans?
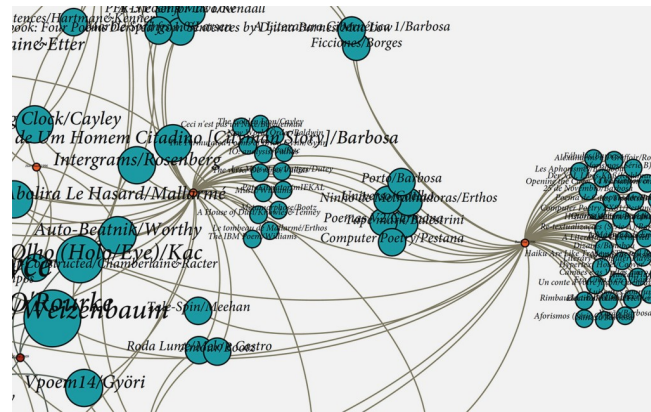
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Figure 15. Detail of the network shown in figure 8 (right). Chris Funkhouser's 2007 monograph (orange) is pulled towards Pedro Barbosa's 1996 monograph (orange) due to common creative works that act as attractors.
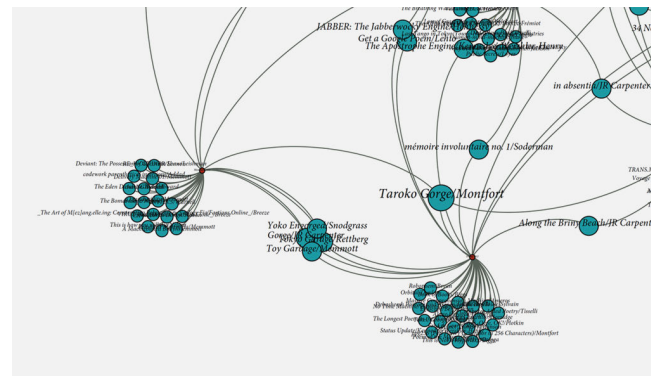
Figure 16. Detail of the network shown in figure 8 (bottom left) depicting a cluster of poetry generators. Three monographs that reference Nick Montfort's poetry generator and mods created by several authors gravitate around that node.

Similar creative works referenced by two or more books attract those nodes closer, as figures 15 and 16 show. Even someone who had not read Funkhouser's (2007) and Barbosa's (1996) monographs would note that figure 15 makes clear six poetry works—by Nanni Balestrini, Ángel Carmona, Erthos Albino de Souza, Silvestre Pestana, João Coelho and Barbosa himself—that function as bridges between the two nodes, besides other common cited creative works dispersed around them. Funkhouser's fan attraction towards Barbosa's is then clear for someone who had not read it, but espe-

cially for someone who did. Why? Because both authors take a historiograph-ical approach in their studies, and therefore cite common examples of digital poems from the 1950s to the 1990s. Moreover, *Prehistoric Digital Poetry* draws substantially from examples of poetry generation presented by Barbosa in *A Ciberliteratura*.

Another not so unexpected surprise is the poetry generator cluster around Nick Montfort's *Taroko Gorge* node. Not only do we find other nodes representing modifications of the code, that is, creative works by Scott Rettberg, J.R. Carpenter, Talan Memmott and Eric Snodgrass, but also these same nodes act as bridges attracting Memmott's (2011) and Holly Dupej's (2012) Ph.D. dissertations, the latter dedicated to poetry generators (figure 16).
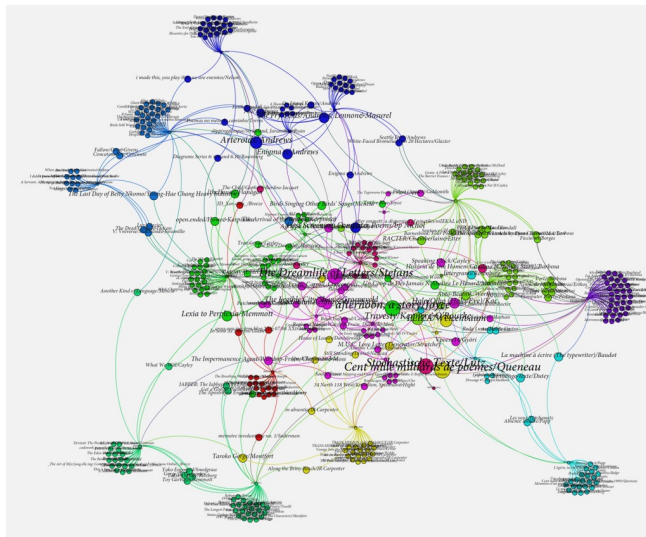
Figure 17. Image exported from Gephi displaying the network after running a modu-larity algorithm and coloring communities.

These aspects become even more salient when inspecting the network's structure in terms of modularity. By applying modularity algorithms, com-munities or modules with denser connections are colored the same way. As seen in figure 17, different clusters form inside the network—several clusters form around references with common antecedents, that is, older creative works that have influenced works of digital poetry, but more recent ones as well. The poetry generator cluster emerges in flashy green in the bottom left corner, although Carpenter (2014) clusters in yellow with Daniel Howe (2009). Critical writing by Maria Engberg (2007), Emerson (2014) and Hayles

(2008) gets clustered in medium green, and Funkhouser (2007) becomes clustered with Charles Hartman (1996) and Glazier (2001), in lighter green, strangely enough, or not, instead of Barbosa (1996). In fact, Glazier's fan is much less dense than Barbosa's, and having nodes as well in common with Funkhouser's, the algorithm might read that density as more relevant. Eskelinen (2012), Luciana Gattass (2011) and Jhave (2011) set another cluster in purple. Bootz (2001) and Saskia Reither (2003) fulfill another cluster in light blue, while in the top left corner Giovanna di Rosario (2011) and Jeneen Naji (2012) cluster in dark blue.

Therefore, modularity underlines both initially visible and invisible clusters. It produces confirmation but it also provides some new insights—for example, Carpenter's Ph.D. thesis shows more points in common with Howe's than with Memmott's and Dupej's, despite being situated closer to these. However, Simanowski (2011) and Urszula Pawlicka (2012) connect only with one creative work, while Mette Sørensen (2013) becomes isolated. This smaller community and the single node may well prove their lesser contact with other authors, that is, either their focus is falling upon works less cited by other theorists, or their research might be in some sense more unique or independent when it comes to close reading creative works. These clusters then can be useful for identifying particular genres and themes shared by certain books.

To conclude, the process has shown that data analysis and content analysis need to be complementary, meaning that quantitative and qualitative approaches supply different information and critical views. Content analysis was irrefutably required in order to articulate the findings, but it was also necessary so that the harvested dataset could be improved.

From a set of 12 books, only Manuel Portela's *Scripting Reading Motions: The Codex and the Computer as Self-Reflexive Machines* does not reference the author's own creative works. From a set of 26 books, a number of digital poems was seen to be referenced four or more times along with a variety of creative works, attesting the use of multiple platforms, and the diversity of forms and genres of electronic literature: combinatorial poetry, textual installation, holographic poetry, hypertext fiction, chatterbots and computer programs. Theo Lutz's *Stochastische Texte* and Brian Kim Stefans's *the dreamlife of letters* are the most cited poetry works. My findings demonstrate that there are different modes of critical knowledge production, but also a high level of self-referentiality in critical discourse published between 1995 and 2015. The criticism of digital poetry in book form shows a wide range of creative work selection (401 unique works), but evidences a lack of diversity of digital poems frequently referenced.

This investigation can be further expanded, both at the methodological level—by addressing the limitations of data that can be mined from the ELMCIP KB—and at the theoretical level, by reasoning behind the patterns retrieved in network graph visualizations. Being a pilot data analysis, it will be

relevant to compare the current findings with those obtained in the future once these references of creative works in critical writing are fully documented.

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VII

Appendix

The appendix compiles material produced in diverse media, such as research work developed in databases, material and texts from curated exhibitions, emulation and transcription of source codes of Silvestre Pestana's *Computer Poetry*, video interviews, and the edited transcript of an audio interview with Stephanie Strickland.

1. Curated Collections

1.1. Portuguese Electronic Literature Collection (PELC)

Figure 1. Portuguese Electronic Literature Collection (PELC). ELMCIP KB (Aug. 23, 2013-). http://elmcip.net/node/8255. Screenshot.

Description

The *Portuguese Electronic Literature Collection* (PELC) at the ELMCIP KB (Figure 1) aims to address and collect the most relevant creative and critical works produced by Portuguese authors in the field of electronic literature during the past forty-five years. The collection also brings together authors, events, organizations, publishers, journals, publications, conferences, performances and exhibitions related to the Portuguese context.

The first works of electronic literature produced in Portugal have primarily dealt with computer-generated literature (CGL). Pedro Barbosa's *A Literatura Cibernética 1: Autopoemas Gerados por Computador* (1977) and *A Literatura Cibernética 2: Um Sintetizador de Narrativas* (1980) can be understood as the first major works combining literary creation with computational programming. In these volumes, besides a critical framework, Barbosa published a selection of the outputs (poetry and fiction) of his text generators programmed in a mainframe computer, a practice developed in other media and languages since the 1980s until nowadays. Meanwhile, between 1981 and 1983, Silvestre Pestana developed a series of kinetic and visual poems, *Computer Poetry*, using the home computers ZX81 and ZX Spectrum. E.M. de Melo e Castro, a pioneer of videopoetry, e.g. *Roda Lume* (1968), created several videopoems during the 1980s with the assistance of electronic equipment, and worked with image editing software, coining the term 'infopoetry' to describe his poetic work with electronic media. Furthermore, Melo e Castro has been widely theorizing on many aspects of literary experimentalism, videopoetry and infoliterature.

In the contemporary scene it is worth noting authors such as Antero de Alda and Manuel Portela, who began their artistic trajectory in the late 1980s in the context of visual and, then, digital poetry, being Portela's theoretical oeuvre singularly strong. From 2000 onwards, there is a new generation of creators-programmers, such as André Sier, a digital artist who has also developed textual works, and Rui Torres, a writer whose creative and critical work, influenced by Barbosa, has proved decisive not only in elaborating combinatorial and networked digital poems, but also in disseminating the PO.EX legacy and cyberliterature in the panorama of literary studies.

PELC uses sources from different essays and monographs— e.g. *Poemografias: Perspectivas da Poesia Visual Portuguesa* (1985), edited by Fernando Aguiar and Silvestre Pestana, E.M. de Melo e Castro's *Poética dos Meios e Arte High Tech* (1988), Pedro Barbosa's *A Ciberliteratura: Criação Literária e Computador* (1996a) and Christopher T. Funkhouser's *Prehistoric Digital Poetry: An Archaeology of Forms, 1959-1995* (2007)—in addition to online databases and

archives, such as the ELMCIP KB and the Po-ex.net, benefiting from the collaboration with Manuel Portela and Rui Torres, principal investigator of the Digital Archive of Portuguese Experimental Literature.

As a further media contribution, PELC contains a video interview with Manuel Portela and Rui Torres recorded during the Electronic Literature Organization 2013 conference "Chercher Le Texte," in Paris, bringing into question some of the important characteristics, influences and future directions of Portuguese e-lit.

—Álvaro Seiça, August 2013-August 2015

For PELC's synopsis in Portuguese, read the PDF in "PELC/CLEP: Portuguese Synopsis/Sinopse em Português": http://elmcip.net/node/9990

Note: A full critical analysis of the collection and the specific literary, political, historical and media elements that run from the Portuguese Experimental Poetry movement to current e-lit environments was published in Portuguese in *Texto Digital* (2015): https://elmcip.net/node/10760

PELC was presented during the ELO 2014 conference, in Milwaukee, United States (June 19-21) and at the Doctoral Programme in Advanced Studies in the Materialities of Literature (June 25, 2014), School of Arts and Humanities, University of Coimbra, Portugal.

+ info: http://elmcip.net/node/9736

http://elmcip.net/node/9401

Po-ex.net entry: http://www.po-ex.net/taxonomia/transtextualidades/metatextualidades-alografas/alvaro-seica-portuguese-electronic-literature-collection

1.2. please combine me combine please me: A Collection of Factorial Literature [l!]

ELMCIP KB (Sep. 11, 2013-). http://elmcip.net/node/8458

Description

please combine me combine please me is a collection that takes on the concept of factorial literature [l!] as a transtemporal genre. Taking into consideration the essay "A Literatura Factorial [l!]" (Seiça 2013) as a starting point, this collection of resources selects literary works that have a permutational structure of composition, in addition to critical writing that has addressed this domain, specifically in the case of factorial poetry [p!].

Being the intrinsic nature of these works concerned with combinatory practices, I acknowledge here the fact that combinatorial poetics is an art that has been developed throughout the ages. By selecting a wider number of literary artifacts, I am expanding the initial analysis I had done when defining the term "factorial literature [l!]" (2011).

As Christopher Funkhouser states, "All works of text generation, or archetypal computer poetry, can be seen as performing some type of permutation in that they transform or reorder one set of base texts or language (word lists, syllables, or preexisting texts) into another form." (2007: 36) To render the question of combination and permutation more debatable, among other used sources, I consulted the frequencies of specific tags in the ELMCIP database. As of August 26, 2013, here are the searched tags by frequency: permutations (1), permutation (3), poetry generation (6), recombinant (6), text generation (7), combinatory poetics (8), text generators (8), generator (8), procedural (13), combinatory (16), generated poetry (17), combinatorial (21), algorithmic text generation (22), generative poetry (23), poetry generator (28).

Po-ex.net entry: http://www.po-ex.net/taxonomia/transtextualidades/metatextualidades-alografas/alvaro-seica-please-combine-me-combine-please-me-a-collection-of-factorial-literature-l

1.3. setInterval() Kinetic Poetry

ELMCIP KB (March 22, 2017-). http://elmcip.net/node/11950

Description

This collection gathers creative and critical work related to kinetic poetry. It is an ongoing research tool and appendix to the PhD study *setInterval()*.

The study is complemented by The setInterval() Conversation Series.

2. Curated Exhibitions

2.1. p2p: Polish-Portuguese E-Lit

Curated by Álvaro Seiça and Piotr Marecki

A part of the ELO 2015 exhibition "Decentering: Global Electronic Literature" at 3,14 gallery in Bergen, Norway (August 4-23, 2015). Chairs: Scott Rettberg, Jill Walker Rettberg, and Roderick Coover.

http://www.stiftelsen314.com/Stiftelsen314/Archive2015.html

http://po-ex.net/exposicoes/exposicoes-colectivas/p2p-polish-portuguese-e-lit

Artists: Pedro Barbosa, Silvestre Pestana, E. M. de Melo e Castro, Rui Torres, André Sier, Manuel Portela, Luís Lucas Pereira, Józef Żuk Piwkowski, Marek Pampuch, Michał Rudolf, Kaz, Piotr Puldzian Płucienniczak, Leszek Onak, and Andrzej Głowacki.

Synopsis

The *p2p* exhibition brings to public different digital literary works produced by Polish and Portuguese authors in the past four decades. Polish and Portuguese literary, artistic, social, political, and even religious contexts have resemblances, even if geographically distant, and still quite divergent. The exhibition focuses on common threads in works of experimental and generative literature, Spectrum-based animated poetry/Demoscene, ActionScript digital poetry and fiction. The exhibition is constructed around three nuclei: experimentalism, activism and animation. For this purpose, the *p2p* exhibition proposes to present, face-to-face, works by authors Pedro Barbosa, Silvestre Pestana, E. M. de Melo e Castro, Rui Torres, André Sier, Manuel

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Portela, Luís Lucas Pereira, Józef Żuk Piwkowski, Marek Pampuch, Michał Rudolf, Kaz, Piotr Puldzian Płucienniczak, Leszek Onak, and Andrzej Głowacki.

p2p: portuguese2polish literature

Figure 2. Entrance to *Decentering: Global Electronic Literature* at 3,14 gallery in Bergen, Norway (August 4-23, 2015), during the ELO 2015 festival. Photo: Álvaro Seiça

The exhibition *p2p: Polish-Portuguese E-Lit* disclosed a retrospective selection of literary works from the 1960s up until the 2010s. It was curated by Álvaro Seiça and Piotr Marecki at 3,14 gallery in Bergen, Norway (Figure 2), from August 4 to 23, 2015. *p2p* was part of the Electronic Literature Organization 2015 conference, and festival exhibition *Decentering: Global Electronic Literature*. The exhibited works provided a critical dialogue and comparative presentation between Portuguese and Polish literary and artistic practices, within a framework of experimental and digital poetics (Figure 3). In the Portuguese case, the historical process that informed *p2p* was rooted in the *Poesia Experimental* anthologies (1964, 1966), and subsequent

PO.EX affiliations. The work developed with PELC was thus physically amplified, being the main source for the creation of the Portuguese part of *p2p*.
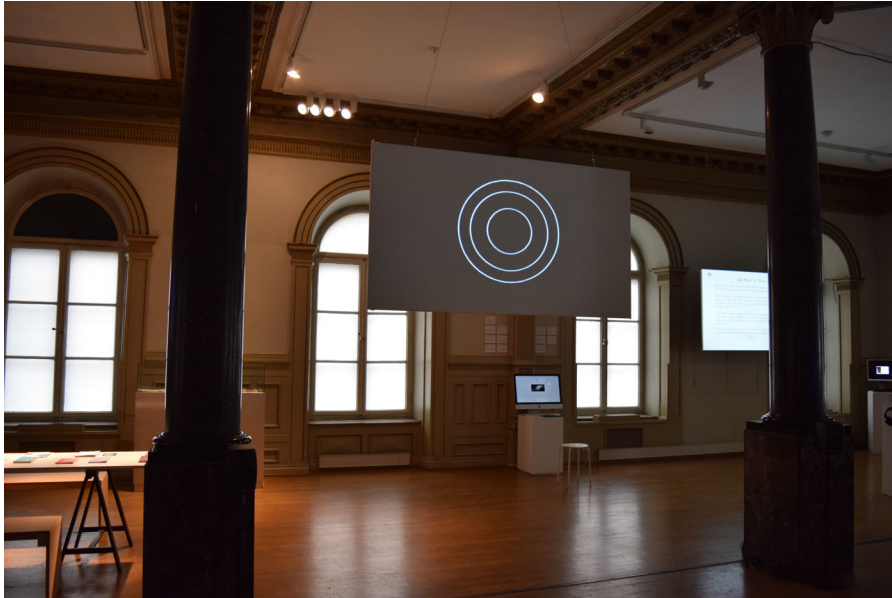
Figure 3. E. M. de Melo e Castro, *Roda Lume*, 1968-86, b&w, 2' 43." Exhibited at *p2p: Polish-Portuguese E-Lit*, curated by Álvaro Seiça and Piotr Marecki at 3,14 gallery in Bergen, Norway (August 4-23, 2015), during the ELO 2015 festival. Photo: Álvaro Seiça. Courtesy of E. M. de Melo e Castro.

Focusing on points of convergence and divergence of Portuguese and Polish creative production, the exhibition's title recalls two motives. First, it refers to the "p2p" (peer-to-peer) network—via which it is possible to directly exchange files in a computer network—decentered model of information exchange among peers. Second, it reinforces the symbolic dimension of the direct encounter of Portuguese-to-Polish electronic literature in two common spaces: the physical space of the gallery, and the virtual space of the online kiosk gallery (Figure 4).

