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READING DIGITS: HAPTIC READING PROCESSES IN THE EXPERIENCE OF DIGITAL LITERARY WORKS

Tese de doutoramento em Materialidades da Literatura, orientada por Doutor Manuel Portela e Doutor Paulo Silva Pereira e apresentada ao Departamento de Línguas, Literaturas e Culturas da Faculdade de Letras da Universidade de Coimbra

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Abstract

The intensification of tactile/haptic research by academia and the digital technology industry, has given rise to several instrumentalizations of the adjective *haptic*, often contradicting an entire philosophical haptological tradition, going back to Aristotle and allowing us to think of the haptic from a multisensory perspective capable of destabilizing the idea of pure sensory modalities. On the one hand, such intensification is evidenced by the ubiquity of digital technological devices that call for interaction through touch and gesture as tactile/haptic functions necessary for experiencing digital content. On the other hand, it may be seen in the increasing demand for tangibility between human and machine, particularly through sensory experiences made possible by virtual/augmented reality, as well as, mixed reality/virtuality platforms. Such intense literalization of the haptic also, paradoxically, ends up reinforcing the existence and primacy of a visual culture inherent to an ocularcentric society.

It is in line with this haptological tradition, as well as through the recovery of a multisensory perspective explored by a series of avant-garde artistic practices that permeate the history of twentieth-century art, that I propose to (re)think digital literary works via means of an alternative and operative redefinition of haptic drawn from the metamedial and intermedial specificities of current digital poetic practices. Based on the mapping and analysis of carefully selected digital literary works, this research intends to understand how digital poetic practices make use of certain processes of haptic reading enabled by current digital technology, in order to explore and question the processes of writing and reading in media.

In order to validate an argument largely based on the examination of ambiguities and tensions highlighted by the literary exploration of interface functionalities in arts and literature, this thesis will attempt to analyze the referred ambiguity, by showing a parallel between an inherent circularity of (multi)sensory perception and the way certain circular, or rather, spiral-like, trajectories, are able to be identified across multiple arts, artists and movements. All of this, of course, is put together via a process of dialectic subversion/disruption that characterizes multiple variants of experimentalism across the centuries. Moreover, doing so is a way of finding possible answers, or perhaps, raising new questions, regarding longstanding problematics pertaining to the relationship between tradition and innovation, from which the digital era is not exempt.

Key words

Haptic – Touch – Gesture – Affect – Interface – Digital Literature

Resumo

A intensificação da investigação em torno da percepção tátil/háptica por parte da academia e da indústria tecnológica digital tem originado diversas instrumentalizações do adjetivo *háptico* frequentemente contrariando toda uma tradição haptológica de linhas filosóficas, que remonta a Aristóteles e que tem permitido pensar a aporia háptica numa perspectiva multissensorial desestabilizadora da ideia de modalidades sensoriais puras. Evidenciada, por um lado, pela ubiquidade de dispositivos tecnológicos digitais que apelam a uma interação pelo toque e pelo gesto enquanto funções tácteis/hápticas necessárias para a possibilidade de experiência dos conteúdos digitais, e, por outro lado, pela crescente procura de tangibilidade entre ser humano e máquina, nomeadamente

através de experiências sensoriais possibilitadas por plataformas de realidade virtual/aumentada e de realidade/virtualidade misturada, uma tal literalização do háptico acaba por reforçar, de modo paradoxal, a existência e primazia de uma cultura visual própria de uma sociedade ocularcêntrica.

É na linha da referida tradição haptológica, bem como por meio da recuperação de uma perspectiva multissensorial explorada por uma série de práticas artísticas *avant-garde* que permeiam a história da arte do século XX, que me proponho (re)pensar a obra literária digital, por via de uma redefinição alternativa e operatória de háptico que é passível de ser esboçada a partir das especificidades metamediais e intermediais das actuais práticas poéticas digitais. Com base no mapeamento e análise de uma série criteriosa de obras literárias digitais pretende-se, com esta investigação, perceber de que modo as práticas poéticas digitais se fazem valer de determinados processos de leitura háptica convocados hoje pela tecnologia digital para explorar e questionar os processos de escrita e leitura nos *media*.

Por fim, para uma possível validação deste argumento assente, em grande parte, na análise de ambiguidades e tensões promovidas pela exploração literária das funcionalidades das interfaces em artes e literatura, a presente tese tentará refletir sobre a referida ambiguidade, evidenciando, de modo paralelo, uma circularidade inerente à percepção (multi)sensorial, bem como determinadas trajetórias circulares, ou melhor, espiralares, que podem ser identificadas numa sucessão de artes, artistas e movimentos. Tudo isto estruturado através de um processo de subversão/disrupção dialética presente em determinadas variantes do experimentalismo ao longo dos séculos. Ao fazê-lo, estaremos a procurar possíveis respostas, ou, talvez, a levantar novas questões, sobretudo no que diz respeito a problemáticas de longa data relacionadas com a relação entre tradição e inovação, da qual a era digital não se encontra isenta.

Palavras-chave

Háptico – Toque – Gesto – Afecto – *Interface* – Obra Literária Digital

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It was like acquiring an entirely new sense, so that now certain things no longer consisted merely of what my eyes could see, my ears could hear, my tongue could taste, my nose could smell, my fingers could feel, but of what my whole body could decipher, translate, give voice to, read.

Alberto Manguel, *The History of Reading*

The medium is the message.

Marshall McLuhan

Read him slowly, dear girl, you must read Kipling slowly. Watch carefully where the commas fall so you can discover the natural pauses. He is a writer who used pen and ink. He looked up from the page a lot, I believe, stared through his window and listened to birds, as most writers who are alone do. Some do not know the names of birds, though he did. Your eye is too quick and North American. Think about the speed of his pen. What an appalling, barnacled old first paragraph it is otherwise.

Michael Ondaatje, *The English Patient*

1. Leaps and Take-Offs

1.1 Methodology

The symbolism of the spiral is the opposite of that of the circle: the circle is religious, theological; the spiral, a kind of circle distended to infinity, is dialectical; on the spiral, things recur, but at another level; there is a return in difference, not a repetition in identity.

Roland Barthes, “Réquichot and His Body”

This thesis is intended to be read as a spiral. An Archimedean spiral, if you like. From chapter to chapter, the reader is invited to follow its course, from its point of emanation in the present, gradually moving farther away as it continually revolves around this point of origin. Just like a spiral, with its recoiling movements, it moves both forwards and backwards, in a circular and consecutive motion. In this spiral-like movement, circles will close in order for new ones to open, through repeated revolutions. Moving between matter and spirit, body and soul, vision and touch, speech and gesture, flesh and mind, perception and cognition, this spiral will lead us to tensions within the arts and literature in which the intersections (both convergent and divergent) between movements, artists and artworks have been designed to fuel an ongoing dialogue.

Throughout the several chapters of this thesis, I will propose a reevaluation of the word *haptic*. I will firstly consider the role of that which we commonly designate as touch and gesture within the context of the ubiquity of digital multi-touch devices that enact tactile/haptic sensory modalities that allow access to digital contents; and secondly, the relationship of tactile/haptic multi-touch interactions with the intensification of the search for tangibility, immediacy and presence between human and machine. In order to lay out this whole intricate argument, I propose to explore, through a tripartite structure, three different perspectives on haptic reading processes involved in the experience of digital literary artworks (Chapters 2, 3 and 4). These three perspectives are based on two synesthetic metaphors - namely, that of a *touching eye*, as well as, of a *seeing hand* (similarly to that which Manuel Portela refers in his volume *Script Reading Motions* as “touching with the eyes” and “seeing with the hands”) - in addition to resorting to a *portmanteau*, expressly, the idea of a *cybrid body*, a concept used by several researchers with respect to the analysis of technological art using virtual reality, augmented and/or mixed reality/virtuality platforms (see for instance, Domingues and Venturelli: 2007).

Concerning the idea of a touching eye, the metaphor owes much to Deleuze and Guattari’s recovery of Riegl, in the sense that it pertains to a visuality that assumes haptic

characteristics, by *touching* the viewer, for example, at a visceral level. However, in addition to the dominion of vision and visuality, when it comes to discussing phenomena such as interactive art, the use of this synesthetic possibility falls short, given that with interactive art, a greater degree of multisensoriality is involved, as may be observed, for example, in a series of gestures with a dual strategy that aims for both signification and affect. Consequently, the risk of falling into the inverse rhetoric must be acknowledged. This may occur, firstly, through a shift in the dominion of a sensory modality, which is to say, a replacement of vision and visuality for touch and tactility; and secondly, through a tendency towards regressive interpretations of tactility, as well as a fetishization of both hand and fingers, specifically in their relation with the notion of a digital interface, as though the hand were the organ that, unlike vision, would allow direct access to knowledge, through its apparent non-mediality.

Finally, I shall delve into the concept of the cybrid body, an idea of body that transcends its biological connotation, with the particularity of being cybernetic while being configured as a hybrid. Moreover, this is a notion that emerges as an alternative to the dichotomy between human and machine, either with reference to the interface, or with reference to interaction, being, in my view, a rather unproductive dualism in what concerns, for example, transactions between the literary and the digital. The idea of cybrid bodies does not exclude its possible identification with other notions, such as that of “intermediation,” adapted by Katherine Hayles from Nicholas Gessler, which refers to the complex transactions between bodies and texts, as well as between different forms of media, and how these intertwine with the idea of “radical mediation” proposed by Richard Grusin.

Besides these productive tropes and conceptual interconnections, the appropriation I have allowed myself to carry out is based on a third confluence of approaches that I would like to present here and leave open for possible reflection, namely, the analysis of digital literary works through the connection of a scientific and philosophical perspective. This includes, for instance, the adaptation of the principle of the 4Es proposed by Alva Nöe - who sees cognition as being embedded, embodied, enacted, and extended – as well as, the idea of the embodied metaphor proposed by Lakoff and Johnson in *Metaphors We Live By*. In this regard, we must necessarily take into account arguments such as the one proposed by Anne Mangen, who sustains that - in what concerns the understanding of writing and reading processes in multimodal environments - interpretation has limited applicability, preferring to adopt, without reservations, a cognitivist perspective. Nonetheless, it is also true that, that which we consider literature, or literary art, especially in its interpretative, lived and experiential dimension, can in no way be summed up in a series of more or less quantifiable data capable of categorizing the creative process.

The central argument of this thesis, regarding haptic reading processes intrinsic to several digital literary artworks' metamediality, is that they enable us to critically examine multisensory perception, specifically, haptic information processing involved in reading processes. This argument will be sustained, on the one hand, through the analysis of the relation between haptic processes in digital works and avant-garde artistic proposals from the beginning of the twentieth-century, in which multisensory perception was a major concern, and, on the other hand, through a philosophical haptological tradition. As such, avant-garde concerns with multisensory perception, in addition to haptological approaches, help us rethink touch and gesture beyond their immediate and superficial connotation with the sensory modality of tactility.

Regarding the first, it should be noted that the idea of *contamination* of avant-garde artistic practices in digital literature is far from being new, having been a common topos of analysis in several major studies (Pressman: 2013). However, my approach expands on previous studies, seeing that it goes beyond the usual emphasis on vision and visuality. Hence, it shall specifically set out to outline particular contact points between analogic and digital processes, such as the loss of control/grasp by the reader, and the idea of apparently functional mechanisms in the arts. While these do not exclude the optic, these aspects will not be limited to it.

With respect to the haptological tradition, my main references are part of a theoretical framework that encompasses names such as Maurice Merleau-Ponty, Jean-Luc Nancy, and Jacques Derrida, and their respective philosophies of touch, in addition to Gilles Deleuze and Felix Guattari. However, these references will be examined in permanent dialogue with precursory approaches. This sort of framework will provide the conceptual space for a reflection on tactile/haptic perception and language. Withal, despite integrating other significant philosophical discussions, the reflection on tactile/haptic perception will assume contours arising from its specific connections with digital literature.

Thus, drawing on Merleau-Ponty's phenomenological views on perception, we shall explore the multisensory perspective emerging out of the idea of *embodied mind*, a crucial notion in order to question phenomena such as telepresence, VR, AR, as well as, MR/VR. In relation to Jean-Luc Nancy, through the lens of Derrida, we will work with the idea of "writing as body," in addition to the various meanings of notions such as touch, gesture and affect, as well as with the idea of *intangible tangibility*, the latter being particularly useful in the analysis of the reader's condition and the growing emphasis of digital literary works that use haptic reading processes as a crucial part of their poetics. Finally, through Deleuze and Guattari, we will find argumentative support for a better understanding of differences between "optic visuality" and "haptic visuality," giving rise to a new role of vision in the context of its relation with other sensory modalities.

It is therefore intended that these two fundamental pillars of our argument (multisensory crossovers in avant-garde artistic practices and multisensory approaches in Western philosophy), be present throughout the five chapters, both threads contributing to a critique of the pure sensory modalities, as well as to a more inflected and broader understanding of notions such as touch, gesture and affect, in the context of haptic reading processes. Additionally, this means that in order to discuss haptic reading processes, we need to specify what they imply, both within the context of this research, as well as in regard to their specificities.

I have attempted to map out current resignifications of the term 'haptic' that derive from the intense academic and industrial research (and production) on tactility in digital technological devices. I have resituated those meanings within the context of haptic reading processes in the experience of digital literary artworks. Using the artistic and philosophical perspectives presented in my argumentation, I will try to produce an alternative and operative redefinition of haptic, based on the destabilization of the idea of pure sensory organs, in order to come up with a view that better suits the multisensory aspects intrinsic to literature and other arts in general, and digital literature in particular. For this purpose, aside from the aforementioned multianatomic (hybrid) structure that will sustain the three main chapters (by means of three synesthetic metaphors), a final chapter will serve as both a conclusion and an invitation to additional speculation, addressing current theorizations of electronic literature that explores tropes of circularity and spirality. By saying what could not be said in previous chapters, these *ex-foliations* will reveal other significant layers that may be found in that which I refer to as *haptic reading*.

Furthermore, there will be another tripartite structure that will sustain each of the referred chapters, consisting of the notions of touch-gesture-affect, three complex phenomena that will enable us to think of haptic reading processes from various perspectives. For that purpose, we shall use, from time to time, illustrative examples from the history of Western painting, sculpture, print literature, as well as from cinema, theatre and videogames. These reading and discursive strategies will serve as a means to establish connections between distinct moments in the history of the arts that may prove to be enlightening with regard to digital literature.

As previously mentioned, three of the five chapters shall present a theoretical and analytical structure: firstly, by presenting theory on different haptic reading processes (and what they consist of, in both general and more specific terms, in relation to the perceiving enactive mediated body); and secondly, by sustaining and developing the respective theoretical arguments by close reading particular works, specifically, by mapping out and analyzing case studies that evidence the aforementioned processes. Moreover, in all of the chapters, additional secondary

examples shall be referenced, seeing that, while they are not themselves close readings within the context of this thesis, deserve nonetheless to be referenced for their pioneering and/or intertextual features.

Another methodological component of this thesis, and one of extreme relevance at that, is the creative process involved during the course of writing and thinking in theoretical terms about the issues involved in haptic reading processes in digital literature. As I write these lines, I am now able to see that which has changed in my view of the significance of the body and perception in the arts, particularly with regard to digital environments in which a sensory modality like touch, at first sight, seems to have always been reduced to the condition of *spectrality*. It is my understanding that, to think in terms of creative research, is also a way to find answers to complex theoretical questions, through our own literary experimentation. However, this goes both ways, since, as a Portuguese experimental artist, much of the theory I worked with led me to come up with solutions for artworks that I came to develop in my mind. Therefore, the experimental component of this thesis, includes the exploration of specific technologies and processes of writing/reading, through the creation of both analog and digital artworks. These processes naturally led to the creation of an artistic collective, expressly, *wreading-digits*,¹ whose focus is on gaining curatorial experience² through the selection and organization of several exhibitions subordinated to specific interactional and interfacial problems. Moreover, although this is not a strictly practice-based research thesis, it still includes contributions based on this research model. In addition, a spiraling, often entropic, movement, must also be considered here, occurring through the simultaneous engagement between perception and cognition, and thus allowing for the construction of something that may be considered as reasonably innovative.

As with the artworks I co-created with some colleagues,³ the selection of case studies for this thesis shall focus on more recent works, produced within the last fifteen years. Additionally, it may be important to point out that the analysis of these case studies is not intended to be exhaustive or repetitive. Several of these artworks have already been the subject of thorough analyses by previous researchers, although they have never been analyzed as probes into haptic reading processes using digital interfaces. Finally, and still concerning the case studies selected for

¹ <<http://www.wreading-digits.com/>>, last accessed December 19, 2017.

² “Language and the Interface,” held at the Digital Literary Studies Conference, in Coimbra, 2015 (<<http://languageandtheinterface.uc.pt/>>); “Translations: Translating, Transducing, Transcoding,” held at ELO Porto 2017 (<<https://conference.eliterature.org/2017/exhibits>>); invited by the Portuguese Society of Mathematics to organize and curate an exhibition of Portuguese experimental literature by emerging artists, in its relation to Mathematics, as part of FESTIVAL FOLIO 2017, an acclaimed International Literature Festival held in Óbidos, Portugal (<<https://matlit.wordpress.com/2017/10/10/materialidades-da-literatura-no-folio-2017/>>).

³ These projects were always thought up via means of a multidisciplinary co-authorship, which explains why some of my fellow co-authors come from a Materialities of Literature background, while others come from entirely distinct backgrounds, such as Computational and Electrotechnical Engineering.

this dissertation, among all the authors who have inspired me to think about haptic reading processes in multimodal digital environments, Serge Bouchardon particularly stands out. This is due to the specific relevance of his digital poetics to my theoretical approach in relation to touch and digital interfaces. As a result, I have chosen three of his artworks to accompany the structure of the three main chapters, meaning that, each section of these chapters will begin with a fragment of a scene or part of an artwork by Bouchardon (some of which were created in co-authorship with other colleagues): *Opacity*, in Chapter 2, analyzed within the context of surfaces and interfaces); *Touch*, in Chapter 3, in relation to the issue of vision and touch, namely, the significance of the hand and fingers; and finally, *Loss of Grasp*, in Chapter 4, which addresses non-functional mechanisms and the idea of loss of grasp as an awareness-raising device. This strategy will allow for the selection and structuring of theoretical considerations that connect to the main features of that particular scene or part. In so doing, I will also try to maintain the conceptual clarity necessary for distinguishing the various dimensions of hapticity and gestuality as enactive processes of cognition involved in the experience of digital literary works.

Contemplating touch, gesture and affect in their reconfiguration within digital multimodal environments, naturally brings up other related issues, one of which is the tension between transparency and opacity in media interfaces, amplified by the ubiquity of touch-screen digital devices, whose tactile and haptic functions have become universal interfaces for the access and experience of digital content. Consequently, an additional goal of this thesis, is to present evidence of how this tension ends up reinforcing visual culture and ocularcentrism, as well as to analyze metamedial explorations of the tension between transparency and opacity.

Another issue which shall be delved into is the focus put on tactility, the so-called haptic shift, which has dominated research in digital industrial technologies. This will involve analyzing how several digital literary artworks make use of metamedial poetics and intermedial aesthetics in order to question the recent emphasis on hapticity. One of the ways in which this shall be done is through a comparative analysis between the idea of “transmission of affect in seemingly functional mechanisms” (Manganis: 2010) in avant-garde artistic practices, and the transmission of affect in apparently functional digital interfaces. Additionally, the idea of raising awareness through mechanisms of loss of grasp shall also be explored.

Finally, in order to validate an argument largely based on the examination of ambiguities and tensions highlighted by the literary exploration of interface functionalities in arts and literature, and despite a strong relationship with mathematical principles, I found it useful to conclude with an exercise in counter-geometry. This exercise attempts to mirror the already referred ambiguity, by showing a parallel between an inherent circularity of (multi)sensory

perception and the way certain circular, or rather, spiral-like, trajectories, are able to be identified across multiple arts, artists and movements. All of this, of course, is put together via a process of dialectic subversion/disruption that characterizes multiple variants of experimentalism across the centuries. Moreover, doing so is a way of finding possible answers, or perhaps, raising new questions, regarding longstanding problematics pertaining to the relationship between tradition and innovation, from which the digital era is not exempt. This questioning, of course, appears during a period of extreme relevance for electronic literature, specifically in what concerns its end(s) and beginning(s).

Basing itself on the methodological guidelines presented above, this thesis offers a complex and layered description of haptic reading processes involved in the experience of digital literary works. The *multianatomic* or hybrid structure of which the three central chapters in their optic/haptic, haptic/optic, cybrid body tripartition are comprised, will be sustained by using case studies selected from a series of digital literary works that pave the way for reflection on another unrelated sub-tripartition presented as follows: touch – gesture – affect. This structure, although not completely clear-cut, serves, nevertheless, as a strategy for comprehending haptic *aporia*, particularly in relation to processes of writing and reading in digital media, as well as in relation to the way in which artistic practices have metamedially dealt with these questions.

1.2 Haptic Visuality

Quand nos yeux se touchent, fait-il jour ou fait-il nuit?

Jacques Derrida, *On-Touching* – Jean-Luc Nancy

The blue sky above us is the optical layer of the atmosphere, the great lens of the terrestrial globe, its brilliant retina.

From ultra-marine, beyond the sea, to ultra-sky, the horizon divides opacity from transparency. It is just one small step from earth-matter to space-light – a leap or a take-off able to free us for a moment from gravity.

Paul Virilio, *Open Sky*

As I read Virilio's introduction to *Open Sky* (1997 [1995]), I decide to open the Google Earth app on my iPad. By sliding my forefinger over its glassy surface, I notice that, in a matter of a few seconds, I increasingly come closer to what corresponds to my current geographical position, while at the same time, I am able to travel around the world via means of just a short sequence of taps and swipes on the screen. As evocative as it may be of David Bowie's "Planet

Earth is blue/and there's nothing I can do," this apparently insignificant manipulation also reminds me of Canadian astronaut Chris Hadfield's version of "Space Oddity," recorded inside the International Space Station and enabling more than 23 million people to witness Earth's blueness through Hadfield's perspective.⁴ What all these artifacts – videos, music, lyrics, quotes – have in common, is the fact that they are affected by a series of interface mediations, all of which, can be seen and touched through the Internet. However, one may question the real significance of this touch, as well as the reason why we find the idea of holding the whole world in our hands so extraordinary. If what we now need in order to free us from gravity is just to leap or take-off, which may happen through a simple touch of the hand or a snap of the fingers, what becomes of the eye? Moreover, if we are, in fact, now living in a Glass Age governed by a culture of alleged transparency, to what extent are these *transparent* touchable glass surfaces paradoxically becoming a black mirror/opaque looking-glass?

Such visual paradoxes, of course, should not be isolated from other tactual ones, namely those propelled through the intensification of research around digital media devices that require tactile/haptic functions, along with efforts to increase tangibility in Human-Machine Interaction (HMI). It is in this sense that a whole new rhetoric of bodies, surfaces, and interfaces arises. Nonetheless, it is a rhetoric that has its own particular nuances. As such, it will be necessary to look beyond the surface, in order to come to understand what other possibilities for gesture and touch await us on the other side, thus entering "where we will never enter (...) on the threshold, neither inside nor outside," we being ourselves "the threshold, just as our eye conforms to the plane of the canvas and weaves itself into its fabric" (Nancy: 1996, 27), to use Jean-Luc Nancy's insightful words.

In 1972, writer John Berger, along with producer Mike Dibb, created and directed *Ways of Seeing*,⁵ a series of four episodes for BBC Two, which looked at the ways of seeing art, and how ideologies contained in the ways we see images are perpetuated through certain technologies, namely those of the twentieth century. One of the most telling moments in the first episode, broadcast on January of that same year, is when Berger shows a series of paintings in complete silence for a couple of seconds, then contrasting it with the same painting being shown with sounds playing over it (for example, a painting by Caravaggio shown in complete silence, then followed by it being shown accompanied by a fragment of an Italian Opera), prodding us with the following question: "How often do you consciously notice the music played over paintings

⁴ <<https://www.youtube.com/watch?v=KaOC9danxNo>>, last accessed on November 11, 2015.