Figure 4. Virtual exhibition hosted at Po-ex.net by Rui Torres for a kiosk of *p2p: Polish-Portuguese E-Lit*, curated by Álvaro Seiça and Piotr Marecki at 3,14 gallery in Bergen, Norway (August 4-23, 2015). http://po-ex.net/exposicoes/exposicoes-colectivas/p2p-polish-portuguese-e-lit. Screenshot. Courtesy of Po-ex.net

p2p's conceptualization was articulated according to three nuclei: experimentalism, activism, and animation. For this purpose, the exhibition presented, face-to-face, works by Portuguese authors Pedro Barbosa, Silvestre Pestana, E. M. de Melo e Castro, Rui Torres (Figure 5), André Sier, Manuel Portela, and Luís Lucas Pereira; and by Polish authors Józef Żuk Piwkowski, Marek Pampuch, Michał Rudolf, Kaz, Piotr Puldzian Płucienniczak, Leszek Onak, and Andrzej Głowacki.
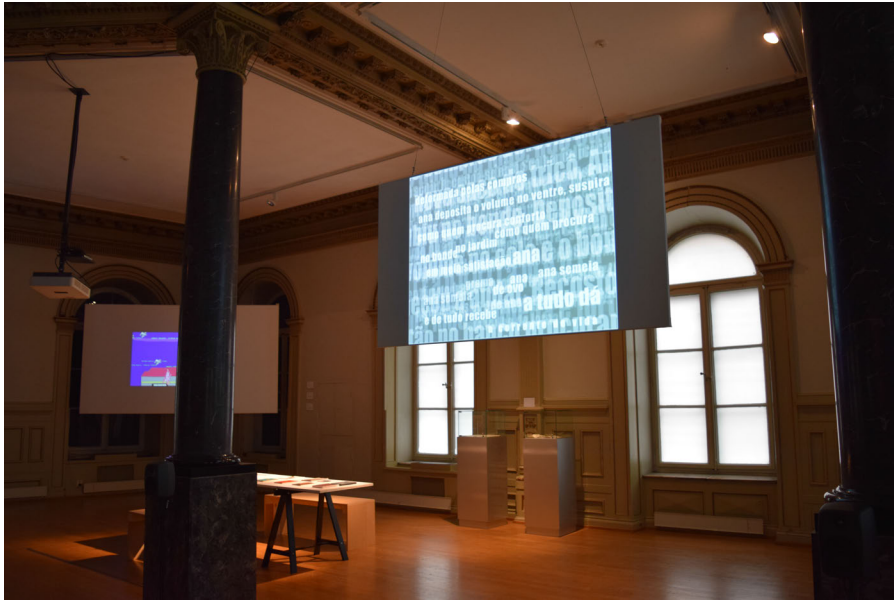
Figure 5. Rui Torres's *Amor de Clarice* (2005) exhibited at *p2p: Polish-Portuguese E-Lit.* http://telepoesis.net/amorclarice/ Photo: Álvaro Seiça. Courtesy of Rui Torres.

p2p aimed to address—for a general audience and, in an operation of decentralizing the Anglo-Saxon canon, for a specialized audience—the following issues: modes and contexts of production and reception of digital literary works, its themes, genres, and platforms. Portuguese and Polish literary, artistic, social, political, and even religious contexts reveal several points in common, despite the fact that, on the surface level, they demonstrate to be rather dissimilar, especially if we consider the geographic distance that separates them.

Experimentalism cherished by writers and artists in both countries—in the Polish case, the remarkable history of radical animation films should not be forgotten—has been shared in forms, genres, media, and place of inscription. We can go as far back as the baroque period to find common traits in visual poems, that is, early literary machines shaped as labyrinths, anagrams or lipograms, which semantically and syntactically expand the composition of words in the printed page, and quite often make use of combinatory processes. In his comprehensive historical study of pattern poetry, Dick Higgins (1987: 131) remarks: "One stylistic peculiarity

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of the Polish materials is that, like the Portuguese ones, there is an extraordinary large number of labyrinthi cubici, which are very close to the Portuguese. Since both are traditionally catholic countries, there may have been some intellectual contact by way of Rome." Poetic experimentation reemerges in the twentieth century, first with avant-garde and Modernist poetry from the 1910s-30s, and then with the experimental practices of the second half of the twentieth century. A common entry point is, for instance, the year 1965, when the first happenings took place in Portugal and Poland. In Portugal, Aragão, Melo e Castro, Peixinho, and Tavares performed poetic and musical actions in the happening *Concerto e Audição Pictórica*, at Galeria Divulgação in Lisbon, whereas in Poland, Tadeusz Kantor created *Cricotage*, at the café of the Society of the Friends of Fine Arts in Warsaw.[100]

From a social and political perspective, oppression and censorship were part of the *modus vivendi* in both totalitarian regimes: Portuguese fascism and Polish communism. Though obviously different in ideology, what impresses is the way both regimes employed similar control measures, political police apparatus, and repression. Moreover, both countries were and still are culturally and religiously dominated by Christianity and Roman Catholicism. The experimental character of many works is thus reinforced by an activist approach of dissection, denouncement, and transgression of dominant political, religious, and artistic power structures.

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[100] Manuel Baptista, Mário Falcão and Clotilde Rosa also participated in the Portuguese happening. Wiesław Borowski, Zbigniew Gostomski, Krystyna Jarnuszkiewicz, Edward Krasiński, Alfred Lenica, Anka Ptaszkowska, Erna Rosenstein, Maria Stangret, Mariusz Tchorek and Agnieszka Żółkiewska, among others, participated in Kantor's happening.
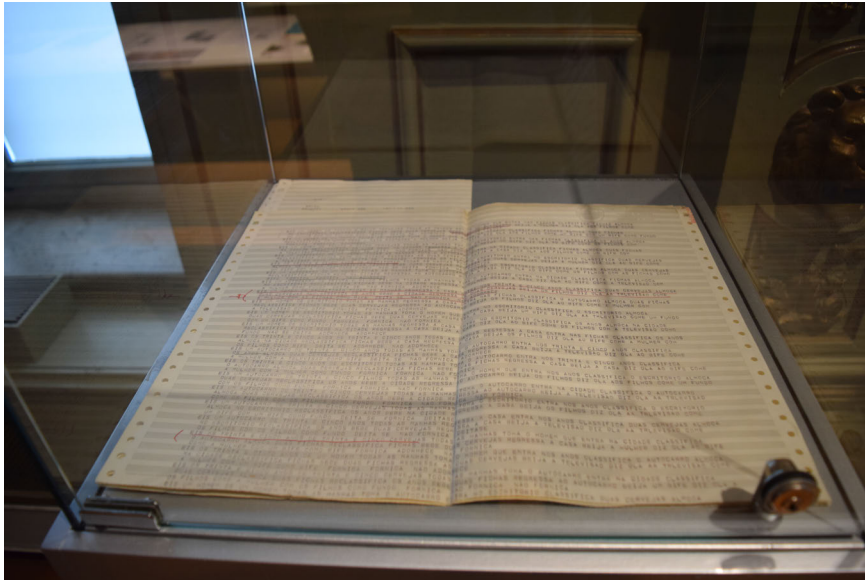
Figure 6. Pedro Barbosa's FORTRAN printout of "História dum Homem Citadino" [Cityman Story] (1980) exhibited at *p2p: Polish-Portuguese E-Lit*. http://po-ex.net/taxonomia/materialidades/digitais/pedro-barbosa-literatura-cibernetica-2-series. Photo: Álvaro Seiça. Courtesy of Pedro Barbosa and Po-ex.net
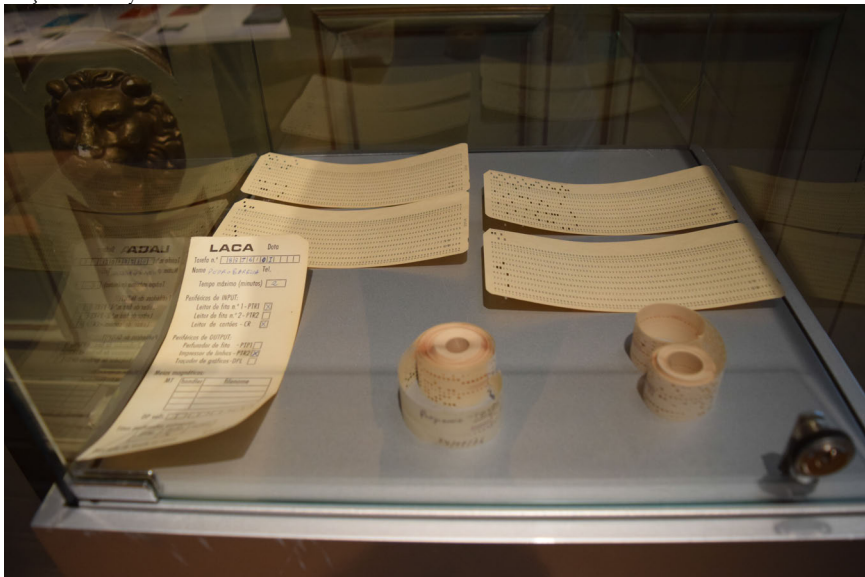
Figure 7. Pedro Barbosa's perforated cards and poetry rolls with the TEXAL program (1975-77) exhibited at *p2p: Polish-Portuguese E-Lit*. Photo: Álvaro Seiça. Courtesy of Pedro Barbosa and Po-ex.net.

With regard to the close connection between literature and computation, Portuguese and Polish authors explored creative processes in common platforms, and media: mainframe computers, namely works developed by Pedro Barbosa in the 1970s (Figures 6-7), video, ZX Spectrum and, from the early 2000s, animation software like Flash and its scripting language ActionScript. These experiments have been often accompanied by critical and creative work, which was documented in a variety of printed matter that was shown in a table, where visitors were invited to explore it, as illustrated in Figures 8 and 9.

Figure 8. Table at *p2p: Polish-Portuguese E-Lit* exhibition with E. M. de Melo e Castro's *A Proposição 2.01: Poesia Experimental* (1965) and *Poética dos Meios e Arte High Tech* (1988); Fernando Aguiar and Silvestre Pestana's (eds.) *Poemografias: Perspectivas da Poesia Visual Portuguesa* (1985); Silvestre Pestana's BASIC code for *Computer Poetry* (1981-83) published in *Poemografias* and in "A Poética dos Anos 80" (*O Comércio do Porto*, 1987); Pedro Barbosa's *A Literatura Cibernética 1: Autopoemas Gerados por Computador* (1977), *A Literatura Cibernética 2: Um Sintetizador de Narrativas* (1980), *Máquinas Pensantes: Aforismos Gerados por Computador* (1988), *Teoria do Homem Sentado: Livro Virtual* (1996) and *O Motor Textual: Livro Infinito* (2001); and Rui Torres's CD-ROMs *Amor de Clarice* (2005) and *Poemas no Meio do Caminho* (2012). Photo: Álvaro Seiça

Figure 9. Table at *p2p: Polish-Portuguese E-Lit* exhibition. Detail showing Pedro Barbosa's *A Literatura Cibernética 1: Autopoemas Gerados por Computador* (1977) and *A Literatura Cibernética 2: Um Sintetizador de Narrativas* (1980). Photo: Álvaro Seiça

The nearby display points of tablets and Spectrums enacted the most visible example of dialogue between the two countries. First, two tablets displayed the Corona SDK-developed piece for Android *Machines of Disquiet* (2014-15), an app by Luís Lucas Pereira (Figure 10) that recreates reading strategies, and departs from Fernando Pessoa's *Book of Disquiet*, and the iOS *The Archetypture of Magical Reality* (2014), an app by Andrzej Głowacki that proposes animation strategies for reading poetic prose.

Figure 10. Luís Lucas Pereira, *Machines of Disquiet*, 2014-15. Android app and tablet. Photo: Álvaro Seiça

Second, two ZX Spectrum, running on an emulator and a clone, exhibited Silvestre Pestana's *Computer Poetry* (1983) and KAZ's *Fifth Demo* (1990). Whereas Pestana (Figures 11-12) programmed three poems in BASIC without sound and within an experimental poetics collective awareness, KAZ (Figure 13) programmed his demos with sound within a demoscene context. The demoscene gathers subculture actors engaging with software demos in virtual spaces and physical events. The demoscene is a venue and arena for free exchange of programs, creation of works, and battle-like enhancement of programming skills.

Figures 11 and 12. Silvestre Pestana's *Computer Poetry* (1983) programmed in BASIC for a Sinclair ZX Spectrum. Work emulated by Sindre Sørensen and Álvaro Seiça for the exhibition *p2p: Polish-Portuguese E-Lit*. Detail of the installation adaptor from a mac Mini to TV screen. Photo: Álvaro Seiça. Courtesy of Silvestre Pestana.

Figure 13. KAZ's *Fifth Demo* (1990) programmed in BASIC with sound for a Sinclair ZX Spectrum. Work running on a Sinclair clone at *p2p: Polish-Portuguese E-Lit*. Photo: Álvaro Seiça. Courtesy of KAZ.

Despite crafting their poetic and writing programs with disparate natural languages, artistic vocabularies and aesthetics, similar characteristics are thus found in works of experimental and generative literature, Spectrum-based animated poetry, the Amiga, Commodore 64, and Spectrum demoscene, Flash/ActionScript-based digital poetry and fiction. The exhibition *p2p* contrasts and highlights these similarities and discrepancies, in an attempt to foster comparative study of works of electronic literature, in their cultural, political, and technological context.

—Álvaro Seiça

2.2. Affiliations—Remix and Intervene: Computing Sound and Visual Poetry

Curated by Álvaro Seiça and Daniela Côrtes Maduro

A part of the ELO 2017 conference and festival, at the Palacete dos Viscondes de Balsemão in Porto, Portugal (July 18-22, 2017). Chairs: Rui Torres, Sandy Baldwin, and Dene Grigar.

https://conference.eliterature.org/2017/exhibits

Artists: Tristan Tzara, Kurt Schwitters, Matti Niinimäki [Brion Gysin, William Burroughs], António Aragão, Jaap Blonk, Golan Levin, Antje Vowinckel, Claire Donato, Matej Gažúr, Portuguese baroque poetry (various authors), E. M. de Melo e Castro, Hansjörg Mayer, Ana Hatherly, Katarzyna Giełżyńska, Zuzana Husárová, Ľubomír Panák, María Mencía, Felipe Cussen, Jörg Piringer, Danny Snelson [Rosmarie Waldrop], Ian Hatcher, Américo Rodrigues, Jazra Khaleed, Timos Alexandropoulos, Antonis Kalagkatsis, and Jhave.

Remix and Intervene: Computing Sound and Visual Poetry

In this exhibit, sound is represented as an overarching medium connecting the artworks displayed. Visitors of the "Affiliations" exhibit will find poetic works that radically explore language and sound. For the curators, sound is one of the fundamental aspects, if not the core, of experimental and digital poetics. Yet, as some writers and critics have pointed out—especially Chris Funkhouser, Hazel Smith, and John Barber—sound has not been sufficiently highlighted as a fundamental trait of electronic literature.

The "Affiliations" exhibit presents works that embrace appropriation and remix of older and contemporary pieces—be they merely formalist or politically engaged—as pervasive creative methods in experimental poetics. Furthermore, it

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suggests that electronic literature can be seen as a heterogeneous field of self-reflexive experimentation with the medium, language, sound, code, and space.

At the Palacete dos Viscondes de Balsemão, connections between several art forms and movements, ranging from the baroque period to dada and experimentalism will be underlined. In so doing, the "Affiliations" exhibit presents works composed with print, sound, and computational media. This exhibit is divided into nuclei of practice, where works can be independently or simultaneously read, played, listened to, watched, and remixed.

Remix+Intervene ~Poetry/Dada/Sound/Cut-Up

In this nucleus, visitors will find works that frustrate any prospect of finding a central and original meaning, and lend themselves to usurpation, bisection, and metamorphosis. These works relate to a tradition of chance, procedure, and cut-up methods that can be traced back to Tristan Tzara's "Pour Faire un Poème Dadaïste" [To Make a Dadaist Poem] (1920), which is illustrated by Figure 14. Brion Gysin and William Burroughs (1959) later continued this exploration. A more recent example of this kind of experimentation can be found in Matti Niinimäki's *Cut-Ups* (2009). The same processes of appropriation, collage, and recombination of found materials and fragments of texts can be observed in the work of experimental poet António Aragão, "poesia encontrada" [found poetry] (1964). Following the same tradition, Antje Vowinckel and Claire Donato show subsequent ways of recreating cut-up techniques in their works. On the one hand, *Call Me Yesterday* (2005) by Vowinckel, a radio artist, is a sound composition that, in a post-dada fashion, uses lines taken from language courses. On the other hand, Donato's *Material Studies* (2016-17) is a whimsical, feminist, and vegan approach to intimacy, body, and spirituality (Figure 15).
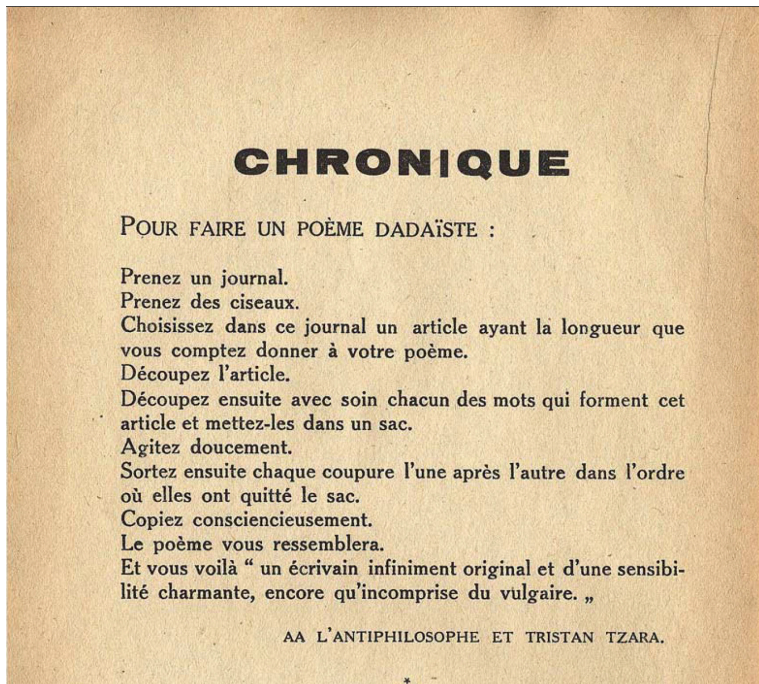
Figure 14. Tristan Tzara, "Pour Faire un Poème Dadaïste," *Littérature* 15 (July 1920): 18. Edited by André Breton, Philippe Soupault, and Louis Aragon. Collection of the International Dada Archive, Special Collections, University of Iowa Libraries.
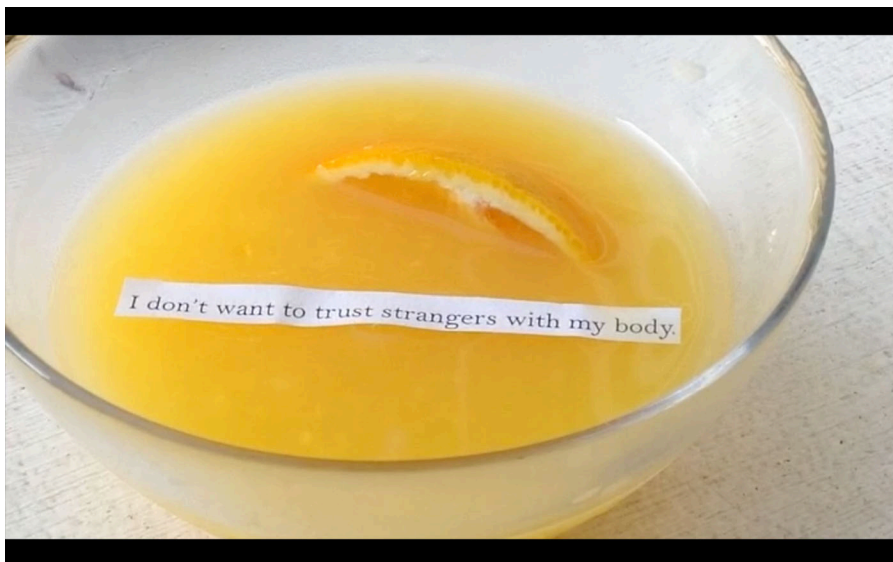
Figure 15. Claire Donato, *Material Studies*, 2016-17. Screenshot. Courtesy of the artist.

Drawing from dada, sound poetry emerged as an expanded form of poetic expression. Versioning sound poetry scores is an example of recreation chiefly employed by first wave sound and Dadaist poets such as Hugo Ball and Kurt Schwitters (Figure 16). Jaap Blonk and Golan Levin's *Ursonography* (2005), a live version of Schwitters's *Ursonate* (1922-32) with real-time kinetic typography, is one of the most extreme examples of the score's interpretation (Figure 17).

1922–1932	ursonate	
einleitung:		

Fümms bö wö tää zää Uu,
            pögiff,
                  kwii Ee.
		1

Oooooooooooooooooooooooooooooooo,		6

dll rrrrrr beeeee bö,
dll rrrrrr beeeee bö fümms bö,
    rrrrrr beeeee bö fümms bö wö,
        beeeee bö fümms bö wö tää,
            bö fümms bö wö tää zää,
            fümms bö wö tää zää Uu:
	(A)	5

Figure 16. Kurt Schwitters, *Ursonate*, 1922-32, in *Das Literarische Werk*, vol. 1. Edited by Friedhelm Lach. © 1973 DuMont Buchverlag, Köln and Kurt und Ernst Schwitters Stiftung, Hannover. Courtesy Kurt und Ernst Schwitters Stiftung

Figure 17. Jaap Blonk and Golan Levin's *Ursonography* (2005), an audiovisual interpretation of Kurt Schwitters's *Ursonate* (1922-32) with real-time typography. Courtesy of the artists.