⁵ <https://www.youtube.com/watch?v=0pDE4VX_9Kk>, last accessed January 20, 2018.

on television?” Though this may be an entirely subjective process, the results are striking. But what does tact, kinesthesia or proprioception have to do with any of this?

Let us give another example. In the following excerpt, taken from Michael Ondaatje’s novel *The English Patient* (1992), readers are faced with a series of instructions on how to properly read Kipling:

Read him slowly, dear girl, you must read Kipling slowly. Watch carefully where the commas fall so you can discover the natural pauses. He is a writer who used pen and ink. He looked up from the page a lot, I believe, stared through his window and listened to birds, as most writers who are alone do. Some do not know the names of birds, though he did. Your eye is too quick and North American. Think about the speed of his pen. What an appalling, barnacled old first paragraph it is otherwise. (Ondaatje: 1992, 94)

This fragment, highly illustrative of Ondaatje’s own literary artifices, is symbolic of a crucial problematic of this thesis, particularly in what concerns haptic reading processes in the experience of digital literary artworks. Firstly, due to the *materialities of writing* that it evokes, expressly, the gestures executed by Kipling’s *prosthetic* hand (mediated by another *subprosthesis*⁶ represented by his writing kit), enabling *contact* to be established between the body⁷ and the writing technology that is paper. Secondly, as a result of the writer’s natural pauses in order to observe the landscape painting brought in through the front window, thus creating a perfect triangulation between biological body, world and text.

Notwithstanding, there is yet another sublayer of materialities. In this case, of reading, a sublayer sedimented in different instantiations of the reader. The first of these layers is the one pertaining to Anne, one of the main characters, whose “too quick and North American” eye is reproached by Anne’s interlocutor. The second, is the one represented by Ondaatje’s readers, who, mediated by the author, also become Kipling’s readers. However, with the latter, the literary device reaches a level of autoreflexivity (and autoreferentiality) such, that even the most attentive reader will feel the need to go back a couple of lines in order to reread the evoked excerpt. This

⁶ In some areas of knowledge, the potential contained within the prosthesis metaphor is such, that it allows for the further subdivision into sub- and supraprosthesis, if one is to agree with the post-humanist vision of the biological body as “the original prosthesis we all learn to manipulate,” so that, in the extension or replacement of body parts with (sub)prostheses, there is a place for the continuation of a process that began prior to birth (Hayles: 1999, 3). For instance, in the act of writing, in addition to hands, fingers and writing tools, the whole prosthetic sequence may also include the very act of writing in itself, as such, a permanent inscription on a given surface, may be seen as a “prosthetic memory” (Ryan: 2006, 22).

⁷ The notion of body that I use here differs from its habitual Cartesian implications, going beyond its recurrent connotation with the biological body. For that matter, it is of relevance to take into account notions such as “distributed cognition” and “intermediations.” See Hayles: 2010.

time, howbeit, by taking into consideration the appropriate pauses that emulate the original author's writing speed.⁸

Perhaps this is one of the reasons why Milena Marinkova refers to the writing of Ondaatje as being represented by an aesthetics capable of forging an intimate corporeal relationship between public, author and text (Marinkova: 2011, 4). Marinkova classifies this aesthetic dimension of Ondaatje's work as "haptic," justifying the adjective's appropriation on the basis of a resignification carried out by several researchers, namely in film studies, wherein one of the most widely used is the one related with affect theories that favor certain perceptual characteristics of an image, such as its texture, rather than its visual connotations.

One of these researchers is Laura Marks, who – in her volumes *The Skin of Film* (1999) and *Touch: Sensuous Theory and Multisensory Media* (2002) – focuses mostly on cinematographic images, arguing for the existence of "haptic visuality" (in contrast to "optical visuality") in the way "we experience touch both on the surface of and inside our bodies" (Marks: 2002, 2). Drawing her definition of haptic from Deleuze and Guattari's understanding of "smooth space," "a space that must be moved through by constant reference to the immediate environment, as when navigating an expanse of snow or sand" (xii), Marks emphasizes that Deleuze and Guattari do not see a dichotomy between the haptic and the optical, given that these two instantiations "slide into one another, just as property laws striate land once traversed by nomads, but then homeless people, urban nomads, smooth the striated space of the city" (xii). It is precisely this flow between the optical and the haptic that Marks believes to be missing in Western culture. In her own words,

That vision should have ceased to be understood as a form of contact and instead become disembodied and adequated with knowledge itself is a function of European post-Enlightenment rationality. But an ancient and intercultural undercurrent of haptic visuality continues to inform an understanding of vision as embodied and material. It is timely to explore how a haptic approach might rematerialize our objects of perception, especially now that optical visuality is being refitted as a virtual epistemology for the digital age. (xiii)

For Marks, with haptic visuality "the eyes themselves function like organs of touch." But this does not mean that one should replace the other, since "in most processes of seeing both are involved, in a dialectical movement from far to near, from solely optical to multisensory" (2-3).

The influence of Deleuze and Guattari in recent theories of affect is undeniable, as evidenced in their second volume of *Capitalism and Schizophrenia*, in which they postulate a distinction between "short-distance" vision and "long-distance" vision, arguing that,

⁸ Other sublayers could be added here: for example, a sequence of underlying multisensory materialities, such as the smell and texture of paper, or the act of moistening one's finger to turn a page; as well as ergonomical ones, such as the act of holding a book between one's hands from a precise distance in relation to the eyes.

“haptic” is a better word than “tactile” since it does not establish an opposition between two sense organs but rather invites the assumption that the eye itself may fulfill this nonoptical function. (Deleuze and Guattari: 1987, 494).

This is a conclusion they draw from Alois Riegl’s (later followed by Wilhelm Worringer and Henri Maldiney) coupling of close vision with haptic space, and the idea of “haptic gaze,” within the context of the “necessary, and uncertain, and all the more disruptive” passages “between the striated and the smooth,” the smooth being “both the object of a close vision par excellence and the element of a haptic space (which may be as much visual or auditory as tactile),” and the striated relating to “a more distant vision, and a more optical space” (492-493). By means of the synesthetic metaphor of a touching eye, it is possible to justify how the eye is able to fulfill a non-optic function, namely, that of haptic perception, which Deleuze and Guattari view as being opposed to a different type of perception, expressly, perception of an “optical” nature. Moreover, according to Patrícia Silveirinha, such “tactile optics” are the result of “efeitos especificamente cinematográficos que embalam o corpo do espectador numa relação diretamente física, e não estritamente (...) racional ou emocional” (Silveirinha, 2013: 26).⁹

Regarding the problematics pertaining to the physicality of vision, while its validity may be attested through resignifications of touch and gesture, its inherently metaphorical core will probably never be surmounted.¹⁰ In the case of cinema, this unsurpassable metaphoric barrier is perhaps taken to its extreme through Robert Bresson’s signature mark, namely that of his close-ups, going from a hand that caresses and redeems, to a hand that destroys and sullies.¹¹ Bresson’s cinematic hands carry affects that are felt by the spectator, through an unfolding series of gestures that cease to be right after being made, hence their affective and affecting capacity. In this regard, as pointed out by Patricia McTighe,

[H]aptic aesthetic strategies can also function as a disruption to the structure of the artwork. For instance, an image that calls upon the eye to touch within a sequence of representative images in a film interrupts the visual flow, arresting, in a similar way to Deleuze’s time-image, the visual logic, and therefore the narrative logic, of the film. (2013, 5)

Perhaps then, without wanting to question the validity of said touch and gesture within the context of the aforementioned phenomena, and despite the attempt to replace tactility by

⁹ “specific cinematographic effects capable of dandling the spectator’s body through a directly physical relation,” rather than a strictly (...) rational or emotional one”. Unless noted, all translations from Portuguese to English Language are of my entire responsibility.

¹⁰ According to Derrida, the use of metaphors and metonymies in order to describe potential interchanges between vision and touch (often by means of the synecdochic metaphors of eye and hand), is not consensual within a certain haptologic tradition in philosophy, a problem that seems to contribute to the perpetuation of the aporetic status of the haptic. Thus, while for Bergson metaphors are a way of disturbing the rigid boundaries of concepts, Husserl’s phenomenological guidelines do not leave room for such abstractions. See Derrida: 2005, 122; 169.

¹¹ See Kogonada (2014).

means of a metaphorical reduction, such efforts will invariably end up reiterating a continual superposition of vision over touch, of one sense modality over another. This is the reason why the haptic hypothesis seems insufficient when it comes to revealing the “value of touch as a performative move and as the principal sensory gateway to an aesthetic experience” (Engberg: 2013, 20). As Erkki Huhtamo also reiterates with regard to “interactive art”:

Although useful, the notion of “haptic visuality” cannot be applied as such to the analysis of phenomena like interactive art, where the body – sometimes coupled with the “bodyimage”, as in the case of the “levitating” virtual hands in VR applications – is directly involved. The haptic gaze is supported – and perhaps contradicted? – by other corporeal operations. Quite clearly, any segregation of the senses from each other is out of question. As McLuhan stated, “tactility is the interplay of the senses, rather than the isolated contact of skin and object”. This applies well to interactive art that often engages not only sight and touch, but sound as well. (2007: 73-74)

Which brings me to McTighe’s idea of disruption, made possible through haptic aesthetic strategies, of which she gives the example of images that arrest and interrupt the visual flow of a film in calling upon the eye to touch (McTighe: 2013, 5). Such is also the case with digital literature, although in a very distinctive way, where a demand for touch interrupts the narrative and visual logic, while paradoxically, the narrative and the visual logic depend on this very same touch in order to move forward. However, in the case of digital literary works, the main difference may well lie in a rhetoric of manipulation, a kind of gestural grammar that is characteristic of interactive writing, and which reinforces the dual nature of the gesture as a movement capable of promoting strategies of signification and affect. In this respect, according to Serge Bouchardon, this rhetoric is a dimension of the manipulation of the text in itself and not only of its physical medium (Bouchardon: 2008; 2014). It then follows that, via means of this textual manipulation, a dualism between the analogical and the digital gesture arises. In the context of this thesis, digital gestures are presented as gestural *machimanipulations* used within multimodal digital environments, calling for a series of sensory modalities, including vision (although not necessarily having the dominant role it assumes in other contexts).

Jacques Derrida’s rhetorical question, “when our eyes touch, is it day or is it night?”, shows that the relations between sensory modalities such as vision and touch (to use standard designations for now), are far from being isolated phenomena. Derrida’s phrase is one of many activation mechanisms he uses to delineate a history of touch in philosophy in his volume *On Touching – Jean-Luc Nancy*, in which he revisits with great detail and zeal his friend’s considerations on the obscurity of touch. This philosophical haptological tradition, from Aristotle’s *De Anima* to the more recent continental philosophers, is significant in the way it enables us to think of a multisensory perspective capable of disrupting the idea of pure sensory modalities. Nonetheless, in spite of this tradition, Western philosophy cannot escape the ocularcentric tendency that gives

primacy to the eye alone, a cultural factor that should not be separated from the role of literature in Western society.

1.3 Haptic Touch

“Haptic” is a better word than “tactile” since it does not establish an opposition between two sense organs but rather invites the assumption that the eye itself may fulfill this nonoptical function.

Gilles Deleuze and Félix Guattari, *A Thousand Plateaus*

Deriving from the Greek word *hapto* (to touch, grab or fasten), the word *haptic* is often related to or based on the sense of touch and tactile sensations. However, as shown by Derrida, the adjective haptic, is far from being clear, since it constitutes, at least ever since Aristotle’s considerations in *De Anima*, an *aporia* (Derrida: 2005, 5). According to Mark Paterson, its ambiguity seems to derive from multiple appropriations by different fields of knowledge, such as experimental psychology and engineering (Paterson: 2007, 4). As such, it may be worth mentioning that differences between the notions of tactile and haptic were never consensual among these different fields of knowledge. The complexity of this adjective is revealed by the enormous discrepancy of definitions that can be found within different disciplinary areas. For instance, the science known as Haptics, developed in recent years, and being often based on partnerships involving university laboratories and the digital technology industry, stands out above all others, due to its potential uses and applications in varied areas. Of particular relevance within this field is the concept of haptic interface, described by experimental psychologists Susan Lederman and Roberta Klatzky as,

[A] device that enables manual interaction with virtual or remote environments (Durlach & Mavor, 1994). The device feeds back information to the operator about the consequences of interaction in the remote world. Although the feedback modality is unspecified in principle, it can take the form of haptic feedback, which indicates the forces and vibrations that are imposed on the effector in the remote or simulated world. This type of feedback has been used in two contexts. One is known as teleoperation – that is, when a human operator controls a remote device. The other is virtual haptic environments, in which contact with computergenerated objects and surfaces is simulated. In either case, haptic feedback enhances a sense of telepresence, the feeling that the operator is in a physical environment”. (2003, 169)

An example of this is the Haptics Group, belonging to the GRASP Lab of the University of Pennsylvania, responsible for innovative projects such as the Haptography case, which investigates and applies the virtualization of tactile (cutaneous and proprioceptive) tactility.

Although this thesis will not delve extensively into the particularities surrounding this emerging science, it shall prove to be of use to look at this science within the context of my argument concerning haptic reading processes, in the sense that, to a large extent, the foundational basis of these particularities confirms the theory of haptocentrism propounded by several theorists such as Derrida. Furthermore, in what concerns the aforementioned growth of academic and industrial research on the role of sensory perception in digital technology, it is precisely from the field of Haptics that instrumentalizations of sensory modalities derive from, particularly those concerning touch. On the one hand, the ubiquity of digital multi-touch devices beckons for human touch in order to access digital contents. On the other hand, phenomena such as Virtual Reality (VR), Augmented Reality (AR) and Mixed Reality/Mixed Virtuality (MR/MV) all draw attention to the ways in which our ancestral search for tangibility, immediacy and presence – a desire to gain direct access to knowledge through our apparently most unmediated sense – is perhaps now more than ever, a primary goal of digital technology industries.

Based in their research on touch as a cross-modal sensory modality, Lederman and Klatzky recognize touch as “a fully cognitive system, playing a role in the direction of attention and providing a substrate for conscious and implicit memory” (2003, 170). However, for them, touch encompasses “several distinct sensory systems (...) on the basis of the underlying neural inputs,” namely cutaneous (receiving sensory inputs from skin-embedded mechanoreceptors), kinesthetic (mechanoreceptors within muscles, tendons and joints), and haptic (receiving input from the two previous systems and being particularly associated with haptic touch). (148)

According to Matthew Fulkerson, in his entry on “Touch” in the online *Stanford Encyclopedia of Philosophy*, typical references to “the sense of touch,” either from philosophy or from cognitive science, generally refer to “active” or “haptic” touch, a type of touch involving movement: “voluntary, exploratory movements of the hands and other sensory surfaces involved in touch, or (...) experiences generated by objects moving against a stationary body” (2015, para. 3). Often involving the awareness of movement (kinesthesia), and the awareness of bodily position (proprioception), haptic touch should then be distinguished from “touch mediated entirely through the skin,” the latter being designated as “cutaneous touch.” Regarding the words tactual and tangible, according to Fulkerson, while the first is broadly used to refer to “any form of touch experience,” the latter concerns “features and objects made available through touch” (para. 3). Hence, to “talk about perception through touch” usually involves having “haptic perception in mind” (2014, 12).

Experimental psychologists Alberto Gallace and Charles Spence provide a similar explanation:

in much of the literature on ergonomics and human interface design, the term “haptic” has been used to describe the stimulation of the participant’s skin/body (...). However, in the cognitive psychology/psychophysics literature (...) this term has a very specific meaning, one that is restricted to describing those tactile stimuli that impinge on the skin, and which are perceived by means of a person actively palpating an object or surface, such as when actively exploring an object held in the hand. By contrast, the term “tactile” is used to describe those stimuli that are delivered passively to the skin surface. (2014, 162)

Contrastingly, Mark Paterson asserts that the term haptic may be used to refer “to the sense of touch in all its forms,” including proprioceptive, vestibular, kinesthetic, cutaneous and tactile forms of perception, the latter being described as “pertaining to the cutaneous sense, but more specifically the sensation of pressure (from mechanoreceptors) rather than temperature (thermoceptors) or pain (nociceptors)” (Paterson: 2007, ix).

A slightly more thorough definition is the one given by Brian Massumi, in his *Parables of the Virtual* (2002), which clearly distinguishes between tactile sensibility, proprioception and interoception, three distinct instances of that which is usually understood as haptic:

[P]roprioception, defined as the sensibility proper to the muscles and ligaments as opposed to tactile sensibility (which is “exteroceptive”) and visceral sensibility (which is “interoceptive”). Tactility is the sensibility of the skin as surface of contact between the perceiving subject and the perceived object. Proprioception folds tactility into the body, enveloping the skin’s contact with the external world in a dimension of medium depth: between epidermis and viscera. (Massumi: 2002, 58).

Nonetheless, as previously mentioned, there is also a long tradition in philosophy that focuses on the aporetic qualities of the word. Jean-Luc Nancy, for instance, asserts that the etymology of the verb *haptēin*, goes well beyond its common association with the idea of being able to touch, grab, attach, or fasten, given that it can also mean “to hold back, to stop” (Nancy: 2008, 15). Moreover, it would be this dual nature of touch that would lead Jacques Derrida to analyze Nancy’s philosophy of touch, especially the one propounded in volumes such as *Corpus* (1992) and *Noli me Tangere* (2003), as a possible intangible tangibility that touches the entire gestural dimension of certain historical moments such as the Baroque (not to mention the way these philosophers also question the notion of body in a Western Christian context).

As such, I propose to re-evaluate the role of haptic touch in literature based on this haptological tradition, by looking specifically at digital literary artworks that make use of its metamedial poetics (along with an intermedial aesthetics), in order to question concepts, media and devices. This sort of philosophical approach, strongly associated with Continental philosophy, enables us to explore a link between current artistic practices and earlier art movements, going as far back as the Baroque.

The gestural and haptic dimension of the artistic avant-gardes, both the European

historical avant-gardes and those that would emerge in the second half of the twentieth century, is something that is also visibly present in Baroque art. Although the “Neo-Baroque” designation that has been attributed to these avant-gardes by several researchers, in various instances, brings with it a series of problems, it is possible to identify a series of shared gestures of subversion/disruption based on those Hatherly identified in the Baroque. It is precisely these *gestures* which, in digital contemporary art, expressly, in digital literary artworks, are taken to their extreme, presenting themselves through two contrasting tendencies. Firstly, through digital artistic practices which, by making use of the latest technologies, contribute to a series of instrumentalizations of sensory perception, such as the incessant search for tangibility between human and machine, as well as the search for a complete emulation of the senses by machines (which entails the known risks of the predominance of technics, spectacularization and entertainment). Secondly, through artistic practices that use technology experimentally, while questioning the very concepts, media and devices which they resort to. This questioning, as is often the case with digital literary artworks, also involves processes of language, including the gesture(s) of writing (and reading).

As follows, the digital literary artworks that I propose to analyze in this thesis, besides presenting clear characteristics of a metamedial poetics, in association with an intermedial aesthetics, cannot be analyzed without establishing a connection with previously explored creative processes where subversion already played a part in the creative act (although the targets of this very subversion, or instruments of power, as Hatherly refers to them, were not the same). We may also think of targets such as functionalism and functionality, a recurrent aim of digital technology industries, as well as concepts such as the digital interface, and the problematics of human-machine control, as issues that do not rule out important political-ideological and socio-cultural dimensions.

My definition of haptic shall reveal itself as being multilayered and inflected, drawing from several definitions already explored by researchers and thinkers from different fields of knowledge, as well as being largely influenced by the metamedial and countercultural features of contemporary digital poetic practices. In a series of chapters that alternate between theoretical analyses and literary close readings, it is my intention to investigate the ways in which digital literary artworks make use of haptic touch in reading processes, using it to explore new ways of understanding sensory and affective dimensions of literary cognition, as well as to delve into what it means to read and write in a digital multimodal environment.

In his book *Downcast Eyes, The Denigration of Vision in Twentieth-Century French Thought* (1994), Martin Jay presents us with a series of continental philosophical thinkers who came to

identify and counteract a certain dominion of visibility, a by-product of an ocularcentric culture propelled by the Gutenbergian paradigm, as well as of its confluence with an idea of political and social oppression promoted through phenomena such as spectacle and surveillance. Along six hundred and fifty pages, Jay scrutinizes the role of vision in Western culture, from its dominance as “the noblest of the senses,” to its loss of aura, presenting us with several moments of Western cultural thinking with regard to vision and visibility.¹² From Plato to Descartes and the Enlightenment; the Impressionists to Bergson; Bataille and the Surrealists; Sartre and Merleau-Ponty; Lacan and Althusser; Foucault and Debord; Barthes, Metz and the *Cahiers du Cinéma*; Derrida and Irigaray; as well as, Levinas and Lyotard; his account of vision as a sense modality reveals the complexity and significance of human sensory perception in society and culture. Not surprisingly, one of Jay’s premises concerns the way language and perception should be understood as two equal parts of the same equation, specifically, through metaphors that are part of everyday language. The term Jay uses to describe this mechanism is ubiquity, going as far as adding a footnote that draws attention to a series of visual metaphors that he resorts to in his (meta)discourse. Nonetheless, his metaphors are mostly visual, illustrating the long-standing dominance of vision in what he calls “the complex mirroring of perception and language” (1994, 1), which may also explain why many commentators have claimed that “certain cultures or ages have been ocularcentric or dominated by vision” (3). Jay will turn his attention toward some of these commentators in order to question whether it is possible to reverse that domination, should vision be understood not just as part of our physiology, but also, as a notion of crucial influence in “historical terms” (3) and within “our culture as a whole” (11).

This questioning of vision and visibility, however, cannot be dissociated from two other paradigm shifts, the first being the shift from an aesthetic paradigm of the Beautiful and the Ugly to an aesthetic of perception and mediality, through which, for example, a confluence between an industrial object and an artistic object may be observed (Pires: 2013, 180-181). The second, interconnecting with the former, being a systematic critique of the Cartesian dualism of soul/body,¹³ which has not only reverberated in practically all areas of knowledge, but also given rise to new fields. These include, for instance, experimental psychology and cognitive

¹² Martin Jay distinguishes between vision and visibility: “It implies, in other words, the inevitable entanglement of vision and what has been called ‘visibility’ – the distinct historical manifestations of visual experience in all its possible modes” (1994, 9).

¹³ According to Martin Jay, “Descartes was a quintessentially visual philosopher, who tacitly adopted the position of a perspectivalist painter using a camera obscura to reproduce the observed world. (...) For many commentators, Descartes is considered the founding father of the modern visualist paradigm. (...) Descartes may thus not only be responsible for providing a philosophical justification for the modern epistemological habit of ‘seeing’ ideas in the mind, but may also have been the founder of the speculative tradition of identitarian reflexivity, in which the subject is certain only of its mirror image” (69-70).

neurosciences, which, oddly enough, have also been accused of a huge discrepancy in studies devoted to isolated sensory modalities, being often exclusively focused on vision. Besides, while this tendency for the primacy of vision as a pure sensory modality is not specific to digital environments, it seems to undoubtedly be reinforced in the so-called era of images. As such, reading and writing processes cannot be divorced from the ocularcentric cultural paradigm. However, according to Maria Engberg,

Despite Martin Jay's claims regarding the assault on the visual by critical theory in the twentieth century (Jay 1993), literary criticism largely understood text as apprehended by the visual sense. Reading was visual and, if recognized at all, only marginally something physical. The digital offers a more complex understanding of the tactile, even the visuotactile, different from the notions of the feel of a printed page or binding of a book. However, the aesthetic possibilities of a complex writing surface – with its animated, tactile and sonic capabilities – are a potential to be explored, not an inherent ever-present quality of any one medium's affordances.

Adding that:

The role that tactility plays in a medium is viewed differently in art history than in interaction design or media theory. Art theory and history have long viewed touch as an inferior mode of aesthetic experience; Panofsky maintained that modern knowledge is predicated upon the eradication of touch from artistic, scientific and philosophical practice (1991). Although his view is challenged today, touch is still, as Fiona Candlin has argued, an adjunct to vision as critical engagement (2010). (Engberg: 2013, 23)

However, as one of the main goals of this thesis is to analyze what I refer to as haptic reading processes, by exploring the history of haptic touch according to distinct fields of knowledge, namely, art theory and history, as well as interaction design and media theory, I argue that one cannot think of haptic reading processes without taking into account the aforementioned history of haptic touch. In this sense, if, on the one hand, throughout the history of art a tendency towards a nonrecognition of touch may be observed, on the other hand, this nonrecognition seems to have significant implications in the way we interact with digital media. This can be seen especially in remediation processes from one medium to another, where the most observable tendency, in most cases, is transmedial emulation. This tendency may be verified, for instance, in the terminological and technological emulation of manuscript and codex on the screen, and at another level, in the way buttons and keys evolved from their analogical status to their current digital configuration (a remediation nonetheless).