Blonk has been performing *Ursonate* since 1982. The same score has been performed in the 1970s by Christopher Butterfield, and more recently, in its entire form or by "deformative" reading (McGann and Samuel 1999) by Christian Bök, Anat Pick, Tomomi Adachi, Tracie Morris, Eberhard Blum, Lynn Book, Adrian Khactu, Sébastien Lespinasse, Ensemble Ordinature, Luke McGowan, and Linnunlaulupuu. Jaap Blonk's creative output—interweaving visual, sound, performative, and computational components—has had a tremendous impact on experimental writers, and stems from a Dadaist understanding of poetics. To celebrate Blonk's work (Figure 18), one of his most emblematic pieces is here presented: "Der Minister I" and "Der Minister II" (1985).

der minister I


```
der minister bedauert derartige äusserungen
der minister bedauert derartige äusserungen
der minister bedauert derartige äusserungen
der minister bedauert derartige äusserungen
der minister bedauert derartige äusserung n
der minister bedauert derartige äusser ng n
der minister bedauert derartige äuss r ng n
der minister bedauert derartige    ss r ng n
der minister bedauert derartig     ss r ng n
der minister bedauert derart g     ss r ng n
der minister bedauert der rt g     ss r ng n
der minister bedauert d r rt g     ss r ng n
der minister bedau rt d r rt g     ss r ng n
der minister bed    rt d r rt g     ss r ng n
der minister b d    rt d r rt g     ss r ng n
der minist r b d    rt d r rt g     ss r ng n
der min st r b d    rt d r rt g     ss r ng n
der m n st r b d    rt d r rt g     ss r ng n
d r m n st r b d    rt d r rt g     ss r ng n
```

```
                                        usw.
```



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Jaap Blonk 1985

auf: 'Flux de Bouche', Staalplaat STCD 046, Amsterdam 1993
```

Figure 18. Jaap Blonk, "Der Minister I," 1985. Courtesy of the artist.

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Remix+Intervene ~Poetry/Baroque/Concrete/Visual/Kinetic

This nucleus draws links between baroque poetry, concrete, visual, and kinetic poetry, in which letters are meaningful shapes spread across the page and digital canvas. Baroque poetry authors developed specific visual forms and combinatory poetics that have been considered as antecedent literary "machines" of electronic literature. Before current artistic engagement with computational systems, however, experimental poets had not only used baroque examples as a source for visual poetics, but they also studied them in great detail. This is the case of Ana Hatherly and Dick Higgins, whose research has helped these works to survive oblivion. Moreover, there are striking commonalities between different European countries' baroque poetry. For instance, in this exhibit, visitors will find Slovakian and Portuguese baroque poetry in dialogue. Zuzana Husárová and Ľubomír Panák's app *Obvia Gaude* (2013, Figure 19) recreates and expands "Decagrammaton" (1649, Figure 20), a poem by Slovakian author Matej Gažúr. Portuguese baroque poets created the same type of labyrinth of letters, e.g. José da Assunção's *Hymnodia Sacra* (1738, Figure 21).

Figure 19. Slovakian baroque poetry. Labyrinth of Letters. Matej Gažúr's "Decagrammaton," 1649. With this work, Matej Gažúr expressed wishes of a happy marriage to his friends Eva Ujfalusi and Pavol Ostrošič. Courtesy of Zuzana Husárová and Ľubomír Panák.
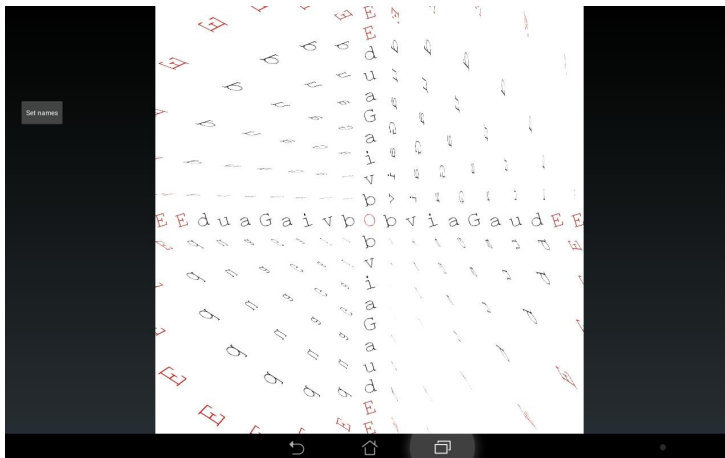
Figure 20. Zuzana Husárová and Ľubomír Panák, *Obvia Gaude*, 2013. App. Screenshot. Courtesy of the artists.
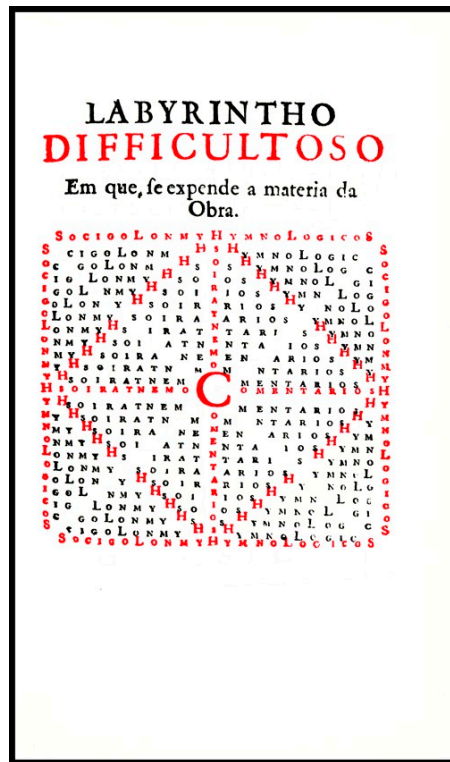
Figure 21. Portuguese baroque poetry. Labyrinth of Letters. José da Assunção's *Hymnodia Sacra*, "Labyrintho Difficultoso," Lisboa Ocidental, 1738. MS 337, Biblioteca Geral da Universidade de Coimbra. Documented by Ana Hatherly in *A Experiência do Prodígio* (1983: 305). Courtesy of Ana Marques Gastão and Po-ex.net.

"Patterns poems" that include anagrams, verse, letter, and cubic labyrinths, acrostics, emblems, echoes, enigmas, rhopalic verse, lipograms, and chronograms were written by Portuguese baroque authors. Therefore, a selection of these poems is presented in direct relation to twentieth- and twentieth-first writing systems of inscription, letterforms, sound, and semiotic poems by experimental poets E. M. de Melo e Castro, Hatherly (Figure 24), Américo Rodrigues, and publisher Hansjörg Mayer. Mayer's *Alphabetenquadratbuch* (1965, Figure 22) is recreated by María Mencía in *Generative Poems* (2008-, Figure 23), a series of visual poems activated by sound. Viewers will be able to create poems by drawing a square of Roman letters with their own voice. Another source of fascination for experimental poets is the language of advertisement. Katarzyna Giełżyńska's *C()n Du It* (2012, Figure 25) explores this

theme by conflating, in a self-reflexive manner, graphical user interface semiotics with motion graphics for poetic engagement.
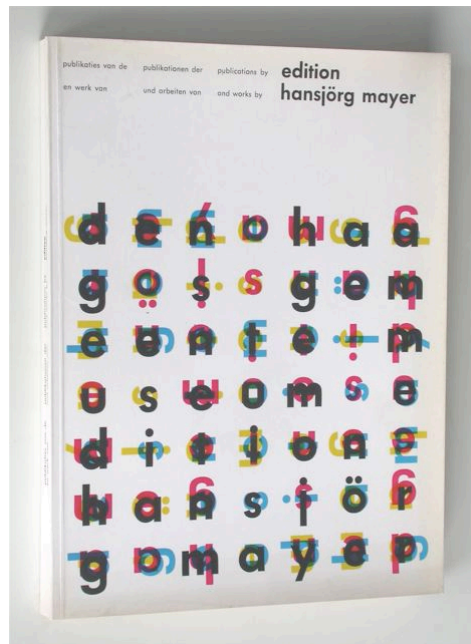
Figure 22. Hansjörg Mayer, *Alphabetenquadratbuch*. Stuttgart: Ed. Hansjörg Mayer, 1965. Book cover. Courtesy of the artist.

Figure 23. María Mencía, *Generative Poems*, 2008-. Screenshot. Courtesy of the artist.
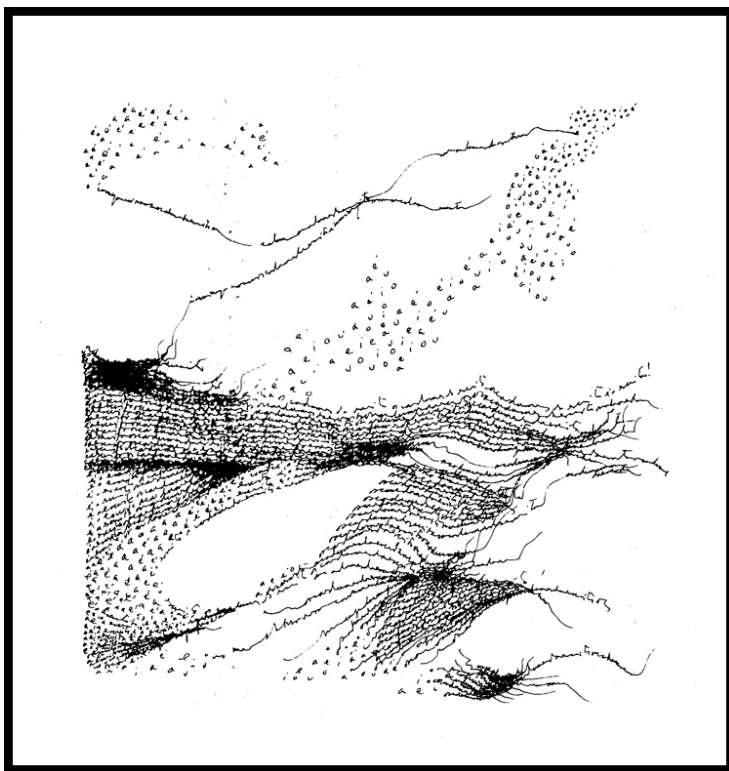
Figure 24. Ana Hatherly, *A Reinvenção da Leitura* [The Reinvention of Reading], 1975. Courtesy of Ana Hatherly, Po-ex.net, FLAD, and Fundação Serralves.

Figure 25. Katarzyna Giełżyńska, *C()n Du It*, 2012. Screenshot. Courtesy of the artist.

Remix+Intervene ~Poetry/Remix/MashUp/Intervention

Besides reworking meaning in varied ways, poetry often serves as a mirror of society and as an art fighting for sociopolitical change. This nucleus presents works that take action and share several social concerns with their readers or users. Some works are clearly intervening and activist, whereas others make use of subterfuges and techniques to speak about freedom. These works appropriate, remix, and mashup the archive.

Ian Hatcher's *The All-New* (2015) and *Prosthesis* (2016, Figure 26) critique hyper-consumerism, communication, violence, and black boxes in the network society. Addressing the Syrian war, Jazra Khaleed, Timos Alexandropoulos, and Antonis Kalagkatis's *Poetry is Just Words in the Wrong Order* (2015) is a Twitter-feed performance that draws attention to the number of civilians killed in Syria by the autocratic and genocidal regime in power (Figure 27). Other works explicitly remix and expand previous literary and sound pieces: Felipe Cussen (2015) remixes Jörg Piringer's *Letter Singles* (2015, Figure 28), while Danny Snelson's *Feverish Propagations* (2009, Figure 29) departs from Rosmarie Waldrop's *The Reproduction of Profiles* (1987).
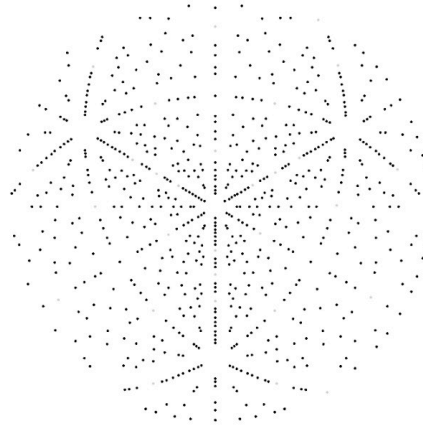
Prosthesis
Ian Hatcher

Figure 26. Ian Hatcher, *Prosthesis*, 2016. Book cover. Courtesy of the artist.
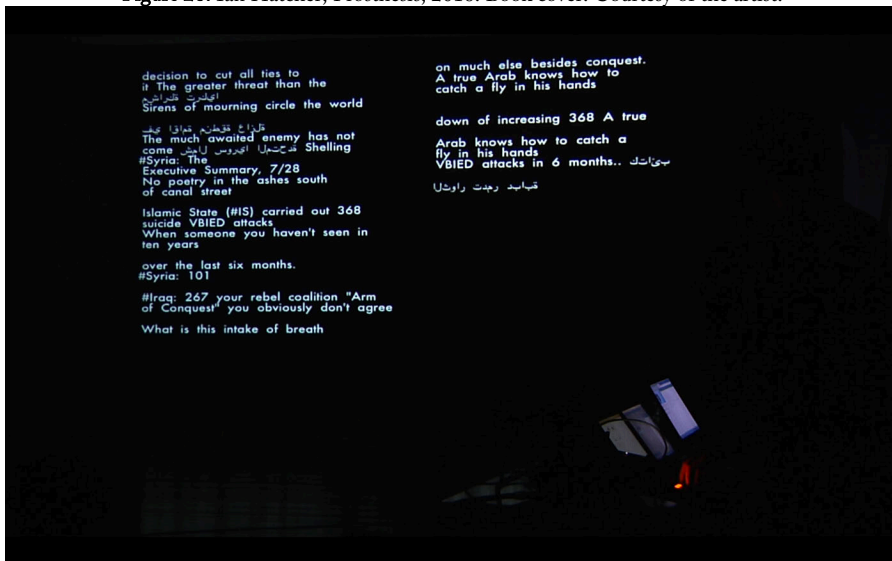
Figure 27. Jazra Khaleed, Timos Alexandropoulos, and Antonis Kalagkatsis, *Poetry is Just Words in the Wrong Order*, 2015. Performance recorded in Milan. Courtesy of the artists
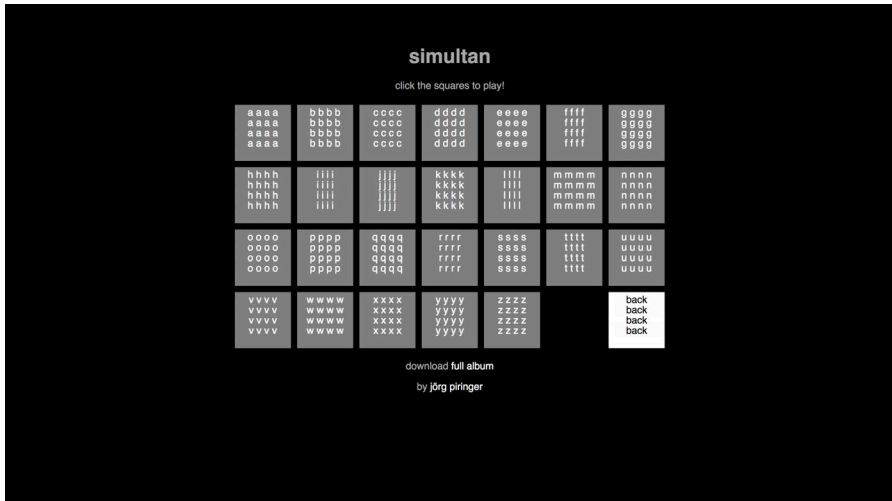
Figure 28. Jörg Piringer, *Letter Singles*, 2015. Screenshot. Courtesy of the artist.
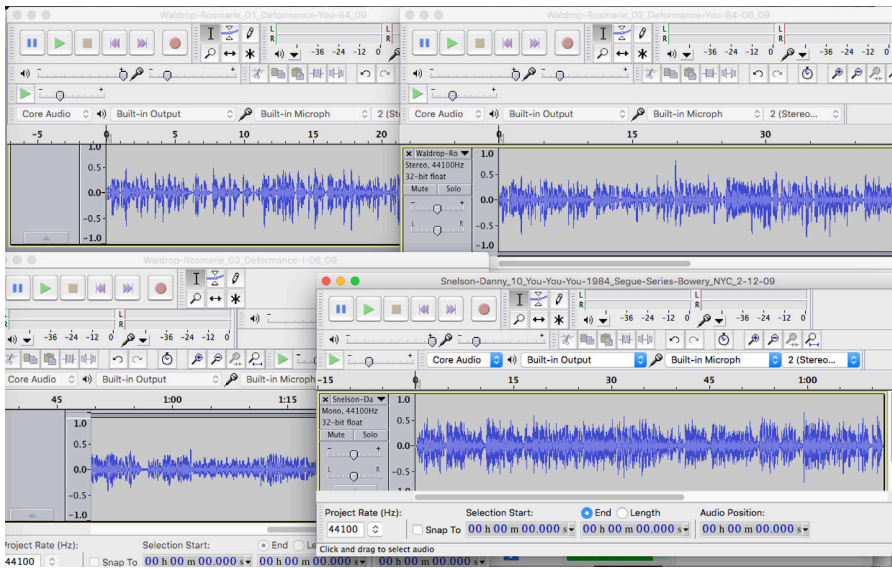
Figure 29. Danny Snelson, *Feverish Propagations*, 2009. Screenshot. Courtesy of the artist.

Remix+Intervene

Finally, visitors can further expand their experience of "Affiliations" by mixing the whole exhibit. Jhave's *MUPs* (2012, Figure 30), a sound engine created for close and distant listening of the PennSound archive, is modified in order to allow simultaneous play of the sounds that constitute "Affiliations," as well as some other sonic surprises (Figure 31). *MUPs (MashUPs)* is an interface developed by Jhave (2012) with 1260 audio poems from the PennSound archive. The poet explains: "MUPS is intended as a digital augmentation in the study of prosody. As computational analysis advances it is feasible to foresee cultural heritage archives such as PennSound operating as sites where digital tools permit innovative explorations into the evolution of poetics. In MUPS [PennSound], remote users can, on one webpage, hear 1260 poems speak to each other and with each other. This is both fun and informative." The viewers can play and mix them "for the sheer pleasure of simultaneity," Jhave invites. The version presented in the "Affiliations" exhibit is seeded with the sound works from the exhibit itself, for the *sheer pleasure* of the audience.

—Álvaro Seiça and Daniela Côrtes Maduro
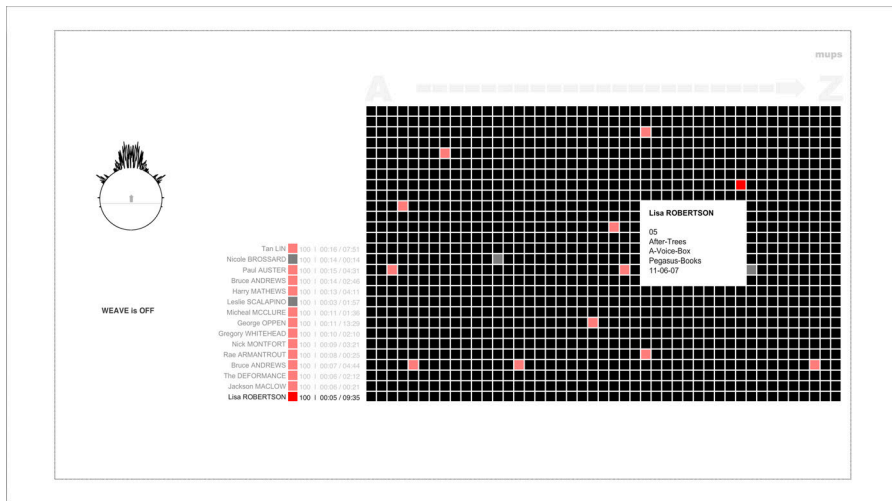
Figure 30. Jhave, *MUPs* (2012), with 1260 sound files from the PennSound archive. Screenshot. Courtesy of the artist.
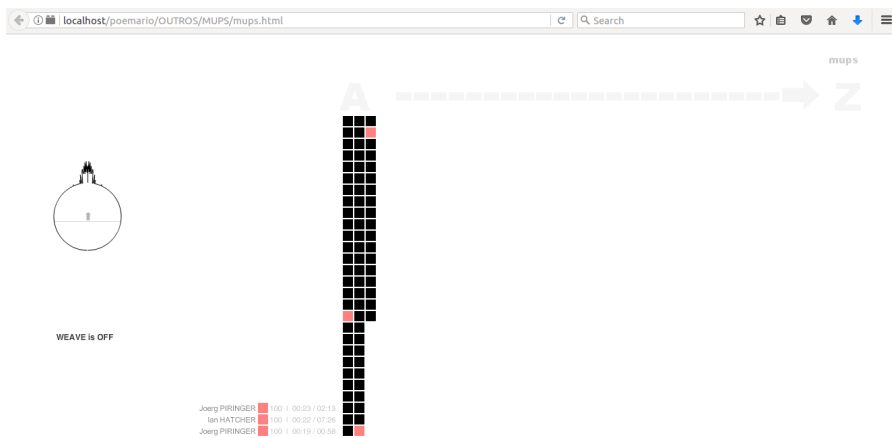
Figure 31. Jhave, *MUPs* (2012-17), with 75 sound files from the "Affiliations" exhibit. Modified and assembled by Rui Torres. Screenshot. Courtesy of the artist.

3. Emulation: The Case of Silvestre Pestana's *Computer Poetry*

Computer Poetry (1981-83) is a series of three poems written in BASIC by Silvestre Pestana. *Computer Poetry* 1 and 2 (1981) were programmed in a Sinclair ZX81: the first poem was dedicated to E. M. de Melo e Castro and the second to Henri Chopin. The third poem (1983) was programmed in a Sinclair ZX Spectrum and dedicated to Julian Beck.

Later on, Pestana took the initiative to emulate the pieces. According to Rui Torres (2017), these versions were presented in "Mostra da Poesia Cibernética" ("Festa da Poesia 2006," Matosinhos), organized by Torres. By 2013, Rui Torres and Nuno Ferreira documented and emulated all the code, additionally porting it into JavaScript and Android mobile devices. Based on these versions, Manuel Portela (2014) presented a screenshot and brief description of Pestana's work within a framework of preservation in digital archives—rethinking the process of migration of works from one platform to another.

What follows is a non-exhaustive survey of *Computer Poetry*'s public iterations and code publications. The majority of this information has been collected in Silvestre Pestana's blog, [101] but other sources have been used, especially *Poemografias* (1985), and newspaper articles.

The source code, images, and executable pieces were published, performed, and exhibited in many instances in Portugal, but rather fewer abroad. To my knowledge, *Computer Poetry* 1 (1981) appears for the first time—source code and images—in the catalogue of "Alternativa 2" ("II Festival Internacional de Arte Viva," Almada, 1982). Between 1980-84, Pestana developed the performance "UNI VER SÓ," presenting it with "video-poetry" at "Alternativa 3" ("III Festival Internacional de Arte Viva," Almada, 1983). From the picture available in *Poemografias* (1985), it seems that one of the "video-poetry" pieces is, in fact, *Computer Poetry* 3 (1983). In 1984, *Computer Poetry* 3 (1983) is presented again as part of an installation and cycle

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[101] https://pestanasilvestre.wordpress.com/

of performances entitled "Bio-Virtual" (Cooperativa Árvore, Porto, 1981-1984),
shown in Figure 32:

Figure 32. Silvestre Pestana, Performance *Bio-Virtual* at Cooperativa Árvore, Porto, 1984. 8
fluorescent lamps: white, yellow, and magenta. TV set and independent projection presenting the
digital poem *Computer poetry to Julian Beck* (1983) for Spectrum. In the background, the poem
"Salary" is shown in black and red typography printed on extended sheet. © Silvestre Pestana

The series of three poems, with source code and images, was published
together for the first time in the anthology of visual poetry edited by Fernando Aguiar
and Pestana (*Poemografias: Perspectivas da Poesia Visual Portuguesa*, 1985, Figure
33). The third poem in the series was photographed while displayed on a TV screen
for the book's cover, and exhibited during the eponymous travelling exhibition.
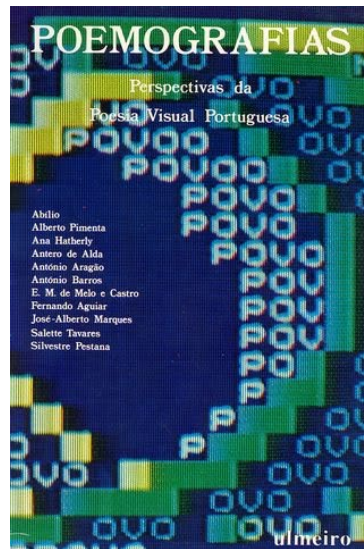
Figure 33. Cover of *Poemografias: Perspectivas da Poesia Visual Portuguesa*, ed. by Fernando Aguiar and Silvestre Pestana, 1985. The book cover and back cover contain a photo of *Computer Poetry* 3.

In 1986, the third poem is also presented as background to Pestana's *Light Pen* performance (Fórum Picoas, Lisbon, Figure 34), and E. M. de Melo e Castro curates it as part of the exhibition "Arte High Tech em Questão" (Diferença, Lisbon, 1988).
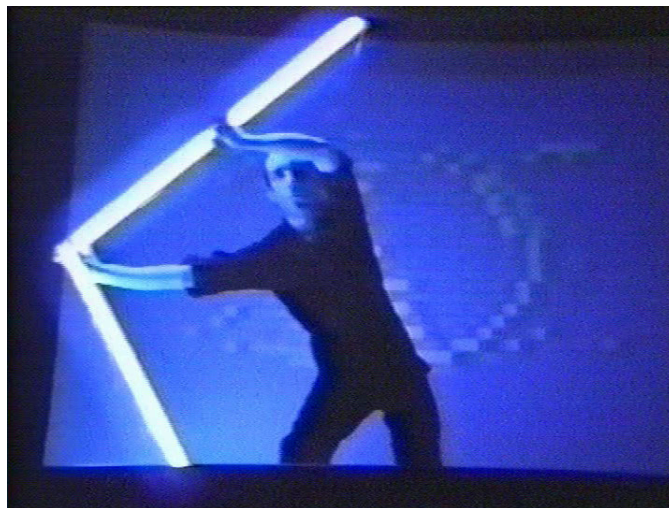
Figure 34. Silvestre Pestana, Performance *Light Pen* at Fórum Picoas, Lisbon, 1986. *Computer Poetry* 3 is projected in the background. © Silvestre Pestana

A reworked version of the source code of the second and third poems was later published with an interview by Luís de Barroco entitled "Silvestre Pestana: 'A Força da Razão Dominará as Artes'" (*Comércio do Porto*, *Revista Domingo!*, March 29, 1987). In this newspaper article (Figure 35), we find a special section entitled "A Poética dos Anos 80" [The Poetics of the 1980s]:

Figure 35. Silvestre Pestana, "A Poética dos Anos 80," 1987. Detail of "Silvestre Pestana: 'A Força da Razão Dominará as Artes'" (*Comércio do Porto*, *Revista Domingo!* March 29, 1987). Image edited by Rui Torres/Po-ex.net. Courtesy of Arquivo Municipal Sophia de Mello Breyner/C.M. V.N. de Gaia.

In the Post-Scriptum, Pestana (1987: 11) presents additional information:

> Como tiveram oportunidade de constatar, há dois programas destinados aos utentes do ZX-81. No entanto, através de pequenas alterações os programas ficam compatíveis com a gama 'Spectrum' (Spectrum 16K, 48K, TC2048, TC2068, PLUS, etc.). Além disso, não estão programados para produzir cor. Fica, por isso, ao critério dos utentes fornecerem ao programa cores do seu agrado. Uma sugestão: programem as cores com a função RND. A ordem 'UNPLOT' para a gama Spectrum é substituída por 'DRAW.'[102]

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[102] "As you may have noticed, there are two programs for the ZX-81 users. However, by means of small changes, the programs are compatible with the 'Spectrum' series (Spectrum 16K, 48K, TC2048, TC2068, PLUS, etc.). Moreover, they are not programmed to produce color. Therefore, it remains at the users' choice to provide the program with the colors of their liking. One suggestion: program the colors with the RND function. The 'UNPLOT' statement is substituted with 'DRAW' in the Spectrum series." (translation mine).

The P.S. is relevant because Pestana's comments explain the need to adapt the functions UNPLOT from the ZX81 to DRAW in ZX Spectrum. Furthermore, the author invites the users to recreate the code with new colors using the randomize function RND. This is a creative and aesthetic invitation to users. It could read: "Users! Modify the program, create other color versions, explore, program!"

The *Computer Poetry* series has since then been exhibited in Portugal in two other occasions: Pestana's retrospective exhibitions "Povo Novo Virtual 1966-2013" (Casa da Escrita, Coimbra, 2013, Figures 36-38) and "Silvestre Pestana: Tecnoforma" (Museu de Arte Contemporânea de Serralves, Porto, 2016, Figures 39-40).

Figure 36. Silvestre Pestana, *Povo Novo Virtual 1966-2013*, Casa da Escrita, Coimbra, 2013. Exhibition view: *Computer Poetry* 1, 1981, and *Fundação v5*. © Silvestre Pestana

Figure 37. Silvestre Pestana, *Povo Novo Virtual 1966-2013*, Casa da Escrita, Coimbra, 2013. Exhibition view: *Computer Poetry* 3, 1983. © Silvestre Pestana

Figure 38. Silvestre Pestana, *Povo Novo Virtual 1966-2013*, Casa da Escrita, Coimbra, 2013. Exhibition view: table with Spectrum keyboard, *Poemografias*, article in *Comércio do Porto*, and "code poem." © Silvestre Pestana

Figure 39. Silvestre Pestana, *Silvestre Pestana: Tecnoforma*, Museu de Arte Contemporânea de Serralves, Porto, May 26-Sep. 25, 2016. Exhibition view: *Computer Poetry*, 1983. Photo: Filipe Braga. © Fundação de Serralves, Porto.

Figure 40. Silvestre Pestana, *Silvestre Pestana: Tecnoforma*, Museu de Arte Contemporânea de Serralves, Porto, May 26-Sep. 25, 2016. Exhibition view: *Computer Poetry*, 1981. Photo: Filipe Braga. © Fundação de Serralves, Porto.

Outside Portugal, the series was shown in two collective exhibitions: in Brazil (São Paulo, 2007) and Norway (Bergen, 2015). In Norway, the series was presented at the exhibition "p2p: Polish-Portuguese E-Lit" (3,14 gallery, 2015). *Computer Poetry* 1 was projected as a video recording created by Pestana (Figure 41), whereas *Computer Poetry* 3 was presented in an emulated version in Fuse, with TV set output (Figures 42-44). Furthermore, a table allowed viewers to explore printed matter with versions of published source code of all the series' outputs (Figure 45).
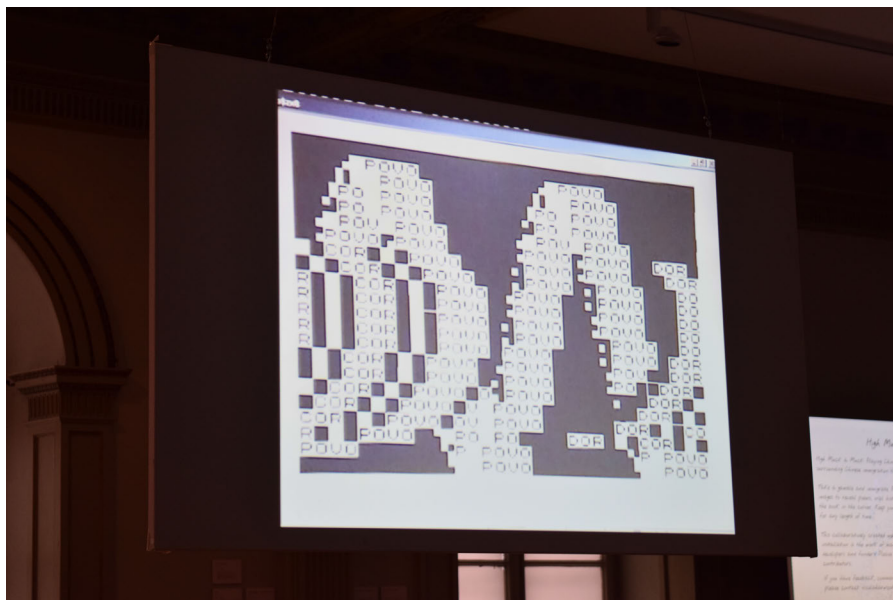
Figure 41. Silvestre Pestana, *Computer Poetry* 1 (1981). Exhibition view*: p2p: Polish-Portuguese E-Lit*, 3,14 gallery, Bergen, Norway (August 4-23, 2015), during the ELO 2015 festival. Photo: Álvaro Seiça. Courtesy of Silvestre Pestana.
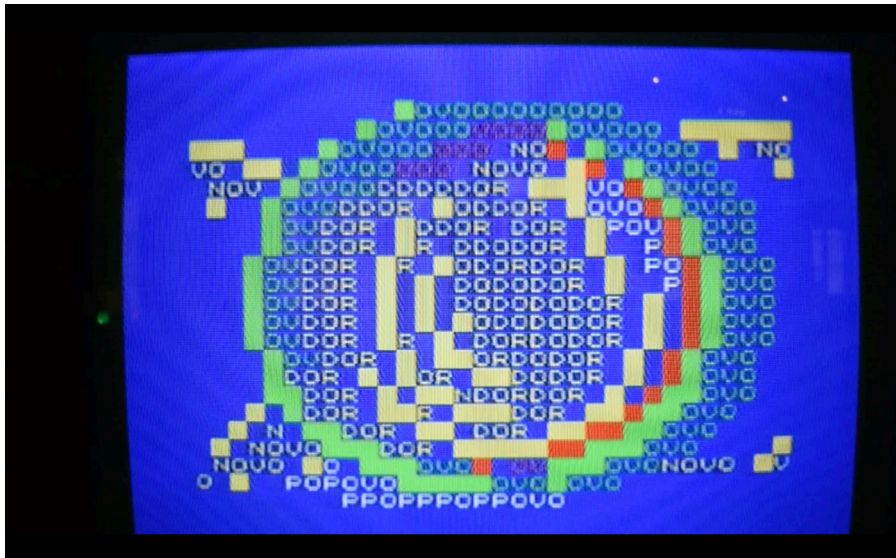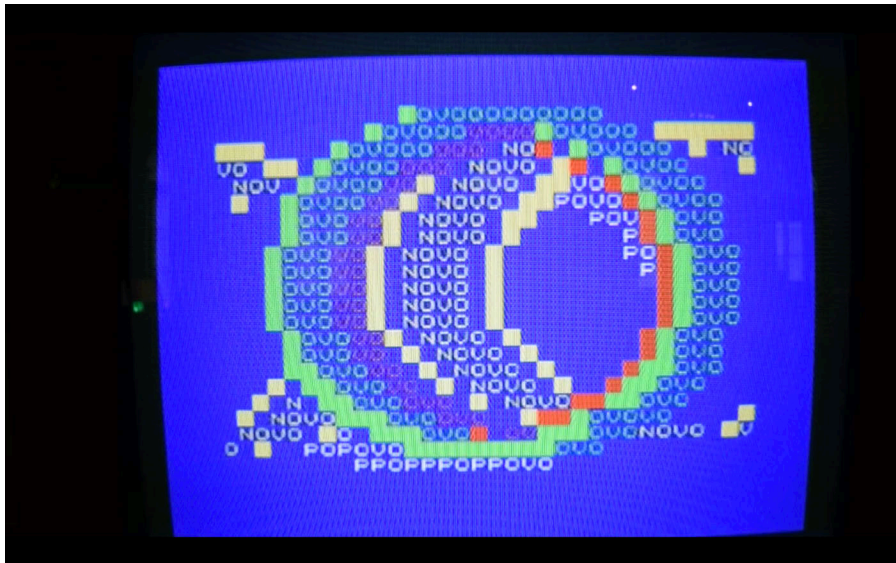
Figures 42-44. Silvestre Pestana, *Computer Poetry* 3 (1983). Work emulated by Sindre Sørensen and Álvaro Seiça. Exhibition view: *p2p: Polish-Portuguese E-Lit*, curated by Álvaro Seiça, and Piotr Marecki, at 3,14 gallery in Bergen, Norway (August 4–23, 2015), during the ELO 2015 festival. Photo: Álvaro Seiça. Courtesy of Silvestre Pestana.

Figure 45. Table at *p2p: Polish-Portuguese E-Lit* exhibition. From left to right: E. M. de Melo e Castro's *A Proposição 2.01: Poesia Experimental* (1965) and *Poética dos Meios e Arte High Tech* (1988); Fernando Aguiar and Silvestre Pestana's (eds.) *Poemografias: Perspectivas da Poesia Visual Portuguesa* (1985); Silvestre Pestana's BASIC code for *Computer Poetry* (1981-83) published in *Poemografias* and in "A Poética dos Anos 80" (*O Comércio do Porto*, 1987); Pedro Barbosa's *A Literatura Cibernética 1: Autopoemas Gerados por Computador* (1977), *A Literatura Cibernética 2: Um Sintetizador de Narrativas* (1980), *Máquinas Pensantes: Aforismos Gerados por Computador* (1988), *Teoria do Homem Sentado: Livro Virtual* (1996) and *O Motor Textual: Livro Infinito* (2001); and Rui Torres's CD-ROMs *Poemas no Meio do Caminho* (2012) and *Amor de Clarice* (2005). Photo: Álvaro Seiça

3.1. Silvestre Pestana's *Computer Poetry* 1 (1981) to E. M. de Melo e Castro

The caption of the work reads "Computer Poem for ZX81 dedicated to Melo e Castro, 1981" in Pestana (2016: 271). The transcription below of the BASIC code for the Sinclair ZX81 follows Pestana (1985: 214):

```
10 REM "MAQ ZX81"
20 PRINT AT 11,6; "COMPUTER POETRY"
30 FOR D=1 TO 150
40 NEXT D
50 CLS
60 PRINT AT 11,6; " TO : E. MELO E CASTRO"
70 FOR D=1 TO 150
80 NEXT D
90 CLS
100 PRINT AT 11,6; "FROM: SILVESTRE PESTANA-81"
110 FOR D=1 TO 150
120 NEXT D
130 CLS
140 FOR P=0 TO 21
```

150 PRINT "███████████████████████████████████████
████████████████████████████████"

```
160 NEXT P
170 FOR A=0 to 120
180 LET B=A*PI/30
190 UNPLOT A/2,SIN (B)*20+20
200 PRINT "POVO"
210 NEXT A
220 FOR C=1 TO 100
230 LET F=PI*C/50
```

240 PRINT AT 9*COS (F)+10,14*SIN (F)+15; "█

DOR█   █COR █POVO█ "

```
250 NEXT C
260 GOTO 170
270 RUN
```

3.2. Silvestre Pestana's *Computer Poetry* 2 (1981) to Henri Chopin

The caption of the work reads "Computer Poem for ZX81 dedicated to Henri Chopin, 1981" in Pestana (2016: 272). The transcription below of the BASIC code for the Sinclair ZX81 follows Pestana (1985: 215):

```
10 REM "MAQ ZX81"
20 PRINT AT 11,6; "COMPUTER POETRY"
30 FOR D=1 TO 150
40 NEXT D
50 CLS
60 PRINT AT 11,6; "TO : HENRY CHOPIN "
70 FOR D=1 TO 150
80 NEXT D
90 CLS
100 PRINT AT 11,6; "FROM: SILVESTRE PESTANA"
110 FOR D=1 TO 150
120 NEXT D
130 CLS
140 FOR N=-4 TO 4
150 FOR M=0 TO 120
160 UNPLOT 16+20*SIN (M/60*PI),11+20*COS (M/60*PI+1/4*PI)

170 PRINT "POVO    "
180 NEXT N
190 NEXT M
200 FOR J=1 TO 10
210 FOR I=0 TO J*12
220 UNPLOT 32+J*2*SIN (I/(J*6)*PI),22+J*2*COS (I/(J*6)*PI)

230 PRINT "OVO    "
240 NEXT I
250 NEXT J
260 GOTO 140
270 RUN
```

3.3. Silvestre Pestana's *Computer Poetry* 3 (1983) to Julian Beck

The caption of the work reads "Computer Poem for Spectrum dedicated to Julian Beck, 1983" in Pestana (2016: 272). The transcription below of the BASIC code for the Sinclair ZX Spectrum follows Pestana (1985: 216):