More than twenty years after its publication, Martin Jay's book must now be reread up against a whole series of cultural changes, including the way in which the rhetorics of vision, despite their continual dominance, have come to be questioned by the emergent rhetoric of touch. In order to understand this significant change, one has only to think of the growing ubiquity of digital technological devices that call for an interaction through touch and gesture,

thus allowing for the experience of all kinds of digital content, as well as the growing search for tangibility between humans and computational machines, namely via means of sensory experiences made possible through virtual /augmented reality and mixed reality (or mixed virtuality) platforms.

Academic and industrial research is giving way to a whole new rhetoric of bodies and surfaces (as well as interfaces). One of the problems is that, as with any substitution of a given rhetoric for another, the intensification of tactility in detriment of vision brings with it several paradoxes. On the one hand, it ends up reinforcing the existence of a visual culture typical of an ocularcentric society, hence amplifying the primacy of vision over other sensory modalities. In consonance with what Caroline Jones describes as “the reformation of the senses,” carried out at least since the 1990s through the search for “everyday virtuality” (2010, 97), this paradox becomes even clearer due to a growing dichotomy between the opacity and transparency of digital interfaces, in their multiple forms, thereby linking the idea of superficial, with something that is superfluous or accessory. On the other hand, as previously mentioned, it often gives rise to certain instrumentalizations and literalizations of touch and gesture, one of which is the way the adjective haptic is being resignified.

Current resignifications of the word haptic operate through semantic restriction, given that in their alleged recovery of touch, they seem to ignore an entire haptologic tradition of philosophical approaches – dating back to Aristotle – that enable us to rethink the notions of touch and gesture, in addition to the notion of affect, beyond their engineering and superficial connotations. Jacques Derrida, for instance, drawing on the idea of “writing as body” previously explored by Jean-Luc Nancy, offers a long reflection on the haptic aporia, pointing to a

“[T]actilist” or “haptocentric” tradition [extending] at least until Husserl and [one that] includes him, a tradition that becomes complicated, with the risk of being interrupted, in Merleau-Ponty (...) when the latter seems to reinstate a symmetry that Husserl challenges between the touching-touchable and the seeing-visible. (Derrida: 2005, 41)

Haptic aporia in turn leads to a paradox of intangible tangibility, an understanding of “tact, not in the common sense of the tactile, but in the sense of knowing how to touch *without* touching, without touching *too much*, where touching is already too much” (67, his emphasis).

Moreover, this haptological tradition, which forms the basis of haptic aesthetics, should not be regarded as a niche closed in on itself, since it is possible to recognize an appropriation of some of its arguments in multiple artistic practices. In this sense, the exploration of the haptic aporia and its multisensory interchanges posited by the aforementioned haptological tradition, may be found throughout the history of Western art, having reached its peak with the avant-gardes from the beginning of the twentieth century. From a series of countercultural and

experimental practices that would originate a chain of reactions extending across the whole of the twentieth century, artistic movements such as Italian Futurism and the various Dadaisms, which appealed to different ways of experiencing art, would offer a critique of dominant ocularcentric assumptions.

According to Caro Verbeek, and despite her view of touch as an “unmediated sense” – a view with which I am inclined to disagree, as we shall see in the following chapters – artists from the beginning of the twentieth century started “experimenting with the non-visual senses,” touch being “a sense often discussed, documented and applied by artists and yet-long-neglected by art historians” (Verbeek: 2012, 226). These artists’ concern with other senses often considered as inferior was a “reaction to the nineteenth-century attitude that ranked the five common senses in a strict hierarchy” (227). This sort of questioning of the ways of seeing and experiencing art may be found, for instance, in Marinetti’s tactilist manifesto, from 1921:

In the course of making my attentive and antitraditional observations of all the erotic and sentimental phenomena that unite the two sexes, and of the no less complex phenomena of friendship, I’ve come to understand that human beings speak with their mouths and their eyes, yet never achieve true sincerity because of the insensibility of the skin, which is still a mediocre communicator of thought. (Marinetti, as cited in Rainey *et al.*: 2009, 266)

In addition, and in relation to Dadaism, Walter Benjamin refers to the Dadaist work of art, particularly cinema, as a “missile”:

From an alluring visual composition or an enchanting fabric of sound, the Dadaists turned the artwork into a missile. It jolted the viewer, taking on a tactile [*taktisch*] quality. It thereby fostered the demand for film, since the distracting element in film is also primarily tactile, being based on successive changes of scene and focus which have a percussive effect on the spectator. (Benjamin: 2008, 39)

As evidence of a legacy transmitted through several avant-garde artistic practices, something which several researchers have already delved into (Aarseth: 1997; Ikonen: 2003; Simanowski: 2011; Block: 2004; Schaffner: 2005; Manovich: 2002), it becomes possible to recognize avant-garde visions within computational software (Manovich: 2002). In their questioning of digital interfaces, current digital literary artworks would end up contributing to a continuous countercultural and essentially intermedial aesthetics as a continuation of their already referred inheritance. The same may be said of an intense reflection on the haptic phenomenon, and what it means to experience a work of art through haptic reading processes that are not restricted to the usual resignifications of haptic. As Maria Engberg affirms, in her rather optimistic view of the haptic shift within digital media:

[A]s touch interfaces multiply and we become habituated to their use, there remains a difference between merely watching an image and actually using your hand to manipulate a surface and receive an immediate response in the digital image you touch. Responsive, a performing under the touch of a fingertip, or the light touch of a swipe of several fingers

across a glassy surface, makes a sensual, perceptual, difference. (...) McLuhan's synesthesia gives way to polyaesthesia, and to polyaesthetics. The touch interfaces set up complex and multiple sensual relationships that are of course visual but also tangible and proprioceptive. (2013, 2)¹⁴

Academic research has also undergone a haptological shift, as some researchers and critics begin to abandon their biased visual perspective, choosing to instead focus on more multisensory approaches. In this context, the importance of another intellectual current, including names such as Nietzsche, Heidegger, Kittler, and Flusser, should also be mentioned, insofar as their investigations into the materialities of different reading and writing media, such as the typewriter, or more recently, the personal computer, are directly relevant to my argument for the possibility of haptic reading. This need to begin to take into account significant questions, such as the ergonomic materialities of digital devices and the influence that these can have on writing and reading processes, as well as on the relation between humans and machines, is evidenced by researchers such as Manuel Portela (2013), Carrie Noland (2006) and Maria Angel & Anna Gibbs (2010), among others, whose work shall be discussed in detail in the chapters that follow.

1.4 Haptic Inter[(SUR)Faces]

A thinking of touch must at least go through a theory of skin. Now, what is skin, the pellicular, peau, peel, pelt, fell, or hide?

Derrida, *On Touching – Jean-Luc Nancy*

Skin and screen are two specific types of thresholds that ambiguously suggest both permeability and impermeability, two notions that are intrinsic to any type of communication. Inasmuch as skin has the ability to protect, to separate, or to contain something, namely viscera, it is also the main gateway for all stimuli human beings may receive from the external world. As for the screen, it conceals, as much as it reveals. In this regard, both concepts may work together in a symbiotic relationship, expressly, one of *ex-foliation* between *cybrid bodies*, both having interconnected exterior and interior sheaths. Calling for a comparison between skin and screen as interfaces (including *digital* interfaces), I argue that, just as touch is not dependent (alone) on what

¹⁴ On her personal website, Maria Engberg defines her understanding of polyaesthetics in the following way: "Originally, *polyaesthesia* was a rarely used medical term that described an abnormality of sensation in which a single stimulus is felt in several places. I use *polyaesthetics* to connect to sensory engagement, but in a way that retains the original Greek understanding of *aisthesis* as the perception of the external world by the senses. I also want to expand the term to refer to the desire in contemporary media culture to foreground the use of multiple tools, practices, and modes of reception. The polyaesthetic is evident in media environments that call on more dimensions of the human sensorium than earlier media." <<https://polyaesthetics.net/what-is-polyaesthetics/>>, last accessed September 11, 2017.

happens at the surface of the skin, digital media also depend on other layers beyond the screen, which raises the question as to how a digital literary artwork, and its experience through touch, may unravel the contained and subliminal nature of literature.

According to Søren Pold, in order for cybernetic criticism to occur, the artwork must be:

[C]ybernetic in its form, in order to enter into the system, but also an outspoken meta-reflection of the machine in order to avoid merely confirming the order of the system and becoming a speechless part of it, as just another wheel in the machine, or a banner ad on the front page of the cybernetic spectacle. (Pold: 2011,107)

One way of doing this is through the analysis of digital literary artworks that, while perpetuating an avant-garde countercultural tradition that began to question visual culture as early as the beginning of last century, channel their countercultural and metamedial poetics into phenomena like digital interfaces. Resorting to a critique of digital media, devices and concepts, I argue that there is a need to question the complex movements that are made on these glassy surfaces. These gestures may or may not be used with multi-touch devices such as tablets and smartphones. Nevertheless, these critiques often self-reflexively question the specificities of these digital devices and media, as well as the apparatuses that enclose them.¹⁵ I argue that such *machimanipulations*, manipulations of digital media by both humans and machines, tend to defy the general assumption of surfaces as superficial things, hence recovering Deleuze's idea of surfaces as double-fold and profound (Deleuze: 1990, 4-11).

The adoption of an intersensory approach as can be observed in the integration of vision and touch in digital literature, may provide an alternative to the rhetoric of smoothness and roughness (deriving, as we shall see, from a rhetoric of transparency/opacity). The real difference, however, made possible due to progress in *digi-tech*, is that we are now given the illusion of being able to unveil for ourselves these gimmicks with a simple Midas touch. Moreover, if the hands-on-screen as the ultimate interface may be explained as a consequence of both *ubicomp* and the aim for transparency (which is to say, a desire to access knowledge through a more direct way of perception), what should be said of our relationship with these gadgets made of cold glass and aluminum, seemingly capable of providing us with a paradoxical sensation of warmth while we hold them?

¹⁵ Drawing on its common Foucauldian use as a “set of practices and mechanisms (both linguistic and nonlinguistic, juridical, technical, and military) that aim to face an urgent need and to obtain an effect that is more or less immediate,” Giorgio Agamben redefines the term “apparatus” as “anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviors, opinions, or discourses of living beings. Not only, therefore, prisons, madhouses, the panopticon, schools, confession, factories, disciplines, juridical measures, and so forth (whose connection with power is in a certain sense evident), but also the pen, writing, literature, philosophy, agriculture, cigarettes, navigation, computers, cellular telephones and – why not – language itself, which is perhaps the most ancient of apparatuses (...)” (2009, 14).

1.5 Hands that See

Caught in the recursive loop between computer processing of codes and human processing of textual events, the hand is able to feel itself reading.

Manuel Portela, *Scripting Reading Motions*

In Chapter 3, emphasis will be given to one of the most recurrent metonymies of touch, the hand, particularly a hand that is infused with vision, having the eye as its most faithful companion. Nevertheless, discussions on the role of this metaphor, as well as its significance to my understanding of haptic reading shall require a preceding detour. This deviation will specifically focus on the hand as a trope in art and culture, by means of an analysis of Derridean accounts of a longstanding philosophical tradition surrounding the haptic as adjective, as well as through a digression on this trope as a by-product of an ancestral collective imagination still powerful in the era of digitality. Other significant issues involving the hand are also its role as organic prosthesis, as well as its significance within the context of the organic body (including the brain). For that purpose, I shall compare Leroi-Gourhan's considerations on the role of the hand in the relationship between technics and language, with Frank R. Wilson's thoughts on the historic origins of the interdependence between brain and hand function.

The replacement of mechanical-electronic interfaces with tactile haptic contact with the screen, using hands, fingers and, in some cases, the whole biological body, brings to the fore a series of literal gestures with visible influence on the way we read and write in digital multimodal environments. Making use of a rhetoric based on perceptual qualities such as transparency and softness, this prosthetic curtailment seems to give continuity to an ancestral desire for an immediate and non-mediated access to knowledge. As shown by David Parisi, in his Kittlerian examination of the discursive framing of touch in Nintendo's Dual Screen advertisements, as a way to reconnect with "a lost and repressed mode of perception" via a "nostalgic memory of a pretechnological sensorium that can be restored using technology," through a displacement of "older models of touch" and an attempt to redefine what this term means (Parisi: 2008, 307). Contrastingly, this imaginary appeal for immediate connectivity ends up paradoxically reinforcing the dominion of visuality reinforced through the "Gutenberg Galaxy," as well as the understanding of reading as a mere visual process. According to Parisi,

The DS ads position it as a device that allows interpersonal touch - intersubjective contact – mediated by the sensing, eroticized screen. No longer a space of pure visuality, the DS ads teach us to reconsider our relationship to the screen, not to treat it as something touch contaminates but rather as a surface meant to be fondled, poked and caressed. Touch is introduced into the image; the finger (which functions as an icon for touch) is pressed into a space normally reserved for the eye, but in the process touch as a

category of experience is fundamentally transformed as our expectations for the experience of touch are recalibrated to fit the capacities of its technological extension. *Rather than disrupting the logic of the image, touch is brought under the control of a visual logic by pretending that touch's technological reintegration under the eye's mastery is sufficient to reproduce it.* (314, my emphasis)

Nonetheless, given that the gesture of writing is present in all of the possible configurations of the word reading — taking into account the way the gesture of writing was understood by artistic avant-gardes such as the Portuguese Experimentalists, whose intermedial, cybertextual and intersensory concerns continue to generate renewed readings in what concerns transactions between the literary and the digital – special emphasis shall be given to the ways in which the hand was and persists to be reinvented by Experimentalism. Furthermore, confluences of both analog and digital gestures shall also be emphasized as one of the central characteristics of haptic reading processes, produced by actual and virtual manipulations of the text in digital literary artworks.

As might be expected, this chosen route will inevitably lead us to fingers, another recurrent metonymy for touch. By means of a brief analysis of its synonymy with the English word *digits*, I shall discuss what is “digital about digital media,” to borrow Till A. Heilmann’s expression. Since these discussions mostly concern the specific case of digital literary artworks, for practical purposes focus will be placed on several case studies of artworks metamedially concerned with the multisensory role that both hands and fingers play, as shall be observed in artworks such as *Pry* (2014), a literary app specifically designed for mobile multi-touch devices, and *Touch* (2009), a digital poem that does not depend on these devices in order to question touch and tactility within the context of digital interfaces.

Despite museological practices that appeal primarily to vision and visibility,¹⁶ our sense of touch and haptic perception may play a significant role in terms of aesthetic perception, our skin being crucial to the experience of art, even if there is no direct cutaneous contact. This tactile/haptic dimension is augmented in what concerns the experience of digital art, including digital literary artworks. If we are to agree with Kittlerian observations that media does in fact alter our perception, then it follows that digital media extend our proximal perception, to the point of creating new forms of intimacy and emotionality, as well as new forms of communication. Regardless of their often metamedial nature, the experimental nature of digital literary artworks is far from being immune to the recurrence of the trope of the hand in popular culture, as well as to the longstanding haptocentrist tradition in philosophy. But given their digital

¹⁶ For more on this subject, please refer to Candlin, Fiona (2009). *Art, museums and touch*. Manchester. Manchester University Press.

nature, this occurs in a vastly different manner from that of previous artistic forms, evoking, in turn, another variation of the intangible tangibility paradox: while touch is now one of the main features of these artworks' aesthetics and poetics, how may be it possible to touch the digital? This new contradictory condition pertains to the possibility (and sometimes fundamental necessity) of touching a digital artwork in order to fully experience it, a complete change of paradigm in comparison with the fruition of a painting or sculpture in a museum or gallery (encapsulated in the ubiquitous and disturbing *DO NOT TOUCH* signs). However, this is not to say that there is not a sense of intangible tangibility at the core of digital artworks' potential messages. On the contrary, it is precisely what bestows them their paradoxical condition.

1.6 Singularity and Multiplicity of Touch

Tactility is involved with thought whether in our minds or in our machines, as a participant in the thinking process.

Derrick De Kerckhove, *The Skin of Culture*

Two fields of knowledge that actively explore the emulation of tactile information processing in Human-Machine Interaction (HMI) are experimental psychology and cognitive neurosciences. In their compendium on touch, *In Touch with the FUTURE: the sense of touch from cognitive neuroscience to virtual reality* (2014), experimental psychologists Alberto Gallace and Charles Spence present a state of the art of touch within neuroscientific research, discussing both its potentialities and limitations. Similarly to Martin Jay, Gallace and Spence also give us evidence of a primacy of vision in the history of research on human perception, with touch being a sensory modality often neglected (4). Such primacy is in consonance with most theories of consciousness, which are, in fact, theories of “visual consciousness,” and thus not able to “provide any possibility of being easily extended to account for people’s awareness of stimuli presented in the other sensory modalities” (71). One of the reasons both researchers believe is behind this neglect of other senses is how little we currently know “about the machinery underlying human social interactions that involve the sense of touch,” which constitutes a challenge when it comes to reproducing “these sensations artificially,” or being even “utterly impossible.” In addition, “this process is made all the more complicated by the fact that tactile interactions rarely (if ever) occur in isolation, that is, in the absence of visual, auditory; and/or olfactory stimulation” (4). It follows that their perspective on haptic touch as an “active, serial exploration of a stimulus” involving “the movement of different parts of the body,” contrary to other researchers’ beliefs, is a

multisensory one, “rather than being a ‘single sensory modality’” (5, note 1). Moreover, research on touch becomes even more complicated, if we take into account the ways in which technological devices gradually channeled sensory perception throughout the history of media. This multisensory perspective might provide a possible resolution for the far too literal scope of research on the study of tactile information processing.

Pioneering research in experimental psychology, such as the one led by Susan Lederman and Roberta Klatzky, show that touch can be best understood if we take into account its cross-modal nature. For Lederman and Klatzky, “in everyday perception, touch and vision operate together,” (2003, 147) since both “interact cooperatively extracting information about the world,” despite of representing different priorities, with touch emphasizing information about material properties and vision emphasizing spatial and geometric properties.” (147-148) Proof of this is the way in which a “visual cue can direct attention to a tactile stimulus,” inasmuch as “incongruent visual stimulation can interfere with tactile detection.” (164)

Such observations are supported by Gallace and Spence, for whom vision, “the most intensively investigated of the senses, and the one that most of the time seems to dominate the mental lives of sighted individuals (not to mention researchers), is often affected by touch.” This is evidenced, for example, by the fact that “the shape of an object held in our hands can affect our ability to find similarly shaped items in a visually cluttered scene” (6). Their research emerges within the context of substantial developments in technology, especially those concerning the simulation of “believable sensory stimulation,” such as VR, AR and MR/MV. Haptic research also appears at a time marked by a society that “is becoming increasingly ‘touch hungry’ because of the reduction in social tactile interactions” (7). According to them, such research may be extremely useful to, not only the development of VR environments, but may also prove to be of relevance within various other fields, namely: videogames, the automobile industry, product marketing and design, systems of sensory substitution (for individuals with some kind of sensory dysfunction), design of human-machine interfaces, in addition to, applications within artistic, sexual, and gastronomic fields. Notwithstanding, the constant channeling of the senses does not seem to be a very productive method, since it has been recently demonstrated that “the limitations that affect human information processing when stimuli are presented from just a single sensory modality might be dramatically different from those that affect information processing under conditions of multisensory stimulus presentation” (12).

Furthermore, Gallace and Spence believe that, in the future, researchers should place a bigger focus on other sensory modalities, touch being one of the main candidates. They offer practical (even anecdotal) examples of how industries and academics have spent large amounts of

money on things pertaining to vision, neglecting that, from a neurocognitive perspective, this is not certainly an adequate approach. Given that technology is still far from being able to reproduce effective tactile sensations, they posit that one of the solutions would be the reinforcement of multisensory illusions and signs that can trick the brain into perceiving tactile sensations, even when these are not actual (13). Nonetheless, crucial differences between sensory modalities, as can be observed, for example, in visual and tactile information processing, have to be considered, the first having its information “coded retinotopically,” while the latter, “at least initially, coded somatotopically” (39).

A little more difficult to understand, is the application of neuroscientific research in the fields of arts, sex and gastronomy, and although their book is one of the first attempts to address these issues from a haptic point of view, this sort of research should not reduce human neurosensorial processing to a series of observable and quantifiable data. Furthermore, the danger of commercializing the senses is always latently present, for instance, through philosophical literalizations carried out by the publicity and entertainment industries, particularly when the inherent complexities of these fields are not consistent with a scientific methodology that appeals either to an individuation of research on each sensory modality, or to an understanding of the haptic that goes beyond the somatosensory system.

On one hand, empirical research may become too literal, expressly in its difficulty to surpass the somatosensorial system (from the local receptors on the skin, muscles and joints, to cerebral activity), thus mechanizing the human element for the sake of the scientific precision of collected data. On the other hand, in the Humanities, the shortcomings lie in seeing touch as something too literary. The excessive use of metaphors potentiated by an *intersensory* perspective, in order to completely disrupt the idea of sensory modalities, may fall into the trap of an anthropocentric illusion which has long plagued hermeneutic philosophy and the social sciences.

Much in the same vein as Gallace and Spence’s book, Matthew Fulkerson’s *The First Sense: a Philosophical Study of Human Touch* (2013), is a book that tries to break barriers resulting from the post-Kantian divergence between human and exact sciences. Although both works lie somewhere in the middle of the dichotomy between the overly literal and the overly literary, the strategies they use to analyze touch and haptic touch take different paths. This may be due to the authors’ distinct backgrounds, Fulkerson opting for an analytical and empirical philosophical argument, while Gallace and Spence present a model common to cognitive neurosciences and experimental psychology. Thus, each volume takes one of two opposite sides of the discussion, although sharing the common goal of making use of an argument sufficiently interdisciplinary so as to reveal the role of tactile information in the context of multisensory human perception, a

goal that counteracts the tendency to focus scientific research on ocularcentric perspectives.

The First Sense results from Fulkerson's PhD. thesis in Philosophy (University of Toronto, Canada), six of its seven chapters being a result of his thesis' main argument, in which he defends that haptic touch "despite its functional diversity, is a single, unified sensory modality" (xi) – a marked position that is in clear contrast with Gallace and Spence's multisensory approach. With regard to its subject of analysis, Fulkerson's argument is controversial, although it is also exemplarily constructed by means of a logical reasoning typical of empirical philosophy, sustained by practical examples from daily life. It is, therefore, a fitting analysis coming from the field of contemporary analytical philosophy, focused on "sensory content, representation and reference; dependency relations (of various sorts) between perception, bodily awareness, and exploratory action" (xi), as well as "the phenomenal and epistemic nature of tactual experience" (xi-xii). Nonetheless, the author does not disregard the significance of an interdisciplinary model of cognitive science, supported by results obtained from the fields of cognitive neurosciences and psychophysiology. On the contrary, according to Fulkerson, his argument pays debt to the influence of previous scientific research, such as the one led by Susan Lederman and Roberta Klatzky, considering such interdisciplinarity may be the first step towards a better understanding of human touch (xii).

Fulkerson asserts that his book is based on two main pillars: the first being, to give "a philosophically robust account of the nature, structure, and content of perception through touch"; and the second, to communicate that "work in touch has deeper implications for our general understanding of perception and perceptual experience" (xiii). While it is true that the first aim seems to reflect a longstanding desire for interdisciplinarity, it is nevertheless not clear how it can be sufficiently embracing to the point of accepting and working together with other less analytical philosophies. On the other hand, the book's second aim, is revealing of the author's intention behind the choice of its title, *The First Sense* (his PhD thesis having been originally titled *The Sense of Touch*). The title is justified by Fulkerson as being less an idea that touch is in fact the first sense to develop *in utero*, but rather, resulting from its constant preterition in favor of other sensory modalities, namely vision: touch, contrary to other sensory modalities, "involves our entire body and offers awareness of a range of distinct and important features of the world" (xii), Fulkerson giving particular emphasis to the role of exploratory action.