```
5 REM "MAQ. SPECTRUM"
10 PRINT AT 11,6; "COMPUTER POETRY": PAUSE 100
20 FOR D=1 TO 150: NEXT D:    CLS: PAUSE 100
30 PRINT AT 11,6; "TO:JULIAN BECK": PAUSE 100
40 FOR D=1 TO 150: NEXT D: CLS: PAUSE 100
50 PRINT AT 11,6; "FROM:SILVESTRE PESTANA-83": PAUSE 100
60 FOR D=1 TO 150: NEXT D: CLS: PAUSE 100
70 BORDER 1
80 PAPER 1: CLS
90 INK 4
100 FOR C=1 TO 200: LET F=PI*C/30

110 PRINT AT 9*COS (F)+10,11*SIN (F)+15;" ██ ": NEXT C
120 INK 7
130 FOR A=1 TO 70: LET B=PI*A/32
140 PRINT AT 9*SIN (B)*1-12,14*COS (B)*1+12;"POVO"
150 NEXT A
155 INK 6
160 FOR C=1 TO 200: LET F=PI*C/50

170 PRINT AT 9*COS (F)+10,14*SIN (F)+15;"      ██ NOVO ██ "
180 NEXT C
190 FOR C=1 TO 200: LET F=PI*C/50: INK 2

200 PRINT AT 9*COS (F)+10,11*SIN (F)+15;" ██  OVO"
210 NEXT C
220 FOR C=1 TO 200: LET F=PI*C/50: INK 4

230 PRINT AT 10*COS (F)+10,12*SIN (F)+15;" ██OVO"
240 NEXT C
250 INK 6
260 FOR J=1 TO 5: FOR I=0 TO J*12
```

```
270 PRINT AT 10+J*2*SIN (I/(J*2)*PI/3),12+J*2*COS (I/(J*3)*PI/2);"DOR
    █"
280 NEXT I: NEXT J
290 PAUSE 200: PAUSE 200: INK 4: GO TO 60: RUN
```

The BASIC code was modified in the Unix Spectrum emulator Fuse[103] due to the automatic reordering of the lines 5 and 155. The transcription below is the emulated code by Sindre Sørensen and Álvaro Seiça (2015), which was saved as files "CP128-10.SZX" and "computer poetry-1983-pestana-emulation-2015.rzx":

```
10 REM "MAQ. SPECTRUM"
20 PRINT AT 11,6; "COMPUTER POETRY": PAUSE 100
30 FOR D = 1 TO 150: NEXT D:  CLS : PAUSE 100
40 PRINT AT 11,6; "TO:JULIAN BECK ": PAUSE 100
50 FOR d=1 TO 150: NEXT d: CLS : PAUSE 100
60 PRINT AT 11,6; "FROM:SILVESTRE PESTANA-83": PAUSE 100
70 FOR D=1 TO 150: NEXT D: CLS : PAUSE 100
80 BORDER 1
90 PAPER 1: CLS
100 INK 4
110 FOR C=1 TO 200: LET F= PI *C/30

120 PRINT AT 9 * COS (F)+10,11* SIN (F) + 15;"  █  ": NEXT C
130 INK 7
140 FOR A=1 TO 70: LET B= PI *A/32
150 PRINT AT 9* SIN (B)*1-12,14* COS (B) *1 + 12;"POVO"
160 NEXT a
170 INK 6
180 FOR c=1 TO 200: LET F= PI *C/50

190 PRINT AT 9* COS (F) + 10,14 * SIN (F)+15;"      █   NOVO █ "
200 NEXT C
210 FOR C=1 TO 200: LET F= PI *C/50: INK 2

220 PRINT AT 9* COS (F) + 10, 11* SIN (f)+15;"  █   OVO";
```

```
230 NEXT C
240 FOR c=1 TO 200: LET F = PI*C/50: INK 4

250 PRINT AT 10 * COS (F)+10,12* SIN (F) + 15;" ██OVO";
260 NEXT C
270 INK 6
280 FOR J=1 TO 5: FOR I = 0 TO J*12
290 PRINT AT 10 + J * 2 * SIN (I / (J*2) * PI / 3), 12 + J * 2 * COS

(I / (J * 3) * PI / 2);"DOR ██ "
300 NEXT I: NEXT J
310 PAUSE 200: PAUSE 200: INK 4: GO TO 70: RUN
```

The number of lines is the same, though instead of finishing with line 290, the code now ends with line 310, since in BASIC the lines commonly follow "x+10." There are also some space differences and non-capitalized letters, which run exactly in the same way. The only difference is in the size of the program that now has a couple more bytes. This fact was caused by the effort of typing with a keyboard that is not native to the Spectrum keyboard, and as such the majority of commands and functions follow shortcuts. The list below provides a short list of command key combinations in Fuse:

```
CTRL+SHIFT = TURNS KEYBOARD on E
CAPS+SHIFT+9 = TURNS KEYBOARD on GRAPHICS
AT = ALT+I
+ = ALT+
- = ALT-
/ = ALT+V
* = ALT+B or SHIFT+B
: = SHIFT:
= ALT+CTRL+L
GOTO = SHIFT+G
TO = ALT+CTRL+F10
RUN = SHIFT+R
BLACK SQUARE = GRAPHICS(CAPS+SHIFT+9)+8
COS = CTRL+ALT+W
SIN = CTRL+ALT+
RND = CTRL+SHIFT+T
```