The first chapter is also where Fulkerson lays out the plan for his argument, acknowledging that touch often involves bodily parts other than the hand, although also stressing the critical role of this part of the body with regard to things like stereognosis (the recognition of objects through touch), the manipulation of extracorporeal objects, and the use of tools. Besides,

touch seems to involve an “awareness” extended in time, implying, for instance, a set of variables, as well as exploratory movements and a series of discriminatory “sensible features.” Following on from this, his analysis goes on to focus not so much on prehension, gestures and communication, focusing instead on the dimension of touch as a form of sensory awareness, an option that will prove to have an obvious influence on his conclusions. This choice will also impact the distinction he makes between tactility and haptic touch, Fulkerson opting to focus on the latter, assuming that, whenever tactile perception is active and exploratory, it is also haptic, and not just cutaneous (passive).

Consequently, based on the difficulty posed by Brian Keely in attributing the characteristics of a single organ with its own energy to touch, a formulation that would ultimately lead to making each sensory transducer a sense in itself, Fulkerson states that a group of several channels involved in touch form a unified sensory modality, even if one has to figure out how they can work together (14). This leads us to that which Fulkerson refers to as “unified representations,” which, although similar, should be distinguished from each other. In turn, this very position establishes Fulkerson’s argument as a mix of two approaches, given that touch is described as a unified sensory modality despite its multisensorial nature. In other words, while he does not disregard an intersensory dependence of perception, he is impelled to subdivide it into different “unified representations.” As such, haptic touch implies “a diverse set of sensory subsystems that function to assign a unique set of qualitative features to individual objects” (19). Consequently, exploratory action, understood as a mechanism of vinculation of sensory characteristics in haptic touch, is similar to other equally different subsystems that can be found in other sensory modalities such as vision.

It is curious to note Fulkerson’s reference to the duality between proximal and distal touch, for “it informs us both of the conditions of our own bodies and of the properties of external things,” causing tactile experience to depend on this same dual body-consciousness (77). Regarding distal touch, understood as the possibility of experiencing “objects through touch, even when those objects are not in contact with the apparent limits of our bodies” (137), Fulkerson introduces a counterpoint to previous theses such as the “contact thesis” or the “apparent contact thesis.” His “connection principle” “holds that distal touch requires an appropriate tactual medium to connect our sensory surfaces to the distal object” (137-138). In other words, unlike other senses, touch requires a different type of mutual interactive connection between our sensory surfaces and the objects of our experience. This observation enables us to think of tactile media as being reliable in transmitting tangible information, provided that there is a “peripersonal space (...) the area immediately surrounding a subject’s body, usually defined as

the area wherein one can easily reach and actively engage” (160). As such, Fulkerson concludes that this description of distal touch may be of interest to “those working on haptic interfaces and virtual reality technologies” (164).

However, the key to his argument lies in Fulkerson’s development theories on “intensive features,” since according to him these are capable of interconnecting the various aforementioned subsystems. Given the versatility that touch assumes, both in its phenomenology, as well as in regard to its multiple sensory receptors, Fulkerson’s task in building an argument in favor of touch’s unicity, is far from being an easy one, considering that the vast majority of approaches advocate multisensoriality.

But how does the question of the unicity and multiplicity of touch relate to reading? How can touch be simultaneously associated with the action of reading and readers? Reading (and writing, seeing that ink adds to the surface of inscription a layer of roughness) is in itself a tactile experience. Nonetheless, as we have seen, the materialities intrinsic to reading processes must be distinguished in accordance with the media and types of mediation involved. We could paraphrase the observations by German visual artist Peter Roehr concerning art, by saying that *Whether or not this is what reading is, I do not know. On the other hand, I do not know what else it could be.* However, I shall simply evoke the same justification I use with regard to literature, opting for a broader definition of reading, expressly, one that is not exclusive to print literature, nor literature as a whole. As noted in previous chapters, my understanding of reading assumes an intense connection between the senses, as well as between cognition and perception, and while not not excluding vision, it takes into account a much more multisensory connection between several intero- and exteroceptive senses.

Alva Noë’s book *Action in Perception* (2004), is based on the idea that vision is far from being passive, since it is highly dependent on sensory systems other than the eye. Comparing vision to touch, Noë infers the presence of movement and temporality in vision. In deconstructing the paradigm of perception as being based on vision and the idea of “vision on a photographic model” (2), Noë states that perception is not to be confused with sensation, inasmuch as, “to be a perceiver is to understand, implicitly, the effects of movement on sensory stimulation,” being applicable to all sensory modalities:

An object looms larger in the visual field as we approach it, and its profile deforms as we move about it. A sound grows louder as we move nearer to its source. Movements of the hand over the surface of an object give rise to shifting sensations. As perceivers we are masters of this sort of pattern of sensorimotor dependence. (1)

And while he does not deny haptic/tactile perception as being the major gateways to all of our forms of understanding, he bases his view on a multisensory perspective in which sense

modalities are integrated, given that “perception is input from world to mind, action is output from mind to world, thought is the mediating process” (3). In digital multimodal environments, this “input-output picture” (Hurley, as cited in Noë: 2004, 3) seems to attain a balance that is considerably more evident than in more traditional forms of reading, in which the mediating process, specifically, thought, is much more pronounced. From here, it follows that:

You aren't given the visual world all at once. You are “in” the world, and through skillful visual probing – what Merleau-Ponty called “palpation with the eyes” – you bring yourself into contact with it. You discern its structure and so, in “that” sense, represent it. Vision is touch-like. Like touch, vision is “active”. You perceive the scene not all at once, in a flash. You move your eyes around the scene the way you move your hands about the bottle. As in touch, the content of visual experience is not given all at once. We gain content by looking around just as we gain tactile content by moving our hands. You enact your perceptual content, through the activity of skillful looking. (73)

Noë's notable research on action and perception is highly relevant to the analysis of perception in haptic multimodal interfaces, having been largely influenced by the paradigm of *embodied cognition* put forward by at least three seminal books on the subject: George Lakoff and Mark Johnson's *Metaphors We Live By* (1980), Francisco Varela, Evan Thompson and Eleanor Rosch's *The Embodied Mind* (1991), as well as Andy Clark's *Being There: Putting Mind, World, and Body Back Together* (1997). Together, these three books provide a very strong counterargument to the dominant views in the field of philosophy of the mind, which tend to regard the body as peripheral, and see the mind as being confined to the brain.

In 1980, Lakoff and Johnston made manifest their view that figurative language, namely metaphors, play a major role in cognition. As the title of their book suggests, metaphors define human experience, their pervasiveness in our lives going well beyond language, and being largely responsible for our actions and thoughts (2003, 4). In a revised edition of that same work, Lakoff and Johnston reinforce their argument on embodied knowledge through the concept of *enactment*:

When we imagine seeing a scene, our visual cortex is active. When we imagine moving our bodies, the pre-motor cortex and motor cortex are active. In short, some of the same parts of our brains are active in imagining as in perceiving and doing. We will use the term *enactment* for dynamic brain functions shared both during perceiving and acting and during imagining. An enactment, real or imaginative, is dynamic, that is, it occurs in real time. (258, their emphasis)

Another perspective coming out of embodied cognitive science is the notion of *enactive cognition*, explored by Varela et al. Mainly influenced by Merleau-Ponty's phenomenology of perception, Varela and his colleagues see embodiment as a combination of knowledge, cognition and experience (1993, xv). Differing from the more strictly disciplinary approaches of the 1940s and 1950s, during the last decades of the twentieth century room was made available for interdisciplinarity within the sciences of cognition, including neuroscience, as well as within the

realm of cognitive psychology, linguistics, artificial intelligence and philosophy. The intention, at the time, was to improve cognitive science, outlining “a view of cognition as embodied action” (xx), and seeing evolution as a “natural drift,” within a special kind of circularity:

A phenomenologically inclined cognitive scientist reflecting on the origins of cognition might reason thus: Minds awaken in a world. We did not design our world. We simply found ourselves with it; we awoke both to ourselves and to the world we inhabit. We come to reflect on that world as we grow and live. We reflect on a world that is not made, but found, and yet it is also our structure that enables us to reflect upon this world. Thus in reflection we find ourselves in a circle: we are in a world that seems to be there before reflection begins, but that world is not separate from us. (3)

Their understanding of *enactive* rejected the idea of cognition as a “representation of a pre-given world by a pre-given mind” and emphasized “the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs” (9).

However, it was with Andy Clark’s *Being There*, that the division between matter and mind would finally be put to the test, particularly with the introduction of robotics in embodied cognitive science. In his preface to the volume, Clark begins by affirming:

Might it not be more fruitful to think of brains as controllers for embodied activity? That small shift in perspective has large implications for how we construct a science of the mind. It demands, in fact, a sweeping reform in our whole way of thinking about intelligent behavior. It requires us to abandon the idea (common since Descartes) of the mental as a realm distinct from the realm of the body; to abandon the idea of neat dividing lines between perception, cognition and action; to abandon the idea of executive center where the brain carries out high-level reasoning; and most of all, to abandon research methods that artificially divorce thought from embodied action-taking. (1997, xiii)

Clark conceives the mind not just as something that we use in thought, but above all, as something humans use in their everyday actions, contradicting a longstanding association of brains (and minds) with vision and visuality, taking particularly into account a chain of events in human perception that have to be understood from a multisensory perspective.

Given these scientific accounts of the relationship between the senses, as well as of the intricacies of dualisms deriving from the ancestral divide between body and soul, we might as well conclude with Caroline Jones’s idea regarding the senses as “complex cognitive systems in which there is no clear separation between” (2010, 91), considering that, inasmuch as the senses always imply full embodiment, they are, by definition, “conscious,” given that “consciousness – and consciousness of medium – is born through forcible estrangement from the media to which mammalian senses adapted and evolved” (94).

1.7 Gesture, Speech and Affect

As alphabetic writing segmented the flow of speech into separate, decontextualized, discrete, and fixed objects of awareness – “words” – that could be examined and compared, giving rise to grammar, its own form of literate awareness, and the study of the resulting written language, so motion capture likewise opens the possibility of a “gesturology”, a science of gesture that might allow the semiotic body the conceptual space to emerge from under the shadow of spoken language’s lettered, disembodied inscription.

Brian Rotman, *Becoming Beside Ourselves*

Etymologically deriving from the Medieval Latin *gestura*, which in turn evolved from the Latin *gerere* (meaning “to bear, wield, perform”), a gesture is usually described as a movement of the body - typically executed through the use of a hand or the head - that expresses an idea or meaning, but also a sentiment or an attitude (it can also be used to describe something “said or done by way of formality or courtesy, as a symbol or token, or for its effect on the attitudes of others.”)¹⁷ Despite these apparently simple definitions, the notion of gesture bears a complexity similar to the one of touch, a complexity that is partly related with its association with speech. As Paul Bouissac, a renowned figure within semiotics, reminds us, “many of the human brain’s spatial maps are located in the cortical areas involved in the control of movements (e.g., eye, head, arms, hands)” (2003, 17). His observation is based on experiments using primates carried out by several researchers in the 1990s, such as those by Rizzolatti *et al.*, who showed that “Area F4 of the ventral premotor cortex of the monkey brain has a large proportion of neurons which are bimodal, that is, which respond to both visual three-dimensional stimuli and tactile stimuli applied to the face or arm” (17). Quoting Graziano and Gross, he concludes that “extrapersonal space” in primates, that is, “the visual space near the body that extends outward from the skin about 20 cm, is represented in the brain by bimodal (visual-tactile) neurons in at least three interconnected somatotopic maps in which the tactile and visual receptive fields are adjacent, and that these maps are centered on the limbs rather than on the head or trunk” (17).

According to Randall White, as may be seen in his introduction to Leroi-Gourhan’s *Gesture and Speech* (1964), “gesture paralleled speech as a form of expression of mind and language,” an assumption in line with Leroi-Gourhan’s notion of *chaîne opératoire*, or “operational sequence” (White: 1993, xviii), as a “result of interaction between experience, which conditions the individual by a process of trial and error identical to that of animals, and education in which

¹⁷ <<https://www.merriam-webster.com/dictionary/gesture>>, last accessed September 19, 2017.

language occupies a variable, though always decisive, place” (Leroi-Gourhan: 1993, 230).¹⁸

On the other hand, for David McNeill, a psychologist specialized in psycholinguistics, gestures “are not just movements and can never be fully explained in purely kinesic terms. They are not just the arms waving in the air, but *symbols that exhibit meanings* in their own right” (1992, 105; his emphasis). This complexity arises from the need to distinguish between different types of gesture, which McNeill defines as four different “continua,” expressly: “gesticulation,” “pantomime,” “emblem,” and “sign language” (2000, 1).¹⁹

In accordance with McNeill, Adam Kendon (co-responsible for the creation and development of a field entirely dedicated to Gesture Studies, along with McNeill), posits that one of the main conceptual challenges around the notion of gesture is born out of its association/dissociation with language (and the problematics surrounding the notions of discourse and speech). According to him, the problem with either a unifying or dual perspective of language and gesture (which is perhaps one of many reiterations of the age-old problematics pertaining to body and soul), is that it has been approached in accordance with the development and changes within the field of Linguistics. For him, the influence of Saussure on linguistic studies led to the assumption that language and speech are interchangeable terms. This sort of suppositions also brought about generalizations of gesture as something that is ordinary, obvious and primary, and usually accompanies speech (Kendon: 2000, 48). Therefore, apart from a few linguists who developed empirical studies to prove that language was integrated in gesture,

[L]ittle in the way of an investigation of gestures from a linguistic perspective has been undertaken, and with the reorientation of linguistics that occurred under the influence of Chomsky, which turned it into a kind of “mental science”, among those interested in language gesture appeared to disappear altogether as a topic of inquiry (...). Yet, curiously enough, it is really as a consequence of linguistics having come to be defined as a kind of mental science, which led directly to the development of studies of cognitive processes, that we have the situation we see today in which gesture is once again being investigated quite vigorously by those with an interest in language. If language is a cognitive activity, and if, as is clear, gestural expression is intimately involved in acts of spoken linguistic expression, then it seems reasonable to look closely at gesture for the light it may throw on this cognitive activity. This is leading to a new way in which the issue of the relationship between language and gesture can be approached. (49)

As such, for Kendon, gesture is “that range of visible bodily actions that are, more or less, generally regarded as part of a person’s willing expression,” which differentiates it from the notion of affect, but also from other “aspects of behavior such as posture and postural shifting, direction of gaze, and the like” (49). In order to attest to this observation, one may resort to the

¹⁸ See Chapter 3 for more on Leroi-Gourhan’s understanding of “operational sequences.”

¹⁹ McNeill attributes this differentiation between four continua to Adam Kendon (1982), from which McNeill coined the term “Kendon’s continuum” (2000, 1).

development of a multimodal analysis of speech during the last decade, in which the research on the associations between language and body gestures has become a significant subfield of study. Digital methods of capturing images and sound, enable a granular analysis of these associations, namely, the communicative component of body language (facial expressions, hand and head movements, etc.).²⁰

Notwithstanding, according to Vilém Flusser, in his emphasis on the need for a theory of the interpretation of gestures, especially within the humanities, the separation of gesture from affect is not that straightforward. Part of this void in human sciences, is a result of what Flusser describes as an approach towards the notion of gesture as a phenomenon that may be explained in causal terms, “rather than one that also confers a codified meaning” (Flusser and Roth: 2014, 2). According to Flusser:

And even when they [human sciences] admit the interpretive character of a gesture (that which was once called its “mental aspect”), they still tend to reduce the gesture to causal explanations (that which was once called “nature”). They do this to win the right to call themselves “sciences.” But it is exactly what keeps these disciplines (psychology, sociology, economics, historical area studies, linguistics) from developing a theory of the interpretation of gesture. (2-3)

In this manner, *affect* should be understood as “the symbolic representation of states of mind through gestures.” (4) Moreover, these states of mind “can make themselves manifest through a plethora of bodily movements but that they express gesture and affect and articulate themselves through a play of gesticulations called ‘affect’ because it is the way they are represented” (4-5). In addition, Flusser asks himself if the way he understands affect is not similar to the experience of art, particularly in the way both art and affect are able to articulate and express “something that reason (science, philosophy, etc.) cannot articulate, or not in the same way” (5-6).

From here it seems that gesture, speech, and affect, are intertwined in the transmission of aesthetic values contained in a work of art. This intertwining proves to be even more prominent and significant in the way gestures are becoming extremely relevant within the repertoire of human-machine interaction explored by digital technologies. Concerning these technologies, it may also be relevant to note that some dictionaries already associate the word gesture with a movement of the hand or fingers that is required in order to control a particular technological piece of equipment such as a smartphone or tablet.²¹ According to Maria Angel and Anna Gibbs,

[N]ew media technologies reintroduce an animism and dynamism that re-engage the

²⁰ For more information on Multimodal Analysis, see Jewitt, Carey (ed.) (2009). *The Routledge Handbook of Multimodal Analysis*. London: Routledge; O’Halloran, K. L. & Smith, B. A. (eds.) (2011). *Multimodal Studies: Exploring Issues and Domains*. New York: Routledge.

²¹ See for instance <http://www.macmillandictionary.com/dictionary/british/gesture_1>, last accessed September 19, 2017.

movement and gestures of the body in the scenes of writing and reading, rendering these processes explicitly performative in a way that is intimately involved in the generation of meaning. (Angel and Gibbs: 2013, para. 2)

Following on from French anthropologist Marcel Jousse, Angel and Gibbs's considerations on the relationship between gesture and the behavior of new textual forms in digital contexts, suggest that gesture, namely in reading and writing practices, is being externalized by the "interactivity and new affordances and vitality of digital texts and contexts" (para. 8). In other words, there is a different ecology of the body with new media, one that is vastly different from "reflective" and "silent" reading and writing (para. 6).

The influence of Jousse is significant here, since he understands writing as

[O]ne of the technologies of an algebraic form of abstraction that occludes more direct "concrete" or mimetic form he terms "mimage" - that is, the corporeal or gestural re-enactment and transmission of the world's energies. (...) For him, gesture comprehends all corporeal activity, including that associated with affect (laughter, tears), and even states of mind, while what we ordinarily call "intellectual" is simply an abstraction from gesture (...). For Jousse, then, memory is less a purely cognitive capacity than the result of the body's organization of expression in relation to its action in and active proprioceptive apprehension of its relation to the world (...). (para. 8)

Another theoretician deeply involved in the way gestures define our relationship with the digital is Brian Rotman. For Rotman, growing interest in a gestural dimension, namely in speech, is not a coincidence. In addition to "its role in Sign language, the discovery of an intimate association between gesticulation and narrative speech, [and] its relevance to voice-recognition software," tactile and haptic modalities of gesture have become crucial in the design of interfaces that explore the relation between body and machine, as may be observed in "the development of motion capture technology, a new digital medium which works by tracking the positions of markers attached to the moving body and recording their part through three-dimensional space" (Rotman: 2008, 3).²² Furthermore, gesture has to be taken into account by going beyond its common acceptations, expressly, in writing and reading processes, since, in "relation to the body and alphabetic writing of spoken language gesture operates in the interior of speech itself as the presence of the body within utterance and the affective, intra-verbal dimension of the voice itself" (17). Moreover, in a conception of the world in which discourse was synonymous with the

²² With regard to the research that has been conducted within the field of automatic analysis of gestuality in the development of new computational interfaces, Ekenel and Jun state that: "The recognition of natural human gestures from video sequences is [a] very challenging problem with diverse applications in human computer interaction (HCI), in particular in robotics. Due to different components of human gestures performed by a signer using the hand, face, and torso, vision-based gesture recognition approaches need efficient detection and feature extraction techniques. Many of the existing approaches use only hand feature to recognize gestures. Many manual gestures are ambiguous in isolation, and need to be accompanied by facial expressions in order to convey a specific sign since facial expressions also play a very important role in human gestures." See Dan, L., Ekenel, H. K., and Jun, O. (2012). "Human gesture analysis using multimodal features." In *2012 IEEE International Conference on Multimedia and Expo Workshops (ICMEW)*. Pp. 471-476.

mind and human thought (16), the longstanding association between gesture and exteroceptive perception has now shifted. Seeing that new tactile and haptic technologies, namely motion capture, require senses other than vision take a much more active role, gesture has become a major focus for analysis across various disciplines, from human-computer interaction, to cognitive linguistics and multimodal discourse analysis, evidencing María Angel and Anna Gibbs's assertion that "digital writing (...) functions at the confluence of thinking and moving" (2013, para. 21).

1.8 Tangibility and Virtuality

How is one to believe that touch cannot be virtualized?

Jacques Derrida, *On Touching – Jean-Luc Nancy*

Similarly to Anne Mangen, whose PhD thesis attempted to address the questions of "how (...) we read a narrative fiction by means of the GUI" and "how this process and our experience of it [are] comparable to, as well as qualitatively different from, how we read other interfaces," adding that, "what we mean when we say that something is tangible or intangible might not be so easy to grasp" (Mangen: 2006, 11), Patricia McTighe, six years later, affirms:

In a world in which touchscreen technology is proliferating, bringing the world to our fingertips quite literally – at least for those who can afford it – it would seem that we have direct tactile interaction with technology and therefore with the online world it brings. At the same time, we create virtual online personae for ourselves in the form of social networks such as Facebook. We maintain contact with people who very often live thousands of miles away, people who we may never meet, or touch in any material way. A great global distance has been shrunk through such technology, yet our haptic or material-tactile lives cannot be lived via this technology – at least for now. (McTighe: 2013, 2)

Adding that,

Anthropology, theology, philosophy, aesthetics all can show that to some extent humans have always had a sense of the threshold between the virtual and material, because of religious belief, imagination, or both, and this is certainly the case since the dawn of the modern era of communication and the possibility of intimacy without presence. (2)

For Mangen, "(physically) grasping is precisely what tangibility is about; it means that something is physically, tactilely, graspable to and for the different members of our bodies" (2006, 228). To support her statement, Mangen quotes psychologist James J. Gibson's definition of tangible properties, and its respective three variables, namely:

[1] geometrical variables like shape, dimensions, and proportions, slopes and edges, or curves and protuberances; [2] surface variables like texture, or roughness – smoothness;

and [3] material variables like heaviness or mass and rigidity – plasticity. (Gibson, as cited in Mangen: 2006, 228)

In addition, Mangen asserts that “digital configurations – and, hence, GUI narrative fictions – are not only immaterial, but also fundamentally *ontologically intangible* and *detached from physicality*” (225, her emphasis), an observation which, according to her, finds support in Brian Massumi’s *Parables on The Virtual*: “[O]utside its appearances, the digital is electronic nothingness, pure systemic possibility” (2002, 133).

However, this is far from giving us the complete picture, since that which Massumi puts forth is much more than that which is revealed by Mangen. In distinguishing the virtual from the digital, Massumi begins in fact by affirming that the virtual, as such, “is inaccessible to the senses” (133), meaning that “it cannot be felt,” also adding that it “cannot but be felt, *in its effects*” (133; my emphasis). This way, as a “transducer of the virtual” (135), the body senses the actual as an appearance, its perception being “an effect of a process that is itself imperceptible and insensate (but moves through sensation)” (137), namely, by requiring a combination of infolding and unfolding actions between analog and digital processes, given that “the digital always circuits into the analog,” from processing into process (138-141). As such, Massumi sees reading as an analog process, describing it as “the qualitative transformation of alphabetical figures into figures of speech and thought” (138). Moreover, as is the case with GUI narrative fictions, it is only the coding of these figures that is digital.

In quite a different interpretation of materiality from the one given, for instance, by N. Katherine Hayles, Anne Mangen equates materiality with physicality and tangibility (Mangen: 2006, 225). Written during the first years of the present century, Mangen’s thesis was influenced by a first wave of electronic literature and new media studies mostly focused on theories and practices of hypertext and hypermedia, where binarisms originated during the 1990s, such as old and new media, or analog and digital, were still common assumptions, and not just within the corridors of HCI labs. In my view, Mangen’s thesis is unable to detach itself from the aforementioned binarisms, as evidenced by the constant comparisons she makes between print-based media and digital media. Take this excerpt for example:

[S]eeing a file open before us when clicking on an icon on the screen is as far from a tangible result as it is possible to get, and precisely the fact that this is not a tangible result (such as the turning of a page in a book is a tangible result, bodily and causally connected to our actions) makes the computer a poor device for creating phenomenological immersion. We are never, and will never get, in tangible contact with the letters on the screen in the way we are with the letters on the page, but find ourselves always at an undefined but strongly felt remove from the display, detached and disembodied as it appears, and in lack of spatiotemporal salience and constancy. (241)

We are able to touch printed words in a paper book, no more than we are able to touch digital words flickering on a screen (not to mention code, as we shall see in the following chapter), Mungen's understanding of tangibility, in constantly comparing it to the tactile, fails to take into consideration other forms of touch that should be regarded as an integral part of tactility, namely, distal touch. Notwithstanding, while I do not challenge the idea that "print paper is still, and most likely will always be, a better suited material for facilitating immersive reading of narrative fiction than the digital GUI" (226-227), I posit that this sort of statement is only valid if a definition of reading strictly based on vision and visuality is applied.

1.9 Loss of Grasp and Transmission of Affect through Apparently Functional Mechanisms

Naturally, functionalism not only denies human consciousness its right to emancipation; it also denies the meaning of such emancipation from norms and compulsions, for emancipation leads, according to functionalism, directly into nothingness, into an empty individualism, an amorphous chaos, and the loss of structure in society.

Peter Sloterdijk, *Critique of Cynical Reason*

Generally described as the "quality or state of being functional,"²³ "the quality of being suited to serve a purpose well," or the "purpose that something is designed or expected to fulfill,"²⁴ the term *functionality* is often connected with transparency, as may be seen in the field of design, for instance. Within the field of digital technology, the word functionality has been used as a way of referring to "the range of operations that can be run on a computer or other electronic system,"²⁵ as well as, "the set of functions or capabilities associated with computer software or hardware or an electronic device," as in "new software with additional functionality."²⁶ This association of the term with digital/electronic capabilities is intended to express the idea that the machine works for us, serving as a prosthesis to which we delegate a specific task, in order to fulfill a specific goal or target. But as with many of the appropriations carried out during the digital era of terms usually associated with other fields of knowledge, functionality has become a literalization.

Either through the representation of touch and gesture as forms of superficial contact, or

²³ <<https://www.merriam-webster.com/dictionary/functionality>>, last accessed December 15, 2017.

²⁴ <<https://en.oxforddictionaries.com/definition/functionality>>, last accessed December 15, 2017.

²⁵ See note 24.

²⁶ See note 23.

through the promises of presence, transparency and intimacy, literalizations perpetuated by the industrial and academic fields pertaining to tactile/haptic sensory perception, paradoxically reveal the gap between humans and machines, even if their main purpose is precisely the effacement of barriers between the two. Having been adapted in great part from a field of knowledge known for its continuous search for exactness, the Human-Computer Interaction (HCI) paradigm has been sold as the eternal attempt towards the attainment of smooth and intuitive communication. Notwithstanding, by amplifying human nature through artificial prostheses intended to enhance human capabilities, the HCI paradigm ends up omitting one side of the equation, that is, the fact that it is focused on eliminating failures, and therefore, basing itself on a strictly functional interaction model. In contrast, the notion of cybrid bodies, endowed with a fluid, dynamic nature, allows some space for flaws of both human and machine, while drawing attention to natural imperfections, as well as to the significance of error (and chance). Consistent with the enactive cognition paradigm, the notion of cybrid bodies – cyber and hybrid (Domingues and Venturelli: 2007) – avoids the antinomies pertaining to HCI, particularly by placing the emphasis on the potential of the digital to combine the virtual with the actual (mixed reality/mixed virtuality). However, digital technology industries' *haptic* quest was not (and continues to not be) always shared by the artistic domain. Due to its often metamedial poetics (along with an intermedial aesthetics), cyberliterature questions the engineered functionality of digital media, including dominant concepts pervasive in the digital age, such as HCI, immersion, interactivity, virtual, and digital, to name a few. Through its aesthetic critique of digital media, cyberliterature reinvents inherited strategies of subversion and disruption, raising awareness in regard to the artwork's processes of signification and affect. One of these strategies is the creation of mechanisms that lead to an eventual loss of grasp, often through the use of seemingly functional, dysfunctional or even non-functional interfaces. Seen as a variation of a rich heritage of experimentation with seemingly functional mechanisms in the arts, such strategies reenact age-old tensions between tradition and innovation, while laying the foundation for (re)new(ed) ways of reading and writing in digital multimodal environments.

Understanding dysfunctional strategies as subversive variations of the intangible tangibility paradox, I argue that *mechanisms of awareness* can give rise to a digitally-based haptic reading process. Given that these artworks often make use of a countercultural and metamedial poetics largely influenced by early avant-garde artistic proposals, they tend to question the ways in which we read and write on digital interfaces, expressly, by means of an awareness-raising intended loss of grasp. I believe that such “antidotes” (Emerson: 2014, 2) may be summed up in the notion of loss of grasp (for instance, glitch as a visual loss of grasp), seeing that, despite its

specificities, this sort of critical dysfunctionalization of the medium was already previously explored by several historical avant-garde movements. However, despite a possible dialectic continuity of disruptive operations of estrangement, it is of extreme relevance to question what the differences between previous explorations of *loss of grasp* and the ones enabled by digital literary artworks are. If cyberliterature is to be seen in continuity with previous experimental artistic practices, though with new forms of expression of human creativity, it is only natural to assume that, in order to understand its (re)new(ed) rhetorics of bodies, surfaces and interfaces, one has to take into account its predecessors.

From proto-cybertexts of the Baroque period, to countercultural gestures carried out by historical avant-gardes, there is a longstanding tradition of strategies of subversion explored by artists at the interstices of societies' demand for order, control and functionalism. In an attempt to map out the differences, common features, as well as the impact of several media of production (from print-based to digital media) in literature, Jorgen Schaffer presented a detailed description of proto-cybertexts in German Literature, his research being similar to the extensive research carried out during decades by experimental poet and critic, Ana Hatherly, who rediscovered and brought to light visual texts from the Portuguese Mannerist and Baroque periods. Unveiling these mechanisms puts certain compositional principles and dialectic tensions into a historical perspective that may prove to be enlightening in what concerns the haptic dimension of reading processes in current digital multimodal environments.

Moreover, this perspective of continuity (and disruption) is one of the major traits of historical avant-garde movements from the early twentieth century, namely, Italian Futurism and the multiple Dadaisms. The pervasiveness of subversion in experimental practices is evinced, for example, in Filippo Tommaso Marinetti's perception of the manifestos as performances, the often misunderstood relationship between human and machine that these artistic periods tried to reconfigure, as well as in the attempt to change aesthetic paradigms.

Bringing to mind Jorge Luis Borges's conclusion in "Pascal's Sphere," that "perhaps universal history is the history of a few metaphors," I have taken the risk of opting to work with metaphors and analogies. Echoing Marianne Van Den Boomen when, in her "manifesto for hacking metaphors," she affirms that "to use a metaphor for a metaphor: metaphors are keys, able to lock, but also able to unlock," I have chosen to apply this principle to the context of embodied cognitive science. This relates to what George Lakoff and Mark Johnson did in their 1980s book, *Metaphors We Live By*, where they argued that language, and specifically, metaphors, go beyond the realm of cognition. Metaphors not only structure cognitive processes, but they also do it by means of strong bonds with human experience (Wilson: 2017).

There is a tendency to assume that digital is the same as immaterial. Regardless, perhaps the concept of “in-material,” to use Jorgen Schaffer’s notion, might be a better-suited term. If we think of binary operations - despite their possible association with an alternative definition of digits, as in fingers - ones and zeros are, of course, immaterial, in the sense that they are non-tactile, non-physical, non-tangible. As a matter of fact, zeros and ones are also themselves metaphors (Boomen 2014). As such, we touch code no more than we touch words, regardless of the surfaces, black boxes or clouds in which it is inscribed. There are, however, *co-operations* between the digital and the analog, which cannot be analyzed separately, seeing that they are in a constant state of what Brian Massumi described as a “self-varying continuity.” In the context of digital literary artworks, the analog-digital dichotomy has not proven to be very productive, which is why, perhaps, it may be best to come up with a different pair of notions, namely, one involving the digital and literature. One way of making these apparently intangible phenomena a little more tangible, is through the use old analogies and metaphors, expressly, by *backing* these. Notwithstanding, of course the digital is much more than code, as digital literature is much more than words (both within and without digital codifications). Other metaphors involved in these processes include, for instance, translations, transductions, transcodings, mediations, and interfaces, to name a few. In addition, gestures are yet another way of constructing metaphors: gestures of writing and reading, as well as other emergent gestures, such as those associated with “new” writing and reading processes. In short, there is evidence of writing and reading gestures specific to digital multimodal environments, as well as processes that should be analyzed for what they in fact are - specificities. For instance, as we shall come to observe in the analysis of Serge Bouchardon’s *Loss of Grasp*, it is possible to speak of a rhetoric of manipulation that, nonetheless, should not be confused with the traditional rhetorics of discourse commonly linked to an ocularcentric culture. On the contrary, this rhetoric of manipulation calls for a gestural dimension of reading that does not grant vision a dominant role.

1.10 Haptic Ex-foliations

Reading is, before it can be anything else, surface-work.

Terry Harpold, *Ex-foliations*

Understanding reading as “surface-work,” Terry Harpold uses the term “ex-foliation” as a way of “separating the layers of the text’s surfaces without resolving them into distinct strata or hierarchies, with the aim of understanding their expressive concurrencies” (Harpold: 2009, 10).

Applying this same “set of procedures” to the act of reading on digital surfaces like the GUI, Harpold states that it is time to “interrogate these operations of reading,” given that, while “literary-theoretical approaches to the digital field” are open to the understanding of its aesthetics, they are often “limited by their abstractions of program and interface and their emphases on narrative and mimetic operations” (11-12). As such, he introduces the term “historiation,” defined as a “form of recollection activated by visible traits of the reading surface,” its effects being “especially marked in the dynamic textual fields of digital media.” Furthermore, Harpold postulates that historiation is shaped by the memory of the reader, “aware and unaware, of prior encounters with other texts” (8), as well as being a way of describing “the reader’s (chiefly visual) engagements with their structure – which occurs always (...) in terms of her memories and anticipations of meanings marked on the surfaces from which she reads” (10).

My appropriation of the term *ex-foliation* is also derived from Harpold’s understanding of “historiation,” in the sense that the significance of these surfaces and their materiality is a circumvolution of previous mechanisms recollected by the reader through memory processes that are as individual as they are collective. Mechanisms inherent to previous technologies used for reading, are reconfigured in the digital, creating layers that need to be *peeled* by the reader, in order to access the experience of a digital text. However, I am compelled to disagree with Harpold to some extent, particularly in regard to the way he views the reader’s engagements with the text as a “chiefly visual” process. It is my belief that, particularly with artworks of this nature, the exercise of peeling these layers can lead to new forms of understanding the act of reading as a truly multisensory process, in which vision is part of a circumvolution of perceptive skills enacted in conjunction with cognition. Through the intermingling of perceptive and cognitive skills in our central nervous system, readers work with the constituent mechanisms of these surfaces, blending together both the material and the immaterial, to a point where they become almost indistinguishable.

Building on this idea of ex-foliations, the final chapter primarily argues that attending to the tropes of circularity featured in print-based literature, proves to be a useful tool in the analysis of electronic literature. Being based on the idea that digital literary mechanisms do not exclude previous circularity-inducing structuring motifs in analog literature, for example, labyrinths, chess, rivers, and clockwork, this concluding argument, which features current debates on the beginnings and endings of certain literary forms and experiences, especially within the context of digitality and multisensory perception, acknowledges circularity as having become central to some of their respective processes. Accordingly, circular motion is analyzed in this chapter with regard to its depiction and forms of action across several types of literary/literal machines, in relation to

sensory perception as both mediating and mediated. If literature is conditioned by a series of unique, though interconnected, mechanisms, it seems reasonable not to discard the idea of a certain circularity of the senses being at play, an idea largely influenced by the ways in which “Gestaltists registered the circular, interactional nature of sense experience” (Jay: 1994, 301). In other words, representations generated at the confluence of both biological and technological bodies, cannot but instigate a circularity on which they are dependent: an idea which the final chapter examines and critiques by referencing canonical and electronic literature, with special emphasis given to works by Borges, Beckett, and Joyce.

2. Haptic Inter[(SUR)Faces]

2.1 Part I: a Dream of Transparency vs. a Desire for Opacity

There is more information available at our fingertips during a walk in the woods than in any computer system, yet people find a walk among trees relaxing and computers frustrating. Machines that fit the human environment, instead of forcing humans to enter theirs, will make using a computer as refreshing as taking a walk in the woods.

Mark Weiser, “The Computer for the 21st Century”

[T]he more intuitive a device becomes, the more it risks falling out of media altogether, becoming as naturalized as air or as common as dirt. To succeed, then, is at best selfdeception and at worst self-annihilation. One must work hard to cast the glow of unwork. Operability engenders inoperability.

Alexander R. Galloway, *The Interface Effect*

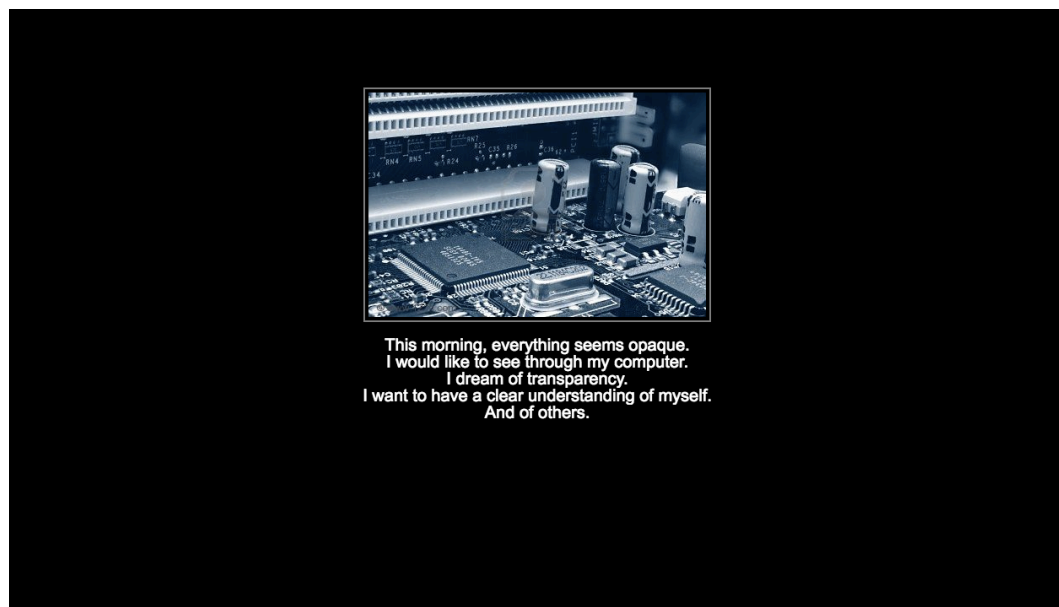


Fig. 2.1: *Opacity*. Part I. Screenshot.

The contours of a black rectangle against a dark background; below the rectangle, a lexia in white, which reads: “This morning everything seems opaque.” A repetitive sound of bits and bytes completes this tension-filled scenario. What lurks behind this rectangle? Will it become more transparent and less opaque if I make the decision to do something? I decide to slide my fingers across the rectangle in all possible directions. Enter the sound of metallic bits and pieces, as grey-to-white phrases and the fragmented image of a computer’s motherboard start to

gradually be revealed: “I would like to see through my computer/I dream of transparency/I want to have a clear understanding of myself/And of others.” But beyond this desire to use the computer as a hypothetical solution to all of our problems, there is nothing apart from a female voice, which asks: “Where are you?”, a question which already denotes a sense of enclosure and separation, as well as a lack of contact.

This is how *Opacity* (2012), a digital interactive fiction by Serge Bouchardon, Leonard Dumas, Vincent Volckaert and Hervé Zénouda, starts. Described by its authors²⁷ as “a journey from a dream of transparency to a desire for opacity,” it is as much a story about human relationships (love, politics, business), as it is a story about transparency and opacity between twofold surfaces. Divided into four interconnected parts, each part of this artwork asks for a specific physical interaction with distinct interfaces, in which more or less direct actions of hand and fingers – depending on whether we are using a PC, a tablet or a smartphone – propel both character and reading subject through a state of “an in-between.”

In May 2016, Matthew Fuller, at that time Professor of Cultural Studies and Director of the Centre for Cultural Studies, Goldsmiths, University of London, was invited as a keynote speaker at Arts Santa Mònica, Barcelona, to present a lecture integrated in the context of the first international conference on Interface Politics.²⁸ Titled “Black Sites and Transparent Layers,” Fuller’s presentation was able to show in many ways how different modes of transparency always produce different forms of opacity, “just as each form of cleverness or each form of intelligence produces a novel form of stupidity,” to use Fuller’s words (Fuller: 2016).²⁹ In order to illustrate his dialectical thinking (not just) concerning interfaces, Fuller gave two basic examples: the first one being a blank powerpoint slide, as something that is able to generate the idea of “immediacy as direct perception,” while at the same time being something that does not let one see anything else apart from a clear beam of light; the second, a counterpoint to the idea of transparency as a “kind of contemporary virtue,” since it is also something that tends to appear “in fairy tales,” for instance, in the story of “The Emperor’s New Clothes,” in which “the emperor reveals himself as being a transparent fool.” However, and not belittling previous mutations of the meaning of the word “transparency,” for Fuller:

Transparency in the present day mutates again to become the mode of interpretation proper to people, politics and machines. So that the way in which the politics of interface

²⁷ Co-authored by Serge Bouchardon, Leonard Dumas, Vincent Volckaert and Hervé Zénouda (sound design), the work also had the contribution of Giovanna di Rosario (Italian version), Valerie Bouchardon (English version), Diogo Marques (Portuguese version), and the Laboratorio de literaturas extendidas y otras materialidades (Spanish version). I used the English version, available at: <<http://i-trace.fr/opacity/>>, last accessed August 1, 2017.

²⁸ <<http://www.gredits.org/interfacepolitics/en/>>, last accessed August 1, 2017.

²⁹ This keynote can be seen in its entirety through the following link: <<https://www.youtube.com/watch?v=nRxyFUex4rg>>, last accessed January 9, 2017.

is played out, is often through a rhetoric or modes of describing something as transparent. (2016)

Since “what is transparent to a machine is not necessarily transparent to a human,” hence forming a kind of “parallax effect,” the ways in which different modalities of transparency are adopted, constructed and maintained, enable a possible history of technology and software, Fuller adds. These mutations can be explained, for instance, by the way in which the “interface moved from something retrospective or skeuomorphic to flat design.” Moreover, changes in interface design do not exclude changes in hardware (2016). And judging from Fuller’s enticing presentation, the integration of buttons and keys as an integral part of the screen, is a good example of these changes, since it presupposes a unification of several senses, for instance, the merging of vision and touch in a single interface, substituting what started as an independent and channeled use of different interfaces and sensory modalities – for instance, the first TV equipment, with its panel(s) of buttons right next to or close to the screen (not to mention remote controls).³⁰

While the attempt to unify human perception by means of a single interface might be pointed as one of the reasons for instrumentalizing the screen as the ultimate interface, where everything has to happen transparently in the blink of an eye, for Erkki Huhtamo, however, the desire for transparency goes back to at least the 19th century, when the “screen served as a veil, hiding the secret tricks and the machinery used to conjure them up” (2004: 35-6). Nonetheless, regardless of its ancestry, with the ubiquity of the Graphic User Interface (GUI), largely propelled by Mark Weiser’s vision of the “Computer for the 21st Century”³¹ at Xerox PARC, came a reinforcement of this form of transparency. This transition, inspired by precursors such as Douglas Engelbart, Ivan Sutherland or Allan Kay, brought with it a new paradigm of computing and interface design, “which pushes computers into the background and attempts to make them invisible” (Ishii & Ullmer: 1997, 235).

By the end of the twentieth century though, *new* leading research concentrated its efforts in a search for tangibility and immediacy via means of “haptic interfaces,” as an attempt to counterpoint the aforementioned human-machine interaction paradigm – a paradigm which, according to Johanna Drucker, was launched and nourished by the “engineering community,” completely infused with visual metaphors, and “based on dubious binarisms” (2013, para. 32), ultimately leading to the proclamation of the immateriality of the digital “by theorists and practitioners of hypertext and electronic writing” (para. 3). According to one of the leading

³⁰ See Chapter 3 for more on the virtualization of buttons and keys.

³¹ <<https://www.ics.uci.edu/~corps/phaseii/Weiser-Computer21stCentury-SciAm.pdf>>, last accessed January 4, 2018.

computer science research laboratories in 1997, namely, the Tangible Media Group (TMG) at MIT Media Laboratory, this gap between “cyberspace and the physical environment” could be minimized “by making digital information (bits) tangible,” expressly by means of a shift towards tangibility in terms of two basic directions: “our skins/bodies,” and “the physical environments we inhabit” (Ishii & Ullmer: 1997, 235). Despite this *new* focus though, ideas such as TMG’s “Tangible Bits,” were still influenced by a specific rhetoric of transparency largely “stimulated by Weiser’s vision” (236). Moreover, taking into account “how thoroughly infused our language is by visual metaphors,” by making “the modality of the visible” a “perceptual experience,” as well as a “cultural trope,” to borrow the words of Martin Jay (1994, 587), the intensification of research around digital media devices requiring tactile/haptic feedback, paradoxically ended up amplifying the primacy of vision over other sensory modalities. This situation is quite similar to what Wendy Chun defines as a “compensatory gesture” for “the current prominence of transparency in product design and scholarly discourse”:

As our machines increasingly read and write without us, as our machines become more and more unreadable, so that seeing no longer guarantees knowing (if it ever did), we the so-called users are offered more to see, more to read. The computer – that most nonvisual and nontransparent device – has paradoxically fostered “visual culture” and “transparency”. (2004, 27)

Thus, it is not particularly surprising to read in the work of researchers dedicated to exploring “Tangible Interfaces,” like Ishii and Ullmer from TMG, there is a notable emphasis on optical metaphors that “bridge physical and digital worlds,” such as the metaphors of “light, shadow and optics” (Ishii & Ullmer: 1997, 240).

As ubiquitous computing turned into a naturalized process in our lives, the opacity/transparency paradox became even stronger, and increasingly glamorized. With advances in digital technology, in which the intensification of haptic features became a primary goal (along with promises of immediacy and intimacy, as we shall see further on), a new rhetoric of bodies, surfaces and interfaces continued to emerge by means of another series of visual metaphors, respectively: digital footprints, thresholds, digits, smoothness, roughness, tracks and traces; all of these terms being used to describe the way we interact with digital media (and vice-versa). But as with the rhetoric of transparency and opacity, these other romanticized elements also highlight another series of consequent paradoxical conditions. As such, even when rhetoric goes from transparent and opaque qualities, to smooth and rough animations, layers, or transitions, there is always a latent visual metaphor contaminating its meaning. Thusly, whenever *smooth interfaces* are mentioned, it will probably be as a synonym for transparency, imperceptibility and automation, also often being a synonym for tangibility.