```
CHR$ = CTRL+SHIFT+U
CODE = CTRL+SHIFT+I
DATA = CTRL+SHIFT+D
LLIST = CTRL+SHIFT+V
PI = CTRL+SHIFT+M
PAPER = CAPS+SHIFT+0
```

The ZX Spectrum character set is a version of ASCII.[104] The black blob in key 8 ■ can be obtained by typing GRAPHICS+SHIFT+8. GRAPHICS is obtained by pressing CAPS+SHIFT+9. Figure 46 shows the emulated work (2015) running on an Apple Mac mini connected to a TV set.
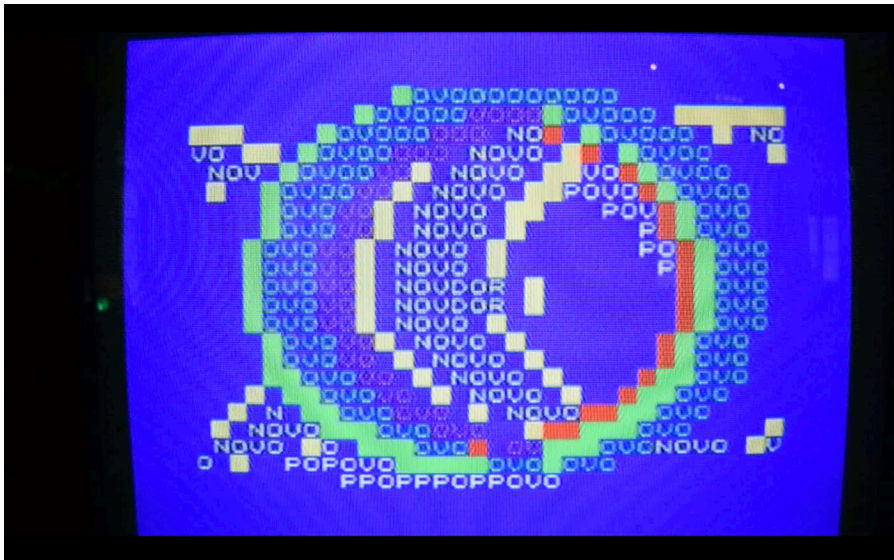
Figure 46. Silvestre Pestana, *Computer Poetry* (1983), BASIC, Sinclair ZX Spectrum. Code emulated in Fuse by Sindre Sørensen and Álvaro Seiça. Installation: Johnny Herbert, Gonzo Gaard, and Lucas Ramada Prieto. Hardware provider: ELO 2015 and BEK. Exhibition view, *p2p: Polish-Portuguese E-Lit*, curated by Álvaro Seiça and Piotr Marecki at 3,14 gallery in Bergen, Norway (August 4–23, 2015), during the ELO 2015 festival. Photo: Álvaro Seiça. Courtesy of Silvestre Pestana.

In addiction, the following set of figures (47-59) shows selected stages— screenshots of the emulated version in Fuse—of *Computer Poetry*'s kinetic behavior.

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[104] For more information, see the ZX BASIC manual at
http://www.worldofspectrum.org/ZXBasicManual/zxmanchap14.html

The stages are ordered chronologically. The three first images correspond to the BASIC lines 20, 40, and 60. They show the print output of title, dedication, and author-year.
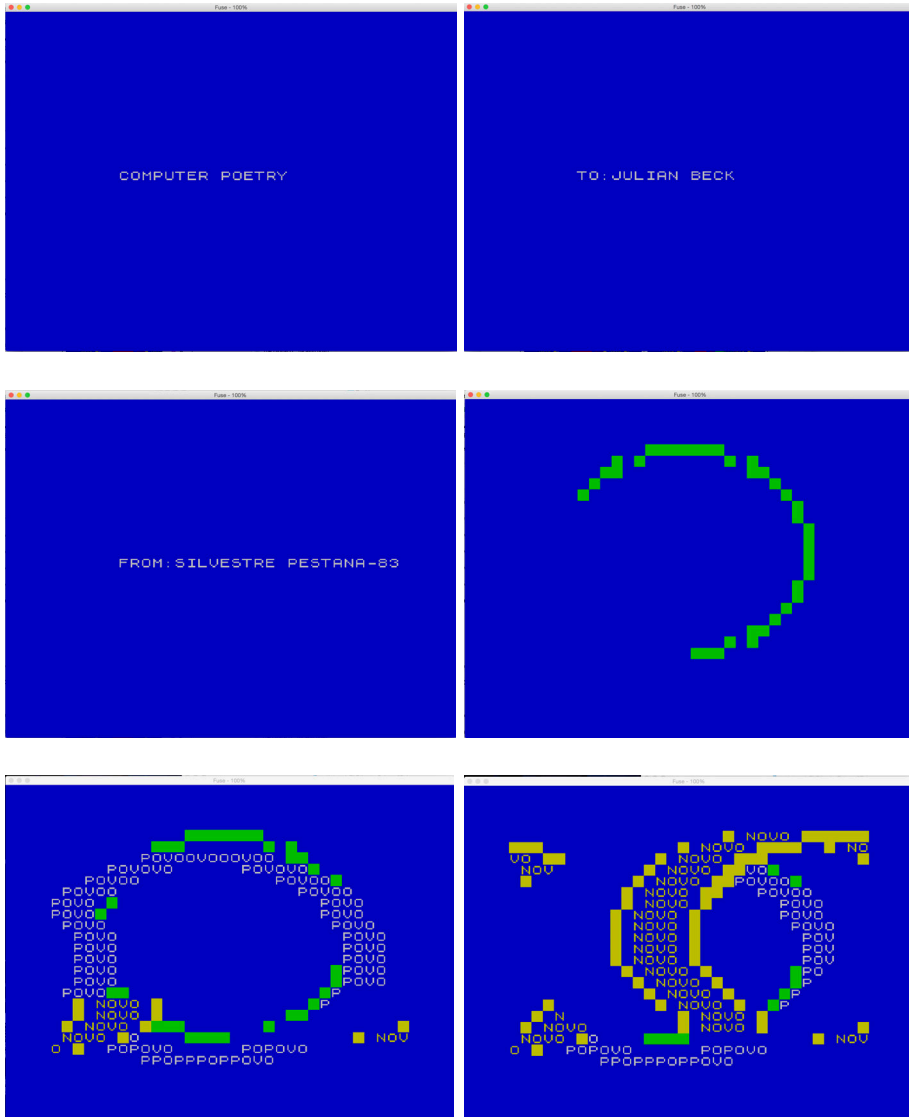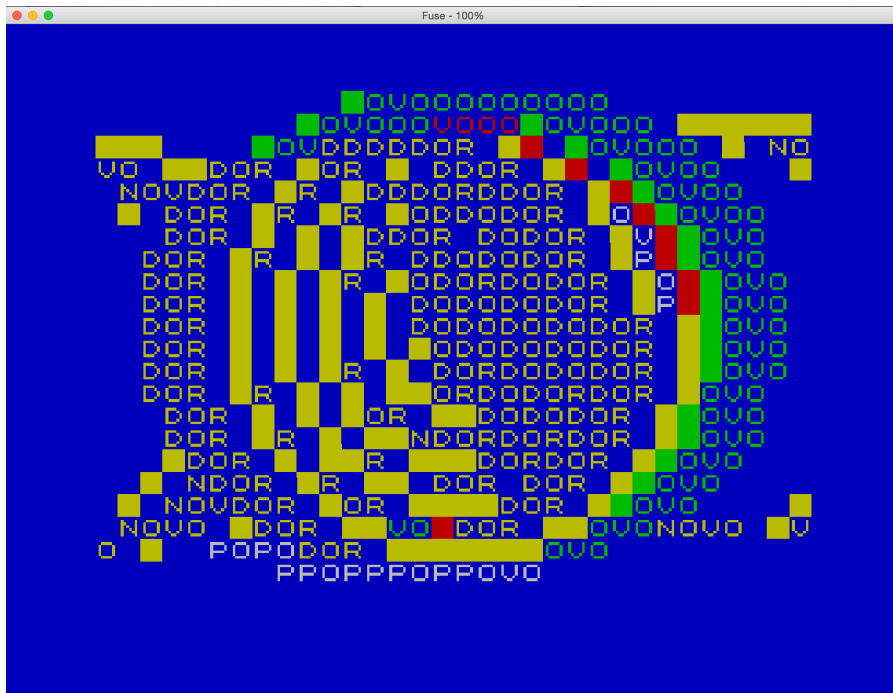
Figures 47-59. Silvestre Pestana, *Computer Poetry*, 1983, programmed in BASIC for a Sinclair ZX Spectrum. The captions represent a selection of stages of the piece behavior. Code emulated in Fuse by Sindre Sørensen and Álvaro Seiça. Screenshots.

3.4. *Computer Poetry*'s Versioning

In the three pieces of code, the first line always indicates the machine for which it has been programmed. Pestana uses the comment REM (remark), writing "MAQ," short for "MÁQUINA" (machine). Several versions of Pestana's work have been slightly modified over time. For instance, *Computer Poetry* 1 (1981, code version published in 1982) has 10 REM 12345678901234567890 "MAQ_ZX81" instead of 10 REM "MAQ_ZX81" (1981, code version published in 1985). The line 100 prints "FROM: SILVESTRE PESTANA," whereas line 100 of code version published in 1985 has been modified to "FROM: SILVESTRE PESTANA-81," thus marking the year. There are also some small space differences, but the most striking change is in line 240. It prints "█OVO█ █NOVO█POVO█" in 1982, whereas in 1985 it prints "█DOR█ █COR█POVO█". This means that Pestana modified the words "ovo" (egg) and "novo" (new) with "dor" (pain) and "cor" (color).

Computer Poetry 2 (1981) maintains the PRINT lines 170 and 230 in the code version published in 1985 and 1987, respectively with "POVO█" and "OVO█". However, *Computer Poetry* 3 (1983) has been modified as well from 1985 to 1987. In 1985, line 230 prints "█OVO" whereas in 1987 it prints "█POVO".

The comparative study of the different code versions, seen in relation to the compact, complex, yet minimal and highly visual words, is no doubt interesting from a point of view of reverse engineering and software versioning. This fact highlights a constant reworking of the code, and perhaps a socio-political and artistic change in Pestana's approach and thought. What was a profound sense of hope in 1981—closer to Portugal's 1974 Carnation Revolution—might had turned into some disappointment by 1985? Or, rather, a critique of the political sphere in the post-revolutionary period?

4. setInterval() Conversation Series

The setInterval() Conversation Series were recorded between 2013 and 2016. The aim of the series is to gather in loco knowledge about diverse poets' creative and critical work. Besides treating individual themes, it tries to better understand positions regarding the phenomena of reading and live performing, in that temporality and spatial elements are key components of kinetic poems. The conversation series serves as an appendix to the PhD study *setInterval()* developed at the University of Bergen.

https://vimeo.com/channels/setintervalconversations

4.1. Index

setInterval() Conversation Series 1: Manuel Portela and Rui Torres /
https://vimeo.com/77139619
setInterval() Conversation Series 2: Judd Morrissey
setInterval() Conversation Series 3: Philippe Bootz / Sound file. Unpublished.
setInterval() Conversation Series 4: J. R. Carpenter / https://vimeo.com/229556541
setInterval() Conversation Series 5: Nick Montfort / https://vimeo.com/210240035
setInterval() Conversation Series 6: Richard Kostelanetz /
https://vimeo.com/209010609
setInterval() Conversation Series 7: Stephanie Strickland / Sound file. Transcribed.
setInterval() Conversation Series 8: John Cayley / https://vimeo.com/211455762
setInterval() Conversation Series 9: Ian Hatcher / https://vimeo.com/207815551
setInterval() Conversation Series 10: Jaap Blonk / Sound file. Unpublished.

4.2. Description

1. "Portuguese Experimentalism: A Conversation with Manuel Portela and Rui Torres." Sep. 26, 2013 at the ELO 2013 conference at the ENSAD in Paris. https://vimeo.com/77139619

Portuguese Experimentalism is the setInterval() Conversation Series 1. A conversation with Manuel Portela and Rui Torres on the Portuguese Electronic Literature Collection (PELC) at the ELMCIP KB. The conversation deals with the characteristics, influences and future directions of Portuguese electronic literature. Video interview and recording by Álvaro Seiça, September 26, 2013, during the ELO 2013 conference "Chercher le Texte" at the ENSAD in Paris. Special thanks to Manuel Portela and Rui Torres. Thanks to Scott Rettberg and Jill Walker Rettberg for their support. + info: http://elmcip.net/research-collection/portuguese-electronic-literature-collection

2. "The Random Walk: A Conversation with Judd Morrissey." June 2014 at the University of Bergen.

3. "Techné et Frustration: A Conversation with Philippe Bootz." Nov. 2014 in Paris. Sound file. Unpublished.

4. "Space Unseen: A Conversation with J. R. Carpenter." May 14, 2015, at the Digital Literary Studies 2015 conference, University of Coimbra. https://vimeo.com/229556541

Space Unseen is the setInterval() Conversation Series 4. A conversation with J. R. Carpenter about her artistic, poetic, and coding work. Recorded at the University of Coimbra on May 14, 2015, during the opening of the exhibition "Language and Interface," at the Digital Literary Studies 2015 Conference. Special thanks to JR Carpenter and Nuno Miguel Neves.

5. "Less Code is More: A Conversation with Nick Montfort." Sep. 29, 2015 at NJIT in Newark. https://vimeo.com/210240035

Less Code is More is the setInterval() Conversation Series 5. A conversation with Nick Montfort about his poetic and computational work, time and space, Commodore 64 and other platforms. Recorded at the New Jersey Institute of Technology on September 29, 2015. Special thanks to Nick Montfort and C. T. Funkhouser.

6. "Syntactical Circumstances: A Conversation with Richard Kostelanetz." Nov. 16, 2015 at Kostelanetz's studio in Brooklyn. https://vimeo.com/209010609

Syntactical Circumstances is the setInterval() Conversation Series 6. A conversation with Richard Kostelanetz about his holographic and poetic work from the 1970s and 80s. Nona Ellis participated in the conversation as well. Recorded at Kostelanetz's studio Wordship II in FarEast BushWick, NY on November 16, 2015. Special thanks to Richard Kostelanetz, Nona Ellis, and C. T. Funkhouser.

7. "Against the Grain: A Conversation with Stephanie Strickland." Nov. 24, 2015 at NJIT in Newark. Transcribed from audio file in Appendix 4.4.

8. "Rewriting the System: A Conversation with John Cayley." Dec. 3, 2015 at Brown University in Providence. https://vimeo.com/211455762

Rewriting the System is the setInterval() Conversation Series 8. A conversation with John Cayley about his poetic and code work, time and space, language, and the increasing corporative prediction and appropriation of our modes of inscription: from typing to voicing. Recorded at Brown University on December 3, 2015. Special thanks to John Cayley and C. T. Funkhouser.

9. "Rendering Time: A Conversation with Ian Hatcher." Dec. 8, 2015 at NJIT in Newark. https://vimeo.com/207815551

Rendering Time is the setInterval() Conversation Series 9. A conversation with Ian Hatcher about his poetic, performative and code work, time and space, surveillance, and black boxes. Recorded at the New Jersey Institute of Technology on December 8, 2015. Special thanks to Ian Hatcher and C. T. Funkhouser.

10. "Upside Down Sound: A Conversation with Jaap Blonk." June 17, 2016 at Forum Stadtpark in Graz. Sound file. Unpublished.

4.3. Examples of Questionnaires

setInterval() Conversation Series 5: "Less Code is More: A Conversation with Nick Montfort." September 29, 2015, at the New Jersey Institute of Technology in Newark. https://vimeo.com/210240035

1. A number of your poems use scroll down movement but, for instance, *Sea and Spar Between* explores height and width. In your kinetic poems what is the importance of space? I am thinking both in terms of composition, screen display, and reading experience.

2. How do you see this relation between space and interface?

3. What is the importance of time and speed?

4. On the other hand, the scroll down movement can be interrupted, for instance, in the Perl program *ppg256-character* series. But, most of the time, you tend to set a balanced tempo for reading. In *Taroko Gorge* you contain the scroll down within the canvas dimensions (onscreen) but one might not have sufficient time to deeply read the poem lines. What do you think about these intervals in readability—especially in works by authors that highly speed up their poems for onscreen display—that surface in a mode that does not allow for a comprehensive reading?

5. One of your favorite themes seems to be language itself and how computation can express its maximum with minimum coding. Can you expand on this?

setInterval() Conversation Series 7: "Against the Grain: A Conversation with Stephanie Strickland." November 24, 2015, at the New Jersey Institute of Technology in Newark. Transcribed in Appendix 4.4.

1. *slippingglimpse*'s opening screen immediately reveals one of the work's relations with space—the composition with squares. It recalled me of Gomringer's "silencio," which also creates a bigger square with a blank space in the middle, besides the soundless connection. Was there any relation to that work here?

2. How do you think about space in your poetic practice? As in *slippingglimpse* and *V: Vniverse*, does it structure the content according to the themes?

3. You have reflected and written on many different conceptions of time in digital poetics, for instance, the time lag of the network, the code to be run, the reading time and the intervals in which poetic lines are set and animated. What and how is the importance of time in your poetry as an expressive (literary) dimension? Can you elaborate on 3 different levels: the work's composition and/or relation with the reading/cognitive experience, and the live performance of the work when you read it.

4. Has *slippingglimpse* been live performed and if yes what parts of the text do you read?

5. You have been collaborating with a few artists, programmers and poets, but not musicians, as far as I know. The fact that your works don't include sound media is it because you see sound as an additional feature that disrupts the silent reading of hypermedia poems that are in themselves already quite visually and textually complex?

setInterval() Conversation Series 8: "Rewriting the System: A Conversation with John Cayley." December 3, 2015, at Brown University in Providence, RI. https://vimeo.com/211455762

1. How do you think about space in your poetic practice? Does it structure the content according to the themes and procedures? Definitely works as *imposition* and *translation* regard space in relation to the canvas, while tridimensional works like lens engage with the Z-axis in the VR environment. I am thinking in terms of composition, screen display and reading experience.

2. Temporal dimensions are a crucial factor of your writing project, both on the creative side as well as on the theoretical. Not only it has been thematized in your *Clock* pieces (*Speaking Clock*, *wotclock*), but it has also been materialized in several of your literal morphing algorithmically-based poems, as *overboard*, *imposition* and *translation* as unfolding events in which you distinguish states as surfacing, drowning

and floating. What and how is the importance of time in your poetry as an expressive (literary) dimension?

Can you elaborate on 3 different levels: the work's composition and/or relation with the reading/cognitive experience, and the live performance of the work when you read it.

3. And if we think on the intervals or tempo that you set for their kinetic aspect? It tends to be quite a slow speed experience in morphing, but not so much in *Common Tongues.*

4. What sort of different creative input—mode of language representation, syntax and semantics—do you find in Chinese poetry?

5. Control and ideological ways of domination at the language level, but also at the human surveillance level, seem to converge as a question in your later projects, *The Readers Project* and *The Listeners.* Can you expand on this topic?

4.4. setInterval() Conversation Series 7: Stephanie Strickland

Against the Grain: A Conversation with Stephanie Strickland

The conversation took place on November 24, 2015, at the New Jersey Institute of Technology in Newark, United States. With interventions by Chris Funkhouser, Ian Hatcher, and a quick appearance by Andrew Klobucar. The following document is an edited transcription by Álvaro Seiça and Stephanie Strickland, with copyediting by Jules Chatelain.

Stephanie Strickland (b. 1942, Detroit, United States) is a writer based in New York City. At the time Strickland studied mathematics at the university level, she was one of the few women taking graduate courses, being even denied access to the math graduate library. She holds a BA from Harvard University, an MFA from Sarah Lawrence College, and an MS from Pratt Institute. Strickland writes poetry and essays. Her poetic work includes the print collections *Give the Body Back* (1991), *The Red Virgin: A Poem of Simone Weil* (1993), *True North* (1997), *V: WaveSon.nets / Losing L'una* (2002), *Zone : Zero* (2008), *Dragon Logic* (2013) and *V: WaveTercets / Losing L'una* (2014), and the digital works, single-authored or in collaboration: *True North Hypertext* (1998)*, The Ballad of Sand and Harry Soot* (1999), *To Be Here as Stone Is* (1999), *Errand Upon Which We Came* (2001), *V: Vniverse* (2002), *slippingglimpse* (2007), *Sea and Spar Between* (2010), *Duels—Duets* (2013), *Vniverse* app for iPad (2014), *House of Trust* (2014) and *Hours of the Night* (2016). Strickland is a member of the Board of the Electronic Literature Organization, for which she co-edited the *Electronic Literature Collection, Volume 1* (2006). Her archive "The Stephanie Strickland Papers, 1955-2016" is being collected by the David M. Rubenstein Rare Book and Manuscript Library at Duke University.

This conversation was recorded at the New Jersey Institute of Technology on November 24, 2015 despite Strickland's refusal of taping. At the beginning of the session she describes the procedure for a prior successful untaped interview (conversation, note-taking, checking back to assure communication has occurred) to explain her preference. Álvaro Seiça thought he had stopped the recording, but though he turned the screen off, his iPhone's voice memo continued recording in the background. The main aim of the conversation was to discuss in detail the work *slippingglimpse*, co-authored by Stephanie Strickland and Cynthia Lawson Jaramillo. In the room, Chris Funkhouser contributed to the conversation, as did Ian Hatcher, who has collaborated with Strickland on the app *Vniverse* (2014) and *House of Trust* (2014). With an impressive and grounded *ars poetica*, Strickland elaborates on the ways mathematics, programming languages, and writing systems share resemblances. The conversation dealt with an eclectic range of themes and topics. They include Paul Ryan's "threeing" theory, Gregory Bateson, and spatial and temporal compositional elements in *slippingglimpse*. Also spoken of are modalities of reading, writing, and viewing; water patterns, reverse motion, and word motion; text behavior, speed, and slowness; René Thom's catastrophe theory, organic shapes and distributed nature-human agency; improvisation, performance, and audience; the story of the passion of the flax and capturing technologies; politics and feminism; collaboration, sound, superimposition, and overlaying; contemplation and meditation; hovering, Director, Adobe, Apple, and Flash; books and Director and app versions of *Vniverse*. Finally, black boxes opened the notion of oracles.

Stephanie Strickland (SS): They wrote up what they thought I said, and I wrote back, you know, which is very interesting, right? Because you can see where you've failed to communicate, how it was heard, how you should make it … what are you doing Chris? No taping!

Chris Funkhouser (CF): What?!

SS: Seriously … no taping!

CF: Oh, you're not taping?

SS: No taping!

CF: Álvaro's not taping?!

Álvaro Seiça (AS): Oh… ok! Is it not ok that I tape the …

SS: You can look at the screens. That's fine! Not my voice.

CF: All right, well, I don't mind.

AS: So, is it ok, that if I tape both the conversation and what is happening on the screen?

SS: Do not tape the conversation—All right, if I know the conversation is being taped, I will restrict what I say …

AS: Oh, ok, ok!

SS: I'll answer your questions … I will not volunteer.

AS: Ok!

CF: But I think then if your interviewer isn't listening, or isn't sharp, it's bound to not be a very interesting interview, that's true. I mean the best interviews are real questions.

AS: Well, I have questions!

SS: I think the best interviews are real conversations, out of which questions then come, and it has to be an iterative kind of procedure that actually arrives at something that's useful all around.

AS: No, for sure! But, I have some questions [laughs]!

SS: It's very easy to misunderstand things.

CF: I tape everything, unless someone objects.

SS: I know you do! [laughs] You tape and you … !

AS: I tape the interviews because even if I take notes, there are some parts that escape always.

SS: Absolutely.

AS: Because I can't take notes of everything.

SS: Absolutely, but that is exactly the thing that you need to go back and have this kind of iterative …   And so, what are we doing now?

AS: Well, so I thought we could start with _slippingglimpse_. [SG starts being projected on the wall.]

SS: OK, I need to find my _slippingglimpse._ [pause while searching]

AS: … So I just made some notes here.

SS: So I'll say I looked over the stuff that I had on it, and these are I think the two best papers—this is Kate Hayles's paper …

AS: I've read that one and yours as well.

SS: And this one, you've read this one, right?

AS: I've read that one as well.

SS: I think those are the ones that most represent what I think is going on there … And then these are things where people interviewed me and asked me specific questions, and these are the answers to some of their questions which might answer your questions, too; I don't know, depends what your questions are. [Strickland shows an assortment of files that include essays by N. Katherine Hayles and Lisa Swanstrom, and e-mail correspondence with both.]

AS: I'm interested in, I've read now … I'm trying to kind of deep read, pay really attention to this kind of complex surface of both text, image, moving image, moving text; looking into the code as well, and then I was reading the papers on that …

SS: Did you read Paul Ryan's book?

AS: I've read some of his essays, and I was watching an interview with him, and the _Video Mind_ [_Video Mind, Earth Mind_, 1993], I have it here.

SS: You have the _Video Mind_ here and the Earth-Score system, and all that?

AS: From which he was basically developing video and his triadic ideas—

SS: Yeah, and his whole idea, the "threeing" thing, right, and that kind of goes back to Peirce, right? Where Peirce was a chemist, and so he'd talk about a thing having three hands out, like a chemical bond. It doesn't just go from two to three, like a threesome or something, do you know what I mean? If you can have three, you can have all the connections in the world, you can build up from three. He [Ryan] has a very profound idea of reorganization of social behavior, on the basis of these threeing things, taking the positions. First of all, there's his talking stick, where the position—using Peirce's firstness, secondness, thirdness, which is kind of like the initiator, and the respondent, and the mediator positions. Each person in turn taking one of those roles. That's the simplified way, but behind it, Paul [Ryan] was a really deep student of Peirce, as well as other technology of what video could do, and in particular—he was a priest actually.

AS: Yeah I was actually watching video of the interview [Paul Ryan in Conversations with Harold Hudson Channer. 12-18-95 Air date] that he has on his website, about that, he was set to ….

SS: Yes, and so you know what he did with the kids, where he had them videoing the ecological situations with the river or this or that. And they'd take different turns being the editor and all that kind of thing. So that was the basis of that.

AS: But he also developed this idea that, in a system where you have three persons, let's say, just in a dialogue, or trying to collaborate, there is always …

SS: A trialogue …

AS: Or a trialogue, yeah, exactly … that there is always one that is excluded from that system, whilst the way …

SS: Not in *his* system.

AS: Not in his system.

SS: But our systems now are always to other the other one, right? So… the *history* here is that I went to a conference on Mary Catherine Bateson, whose work I admire, and Paul also admires, and he showed not these videos [i.e., the ones in *slippingglimpse*], but similar videos in black and white, and … I just knew I had to do something ... so he kept using this word *chreod*, which I had never

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heard of, right, so I go up at the end and ask him what that means, and I get his book and I read his book and everything, and I'm looking and the diagram in the book for the relational circuit is wrong! [laughs].

AS: Oh, is it?

SS: Yes, it's wrong! And so Cynthia [Lawson Jaramillo] happened also to know him because Cynthia had him—he was a teacher at The New School where she was [teaching]; she'd actually taken a course with him on his threeing thing right?

AS: And had you been already collaborating with her?

SS: No, no … well yes, in the *Vniverse*, right?

AS: In *V: Vniverse*.

SS: So that was really odd. We'd looked at all kinds of illustrations, for *Vniverse,* and decided none of them were right, do you know, [that is, while creating *Vniverse*, SS and Cynthia had reviewed many forms of illustration and multimedia, and explicitly decided not to use any, because it failed to support their artistic purpose] and [inaudible] video. But you know what, I can deal with videos of this quality. This is good. [By contrast, upon seeing Ryan's black and white videos, SS thought that she could use videos of this kind in her next work.] And so I had to … I prepared this presentation, and I said, look, we could automate this circuit and make it right. She could program it, so it would actually work right. So we went to him with kind of … we have this to offer you, this thing is wrong in your book and we can fix it up, okay? [laughs] And we'd like to see your, we like these videos you have. And then he became *very much* on board with it, and he has 21 of these, right, and so we went to his house and looked at them, and actually, at his memorial service they showed these, with our stuff, this set of videos [*slippingglimpse*'s]. But anyhow, he let us use everything, and when I read a little bit about the "threeing" and everything, it struck me that, from the point of view of this piece [*slippingglimpse*], we were trying to do a "threeing" thing. With the positions of the text writer, and the videographer, and the waters coded, to

read, taking the positions in turn, and that each of the three modes that you
can look at this piece in highlight one or the other of those.

AS: *slippingglimpse*'s opening screen reveals, in my perspective, one of the primary
work's relations with space, which is the composition with squares. At the
same time, these small thumbnails, the squares, they also form a larger square
as opening screen. In my mind, it actually recalled [Eugen] Gomringer's
"silencio," a poem …

SS: The concrete, yes.

AS: Yes, a poem that … oh problem … no connection at all [Wi-Fi]. I want to test
this. Let's see. Gom-rin-ger [typing]. In the sense that it also has the blank,
and it has 1, 2, 3, 4, 5, 6, 7, and 8, ok. These squares in turn form a big square,
and here [in *slippingglimpse*] we don't have that blank [in the middle], but we
have the "select one to start." It relates with the big square and the blank
space, but also with the soundless connection, the silence, that the piece
doesn't have sound media. Was there any relation or none at all?

SS: It was not in my mind, no. I did not have that piece in my mind, when I did it. I
think, I would have liked to have you actually be able to see the movement
[laughs] …

AS: Oh, inside the thumbnails?

SS: Yes, inside the thumbnails.

AS: So that it wouldn't be static?

SS: No, it would not be static, then.

AS: So, the composition here [opening screen], when you were discussing it?

SS: Well, it goes around, in other words, you really can start anywhere, and it is
written for you to be able to start anywhere, and put it together, but …

AS: But it goes 1 to 10, right?

SS: But also you can go 1 to 10, like that [inverting direction].

AS: So it kind of makes a cycle?

SS: Yes, and in the book, you have the book, right? You have the *Zone : Zero* book?

AS: Yeah, yeah, I have.

SS: So, you have: so you know that the first one would be this one ["upward"]; in the book, it would go this way [points at the projection, in a clockwise motion], with the "leaf" being the last one, in the book.

AS: Actually, this also started from the sense that I was trying to write about the sequence, and then, I didn't want to say, oh, "the green sequence." So, I was looking into the code, and ok, this is in Flash, it's closed source, so I can't actually read, but then I start looking through and through, and I went to these pages, through the parent directory, and then I found out that each one of them, they are named, as: the "green leaf" ["green" and "leaf"], "the cabbage" ["lettuce"] …

SS: Yes, yes, yes [laughs].

AS: Which is very funny!

SS: Well, which we had to do! To talk about it! We had to talk about it, we had to say which one.

AS: Because you had to name the files, right?

SS: [laughs] But the hardest thing I ever, ever had to do, right, and I think Cynthia [Lawson Jaramillo] talks about it a little bit in the <u>Dovetailing [Details Fly Apart]</u> paper, is … so, there were 21, and Paul [Ryan] said you could have whatever you want. And so she [Cynthia] is processing it, and processing it, and processing it, as she is transferring it. And it doesn't have the quality she wants. So she wants to get them directly from Paul, and Paul gives us off to his technician, Rafael, whom we can't reach. And so he [Rafael] says, on the phone, one night; he said, there's 21, he says, which 10 do you want? [laughs, surprised].