Taking into account current meanings of transparency, one of the problems concerning its usage seems to lie in what Alexander Galloway considers to be a constant search for “virtuosic immersion and connectivity,” in such a way that “these transparent and ubiquitous thresholds become simultaneously invisible and inoperable” (2012, 25). In *Interface Criticism*, a collection of essays dedicated to the study of human computer interfaces, Andersen and Pold argue that in order to investigate the interface, we need to go beyond the computer’s surface, reaching “back” into history and “through” to the human senses and perception, “behind” the concept of the interface, “down” into the machine, “out” into society and culture. In all of these necessary moves, or better still, gestures, the question of human perception is central to understanding the way in which these visual metaphors manifest. In this regard, Andersen and Pold are poignant: not only does “the appearance and cultural diffusion of interfaces affect the way the world is perceived and sensed,” making human-computer interfaces “an input/output device where humans exist in a symbiosis with the cybernetic system of the computer” (2011, 11), but furthermore, according to Pold, they are based on a “double sensory process” entailing “a contemporary relationship between interface and perception,” in which “perception becomes mediated and cybernetic.” Hence:

The interface works in two ways, translating the machine to us and us to the machine. It renders the computer sensible, and it is the sense-organs of the computer, whereby it becomes a part of human culture. (Pold: 2011, 109)

By this, Pold does not intend to see a “direct coupling between human perception and the machine.” Instead, he speaks of a “cultural process that artists can interact with, and that can be critically analysed and reflected” (109). Both Galloway and Andersen and Pold’s perspective are not too distant from Lori Emerson’s perspective on interfaces as sharing “a common goal underlying their designs: to efface the interface altogether and so also efface our ability to read, let alone write, the interface, definitely turning us into consumers rather than producers of content” (2014, 1). Nonetheless, for Emerson there is some light at the end of the tunnel, namely by means of electronic literature that courts “difficulty, defamiliarization, and glitch as antidotes (...) against what ubicomp has become,” the “nearly pervasive multi-touch interface” included (2-4). In her critique of the interface, having in mind, as a specific target, Apple’s rhetoric of “magic” interfaces, Emerson states that this alternative response to the way digital media “are steadily making their way toward invisibility, imperceptibility and inoperability,” consists of a growing body of digital literature with a critical eye on digital media (1–2). This aforementioned critical eye is one of the main characteristics of electronic literature, defined in the previous chapter as a metamedial poetics, often in association with an intermedial aesthetics that is not limited to a specific medium or device. This metamediality, present, for example, in Serge

Bouchardon's digital interactive fictions, brings attention to a precisely opposite characteristic of interfaces, namely, their extremely mediated nature.

2.2 Part II: Skin and Screen I

2.2.1 To Surf the Surface of an Interface

The Internet is not a world, it is a city the size of a universe. It can be split into different quarters, not just based on content, but also on presentation, design, architecture of the pages. This is what the invisible walls are made of.

Joel Colover, *Some Ideas About Surfing*

A picture of a woman's half-naked body stands before me. In a flash of intuition, I am compelled to slide my fingers over the image. As expected, this search for transparency gradually reveals the woman's interior organs. First, her skin disappears, revealing her heart, bowels, viscera, kidneys, liver, nervous system, and finally, her skeleton. The sound of what appears to be a magnetic resonance, accompanies the process of revealing each layer, becoming more or less intense according to the intensity of my contact with her body. A verbal text appears next to the image.

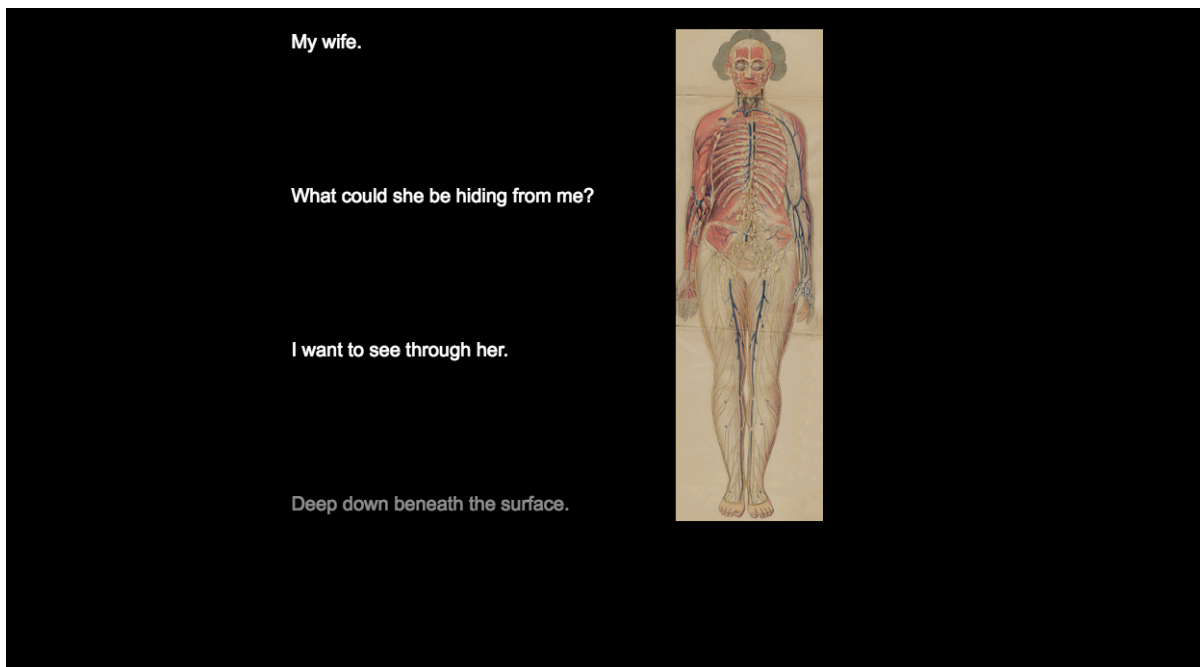


Fig. 2.2: *Opacity. Part II.* Screenshot.

Soon I will discover that such dual gradualism mediating the interaction with the artwork, is the only possible way of progressing in the narrative, since the information I need in order to disclose potential messages given piece by piece, in a linear fashion: “My wife,” where we see for

the first time the character referring to the woman in the story as his wife; “What could she be hiding from me,” denotes typical feelings of suspicion between couples, and where we might think, “I want to see through her,” a desire that the character already knows is impossible to fulfill and something that he has previously attempted to do with himself, albeit without any success; “Deep down beneath the surface,” a final line pointing to a game of depths and surfaces, and which seems to be the main key to the inversion of transparent/opaque experiences. Still, as the character unveils the figurative image of his wife’s internal organs, there seems to be no answer aside from her anatomy, a frustration that is interrupted by a female voice asking: “What are you looking for?”. This question elicits an internal echo. What am I looking for?

While surfing on the Internet, precisely looking for some insight regarding these issues, I came across a zine titled *Some Ideas About Surfing* (2010), by graphic designer Joel Colover. Arranged as a series of xeroxed sketches, preceded and combined with phrases in bold, this zine’s aesthetics presents a creative use of the surfing metaphor in order to rethink cyberspace and hypertextuality. For instance, by putting together several of its sentences in bold, one can read:

Tab based browsing is surfing different waves at the same time. All the time. (...) On the Internet we surf the currents left by other users. Old lost content and new data supply us with the momentum we need... The Internet is not a world, it is a city the size of a universe. It can be split into different quarters, not just based on content, but also on presentation, design, architecture of the pages. This is what the invisible walls are made of. (2010, 12-16)



Fig. 2.3: *Some Ideas About Surfing*. Cover (left) and internal pages (right).

Delving into its etymology, *surf* can mean, “the swell of the sea that breaks upon the shore” or, “the foam, splash, and sound of breaking waves.”³² If we relate tab-based browsing with the act

³² <<http://www.merriam-webster.com/dictionary/surf>>, last accessed on November 11, 2015.

of riding a wave using a special board, it becomes clear that what we are actually riding is this surf. However, in Joel Colover's zine, the action of surfing is used mainly with reference to today's exploration of the Internet, although not exclusively as a conventional metaphor. Ultimately, the matter at hand is that of digital multimodal environments ("surfing different waves at the same time," keeping in mind the adequate skills necessary to undertake this particularly complex task), where we drift over traces left behind by others (like good and bad waves, one needing to learn how to catch the perfect one), while simultaneously speaking of a medium (the computer) that is able to converge a series of other media in its multiple layers. Finally, it is "a city the size of a universe" (horizontal depth of infinite expansion/contraction), split into different quarters, more precisely, a city made of "invisible walls."

If, on the one hand, we find it tempting to make use of these surface metaphors in order to describe what is generally known as a digital interface (considering, for now, the screen as *the* digital interface par excellence), conversely, what we find in the haptic motion of surfing the surface of an interface is a complex process of mediation between layers, capable of destabilizing traditional uses of the Human Computer Interface (HCI) paradigm. Hence, drawing from some of media studies' terminology with regard to HCI – feedback loops, distributed cognition, telepresence, enactive cognition, cybrid bodies, among others – we find that there are surfaces and interfaces on both sides. If an interface, a "productively open-ended, cross-disciplinary term," cannot be restricted to a "point of interaction between any combination of hardware/software components," as Lori Emerson points out, and if we consider at least the eight different kinds of interface listed by Florian Cramer (Emerson: 2014, x), it is plausible to then affirm, that the surface of our skin is no less of an interface than the surface of a screen.

However, slight differences between surface and interface are to be considered in any given theory of the interface. According to Branden Hookway, despite some similarities, namely in terms of their expression, involving both a culminating and a concealing element an interface can be distinguished from a surface, in the sense that the latter refers to a thing or condition, while the former pertains to "a relation between things or conditions, or to a condition as it is produced by a relation" (2014: 14). In Hookway's own words:

If the surface may be seen as the culmination, expression, or concealment of a thing, and so in varying ways the means by which a thing may be made available for theorization or some form of reading, then the interface may likewise be seen as the culmination, expression or concealment of an active relation between things. What the theorization of the interface reveals is not the properties or essence of a thing but rather the interplay within a relation, in the shaping of a mutually generated behavior or action. (...) the surface refers back to a thing and expresses the properties of that thing, while the interface refers back to a relation between things and expresses an action. (14)

And Hookway adds:

The coming into relation of two or more surfaces may also constitute the production of an interface, while the holding constant of one constituent element in the relation that produces the interface may make of the interface the surface of another constituent element. (...) It is in this way that the interface may in turn be read as a surface of each of the entities it has brought into relation. (...) In this way, while the interface is not in itself a surface, it may be a producer of surfaces. (15)

It was based on this differentiation, that the odd portmanteau-like word used as the title of this chapter came about, namely, *inter[(SUR)Faces]*, being of use in describing the ebb and flow of a haptic motion between surfaces of different interfaced and mediated bodies.³³

2.2.2 Foldings and Thresholds

One of my favorite metaphors from quantum physics is that the universe is like a great surface that has been infinitely folded together, until points that were unfathomably distant in space-time come to touch each other.

Laura Marks, *Touch: Sensuous Theory and Multisensory Media*

The apparently flat surface of the skin is ready always to fold in on itself, a limitless invagination that opens the planar surface of the skin to depth.

Patricia McTighe, *The Haptic Aesthetic in Samuel Beckett's Drama*

Despite relatively recent claims regarding touch as a neglected sense in comparison with the longstanding primacy of vision and visuality (Jay: 1994; Paterson: 2007, 1; Gallace & Spence: 2014, 6), (multi)sensory perception has always been a special concern of both science and arts, including the sense of touch. (Drobnick & Fisher: 2012, 133) Part of this dialectic process in human perception derives from Aristotelian conceptions on the origin of thinking and sensing, specifically his study *De Anima* (“On the Soul”), in which Aristotle’s considerations are as clear as they are ambiguous, a duality here wonderfully summed up by Jean-Luc Nancy:

³³ My definition of “bodies” follows broader interpretations of the concept, going beyond general assumptions mainly inherited from a certain (post)-cartesian dualism of body, as in biological body. It may be helpful to recover N. Katherine Hayles’s definitions of “intermediation” and “dynamic heterarchy,” here wonderfully summed up by Manuel Portela, while hinting at a relationship with electronic literature: “Hayles adopts the concept of human-machine intermediation (...) as a literal and metaphorical description of the ‘dynamics of human-computer interaction’ (Hayles 2008, 51). ‘Intermediation’ means the emergence of complex patterns from local interactions resulting from ‘recursive feedback and feedforward loops’ (Hayles 2008, 48) in a dynamic heterarchy. Quoting research in the fields of artificial life, genetics, and computer programming, she argues for the co-evolution of embodiment and technology, rather than for any strict form of social or technical determinism. Human-machine intermediation is also modeled on what recent research has uncovered about human brain development. Hayles sees such intermediation as similar to the co-evolution of brain and language or to the synergy between neural plasticity and learning. The recursive loops that take place inside the machine and the recursive loops that constitute a human subject’s cognition processes become linked in human-computer interaction. In electronic literature this dynamic between body and machine takes place both at the level of writing and reading. A series of cascading and interacting processes makes human and machines part of a single system of emergent cognition” (Portela: 2010, para. 9).

To think is to sense, to feel, in other words, to relate to oneself in the act of relating to whatever it might be (an object, a dream, a presence, an absence). The self-sensing that belongs necessarily to sensing (already in Aristotle, and already for him in dreams) is what creates thought, which is self-relation. But self-relation implies division just as much as it does unity, distance as much as proximity, alienation as much as intimacy. (2013, 11)

This tension between proximity and distance, alienation and intimacy, is linked to Aristotle's particular attention to the sense of touch, a main variable in his problematics. According to Aristotle, here paraphrased by Derrida:

“It is a problem [*aporia*]”, Aristotle says, “whether touch is a single sense or a group of senses. It is also a problem, what is the organ of touch; is it or is it not the flesh (including what in certain animals is analogous [substituted for ‘homologous’-*Trans.*] with flesh)? On the second view, flesh is ‘the medium’ [*to metaxu*] of touch, the real organ being situated farther inward” (*Peri psuches* 2.II.422b). (2005, 5)

Regardless of knowing that “farther inward” can mean distributed receptors that are accountable for the perception of tactile data, and despite the validity of relatively recent scientific acknowledgement of the (multi)sensory role of tactile/haptic perception, philosophically speaking, skin may entail other nuances. It is then possible to already infer certain haptic implications of touch from Aristotle. According to Abbie Garrington, we need to understand Aristotelian touch as a “base sense,” “in its connection to the erotics and the obscene, but also in that it is a kind of grounding, a scaffold on which the other senses are built” (2013, 18). This “grounding,” due to its “manifold” nature, which is to say, in not knowing if it is “a single sense or a group of senses,” and given the fact that it does not have a specific organ associated with it, like all other exteroceptive senses, that is, an organ capable of sensing specific sensory features specific to touch, is part of what makes of touch an “*aporia*,” an obscurity, a problem (Derrida: 2005, 4). In addition, there is also a second problematic contributing to its obscurity, namely, the idea of touch as something direct and superficial, and therefore, completely unmediated, a misconception deriving from (post)-Aristotelian observations on perception.

As Mark Paterson states:

Aristotle hits on something which, with current scientific knowledge, is as true of touch as it is of the other senses, namely that our sensory experience is always already mediated. Although seemingly obvious or commonsensical, this acknowledgment of the mediacy of the senses goes somewhat against the grain of the assumptions of the immediacy of sensory experience, the way a “return to the senses” would indicate a return to something like the pure, raw data of unmediated experience, the senses “as such” or extant. (2009, 130)

According to Patricia McTighe, skin is far from being a flat surface, or even a surface in its general connotation with something superficial:

Skin has the capacity to be folded in on itself, to be both space or depth and surface at the same time. The skin, folded to create the inner recesses of the body, complicates the boundary between the inner and the outer. It puts us in touch not only with the world

around us, but also, through its folds and its tears, with the world within us. At the same time as we are contained and bounded by this somatic envelope, which overlaps and intertwines with itself, we are also aware of the porousness of our body-selves. (2013, 88)

As for Brian Massumi, the role of skin as a medium goes beyond its single identification with exteroceptive tactile sensibility. As the site of external contact between subject and object, skin entails two infolding and “complementary dimensions of the ‘medium’-depth perception most directly implicated in the body’s registration of the in-betweenness of the incorporeal event,” Massumi defining proprioception and interoception (viscerality) together as *mesoperception*, as follows (2002, 58-62):

Mesoperception is the synesthetic sensibility: it is the medium where inputs from all five senses meet, across subsensate excitation, and become flesh together, tense and quivering. Mesoperceptive flesh functions as a corporeal transformer where one sense shades into another over the failure of each, their input translated into movement and affect. Mesoperception can be called *sensation* for short. (62, his emphasis)

For Massumi, while “proprioception folds tactility into the body, enveloping the skin’s contact with the external world in a dimension of medium depth,” that is, “between epidermis and viscera” (58), viscerality, located farther inward in relation to the “stratum of proprioception,” but “still at a medium depth in that it also intervenes between the subject and the object,” “registers excitations gathered by the five ‘exteroceptive senses’ even before they are fully processed by the brain” (60-1).

As Aristotelian as this concept of “quasi-corporeality” may be, there is also a common trait in Massumi’s thinking which points to Maurice Merleau-Ponty’s ontology of the flesh and his notion of “intercorporeality” (as well as Deleuze’s and Guattari’s idea of “haptic visuality”). As such, Merleau-Ponty’s theory of the “primordial sensorium,” as opposed to a differentiation of the senses, is another possible way of unveiling this unapparent obscurity. According to Martin Jay, Merleau-Ponty’s integration of sight with the other senses, enables the possibility of an integral experience of the world (1994, 307). A theory of this nature, along with the ones adopted from Alois Riegl and Henry Bergson, is what enabled Deleuze and Guattari to apply the notion of “haptic visuality” to cinema. Similarly, if we think of haptic touch, its characterization as a nomadic space of free action by nature, with no barriers, does not mean that it cannot work in conflation with an optic space, understood as something striated, metric, and thought out. Phenomenological observations of Merleau-Ponty’s thoughts concerning “body schema” and “body image” also lead Mark B. N. Hansen to rethink the former’s notion of *écart* (a “gap” or a “divide”), and explained by the latter in terms of a “transduction between embodiment and specularity (...) that informs the emergence of the visual from primordial tactility” (2006, ix). Defining this initial touch as a “protosensory (amodal) power,” different from “touch as a

distinct sense” (68), Hansen states that, “the body schema characterizes the body as a ‘pre-ontic’ function, a kind of infraempirical or sensible-transcendental basis for intentional operation” (39). In this way, Hansen manages to refunctionalize Lacan’s theory of the mirror stage, in making the mirror image a phenomenon belonging to touch, rather than being “the source of fission,” and consequently, offering “an ontological privileging of the body schema over the visual image of the body” (54-55).³⁴

Aside from interpretations of the interface as a window or a mirror,³⁵ other more recent investigations prefer to signal its nature as a threshold between mediated layered surfaces, either actual or virtual. For Johanna Drucker, however, the idea of an interface as an object, or in other words, as “the basic model of the user-centered, task-driven, goal-oriented approach to interface design,” that emerged out of the “engineering community” responsible for the HCI paradigm, continues to be “adopted by humanists” (2013, para. 32). Her vision of a “humanistic interface design,” “an interface grounded in probabilistic and performative approaches” (para.18), seems more suitable for a digital humanities community, whose responsibility lies in the invention of a “graphical language suited to its critical principles, not with the HCI labs” (para. 13).

In his general theory of the interface, cultural theorist Branden Hookway states that the interface tends to be seen as “a technology in itself,” and not so much as a “relation with technology,” meaning that “while the interface might seem to be a form of technology, it is more properly a form of relating to technology” (2014, ix-1). Hence, his definition of the interface as “a liminal or threshold condition that both delimits the space for a kind of inhabitation and opens up otherwise unavailable phenomena, conditions, situations, and territories for exploration, use, participation, and exploitation” (5). Considering the two different yet related meanings of interface, namely, with respect to digital devices as surfaces of interaction (either in terms of hardware or software, for example, input devices such as a mouse or a tactile screen, but also any GUI), as well as with regard to analog devices, as a retro metaphor for an interactive surface – although obscuring the fact that digital objects allow for multiple interfaces of the same nature – there are at least two levels of mediation at work here. Not only are interfaces a medium relating to a specific technology, but they are also, digitally speaking, able to be represented in many different ways. As such, the fact that digital objects permit more than one surface of representation, aligned with the fact that they provide abstract models of human-computer

³⁴ According to Hansen, “Lacan, as is well known, posits the mirror stage – the concrete experience of seeing in the mirror image – as the crucial moment in the complex transition of the infant from a ‘fragmented body image’ into an ‘orthopaedic’ totality” (2006: 55).

³⁵ A discussion of the interface as both window and mirror is the central subject of Bolter and Gromala’s *Windows and Mirrors*. See Bolter and Gromala: 2003.

interactions for a particular set of objects and functions, is what enables the possibility for a haptic reading experience by means of a cognitive and sensory-motor coupling.

Both previous perspectives seem to be aligned with what Alexander Galloway, in his understanding of the “interface as an effect,” describes as “a point of transition between different mediatic layers within any nested system” (2012: 31). However, once again, this does not mean that the threshold is to be found outside ourselves. Jean-Luc Nancy’s remarkable definition of *threshold*, given on the occasion of a conference on touch and the primacy of touch (at the Louvre Museum), points towards this particular kind of embodiment, specifically by means of an analysis of Caravaggio’s “Death of the Virgin” (1604-1606), in which Nancy remarks that:

[...] we have entered there where we will never enter, into this scene painted on a canvas. (...) We can’t exactly say that we have penetrated there, but neither can we say that we are outside. We are there in a manner older and simpler than by any movement, displacement, or penetration. We are there without leaving the threshold, on the threshold, neither inside nor outside — and perhaps we are, ourselves, the threshold, just as our eye conforms to the plane of the canvas and weaves itself into its fabric. (1996, 57)

Taking the aforementioned words into account, where the eye acts as the threshold itself, what can be said of the finger, especially considering digital devices that are able to enhance tactile/haptic touch?

It is perhaps relevant to state that a threshold also constitutes a part of a surface, albeit a complex one, as can be read in Gilles Deleuze’s *The Logic of Sense* (1990). In analyzing Lewis Carroll’s decision to change the title from *Alice’s Adventures Underground* to *Through the Looking Glass*, Deleuze is able to denote a change in perspective from one of depth to one that involves the surface:

By sliding, one passes to the other side, since the other side is nothing but the opposite direction. If there is nothing to see behind the curtain, it is because everything is visible, or rather all possible science is along the length of the curtain. It suffices to follow it far enough, precisely enough, and superficially enough, in order to reverse sides and to make the right side become the left or vice versa. It is not therefore a question of *the adventures* of Alice, but of Alice’s *adventure*: her climb to the surface, her disavowal of false depth and her discovery that everything happens at the border. (...) This is the case —even more so— in *Through the Looking Glass*. (...) Alice is no longer able to make her way through to the depths. Instead, she releases her incorporeal double. It is by following the border, by skirting the surface, that one passes from bodies to the incorporeal. (9-10)

Deleuze’s effective considerations on the twofoldness of surfaces manages to turn the rabbit’s hole completely upside down, or better still, to spread it across a horizontal depth that is far from being superficial. Nonetheless, while his theory of surfaces seems to work well when applied to the articulation of the plane of the page in relation to the three-dimensional space of the book in the psychophysical mechanics of the codex, how does it behave in the realm of the digital?

Bearing in mind “writing on complex surfaces,” John Cayley does not argue that “print-

based textuality is incapable of delivering writing with a complex surface,” he does, however, affirm that, “in so far as this is achieved it is achieved as concept, in the familiar and comfortable realm of literary virtuality, in the ‘mind’ and in the ‘imagination,’ but not in the material experience of the text and its language.” Regarding writing in programmable media, Cayley states:

The screen should not simply be cast as the bearer, for example, of multiple (flat) surfaces or successive ‘states’ of text, it must be viewed as a monitor for complex processes, processes which, if they are linguistic, will be textual and symbolic, with a specific materiality as such. We must be able to see and read what the screen presents rather than recasting what passes before our eyes as the emulation of a ‘transparent’ medium. (2005, para.6)

In viewing “materially and conceptually complex” surfaces as “a liminal symbolically interpenetrated membrane, a fractal coast –or borderline, a chaotic and complex structure with depth and history” (para.1), Cayley develops a theory of surfaces that should not be separated from his work as an artist.

In Cayley’s and Daniel C. Howe’s *The Readers Project* (2009-2012),³⁶ a work in progress described by its authors as a “collection of distributed, performative, quasi-autonomous poetic ‘readers’ – active, procedural entities with distinct reading behaviors and strategies,” a series of automatic readers are released “onto inscribed surfaces that are explicitly or implicitly, visibly or invisibly, constituted by their texts.”³⁷



Fig. 2.4: *The Reader's Project*. “Readers Live.” <<http://thereadersproject.org/readersLive.html>>, last accessed July, 28 2017. Screenshot.

³⁶ <<http://thereadersproject.org>>, last accessed August 1, 2017.

³⁷ A more detailed analysis of behaviors and characteristics of these readers can be found in Emerson: 2014, 183-84, as well as in Portela: 2013, 343-47.

Resembling the structure of an open printed book, several programmed readers present multiple behaviors, enabling the possibility to “reveal certain contours and outlines of linguistic materiality” (Cayley and Howe: 2009, project statement). Composed of surfaces of reading and writing that constantly intertwine each other, these readers also enhance a two-fold perspective, “explicitly or implicitly, visibly or invisibly,” in a form that is “significant and affective, aesthetic and literary.” Thus, in their own way, each performing reader becomes a threshold to be crossed by metareaders that read the reading process.

2.2.3 Tactile and Textile

The painter, with the tips of his fingers, caresses or attacks the canvas, the writer scarifies or marks the paper, leans on it, presses it, prints on it. There is a moment when seeing becomes impossible, when the nose is touching, sight is cancelled by contact; two blind people who can see only by means of their canes or walking sticks. The artist or artisan, through his brush, hammer or pen, grapples at the decisive moment with skin against skin.

Michel Serres, *The Five Senses*

Ultimately, for lack of a more suitable option, skin is often seen as a seemingly perfect candidate for the role of medium responsible for tactile/haptic perception, which also brings up the issue of its apparent immediacy. For Gallace and Spence, however, while skin is one “huge sheet of tactile receptors,” protecting “our body from the external world and, at the same time, [informing] us about what occurs on its surface,” what in general terms is defined as touch is “actually the product of multiple forms of sensory integration occurring at different stages of neural information processing” (2014, 3). Given that “the somatosensory system would seem to be based, even at a neurophysiological level, on a neural architecture that is inherently multisensory,” their conclusion is that “the differences in the perception of alternative forms of tactile stimuli” are less related to what is actually happening at the surface of our skin than to the processing of signals deriving from central neural networks (34-35). Moreover, as Michel Serres observes, while skin defines the border between corporeal touch and the world (Serres, as cited in Garrington: 2013, 19), if one is to think of phantom limbs, for instance,

[T]he data that have emerged from studies of those patients whose limbs have been amputated appear to suggest that the consciousness of tactile stimuli does not necessarily require the integrity of the tactile receptors on the skin. That is, the neural representation of the body in the brain is sufficient to elicit an awareness of tactile stimuli in the absence of its physical counterpart (e.g., the limbs themselves). (Gallace & Spence: 2014, 90)

Nevertheless, for Serres, the role of the skin in human perception may entail other nuances, namely since it is “the site of a generalized, common sense, generative of identity”

(Sankey & Cowley: 2009, xii), “the ground or synopsis of all the senses, since all the organs of sense are localized convolutions of it” (Connor: 2009, 3). According to Steven Connor,

Serres’s claim is that the soul does not reside in one particular location in the body – the pea-sized pineal gland, according to Descartes, buried deep in the brain, but flares wherever and whenever the body touches upon itself. Thinking is reflexive because it is enacted through a kind of autotactility. The soul comes into being, not in concentration but in convergence, not in simplification but in complication, not in withdrawal but in excursion. For this reason, the soul has no fixed abode in the body, but rather comes into being in its very coming and going. Serres finds the soul above all on or in the skin, because the skin is where soul and world commingle. (4-5)

This possibility of conjointment of body and soul³⁸ in Serres, is what validates the hypothesis of skin as a sixth and common sense, a theory in line with Aristotelian tensions between thinking and sensing, of a “quasi-sense, the *sensus communis*, the function of which was to mediate between the other five senses” (2). This way, it being “a variety of our mingled senses” (Serres: 2009, 52), as well as “the principal means whereby the body mingles with the world and with itself” (Connor: 2009, 3), as a conjunction of body and soul, in contrast to Condillac’s description of Galatea,³⁹ skin makes it impossible to separate the senses as individual channels.

“How could we see the compact capacity of the senses if we separated them?”, asks Michel Serres (2009, 305). In order to illustrate his argument, Serres presents a possible interpretation for a mysterious set of tapestries woven from wool and silk, commonly known as *The Lady and the Unicorn* (in French, *La Dame à La Licorne*), from around 1500, and now on display at the Musée de Cluny, in Paris. Subject to many interpretations, the set of six tapestries are believed to depict the five exteroceptive senses – hearing, sight, taste, smell, and touch – as well as an obscurer one, as suggested by the words “à mon seul désir.” In his description, Serres starts by noticing that each scene in the tapestries feature a specific object pertaining to a specific sense: “a mirror for sight, a positive organ for hearing, a sweet dish for taste, a plate or basket of flowers for smell.” All of them, except “Touch,” given that there seems to be no “need for a special tool (...) its skin becoming at will both subject and object.” There is the lady’s skin, namely her hands, which hold a standard-bearer and the horn of a unicorn, and then there is the skin of the tapestry itself, in which the “five or six senses are entwined and attached, above and below

³⁸ For more on the conjointment of body and soul, please refer to Chapter 5 of this thesis.

³⁹ In his *Traité des Sensations* (1754), Étienne Bonnot de Condillac uses the myth of Pygmalion and Galatea, as told in Ovid’s *Metamorphosis*, in order to present a more intricate version of the Molyneux Problem posed by Molyneux to Locke, i.e., if a person that was born blind and suddenly made to see would s/he be able to distinguish between cubes and spheres without touching them. Through a gradual addition process of each sense, Condillac states that the last sense to be acquired by the statue, namely, touch, is what provides her with spatial awareness, thus making touch the only sense capable of providing a human being with the capacity to relate tastes, sounds, smells or colors with a given exterior object.

<http://classiques.uqac.ca/classiques/condillac_etienne_bonnot_de/traité_des_sensations/traité_des_sensations.pdf>, last accessed February 20, 2018.

the fabric that they form by weaving or splicing, plaits, balls, joins [sic], planes, loops and bindings, slip or fixed knots” (53). Moreover, in each tapestry, tactility is always preeminently present, although often veiled in transparency:

before smelling the flowers gathered into a circlet, the woman touches them, singling out each one between index finger and thumb. The woman representing sight holds the handle of the mirror with her right hand and, with the left, caresses the neck of the unicorn. The one representing taste offers her fingers to the bird as a perch, as in the art of falconry. The one representing hearing touches the keyboard of the organ. The hand serves five times as a common factor and a common sense develops there. (54)



Fig. 2.5: *La Dame à la Licorne* (“Le Toucher”). Source <<http://www.musee-moyenage.fr/collection/oeuvre/la-dame-a-la-licorne.html>>, last accessed July, 28 2017.

According to Abbie Garrington, Alois Riegl’s thought is “vital in the establishment of a history of the haptic” (2013, 20). Garrington makes reference to the influence of Riegl in Walter Benjamin’s failed doctoral thesis on tragedy in German drama, specifically, Riegl’s idea of the *Kunstwollen* (often translated as “artistic volition”), which she explains in terms of “shifts in the artistic styles of historical civilisations as they relate to shifts in the spatial perceptions of those civilisations, perceptions mediated through the senses.” Being specialized in Egyptian Art, Riegl

differentiates between the haptic and the optic by establishing an opposing dynamic between figures and foreground in hieroglyphic representations, and the “appearance of shadow, perspective and foreshortening.” Another interesting fact stressed by Garrington, is that Riegl’s “interest in questions of touch and tactility” might be explained by his work as a “curator of textiles at the Museum of Art and Industry in Vienna” (20), a fact which Laura Marks, in her volume *Touch: Sensuous Theory and Multisensory Media*, also views as a possible stimulation for the “art historian’s ideas about a close-up and tactile way of looking” (2002, 4). According to Marks:

Riegl observed tactile modes of representation in traditions generally deemed subordinate to the procession of Western art history: Egyptian and Islamic painting, late Roman metalwork, textile art, and ornament. One can add high-art traditions such as medieval illuminated manuscripts, Flemish oil painting from the fifteenth to the seventeenth centuries, and the surface-oriented, decorative rococo arts of eighteenth-century France. I would also include the “low” traditions of weaving, embroidery, decoration, and other domestic and women’s arts as a presence of tactile imagery that has long existed at the underside of the great works. (6)

This relationship between the textile and the tactile, one of Riegl’s primary apparent concerns, is also at the center of a text by Portuguese Experimental poet Ana Hatherly, written for a volume published by Bertrand Editora in 1979, where six Portuguese writers were invited to write about each one of the tapestries, namely, *Poética dos Cinco Sentidos – La Dame à La Licorne* (“Poetics of the Five Senses – The Lady and the Unicorn”). With contributions by Maria Velho da Costa (“Sight”), José Saramago (“The Ear”), Augusto Abelaira (“Smell”), Nuno Bragança (“Taste”), and Isabel da Nóbrega (“À Mon Seul Désir”), it fell upon Ana Hatherly the task of writing about the fifth tapestry, “Touch.” In it, as we have seen, as a lion sits to the side and looks on, a lady touches the unicorn’s horn with her hand, while the other hand holds a pennant. However, Hatherly opted not to emphasize the visual composition, but rather the tangible qualities of the tapestry, and consequently, the tactile/haptic experience of its weavers. Divided into five different parts, each part introduces new sensations through a gradual arousal of desire, ending with a proper climax and denouement.

In the first paragraph, Hatherly starts by remarking that the tapestry’s background is “extremely rough,” alluding to the weavers’ tactile experience, felt on their respective fingertips. Signaling the skin’s prominent place in what concerns touch, Hatherly then mixes the weavers’ sensations with her own memories of tactile experiences, such as walking along a corridor of pronounced hydrangeas, to the point where her skin fused with the skin of the leaves pressed against her body. The second part of the text introduces details on the work of the weavers. Sitting on wooden benches, the weavers chat and sing while working. The texture of their hair is a pretext to bring up Ithaca’s queen, Penelope, most known for the mythical gesture of continuously doing and undoing images while waiting for her husband to return.

Penélope tece com os fios tirados da memória. Diariamente inventada. Quando ela se deita esquece. No dia seguinte tem de recomeçar a memória. Tecer imagens com os dedos. Lembrar o mundo acumulando fios. Criar as imagens com a pele. (2001, 162)⁴⁰

While Penelope is described as a weaver who creates images through skin, each new image corresponding to a different sensation, the third part describes the weaving workshop, and the image of huge quantities of red wool on the floor. The tactile characteristics of this powerful image are emphasized through the number of flocks needed to obtain that large amount of wool: “Quantos rebanhos. Quanto calor animal. Quanto balido quanto grito quanto sangue.”⁴¹ A paradoxical account of extreme beauty as an ultimate form of violence is continued in the fourth section, describing the sensation of fingers bitten by the animal, as if it were still alive and fighting for one last breath. The weavers are compared to shepherds, wool threads associated with flocks, everything is alive and pulsing, skin rubbing against skin, perhaps a possible explanation for the extreme sensation of roughness right at the beginning of the text. The tapestry begins to take shape. The final section announces the contours of the lady’s hands, shaped by the weavers’ hands, and in turn described through Hatherly’s hands. It is a spectacle of sensation made from wool and silk and skin:

Um último toque. As tecedeiras regressam a casa. Colocaram as tapeçarias bastante alto no museu. As janelas também são muito altas. A sala é grande. De pedra. Os visitantes chegam devagar. Param diante das tapeçarias. Olham. É proibido tocar. (165)⁴²

Apart from the emphasis on the process, rather than on its final result (a common trait among Experimentalists), what these last lines by Hatherly also depict is the way in which a tactile/haptic experience of an artwork – in which the Aristotelian tension between distance and proximity in human perception is a central concern – ended up being a primarily visual experience, touch not being permitted to anyone except its current weavers (the conservation and restoration team of experts).⁴³

⁴⁰ “Penelope weaves with the threads taken from her own memory. Daily renewed. When she goes to sleep, she forgets. The following day, her memory starts anew. She weaves images with her fingers. Remembering the world through the accumulation of threads. Creating images with her skin.”

⁴¹ “So many flocks. So much animal warmth. So much bleating, so much screaming, so much blood.”

⁴² “One final touch. The weavers return home. They hang the tapestries high up in the museum. The windows are also very high. The room is big. Made of stone. Visitors arrive slowly. They stop in front of the tapestries. They look. It is forbidden to touch.”

⁴³ At the Musée de Cluny’s website, it is possible to see a video concerning the most recent restoration process of the tapestries. <<http://www.musee-moyenage.fr/collection/oeuvre/la-dame-a-la-licorne.html>> Last accessed August 1, 2017.

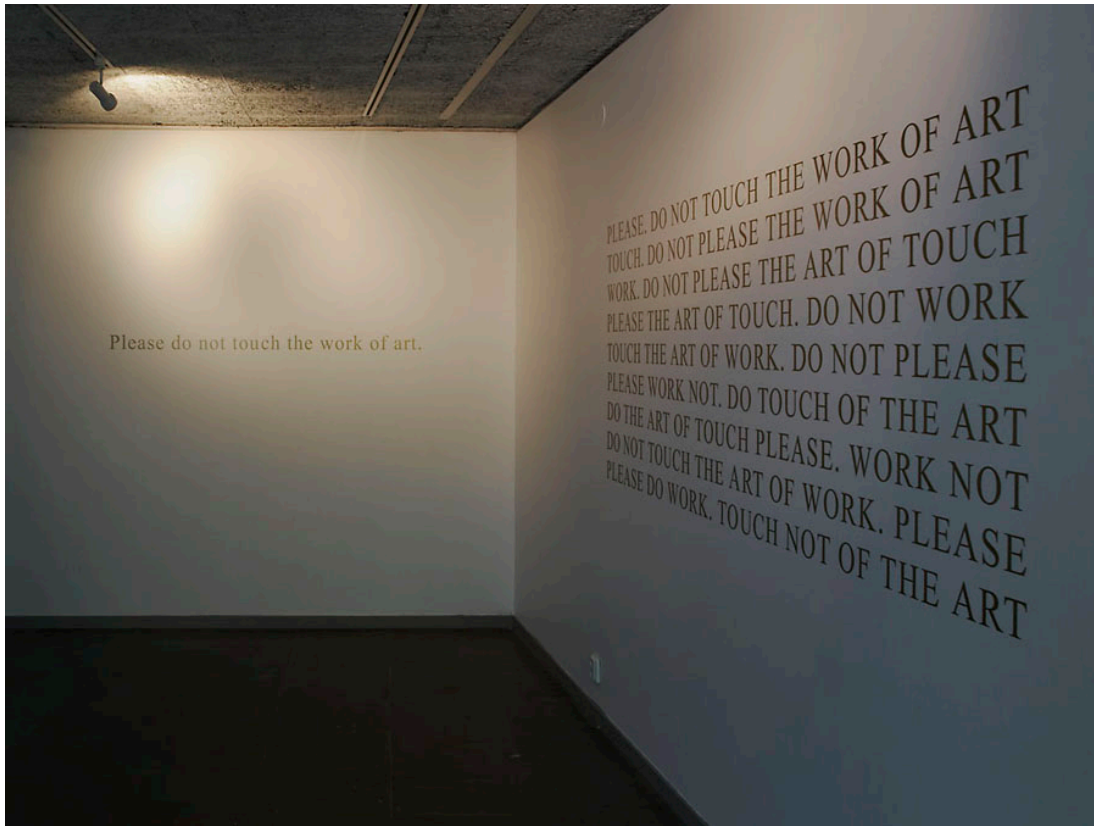


Fig. 2.6: “Please Do Not Touch the Work of Art” (2008). Text art. Raqs Media Collective. Source: <<http://www.raqsmediacollective.net/resultCC.aspx?id=117&type=works>>, last accessed July, 28 2017.



Fig. 2.7: “Touch. Do Not Please the Work of Art” (2010), by Cornelia Erdmann. Public art, Light-Type interactive installation. Flourescent Letters, LED Spotlights. 1.7m x 40m x 6m. In collaboration with Michael Lee Hong-Hwee. Sponsored by Philips. <<http://www.corneliaerdmann.de/?p=534>>, last accessed February 22, 2018.

But the role of skin in both Hatherly's and Serres' depictions of the tapestries also emphasizes a kind of sensory experience that cannot be seen as fragmentary. In other words, from Aristotle to Michel Serres, the senses are several inasmuch as they constitute a whole. But in what way(s) can they be combined together, namely in digital multimodal environments? Bodil Thomsen describes it in terms of an electronic culture, in which "the perceiving experience of the eyes, the ears, and the skin to grasp expressive qualities and changes has been foregrounded," as opposed to "literary cultures [in which] the viewer has become specialised in decoding written and printed texts in a linear fashion" (2011, 43). In order to justify her argument, Thomsen makes use of Deleuze's and Guattari's description in *A Thousand Plateaus* of "nomadic or smooth space," particularly in their use of the term haptic (49). Notwithstanding, one of the problems with such a strong dualism comes with the Deleuzian/Guattarian solution Thomsen arrives at. As with transparency and opacity, to use an example, the rhetoric of smoothness often gives rise to roughness, and roughness, in turn, frequently originates smoothness (similarly to the way that smooth spaces give way to striated spaces and vice-versa). Which raises one more question: what if we apply these dialectic relations between the smooth and striated to human perception?

2.3 Part III: Leaving Poetic Fingerprints

I can track your username on a website on a form somewhere, I can track your real name, I can track associations with your friends and I can build what's called a fingerprint which is network activity unique to you (...).

Edward Snowden

The tension-building repetitive sound of bits and bytes can once again be heard. The machine is still working, and a new lexia is presented: "I am nothing without you." What does this mean, apart from being just another opaque layer? First decision: to use the same gesture as before, since it worked the same time around, the same iterative movement of sliding fingers/cursor across the screen. The first mutation occurs. What initially was a compact sentence now disassembles into two blocks of dispersed sentences. Like a dialogue between lovers, one extrapolates.

Composed of verbal text only, this third part of *Opacity* enables the possibility to think about language in several possible ways. Firstly, as a system composed of several units working together to produce meaning; and secondly, as a technology and a medium used to communicate with ourselves and with others. However, similarly to every mediated technology, language also

has its layers, its transparencies and opacities, its fusions and divisions. Considering that this third part could function as a digital literary artwork on its own, what we are then presented with is the constant attempt to make sense, through a continuous tension inherent to the conditions imposed by language. In other words, in order to fix, in a more or less stable form, the sentences that are being created, a simultaneous need for dissolution becomes apparent, in this case, through the central mutating line, in which each new attempt at attaining transparency from one side, is met with an opaque response from the other. This way, by means of a climax, this third part makes use of language to clear up some of the ambiguous sensations and oblique connections between both parts of the story (as well as between the reader and the work, between each individual part, etc.), maintaining continuously present that there are certain things that cannot be as transparent as one would wish. At this point it becomes clear in *Opacity's* narrative, that the reader's exploration of the work is related to the character's self-awareness, in the sense that both experience a gradual state of increased awareness of the tension between transparency and opacity.

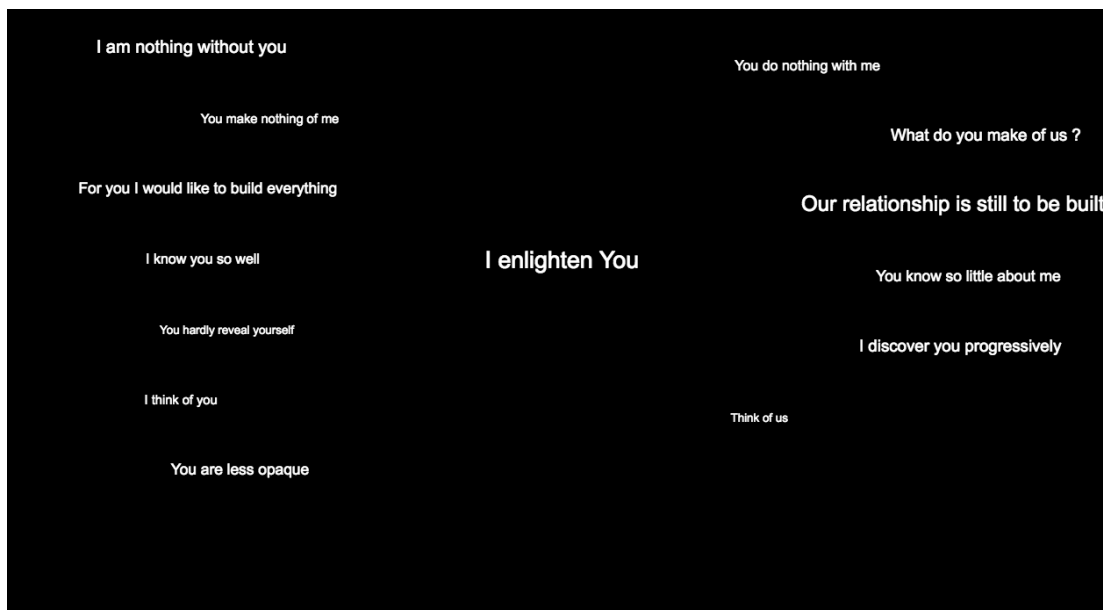


Fig. 2.8: *Opacity. Part III. Screenshot.*

According to Manuel Portela, narratives are a way of making the singularity of events and our actions intelligible:

Sem essa tradução, isto é, sem a violência de nos submetermos à simbolização com que julgamos produzir uma ordem de inteligibilidade para os acontecimentos singulares, o real seria uma ferida aberta permanente. Caótico, doloroso, incmprensível, injustificável, imperceptível (...). (2012, 7)⁴⁴

⁴⁴ “Without that translation, i.e., without the violence of submitting ourselves to the symbolization that we are thought to produce an order of intelligibility for singular events, the real would be a permanent open wound. Chaotic, painful, incomprehensible, unjustifiable, imperceptible (...).”

In the case of *Opacity*, as in most of Bouchardon's artworks, such experiential and intelligible parallels are made available to the reader by means of gestures which articulate the strategies of signification and affect, required in order to make progress in both narrative and event. These exploratory interactions by way of the interface are what constitute these manipulations as a haptic reading process (a symbiosis of cognition and sensory-motor perception). And while this process is equivalent to the experience of reading textual content, multisensory perception enabled by the digital interface's affordances, gives way to a state similar to that which can be described as *experiential learning*, or *hands on learning*, literally and metaphorically speaking.

Outlining a critical framework for a theory on "performative materiality," and its potential application to the design of interfaces from the point of view of digital humanities, Johanna Drucker recalls the work of Matthew Kirschenbaum's at the turn of last century, by "calling attention to the material substrates of computing," and seeing "materiality as essential to the operation and identity of digital media" (2013, para.1), a position that can be summed up in one of the sentences Drucker chooses to quote from the author of *Mechanisms: New Media and the Forensic Imagination* (2008): "Every contact leaves a trace." Not coincidentally, "trace" and "contact" are two of the most significant words in digital literary artworks that self-reflexively present a critique of HCI.

Serge Bouchardon is one of those poet-critic practitioners (to use a definition by Adalaide Morris in her introduction to the volume *New Media Poetics*), able to rethink digital interfaces by means of his digital interactive fictions. The collection of artworks created by the i-Trace collective,⁴⁵ co-founded by Bouchardon, are a poignant example of the ways in which digital literature is able to carry out this exercise of self-reflection pertaining to the holy triad of new media studies, *device, medium and concept*. And if the very name of the collective is already indicative of existing tensions between ephemeral and permanent conditions of our own digital paths, the physical interaction elicited by the i-Trace's website, shows us how this tension can become even more pronounced. Emulating the aesthetics and poetics of the artworks it hosts, the i-Trace's homepage invites its visitors to unveil in order to reveal, or to lose grasp in order to become aware, two equivalent formulas serving as an introduction to most of the artworks created by Bouchardon and collaborators. An example of this unveiling, are iterations made possible through the user's physical interaction, for instance, by sliding the cursor⁴⁶ across the area surrounding and comprising the headline, there are consequent changes in the behavior of the website's header. Some of these changes are visual, as dark and grey glitches start to cover a

⁴⁵ <<http://i-trace.fr/>>, last accessed August 1, 2017.

⁴⁶ At the time of my experience with this work, the webpage was not working properly on some tablets and smartphones.

previously white screen, while others are textual, as shown by the gradual mutation of the line, “No trace can last forever,” into, “Press any key to reset.” Yet, by resetting, we are again confronted with the same white surface concealing another possible surface: its reverse side.