AS: Oh!

SS: I'm on the phone, I'm not seeing them, I'm only remembering them [laughs]. From having seen them, and it's not like they aren't all of water … [laughs]. How are you going to describe this? So it doesn't look like the other, whatever, 11 … So, that was the most demanding language task I ever faced was describing, on the phone, without looking at it …

AS: But then when you got the files from him, they came with a name as well, right?

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SS: No, they didn't come with a name, we gave them names.

AS: Oh! So you gave them names?

SS: We gave them names just so that we could work with them. You know, I want to do on this page, I want to do on this page, but it's very…

AS: I was intrigued by the fact that when I looked into the … I actually managed to download just the videos as .flv files, and they had longer names.

SS: Yes.

AS: So, for instance, one was just called "leaf" on the page [HTML], and when you see the file, it is "turning leaf," or I can't remember exactly now, but the "sepia" sequence was "calm sepia" before. So it has more information, right?

SS: Yeah, yeah, the way we see …

AS: So we see this kind of waterscape as potentially tranquilizer, or calm.

SS: Though often why I picked some of them was, if you look … do you want to go into it, or no [into the running *slippingglimpse* file]?

AS: Yeah, of course I want. [I click on a thumbnail]. I actually like very much this one ["leaf"].

SS: So if you do the "high-rez," which is not exactly "high-res[olution]" really, but it is more …

AS: It gets smaller, but it's still pixelated, right?

SS: Yes, smaller, yes. You can actually see the water pattern best here. In other words, the words somehow don't take up as much of [your attention]. If you go, especially look at this "sepia" one.

AS: If I look at, sorry?

SS: Just keep … just use the little arrow [carat] at the right. Well, actually, probably go backwards for "sepia".

AS: Did you want to see the sequence 1 or?

SS: I wanted to see the one that's called "sepia."

AS: Oh, the "sepia," ok, so maybe if we go "home," it's this one, right? [I click on the "sepia" sequence.]

SS: Right. So you can see much more, and if we look at the "high-rez," … you can kind of see the pattern; you can feel the water, just what the water's doing. [I

click on "high-rez"]. And to me, in "full-screen" you start trying to read the language.

AS: [I click on "full-screen"].

SS: More than you do here [high-rez], to me you don't read it as much, I don't read it as much when it's here, except when it breaks the frame. And of course, it was important that it did break the frame. And I think there's one of these in which it doesn't break the frame, even though it's supposed to.

AS: Okay, so full-screen.

SS: So in this cut, this thing, this mode is where I think, see there's this whole where all I'm really seeing is what the water's doing. I mean, I see some words, but I don't … I only really sort of pick them up when they break the frame.

AS: Because I was trying to see most of them. They first go forward, and then they go backwards, right? They rewind, the water rewinds.

SS: The image? Only some. No, not all. No, they're all different, they're all different, and I named some of those things in these papers too [Strickland points at essays about the piece], the different filters and things that he [Paul] applied to them.

AS: Then it becomes interesting how the words get attracted.

SS: Well that's the process, that's the read.

AS: René Thom's theory of attraction, how …

SS: Yes, exactly, but did you read the *Morphogenesis*?

AS: Yes, how the motion as well of the pairs, or the lines, they get attracted again, so they zoom in, zoom out, this kind of movement.

SS: Well, the lines are drawn by whatever's going on with the …

AS: With the water.

SS: With the water. Yes, but the water pattern itself is what Paul is calling the "chreod." I'll just send you these [the essays], because there's a little bit of what Paul is saying.

AS: Sure.

SS: He went in in this intuitive way, like the guy [Brent Collins] I was telling you about [previous conversation during the train ride to NJIT], who made these

sculptures that later turned out to be mathematically so … He [Paul] spent so much time looking at these, and so much time studying these, so when he went to Maine to go up and down and do this project, he would seek out one of these patterns, but then he would video it in such a way as to bring it out, now that's an intuitive … that's a reading of the thing that he is doing. He's trying to bring out what he thinks the pattern to be, and then when he's doing the editing, he'll even further do that, like he'll reverse the color, he'll use the negative, or he'll turn it backwards, he'll do other things. It's not documentary, in other words. It is a documenting of these things, but in a very, a processing kind of way, a way that I call a reading, right? He's reading it, for what he believes to be there, and what he is seeing, but …

AS: What he believes to be the pattern, right?

SS: It's a very active thing. It's not just setting up a camera on a satellite, you know, and pulling it away; in other words it's a production.

AS: Yes, sure, but in a sense it's some kind of stabilizing flux to reach a loop?

SS: Well, yes, each one is, each one is a reproducing pattern so that it [inaudible]. So even though the whole thing is turbulent, all the time, it reproduces the pattern, the particular pattern of motion that you find [inaudible].

AS: So, in terms of composition. I would like to speak about space, but before that, when the three of you or, in the collaboration, you decided to include a "scroll text" as well … because it's just a portion of, it's like truncated parts of the full sequence that appears onscreen, right? [I click on "scroll text" mode.]

SS: Well, it's like this: The full lexicon, the words you see up there [with the video] are all drawn from what is playing beneath it. Not every word is drawn, so we chose from, I think, about 7 to 10 things, and the things range from one word to maybe a phrase. But since you don't know where it ends up on the water, two phrases, that are really separate phrases, could end up next to each other, and you might think it's a whole phrase. In other words, then you would read it as a whole phrase.

AS: But why was it important to have it? Because, for me, I think the way the interface was done, and this idea of thinking about text as flickering, floating

text, which connects to the theme of the poem, as also the chreods as well; but then, from a reading perspective, it's very non-linear, of course, because you can make whatever readings you want. But then still you decided to have this idea of a more, let's say, conventional page behind, kind of like an excavation there, like a layer that is behind.

SS: Well yeah, because the point was: How does the water read this? How did the videographer read the water? How does the water read the text? How do *you* [Strickland stresses] read the text? How did the writer read the water to produce the text? So, the point is to *contrast,* to have a cycle of reading experiences which are *not* the same, but each of which are accorded an equal priority, an equal weight. In that sense, it does match up with what Paul was thinking, even though we weren't thinking of that necessarily, right? And Paul didn't do anything on this, other than let us have the videos. He was not part of the thinking of the piece, or anything like that. So …

AS: But for instance, like when you have that square there [in "scroll text"], which is divided in two columns, in that sense, you can also … it is very interesting because sometimes you can also do a non-linear reading, right? You can either read horizontally or vertically.

SS: Absolutely, and it's meant … Exactly. And the page is meant to allow you to read horizontally and vertically, and the text is meant to come down. When it's white text, it's very hard for you to see, but sometimes when the text is black, the text will break the frame and come down onto the scroll …

AS: Oh yeah, it comes down.

SS: So that you have all on this one page. You have the typescript, which was whatever *my* reading was, right, presented there; then *your* reading is completely dependent on how you use the pointer. I mean the speed that you allow it to go on, maybe you're reading it backwards, right? Maybe the video is going backwards, and you're going to put the pointer over here [placing the pointer on "-"] and let the whole thing scroll up backwards to read it. Or, in some cases, definitely, obviously, you can read it both directly across the line and down the line [i.e., down the column]; both meanings are good, like in

the "turning leaves," when it says … the brush's algorithm. In the text there, where it says "you could / brush over the entire image algorithmically." Look at the "turning leaves."

AS: The "leaf"? The "turning leaf"?

SS: Look at the "turning leaf," yes. [I go back to "home" and click on the "turning leaf" thumbnail.]

SS: If you look at the text. [pause] No, keep going, keep going. It says "Genetic Brushes / an evolutionary model where you could / breed two brushes together." That's fine. Or, it's "Genetic Brushes / an evolutionary model where you could / brush over the entire image algorithmically." Both of those.

AS: Exactly.

AS: Yes, that's interesting that you can read …

SS: So the point is that you have to make these choices about direction and speed, and so forth. And your choices are not the water's choices; you have to scan. You won't see anything, unless you create a difference by scanning with your eyes, and see what's between one position and the next. So the way we got the water to read, the simplest way we could do it, was to scan—you know this, right, because you read [the essay]—for the color differences. Every time there's a pixel difference, of 10 … Where the words get reassigned, I think you know I like the way [inaudible].

AS: But that means that if you read—and that was my question—if you regenerate the sequence, do you actually get different pickings? If I would regenerate here [I click on "regenerate"], would I get different selections of, let's say, this matrix text that is there [in the scroll]?

SS: From there … Yes, you get different selections, but for each text there is *a* subset of things that have been picked.

AS: Oh, ok, ok!

SS: Ok, of phrases, of various lengths …

AS: And those are fixed?

SS: Those are fixed, right! Which of those gets picked, which of those gets picked first, that will change on the regeneration, and whether or not … And also it

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rotates, it rotates a little bit, and then they grow and they get smaller, they grow faster. I think they grow faster than they shrink, I can't remember. But the idea was to have the words … if water was going to read, then the stuff in the water had to sort of look like stuff that would be in the water, and so we tried to make the text be sort of like thready little kelp-y things, do you know, [laughs] that would be in the water, right? And that would look … which is why it's that font [Scriptina], which ordinarily …

AS: This kind of calligraphic font, thin …

SS: Yeah, yeah, but which is also just kind of thready … it was the most organic-looking font we could find. And then by making the text grow and shrink, and rotate a little bit, and just kind of look like it's …

AS: Oh yes, if you let it run for a while, then the video stops …

SS: And then the text stays, and it keeps …

AS: And then, after one hour or two, and then there is this moment where it stabilizes, it kind of [Strickland laughs], it begins to stabilize at a certain point.

SS: Yes! I don't think I've ever watched it for a whole hour! [laughs]

AS: And then you have maybe …

SS: And afterwards! But actually the text keeps running a lot, right?

AS: No, actually it happened that I left the browser open, and then I came back, after a coffee, and then it was, oh wow! This is behaving; the behavior was different, afterwards …

SS: Yes, yes, but it also keeps going, it keeps breaking the frame, when your image goes away, then it's this text is being generated, and generated, and generated, and generated … [Strickland is happier than ever].

AS: So for you, because one of my questions is: How do you think about space in your poetic practice, in general? But if we specify about *slippingglimpse* or *V: Vniverse*, my question was, because you were saying that it was important for you to break the frame, so does the structure …

SS: I think all of the things that I make …

AS: Do you structure the content according to the themes that you are writing about?

SS: All of the content though, what we were talking about with architecture. See, to me, another thing about these pieces, the difference between *The Ballad of Sand and Harry Soot* and this [*slippingglimpse*]; because I think everything about *SandSoot*, which is a very early thing, it was done very oppositionally, right? It was always Sand versus Soot, Sand would say one thing and Soot would say another thing. And there is a third element there, which is the picture. But it just contextualized their debate, or their love quarrel, or whatever; people have called it many different things, right? The purpose of [*slippingglimpse*] … This was specifically not one thing versus another thing. This really was about how do you find a kind of looping relation, and you have to look around, and look at different subject positions, and not just the ordinary back and forth debate sort of thing. And, I did not, with *SandSoot* I never thought of that architecturally. But beyond that, almost everything, if I had money, and time, and everything, it should had been an installation [laughs]. It should had been an installation, right? [laughs more] And in one of these papers, we talk about projects we would have liked to have carried on and did something further with, which we never could do, but we were envisioning, you know, further things to do. Yes, ideally, it would have been reflected in real water and … [laughs]

AS: But that's even a broader way of thinking about space, because then you have like … you probably would like to engage in this kind of hybrid real-augmented or real-virtual …

SS: Well …

AS: But in terms of the canvas, I'm speaking about this because in the *Vniverse* you have the constellations, the space of the universe … it's kind of open …

SS: … in *Vniverse* for sure … we really did! There was a point where had, we wanted to have either real water or mylar on the floor [laughs], and have …

AS: A projection from …

SS: No! [laughs] Have hanging, the constellations would be hanging with sensors, so then you would walk through the space, it would be like you walking through the constellations, right, and then you'd set off a … if you interfered with

certain of the sensors on a certain timing, then the poems would be … you would hear them, right, and they would be reflected in the waters … it's always difficult, with the sensors, and the walking, and the water [laughs]. We really did look into it—But the woman who was going to do that as a graduate school project at Georgia Tech, instead she got pregnant. [big laughs]

AS: Oh, ok!

SS: And I didn't have anybody else to work with!

AS: Can we say then that the content helps …

SS: Yes, the content goes on and on and on and on …

AS: The content helps shaping the space, both the structure of the poem, but also the way the composition is made in the canvas?

SS: It would be that way. It's just a flat diagram, obviously, in the *Vniverse*. But it gets spontaneously interpreted as stars. And we're looking at it on a dome kind of thing. But one thinks that in space it's a three-dimensional arrangement. The water itself in motion is a three-dimensional thing. And I think that's alluded to when you look at it, it doesn't look … compared to all the space around it … it certainly looks three-dimensional compared to what we're looking at here on the sort of rice paper, the flax paper. And if we look at this [*slippingglimpse* scroll text] now, this just looks like flat text overlaying each other. But when the water is there …

AS: Well, but it gives a depth to it …

SS: Yeah, but when the water is actually present, then it feels like a more three-dimensional thing, right?

AS: Oh sure, sure.

SS: If you have the full-screen, right? So it does present the issue to you of what dimensions are you reading in, right?

AS: This one, actually … The green is very beautiful … [I click in the "lettuce" sequence].

SS: Yes, where's that stuff?

AS: But …

SS: The big one, the full-screen one, that's the water doing its stuff with the words. I mean that's what you most see, not just the pattern in the water, but the water interacting with the words, right, for me, right? And this ["lettuce"] one, where you're faced with many readings going on at once … What you may *recognize*, first, is that some of the words up there—which you maybe can or can't read at first—but after a while you can, right, read some of them anyway …

AS: Yes, you can, right.

SS: And then you say, oh! It's some of those same words there. Is it *saying* the same thing, or *is* it the same? [The question is whether the text in the water is the same as the text on the scroll; in fact, it is a randomly displayed subset of the language present on the coordinate scroll-text display. Or, the question is whether the text in full-screen is the same as text previously generated for that full-screen.]

AS: Yes, that questions the …

SS: Those questions come up, right? I mean, or they don't! I mean, maybe not.

AS: Yes, of course!

SS: They come up if you look at it more than once, but not if you're just looking at it once.

AS: I am interested in time as well. You have reflected and written in many essays on many different conceptions of time in digital poetics, for instance, the time lag of the network, the code to be run, the reading time, and the intervals in which poetic lines are set and animated.

SS: I think the most of that … didn't I talk about that most in "Writing the Virtual"?

AS: Yes, "Writing the Virtual: Eleven Dimensions of E-Poetry." I've read that one.

SS: I think that one is where I talk about time a lot, right? But also "Quantum Poetics" …

AS: Yes, the "Quantum Poetics" as well. But even in the piece about *slippingglimpse* there are quite interesting considerations about time. My interest is like, what, if it's possible to reply, and how, is the importance of time in your poetry as an expressive dimension? And I am thinking on three levels here, if it's possible to

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expand or elaborate on that: time, from the outset, for you, in the work's composition; in regards to, or if you are already thinking about the relation with the reading cognitive experience, from the reading perspective; and then finally, when live performing the work, when you read it. So this kind of three different levels.

SS: Well, when I write, I always hear it, I always sound it. So it's streaming time, I mean that's what you're working with, and that's linear, right? I mean you only get … there's some overlapping, when you're hearing … [inaudible]. So it's completely different than visual, right? What happens if the water reads? The water reading here is certainly visual, right, so the time of processing those words, in that medium, is very different than if you were hearing it. When you're reading, especially when you're reading in the scroll, which is asking you what are you going to do with this line in the middle of it and the inclusions in the paper, you have to have imagistic, spatial kinds of reading as well as a time-based reading. [A handmade paper, with different-shaped white flax-like strands included in it, serves as the background for scroll text.] So, but you're still doing it, you're still probably saying it to yourself, or underneath your breath, sort of silently reading, which is still going on in a kind of linear time, at the same time the imagistic thing isn't. You're getting an overall experience. So stuff is coming in, from many different modalities. And so, what kind of time is it? What it is, is, concurrent times, that you're being asked to process, all at once, and to some extent they may be quite individual. Because you know some people are more spatial in their perception, and some people are more linear in their perception, or more oriented to the ear, or to the eye; or they are more oriented to the *meta-level*, to the structure, so how does the one play against the other, or what am I seeing in terms of the clashing experience of what I am getting here [video] versus here [scroll], or if I'm just trying to look at this chreod … Are these words interfering with it? Is it helping it? Is it …

AS: Is it getting more noise? Or, less noise?

SS: Yes. Is it noise? Is it what? So … the time, within the piece, all of those questions get raised. It's a different kind of time than reading a book, or than listening to poetry. All of that is different. And it's different than going into a museum and looking at a picture.

AS: Exactly.

SS: All of those things are different. However, when you perform it, I always like to perform this…and I collaborate on these, and I like to perform them with more than one person, and so often we would overlap our voices.

AS: In this piece?

SS: Yes.

AS: OK, I've never seen that one.

SS: You've never seen it?

AS: No, you would overlap and …

SS: So, when I'm reading, say I'm reading it with Cynthia, right, and maybe she would read from the video, and I would read from below …

AS: The scroll? Aha!

SS: The scroll. Or, I would … I never read straight down, I would pick out what I wanted to read from the scrolling text at any given moment, and then she would find something, sort of an improv …

AS: An improv thing? Devising the process there?

SS: Yes, but then the audience is hearing … there's only a certain degree of overlap they can hear. We're not; it's not …

AS: Sure, and if you're not reading exactly what's on the screen, then you're picking certain parts of …

SS: And I'm probably reading what's on the screen *somewhere*, but not on … if someone is controlling the speed of the dial, and someone else is doing the reading, or … *Sea and Spar Between* is like that, all the time … with Nick and I, someone is controlling! [laughs]

AS: Someone is controlling, but still you have … thinking about other pieces where you have … because obviously you think much about the cognitive process and the reading experience. You allow people actually to have a tempo; it's a

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balanced tempo where you can actually read. Because a lot of pieces of digital poetry, let's say, and sometimes it's on purpose, they are so fast, and you don't have a controller, so …

SS: Right.

AS: You just end up by reading nothing … and then it becomes kind of a texture, it's so different.

SS: Right, right. And that's exactly the view of certain people. They actually don't want to allow you to do that … I'm much more, and Cynthia too, we are much more … if you took a sort of extensive text piece, not at the advertising level of a few words per screen … How could you slow people down? She went on to become a photographer, and one of her first things was slowness …

AS: Slow motion, right?

SS: You've seen that, right?

AS: I've seen the slow motion videos …

SS: So we were both very interested in an experience that could be contemplative, or meditative, or slow; or would you ever want to just stop and look at it, or watch it happen. Not a YouTube thing, you know … [I laugh]. But, it's very much against the grain of what a lot of e-lit [electronic literature] is … which is how fast can you do it and how … you know …

AS: Yeah, yeah.

SS: So …

AS: So that plays with speed, there.

SS: And that's another sense of the time. But for an actual performance, it's about the audience, and often you can, depending on the size of the audience, you can invite people to read with you, right? First of all, you ask them which one they want to see. And then if it's a thing, it comes up, and if they start to read something about the flax, though I think, the most mysterious thing is probably "The Passion of the Flax." You've read "The Passion of the Flax" story?

AS: No, no, I haven't. "The Passion of the Flax"?

SS: So, ok, the folktale … the screens in here that talk about the hunters and the flax and … so that's based on … If you look at … You have *Zone : Zero*, right? So if you look at the notes in *Zone : Zero*, in the back it's got this; and Kate [Katherine Hayles] talks about it also. Kate talks a lot about it, actually! Kate knows more about it than I do! [I laugh] Because she knew that the guy who wrote it—I just *read* it, right—Kate knew that the guy … [Strickland searches in her papers] Where is it? Eisler! This guy died before he could publish it! And this guy finished it, before it was published. So she talks about that in here! So you can get that in here. [Hayles's essay "<u>Distributed Cognition at/in Work: Strickland, Lawson Jaramillo, and Ryan's *slippingglimpse*</u>."]

AS: The folktale?

SS: The "Cognition" … You're sure you have this?

AS: Yes, I have it.

SS: You have this particular one?

AS: Yes, I have that particular one, from *Frame*, yeah.

SS: Yeah, from *Frame*, yeah. Anyway, so that's what's furthest from people. That's why I love that Kate could get why it was in there [laughs]. This whole thing about capture, which is really what this reading thing is. And all these things are … capture something in a poem, capture it with your video camera. Now we let the water capture the text. It's kind of like, Stop doing that! [Humans, stop doing that!] Let there be another source of … The other place we did that impulse is in <u>*Errand Upon Which We Came*</u> … I don't know if you've seen *Errand*?

AS: Yes, I've seen *Errand*.

SS: There's a little silver butterfly over [inaudible], right?

AS: Yes, there is, there is. That you can …

SS: The butterfly pins the screen instead of … we got that off the Nabokov website.

AS: Oh yeah, I've read, because you've asked for artwork from other people, right?

SS: From the <u>Zembla website</u> … we got permission to do that. You know Nabokov went around pinning butterflies all the time …

AS: He was a lepto, lepido [lepidopterist] …

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SS: So the whole thing was like, *No!* How do you invert the use of some of these things? How do you give agency to what isn't normally thought of as having agency? And how do you do that? How do you model that in an interface?

AS: OK … [I am taking notes now].

CF: What piece were you talking about there?

SS: *Errand …*

CF: *Errand?*

SS: Yeah.

AS: To … kind of module [should be model] the interface. [I am handwriting this.]

SS: Yeah, and where did I write that? I did write about that …

AS: I have a last question, but now I'll make another question. We've been speaking about mathematics, about literature, but also … I've sensed also that you've engaged a lot with political and feminist issues.

SS: Yeah—

AS: And I was wondering how do you … or if you could expand on how you try, or not, to incorporate those issues into the themes of your own poetry, or in the works that you've been doing? Or, if you sense that you've been shifting, or you think that different works require, that you work on different themes? Do you always bring different …

[Ian Hatcher enters the room.]

SS: Hey! [smiles] How are you?

AS: Hey, hi! [smiles]

Ian Hatcher (**IH**): Hi! [smiles]

SS: How are you?

IH: Greetings!

CF: Greetings!

IH: Hello!

SS: Hello … We haven't got off the first thing, so … [Laughs a lot.]

AS: Well … [I laugh a lot. Everyone laughs. Funkhouser and Hatcher start speaking about the class on electronic literature that Hatcher just taught.] Yeah, it was, so … about this …

CF: Feel free to talk …

SS: Well, yeah … it's always there. I mean, *True North*, it's in True North, it's like the witch figure in *True North*. I don't know if you have the book, as well as the …?

AS: Well, you know, I've read the … It wasn't the *True North* ... what was the … I need to go to your website, I can't remember the title. [I meant *Give the Body Back* .]

SS: So, both *True North* and the *Vniverse* have this witch figure, there's a constant … there's a thing about rape in *Vniverse* and how does this happen … ? And there's certainly the flax, this capture, this level of capture, which is always the lesser-powered thing, where you kill the plant, or you kill the animal … So I think the power relation is pretty much there, everywhere, seen differently. Even *House of Trust*, right?

AS: I read … as well one of your books, which was… no, it wasn't this … I read *Give the Body Back.*

SS: Yes … So … *True North*, or the *Vniverse,* the *V,* would be more … and then *The Red Virgin* too, in a way [*The Red Virgin: A Poem of Simone Weil*]. The *V: Vniverse* would be more focused on that. And… *Dragon Logic*, too.

AS: Oh yeah, I have *Dragon Logic* as well.

SS: It doesn't go away [laughs] … it just doesn't.

AS: No, for sure, these things, they don't go away [laughs] … So my final question regarding this, and then we can open up for just a very quick, quick, quick, on the iPad [piece with Ian Hatcher], I don't know [laughs]. You've been collaborating with a few artists, programmers, and poets, but not musicians, as far as I know?

SS: No …

AS: The fact that your works don't include sound … Am I right? All works? There's one that …

SS: Well … *Errand* has that.

AS: Yeah, *Errand* does.

SS: And the work I am working on right now [*Hours of the Night*] has a few sounds …

AS: OK, so the question was regarding that sound media aspect, if it's because you see sound as an additional feature that might disrupt the silent reading—that you've been writing about, and also that we spoke about, the silent reading—of hypermedia poems that already have such a complex … visually and textual…

SS: I think there's that level, that it's one more hard thing, and we don't necessarily …
[A student knocks on the door and disrupts the conversation.]

CF: Did you come to see me?

Student: Yeah, I did.

SS: But also … I think it was very disturbing to me, to see how differently things played back on different *machines* … [laughs a lot].

AS: Do you mean sound in general, or do even voices of readings…?

SS: Everything! The pace, the whole … To me, even the difference between looking at this [paper] and looking at this [screen] drives me crazy! It's like … [laughs a lot].

AS: Looking at …

SS: Yes, the difference just drives me nuts! So … it's such a …

AS: Do you mean in terms of saturation?

SS: Yes, just the whole thing, just the experience of that faded whiteboard behind it, as opposed to a very deep black screen behind it, everything about it. So, in general, it's not possible to have the level of control over [laughs a lot] what is occurring … that I would like to have had … And I think that it *was* one more element, I didn't want to just throw in … People said, "Why didn't you record your voice reading"? Which is like a stupid idea … [laughs]

AS: Yeah… because it's a kind of… it's a tautology!

SS: Yes, I mean, are you going to listen? are you going to read or whatever? It's like this not pay attention thing, right? The same way with the taping, right? Don't dupli…

AS: With the taping?

SS: Right, why I don't want you to tape the conversation, right?

AS: Oh …

SS: Don't *duplicate* a channel, if you can add something with a channel … if that makes it a more interesting experience, that's fine!

AS: But, that's from a perspective of, let's say, reading exactly the text, but, I mean …

SS: Well, I didn't …

AS: You've been collaborating with Paul, who's a videographer and an artist as well, and …

SS: And Ian's [Hatcher] a musician.

AS: Ian is a musician … so, you've been thinking …

SS: And I asked him, could you *please* put some music in *House of Trust,* and he [Hatcher] said, no, you have to be quiet in a library …

AS: Hah! [big exclamation]

SS: Don't write that down … [big laugh]

AS: [With a big laugh] No, I'm not writing, I'm just joking! [everyone laughs].

SS: It's a joke.

AS: No, no, but this thing of are you going to listen or read? It's important …

SS: No, I think there could be some things, little bits of … but I think it's hard to work it in with everything else … It's already a lot to work it in …

AS: Hmm, it was my sense …

SS: … to work *text in* … *text* that you really, that it's not … you don't already know what it's saying … it's not like candy or gun or find the treasure chest, you know what I mean?

AS: You need to decipher, and then you have imagery and …

SS: It's not text that you can … that's conventionally going to be what you think it's going to be. So you have to pay attention to it in a certain way. And then it's already on the screen, like in *V: Vniverse* or here [*slippingglimpse*], what you can do, it's overlaid, in both those cases. In *V: Vniverse*, if you, depending on how you see it, the level and the way in which those things assemble or not, wherever you put your hand, or wherever else is overlaid on it. And you see decay, or whatever … How many of those waves are you going to … I mean, to me, that's enough to explore, if you want to explore the interface. I think,

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sometimes, the sound … like if you use sound in a movie, it tells the whole story of the movie. Essentially, you could *turn off* [laughs]. You can turn off the dialogue, and just play the music, it's very much doubling the movie. That's what it's hired [i.e., meant] to do, right? With the musician … That is not interesting to me … So it's like, oh, you didn't get the first time, so why don't we just …

AS: … give you sound so that you … or, give you text so that you understand, or that you decipher in other way …

SS: Yeah, yeah, why don't I just drop really a large sound in here to make sure that you've heard. But also, you don't know what you have, in this one you have the dial. Who knows what speed you're looking at this?

AS: With the …

SS: With … *slippingglimpse*, right? So if you're looking at … How do I know what you're reading? Do I know if you're looking at the full-screen? Do I know if you're looking at the scroll text? Do I know if you're … how fast you're going to run the text?

AS: No, exactly! Yeah, yeah. Hmm.

SS: No, and I think the contemplation meditation thing goes more with silence, I do.

AS: Yeah, you don't need to have like contemplation sound to kind of … [laughs].

SS: Someone's talking to you, it's not …

AS: Yeah. Hmm. That's fair enough! So, no I just, I mean we are not recording … but the video, I thought like … so you've never done a video recording, like interviews with you?

SS: I avoid them, when I possibly can. [laughs] I have one! Not a video thing, it's like … [laughs]

AS: Let's kill the recorder, afterwards! [laughs]

CF: But you taped her, your interview with her, right?

AS: The …

CF: You taped your interview?

AS: The sound? Yeah, just because I can't take notes of everything!

SS: But there's the *Errand* thing …

AS: But what interests me like no, just sorry, but sometimes with some authors, it just, it becomes interesting, because then I can ... we were traversing a certain space and then I listen, and I see where we were … I kind of go back to it. Without the doubling side …

SS: There's a thing, there's a thing that Patricia Tomaszek did …

AS: I know …

SS: You know that? That interview ?

AS: The screencast.

SS: That screencast thing.

AS: But I think that's wonderful, yes, the screencast?

SS: Well, it is is, there, anyway. [laughs]

AS: No, wonderful that you have access to that, right?

SS: And people have, right. So that's kind of like a traversal thing. And then I think I have been videotaped giving readings sometimes, right, even by Scott [Rettberg] maybe, you know, when I was at Bergen, I don't know. But I don't … I'm kind of in favor of *live* events …

AS: Of that experience … So how was, how was your experience then on the … you've now collaborated in 2 pieces?

SS: Oh lots, I've collaborated on them all, really!

[cross talk confirming that AS meant specifically 2 collaborations with Ian Hatcher]

AS: You've been doing collaborations, a lot of collaboration. But was there any … Well, the only traversal, let's say, or reading I saw of the app [*Vniverse* iPad App] was one you did in Milwaukee, at the Text Pattern [Woodland Pattern bookshop, during ELO 2014] so I don't have an iPad. I need to get something like that, too. But was there anything you were trying to explore in terms of the space?

IH: Oh, that was, was that *House of Trust*?

AS: Come again?

SS: What are we talking about?

CF: *House of Trust*?

SS: Well, in terms of the app, one of the things that long ago, when I first made *Vniverse* [*V: Vniverse*, 2002], I remember showing it to people, and people would say: God, it's an information science kind of thing … oh, that's a really good way to keep track of information. I mean, they were seeing it as a construct, they had no interest in the literature or anything about it. It was just like, oh this is the way to keep track of things, you know, assign them to different constellations, or something, right? And it did! It let you get into that particular bunch of things, do you know what I mean, words, but, so when we were doing that … So the thing is that they killed Director! Right, I mean, you can get it, but … right?

AS: Yeah, you can still work on that, but, yeah.

SS: Yeah, but it's hard, right? So the whole impetus was to make it *available* again, in a more available way, and Ian was doing <u>Abra</u>, you know?

AS: Yeah, yeah.

SS: So, he was investigating software that would work, right, and … Hey!

[Andrew Klobucar enters.]

Andrew Klobucar (**AK**): Hi!

SS: Hey, how are you?

AS: Hey, thanks for the adaptor [iPad VGA adaptor].

AK: Yeah, I hope it works.

AS: Yeah, I mean, I don't think we are going to … are we going to show, no?

SS: No …

AS: Do you wanna take it?

AK: Sure!

SS: And so, the whole issue was how to do a translation.

CF: Happy thanksgiving, Andrew!

SS: Happy thanksgiving, Andrew!

AK: I've got two, because I'm Canadian.

AS: Oh! Really?

AK: Ours is in October! Yeah, I'm always trying to be different! October is better!

AS: Nice to meet you! [Klobucar leaves the room.]

SS: So we had very different ideas of what a touch screen was. And so, Ian knew how to operate with one.

AS: But do you think it became more fluid now on the app than [in the previous version]?

SS: Well, to me … and again I wrote another paper about that, called "Loss of Hover." [Written with Ian Hatcher, and presented at the ELO 2014 conference.]

AS: I haven't read that one.

SS: So, it might be …

AS: Loss of?

SS: Hover. Some of these things are due to come out …

AS: Are you thinking of collecting your papers … ?

SS: Oh god, the thing is, they're supposed to be published. These people take 10 years to bring it out in a book or something. But I can send it to you.

AS: Sure! Sure!

SS: So what I objected to, I object to the loss of pixel-level control when you push your finger down on a touch screen. But I also, the whole way … the interface [of Director *Vniverse*] was designed in a way no one ever uses an interface. The whole point was to have a set of gestures that, *to me*, were an analogy for the things that the poem was themed to. So, you couldn't do that [on an iPad], and one of the main things that you could do [on Director *Vniverse*], is that you can hover with the cursor, without clicking, over words, and things will happen. Things happen differently if you *hover* over the thing, or if you actually click on the thing. And if you click on it twice, something different will happen, and if you click on it three times, something different will happen. And if you have something happening—either you *stabilize* the constellation, or you have things playing out, or the decay going on—if you hover over any other star in the sky [simultaneously], you can bring *that* into association with *this* [whatever you had happening]. It kind of holds you in between.

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AS: So, in a sense, do you think that it embodies more the experience of that platform, more than the desktop version?

SS: It's just that the hover was important to me, you decide between this [Strickland touches the Director *Vniverse* screen and activates the stars], you decide between this, or you move over here and see what is this star? What is the bearing of what this star says on what's happening *here*. You could do that, right, because you don't have to commit in the same way you have to commit … on the iPad screen …

AS: In the other one [desktop version, built in Macromedia's Director, 2002], you have the numbers and you select from them.

SS: But what you can do with the iPad screen, and people love this, is that you can draw your own constellation, which is another whole valuable feature. And we've put an oracle, in a sense the little number circle up here [in Director version] operated like an oracle, if you just put a number in …

CF: This is *Vniverse*, right?

SS: Yeah, on the iPad.

CF: Right.

SS: We have the oracle on the iPad, and so that's there in a more specific way, and what you could never do in *Vniverse* Director, which you can do in the app, is play the whole thing through in tercets. You can play the whole poem through.

CF: And can you calibrate it?

SS: You can just start it and hold it up [above your head, as Steve Tomasula told me he did, to see it as a sky performance]. You just hold it and the whole poem will play out, so you'll see it go from one constellation to another.

AS: OK, kind of cinematic experience. In the other you only [inaudible] sequences.

SS: Yes, it will go, the whole poem will play. You start with one, and it will just keep going, through the whole poem, so you get all 232 [referring to the number of stars and of tercets]. It's also the *tercets*, as opposed to the *Son.nets*, and which is the way it was actually first written. But I didn't…when I first wrote it that way, I didn't think you could publish an entire book of run-on tercets, right?

Now, numbered run-on tercets…now, people read on screens so much that scrolling and identifying little units by number is very *common*. So the new book [*V: WaveTercets / Losing L'una*, 2014] does that, it gives you back the tercets! But when I first wrote it [*V: WaveSon.nets / Losing L'Una*, 2002], they all were published in that Son.net way. And you could get at the tercets in the Director piece.

AS: Yeah, you can.

SS: You can get at them. But it was very hard to have a sense of how the whole poem would run through. Because, in no case, when you just have the constellation, you can't run around it [i.e., sample stars going around the shape] and get it in order [i.e., get the tercets in order]. In neither version can you do that. In the book you can do that. In the book you have a very good sense of how it runs from the beginning to the end. You could not do that with Director. You *can* do that with the app. So that gives you something that you couldn't get in the other. What you can't get in the app … though Ian explains to me very carefully that you can do anything on the app, with enough time, to program it that way! [laughs]

AS: Exactly…

SS: And it's not inherent to [i.e. the limitations of the piece are not inherent to the iPad platform] … [to IH] Am I representing you correctly? You should say it, right? More or less?

IH: Almost!

SS: Almost! It's just that it was easier in Director to *hover*.

AS: But thinking now about the Director Son.net again, and I don't know if you can speak to that, in relation to here [*slippingglimpse*] … Is it true that it is always 14?

SS: Oh, mine are of course 15, right? [laughs]

AS: Come again?!

SS: Well, my sonnets are *Son dot nets*, right?

AS: No, I mean, in *slippingglimpse*, is it true that each time you read, you always get 14 sequences?

SS: No.

AS: Like in the sonnet?

SS: No, no, no.

AS: OK.

SS: What did you mean? 14? What are you talking about? Where would it be? Where is the 14?

AS: Well, it's 14 extractions, it seems to me, I didn't make them all yet, but…

SS: No, it's not true, it's not true. It's not 14 in each thing, no, no. It goes from … it's not the same in each piece either. The thing is that you don't know …

AS: You never get the same number?

SS: Well … no, no. It's explained in one of these things [papers], right? So it's like moving from 7 to 10 [approximate number of phrases chosen to be read by the water for each video]. But the point is, if you think … if *evolution* happened to come up in front of *evolution into the* body, you might think that's a [4-word] phrase, right? [But in fact the water only happened to throw them together, this time.] So, you can't really judge by what the water is … *The water has its own way.* [Says in a hushed voice.]

AS: Yeah. [We all laugh.]

SS: Which is the *point*. So, no, no. It's not 14 like that.

AS: OK.

SS: But what I most liked about the Director *Vniverse* was this ability to be able to bring *any* part of the poem together with any *other* part of the poem. Quick. What the app returns to you is what the book gave you, in the sense that you can now read it through from beginning to end. So, do you [to Ian Hatcher] have the iPad, so we can just look at the …? Oh, we just gave away the projector adaptor.

AS: Oh, yeah … But we can look in your … do you have it there? [Hatcher has a tablet.]

IH: Mm-hmmm.

SS: Oh, so we can just show … we don't need the projector. See how much better it looks if it's *not* projected … [laughs]

[Silence while waiting for the iPad.]

IH: It locks, it's too [inaudible].

AS: So what do you mean in comparison here?

SS: How much better it looks when it is not projected? The black! Are you kidding me? The turquoise is turquoise. [Sound of Funkhouser taking photos is heard. The iPhone button shot sound is heard three times.] What is that? So you know you can draw, right? If you start doing tercets, if you just let that go, it will go, from [wherever you start through to the end]. Supposedly this is enough time for you to silently read it. So this [pacing] is based on that time of silent reading. And it will go through the whole poem. But if you choose something different…like, let me choose, let me choose this. If I'm tired, and I don't want to start from this part again, any star I choose will become the beginning of the sequence that I'm now reading. So now the poem will go on from here. And I just picked that because this will show you a place where it switches constellations. So we stop going from that guy [the Conductor constellation] and now we go through all the Broom poems [the Broom constellation], and then we go to the next constellation. So you see *all* the constellations play out. You'll have *all* the poem in order. That is not possible in either the [2002] book, or the Director version. [But it is possible, by following the constellation-name-header in the *WaveTercets* book.]

AS: Yeah, you type what you …

CF: That's cool!

SS: The drawing is not possible in the Director version. But this is a very linear interface. This is actually a return to the book. Now, the constellations, here you can choose them, and you can read what you want, and you'll see that that's *not* the linear order, actually. If you go around the poem, [i.e., follow star by star around the constellation] 197, and then 200 is the next one, and so on. So in this sense, you can bring together some different sorts of text, but nothing like here [Director], where I can … well here [to AS] just stabilize it. You have to click on it to stabilize it. So now, I can bring anything I want across this Broom, or, if I start to … hit it again, hit something again … while

that's going on and this is faint, I can also overlay that with any other part and ask [to oneself as a reader] How does this go? The closest way … there are also instructions for this [in *Vniverse* Director], for how to read by touch or by number. That is something that I would say exists between all of my works: the difference between touch and number is a basic thematic thing …

CF: On a regular laptop you can't touch [the screen with your finger] … but you're just talking about clicking … [i.e., "touching" with the mouse pointer].

SS: Yes, by touch, by clicking on it. But the thing is, if you use a mouse, if you just sweep your mouse across the screen, you can do it. Which *isn't* clicking. In other words, that's the hover thing.

CF: Right, right.

SS: And you can just, there's this overlay feature that you can do. And the other capability is to type the number in here [in the circle upper right], and that's kind of like an oracle, but this [*Vniverse* app] is a much better oracle. Because we gave it 7 questions, we gave it *the* 7 questions: Who? How? Why? What? Where? When? Which? [laughs]

AS: Yeah, yeah, yeah!

SS: So … what's your question?

AS: Are oracles important to both of you? Like, spiritually … Because *Abra* as well also has this …

IH: I think so, I mean, I don't know if … can I talk?

SS: Of *course.*

AS: If … are you allowed?!

CF: Sure, yeah!

IH: For me, it has to do mainly with ideas around information and accessibility and black boxes, which have …

SS: Not to mention it's a computer science term. [laughs a lot]

IH: Yes, a computer science term. I've just written in my book, *Prosthesis*, about oracles, Turing oracles, and so on. Just that idea of privileged information, the level of information that is inaccessible, I find pretty compelling in a lot of

ways, as an idea and as a [inaudible], resonant and troubling, and it is simultaneously kind of magical, and also … troubling …

SS: It's also like a metaphor for, to me, the whole e-lit thing.

IH: Yeah, the e-lit thing …

SS: So much information has been encoded at so many different levels, that by the time … And you believe that you can kind of approach it, like it wasn't magical … like a lottery or a crystal ball, or something like that, you know? We bring these questions without *any* sense of how people … Somehow, you have to have things like black-boxing. You have to encode a whole lot, and make that one level, and then operate on that level, and then on top of that, and on that level, and that level. And eventually you get to a point where you ask the final *question*. So, which question do you want answered?

AS: "What do I love?" [citing one of the *Vniverse* oracle questions]

SS: You love Cantor and reindeer … and wandering … and R2 … [the oracle says, choosing from Vniverse keywords].

AS: R2.

SS: Right, right! So I think that means that you should go to Finland …

AS: To that conference?

SS: Right, to that conference! I think that's what that oracle is saying!

AS: Do you know that Raine is organizing this conference? [Bridges Finland 2016, I ask Funkhouser.]

SS: Raine Koskimaa? Yes!

AS: Poetry and math.

CF: Poetry and math?

SS: Well the whole … Art and Math. So anyway, each of these things, this is interesting in that … and so then … the new book has *all* tercets and it has the names of the constellations, up at the top of the book [meaning as headers on the top of the printed pages].

CF: Is there a new edition of *WaveSon.nets*?

SS: Yes, which is the *WaveTercets*. So you have the whole of the tercets, with the name of the constellation up in the corner of the page. And the whole is being driven to this by the technology, too, towards mobile, on the screen … I have a tinier [mini iPad] screen, and on a phone, which we don't have it for the phone yet, but you could make it for the phone. A tercet is as much as you are going to get. You can't have a whole Son.net [sized] kind of thing [on a phone] so that drives the language to be smaller, and smaller, and smaller, so it's a response to…

AS: To technology.

SS: Yes, and to what Adobe did, and to what happens to the technology in general, and to the affordances of the different devices …

CF: But what did Adobe do? What are you referring to?

SS: They are not supporting Director. I mean, what Apple did!

CF: Oh, right!

SS: Because Apple didn't allow Flash. It's not that there was ever anything wrong with the Macromedia products, right? They were lovely!

CF: I use them! I still use them! So that book is out, or is it coming?

SS: Oh no, it's out!

CF: It's out! I haven't seen it. No, I haven't seen either the app version of *Vniverse*. It's new to me.

SS: Do you have an iPhone?

CF: I have a phone.

SS: I mean an iPad.

CF: I do.

SS: You just download it.

CF: Yeah, I will.

SS: It's called *Vniverse*.

CF: Of course!

SS: [laughing] Says Ian Hatcher!

CF: But I love that piece so much, you remember I wrote a piece in the *American Book Review* on that.

[Discussion in the background, AS offering to drive IH.]

SS: I think Ian needs to get back to the city.

AS: Yeah, yeah.

IH: I have to, unfortunately.

SS: I think you need to run *now*!

CF: A bit jetlagged, professor Hatcher? [Hatcher had just returned from Berlin.] Do you feel jetlagged today?

IH: A little bit …

AS: Thank you so much Stephanie! This was lovely, at least to me!

SS: This is easy!

CF: Were you in Brussels when they were in the lockdown … [as regarded the bombing]

IH: I was not, thankfully.

CF: Yeah, yeah.

SS: He was in Brussels, but do you know that Nick [Montfort] was in Saint-Denis, supposed to give a lecture, which was cancelled because of the suicide bomber five thousand bullet-raid … I mean, he was like 10 minutes away from it.

CF: Oh, I didn't know that. I was thinking about that, because I knew you [Ian] were going to Brussels …

IH: No, I missed it, thankfully.

Biographical Note

Álvaro Seiça is a writer and researcher. He is a PhD Fellow in Digital Culture at the University of Bergen (2013-2018), where he teaches courses in electronic literature and digital humanities, and edits the ELMCIP Knowledge Base. His poetry books include *Ensinando o Espaço* (2017), *Ö* (2014), and *permafrost: 20+1 zeptopoemas sms* (2012). He published the scholarly book *Transdução: Processos de Transferência na Literatura Electrónica e Arte Digital* (2016) and the PhD thesis "setInterval(): Time-Based Readings of Kinetic Poetry" (2017). @AlvaroSeica / alvaroseica.net

Errata

By suggestion of the jury, the abbreviation of the Latin expression "et alia" has been
        corrected from "et ali." to "et al." on:

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