Fig. 2.9: Screenshots of headlines to the i-Trace’s website, before and after interaction.

Despite not being part of the i-Trace collective, the online narrative *UnTrace* (2016), belongs to a trilogy titled “Hyper-Tensions,” created by Serge Bouchardon and collaborators between 2010 and 2016, of which *Opacity* is also part. Comprising three digital interactive fictions, this trilogy provides different examples of tension, namely by exploring the following antinomies: functionalism and controllability vs. loss of grasp and loss of control, desire for transparency vs. need for opacity, as well as willingness to leave and disseminate traces vs. discomfort in permanent exposure of disseminated traces. In the questioning of such tensions, there is a particularity that unites these three artworks, namely a concern with the way their readers perceptually experience interfaces. Of all of the (hyper)tensions put into scene by Bouchardon and colleagues, *UnTrace*,⁴⁷ coauthored by Clément Routier, Antoine Aufrechter, & Elsa Chaudet, is the most recent.⁴⁸ Developed in Html5/JavaScript, a combination of a markup and high-level programming language for structuring and presenting content on the World Wide Web, this piece deals with our desire to leave traces – one of the many pervasive visual metaphors propelled through human interaction with digital media – and at the same time erase them, in a paradoxical scenario of digital obsolescence, versus permanent exposure of personal data. Like most of Bouchardon’s digital fictions, traces left by the reader, by means of (in)voluntary moves, are put into superposition with a series of traces previously left by others. Following the same structure as other artworks by Bouchardon, *UnTrace* is divided into six small chapters, which

⁴⁷ <<http://www.utc.fr/~bouchard/works/Detrace.html>>, last accessed August 22, 2016.

⁴⁸ Most of Serge Bouchardon’s digital interactive fictions are created in a collaborative process of coauthorship, taking advantage of the different capabilities of people coming from different professional backgrounds.

gradually (and quite linearly) raise awareness through experience (something akin to the basis of experiential learning).

Dealing with several possibilities of traces that one may leave during the course of one's life – respectively, our present moment, our childhood, the establishment of a couple relationship, having a child, disappearance of friends and relatives, and the dissemination of traces – *Untrace* draws upon our personal experience and correlates it with a much more global one. The first of these *machimanipulations* presents itself right in the initial chapter, in which the reader is asked whether he agrees to leave traces.



Fig. 2.10: *UnTrace*. Chapter 1. Screenshot.

Confronted with a turned-off light bulb appealing to be touched (while swinging to the sound of a four-note guitar loop),⁴⁹ the reader must turn on the light, in order to move forward in the narrative. Such an apparently insignificant gesture will generate the first lexia: “Are you willing to leave traces?”, followed by the choice to accept or refuse in the form of two boxes, each with a question mark inside. This series of movements is part of several ironic moves set up by the author, since prior to any acceptance or refusal, it is already possible to see the time and date of one's connection. This reminds us that, often, choice is an illusion: regardless of the reader's input, in order to proceed, s/he necessarily has to leave “permanent” traces. *Untrace* raises awareness through contradiction, providing an interaction with a seemingly functional

⁴⁹ With each chapter of *UnTrace*, a new musical instrument is introduced by the author. In it, as in many digital interactive artworks, the audio component is significant in the way it can influence the reading experience.

design/mechanism.⁵⁰ Accepting/refusing the invitation will facilitate access to the second movement, in which part of the screen is filled with different connection times and dates. Each movement over the data will then unveil a series of lexias left by previous readers/users. Beside it, while the audio now presents us with a second overlapped guitar loop, we are instructed to “please enter [our] name.” Let us write “untraceable,” so as to maintain the illusion working.

Despite their apparently naive narratives, Bouchardon’s artworks are infused with a series of philosophical concepts, drawing on phenomenology and deconstruction, for instance. Thus, it is not particularly strange to note that the very notion of *trace* might have something to do with Jacques Derrida’s usage of it, notably in *Of Grammatology* (1967). Known as one of Derrida’s major concepts in his deconstructivist critical outlook, *trace*, in French as well as in English, is one of those words with a wide range of meanings, such as track, path, or mark. While Derrida does not seem to provide any strict definition of the word, according to Gayatri Chakravorty Spivak, responsible for the English translation of *Of Grammatology*, trace seems to be always a “mark of the absence of a presence, an always-already absent present” (1997, xvii), which is why, in Derridean deconstruction, “the authority of the text is provisional, the origin is a trace; contradicting logic, we must learn to use and erase our language at the same time” (xviii). For Derrida, trace differs (defers) from the sign, being the absent part each time we are confronted with the presence of that same sign. In other words, it is a mark, a track, left by the sign’s absent part. Every present sign is therefore necessarily composed of traces of an absence that seem to define it.

Such are the traces left by readers in *Untrace*. As a repository of “collective memories,” the narrative’s possibilities are constructed according to the reader’s input in conflation with input given by previous readers. Therefore, each time readers access the artwork, the narrative changes. Nonetheless, the required gestures are essentially the same, meaning that structure and content work together in order to provide an experience of playing with tensions between (the desire for) presence and absence. In Chapter 2, there is inclusively a “Cemetery of Memories,” exhibiting traces left by previous users, and reminding us of the way in which Henri Bergson described the relation between matter and memory, particularly in his definition of the latter, here paraphrased by Martin Jay as, “consisting both of images available to voluntary recall by the intellect and corporeally inscribed habits ‘which accumulate within the body’” (1994, 193).

⁵⁰ For more information on apparently functional mechanisms, see Chapter 4.

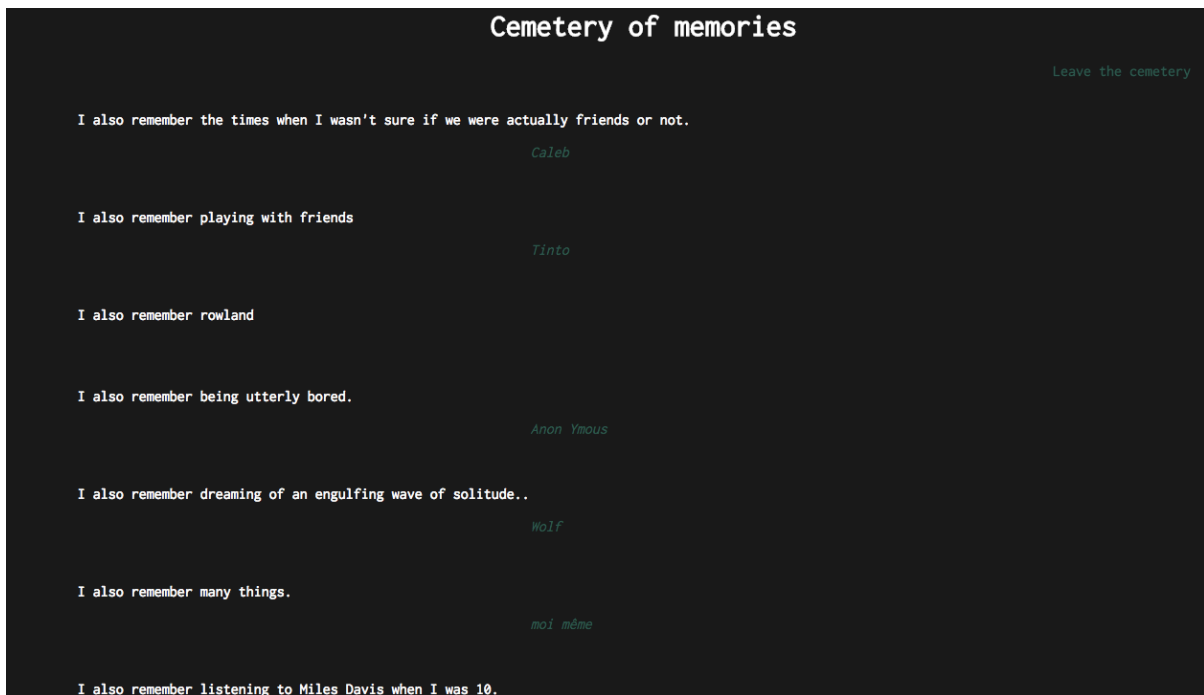


Fig. 2.11: *UnTrace*. Chapter 2: “Cemetery of memories.” Screenshot.

Most of Bouchardon’s digital literary artworks, are infused with Derridean philosophy. *Touch* (2009),⁵¹ for instance, is a nod to, I believe, Derrida’s book *On Touching – Jean-Luc Nancy*. Moreover, several of the dualisms and binary oppositions present in Bouchardon’s digital interactive fictions, particularly in the *Hyper-tensions* trilogy, are perceived by the author as a process in which “the user/participant (...) deconstructs à la Derrida the narrative sequence” (Bouchardon & López-Varela: 2011, 3). *Untrace* is no exception, namely in the way it invites the reader to produce (in)voluntary gestures in the midst of such binary oppositions.

Decidedly marked by a Derridean perspective, Bouchardon seems to show a specific interest in the way (multi)sensory perception works in the context of digital media. He achieves this through a meta-reflexive exploration of specific characteristics of digital multimodal environments, by means of a gradual play between several intero- and exteroceptive sense modalities. For instance, in what concerns the sense modalities of vision and touch, this means that what you see is not what you get, since required gestures make hidden layers visible, the reverse meaning of the lexias normally being presented in the first visual layers. In Chapter 6, for example, “Dissemination of traces,” as the reader is asked to leave a trace for the next user, snippets of code appear and disappear each time one passes over it with a mouse pointer.

⁵¹ <http://www.utc.fr/~bouchard/TOUCHER/index_en.html> Last accessed July 31, 2017. A closer reading of *Touch* can be found in Chapter 3. Nonetheless, some of the observations included in the following chapter can also be used with reference to the themes explored in the present chapter, specifically concerning interfaces.



Fig. 2.12: *UnTrace*. Chapter 6 “Dissemination of traces.” Screenshot.

Through a strategic repetition that is also part of his signature, Bouchardon puts the reader face to face with the very polar opposite of what s/he might expect from such interactions, for instance, by raising awareness through the loss of one’s grasp, by acknowledging opacity through transparency (and vice-versa), and specifically in the case of *Untrace*, by making one aware of the effects of traces, leading the user, through a particular kind of invitation, to leave traces behind.

Poetic and aesthetic dimensions of playing with notions such as manipulations, gestures or traces, do not however, preclude a wide range of interpretations that tend toward the political/ideological. Independently of Bouchardon’s main focus on the way such visual metaphors question themes like embodiment in reading, a macrostructural perspective is always an integral part of such questioning. Similar strategies were also used in *Do Not Track* (2015),⁵² by Brett Gaylor, “a personalized documentary series about privacy and the web economy,” having as its basic premise: “If you share data with us, we’ll show you what the web knows about you.” Through a series of seven episodes, users are invited to share personal data that will be analyzed by algorithms in order to bring awareness to several issues, such as: “Can you avoid being tracked?”, “how to survive in a cookie environment,” how to be aware of the algorithms used by corporations like Facebook in their *like* (data) mining strategy, “how to protect your smartphone,” “what is Big Data and how does it work,” “how we end up being analyzed through our daily activities online,” and finally, based on the data collected, “how is it possible to predict several outcomes for the future of the Internet?”.

⁵² <<https://donottrack-doc.com/en/intro/>>, last accessed August 22, 2016.

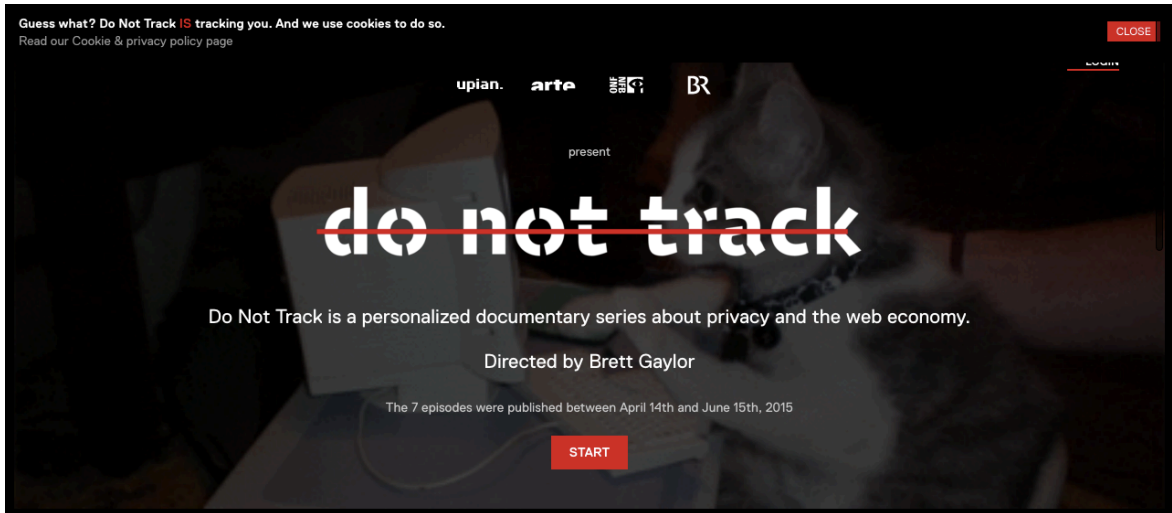


Fig. 2.13: *Do Not Track*. Main interface. Screenshot.

Although questions concerning the privacy and reliability of our Internet data remain to be answered, “experiential learning” experiences like *Do Not Track* are able to teach the user, in a positively disruptive way, what tracking means, by making him/her emulate the same techniques and use the same tracking tools used by corporations that control our daily Internet routines, such as social networks and web search engines.

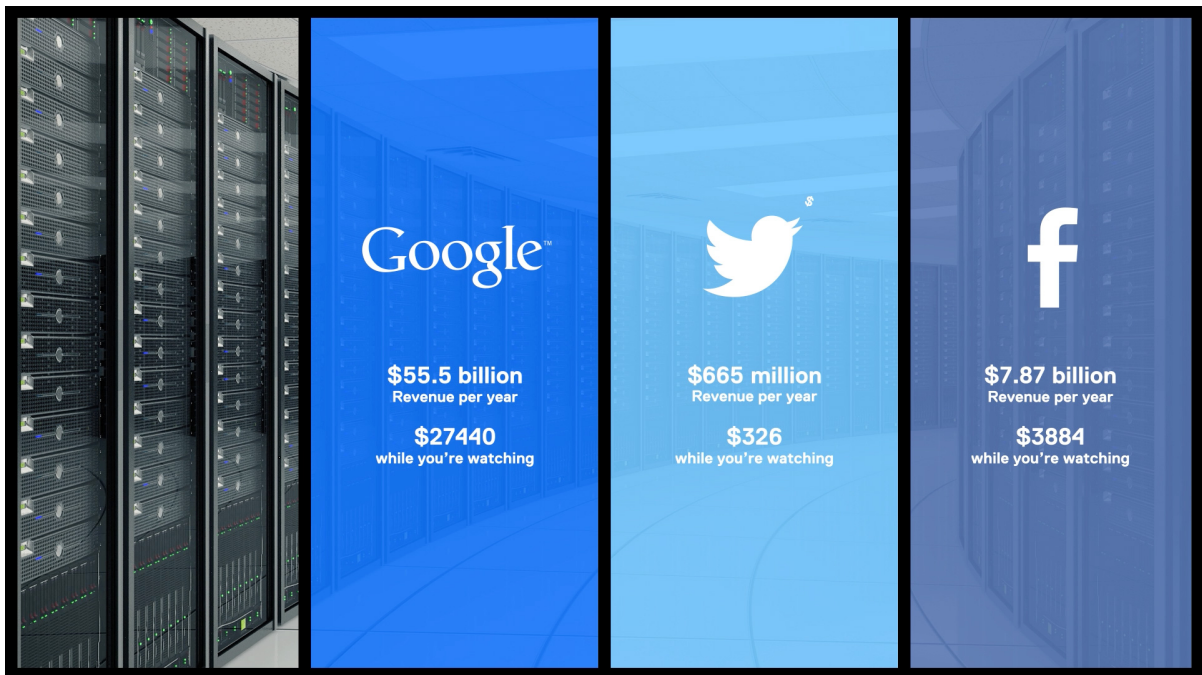


Fig. 2.14: An image showing the Internet’s Giants profits, possible to be downloaded through *Do Not Track*’s website. Main interface. Source: <<http://epkurl.com/donottrack/en/>>, last accessed August 1, 2017.

Interestingly, one of the FAQ made available in the About section of this documentary, concerns the ability of devices to track our moves, and the existing differences in tracking between a personal computer, a tablet and a smartphone, their explanation being that, the “apps

installed on your phone and tablet individually collect various data. Mobile phones are unique in that they provide your location (and thus your movements) to the data collected.”⁵³ Curiously enough, those are specifically the kinds of interfaces that require our touch, perhaps now more than ever.

2.4 Part IV: Through the Touching Glass

2.4.1 Welcome to the Glass Age

0 was to come in an hour. I felt pleasantly and beneficially excited. At home I stepped hurriedly into the office, handed in my pink coupon, and received the certificate permitting me to lower the shades. This right is granted only on sexual days. At all other times we live behind our transparent walls that seem woven of gleaming air – we are always visible, always washed in light. We have nothing to conceal from one another. Besides, this makes much easier the difficult and noble task of the Guardians. For who knows what might happen other wise? Perhaps it was precisely those strange, opaque dwellings of the ancients that gave rise to their paltry cage psychology. “My (sic!) home is my castle!” What an ideal!

Yevgeny Zamyatin, *We*

This is the Glass Age. Where clarity creates a richer world, the frame brings us closer to family, the display expands the mind, and the lens carries us to the heavens (...) when engineers cover our eyes with new ways to see, architects build walls that open possibility, artists use fire to capture the sun and materials scientists invent powerful solutions to impossible problems.

Corning’s advertising video “Welcome to the Glass Age”

For now we see, through a glass, darkly

King James Bible (Corinthians: 13:12)

As the sense of disclosure becomes stronger, I reach a turning point (noticing that the sound is now much calmer, less disturbing). Confronted with the misted glass of a shower door that veils the naked body of his wife taking a bath, as well as the impossibility of unveiling his wife’s thoughts on his own, the character comes face with the paradox’s punchline: “I am not looking for transparency anymore/But for opaque/interactions and sensations.” In short, there is always a need for a certain sense of opacity in order to reveal illusory transparencies, through literature, in this case. But why is glass – a supposedly transparent material, often associated with

⁵³ <<https://donottrack-doc.com/en/about/>>, last accessed August 24, 2016.

windows, used here as the element that is capable of providing that long desired opacity?

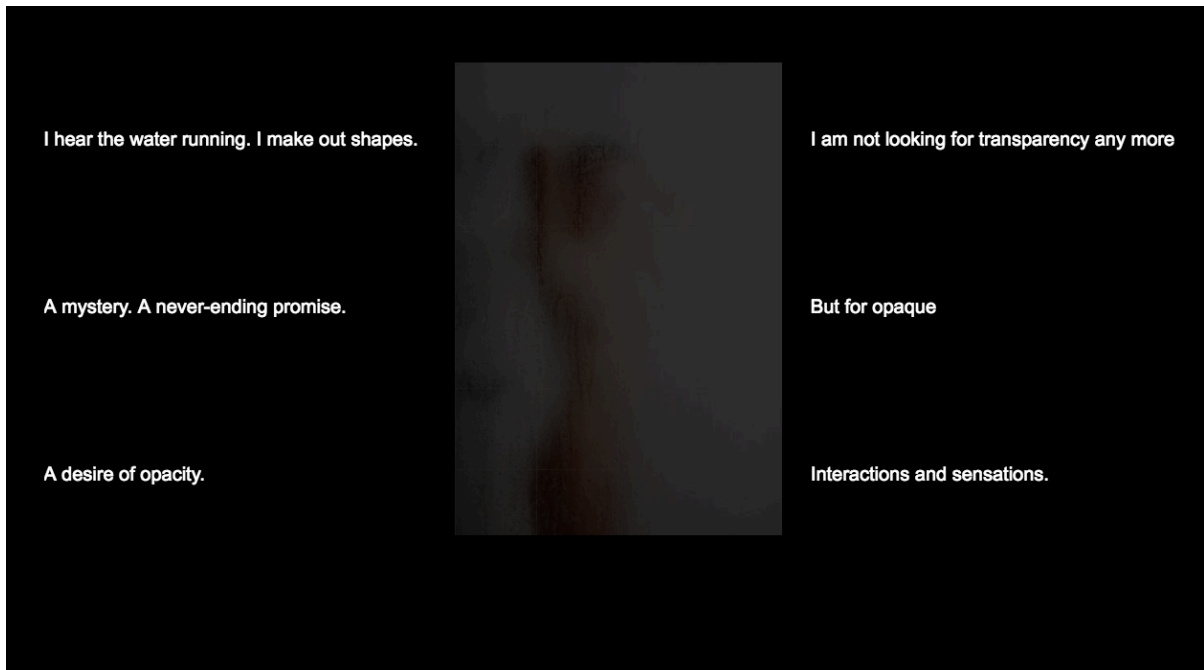


Fig. 2.15: *Opacity. Part IV.* Screenshot.

From 2011 onwards, Corning, a corporation whose core product is glass, released a series of video commercials on YouTube, in which viewers were invited to “enter the Glass Age.” In a futuristic world made entirely of glassy surfaces, Corning presents us with a day in the life of a modern family in which glassy surfaces are omnipresent.



Fig. 2.16: Stills from *A Day Made of Glass 2.*

<<https://www.youtube.com/watch?v=jZkHpNnXLB0&feature=youtu.be>>, last accessed July 30, 2017.

Used as a way to promote Corning’s current innovations in glass material, and despite its incorporation of some technologies still in the realm of science-fiction, their goal is simple: to provide a feeling of absolute transparency.

Also in 2011, Manuel Portela wrote a series of texts dedicated to the deconstruction of Corning’s advertising videos, specifically, “a perfeição transparente do futuro digital” (the

transparent perfection of the digital future”⁵⁴, and “imagina o que é capturar o mundo com uma câmara digital” (imagine what means to capture the world with a digital camera”)⁵⁵ In these texts, which drew on a creative research process resembling what we might call *academic storytelling*, Portela showed the other side of Corning’s story, revealing what was veiled by the images: layers of text concealed by Corning’s intention of transmitting full transparency. By making visible the rhetoric of superiority of digital media, Portela analyzes Corning’s videos as visual and narrative instantiations of the ideology impregnated in current discourse on our technological future.

Whilst trying to answer the question of “what kind of nightmare is this of a totally administrated and pre-programmed transparency,” Portela makes use of a supposedly opaque strategy, resorting to symbolization (alphabetic code) in order to put in evidence the opacity of images and ideology around glass, thus raising awareness by means of subversion/disruption, since the only way to draw attention to the inherent tensions between transparency and opacity is by using a technology that is able to represent both at the same time, namely, in this case, language.



Fig. 2.17: Stills from *A Day Made of Glass 1*.
 <https://www.youtube.com/watch?v=6Cf7IL_eZ38>. Last accessed July 30, 2017.

In order to understand some of Portela’s conclusions, it should suffice reading between the lines of the voice-over that conducts the viewer through these videos, thus making evident that where there is transparency, there is also opacity. Which is to say, that the more transparent, the more opaque; a paradox hidden within each line of the aforementioned epigraph: clarity/real world; frame/family; lens/heavens; covering our eyes/new ways to see; building walls/opening possibilities; fire/sun; powerful solutions/impossible problems. Through this long list of

⁵⁴ Presented for the first time on May 2, 2011, in the context of the cycle “milplanaltos” at the Instituto de Antropologia do Departamento de Ciências da Vida da Universidade de Coimbra. See Portela: 2012a, 6-21.

⁵⁵ Presented for the first time on February 11, 2011, in the context of the cycle “As Artes do Colégio”, promoted by the Curso de Doutoramento em Arte Contemporânea do Colégio das Artes da Universidade de Coimbra. See Portela: 2012b, 22-31.

antagonistic elements, one is able to capture the true essence of a rhetoric, in this case, of transparency.

Nonetheless, even though it may seem almost impossible not to apply the Flusserian metaphor of the black box to the screen, it may be worthy of a closer look to examine what lies at the heart of the transparency/opacity paradox: i.e., translucency.

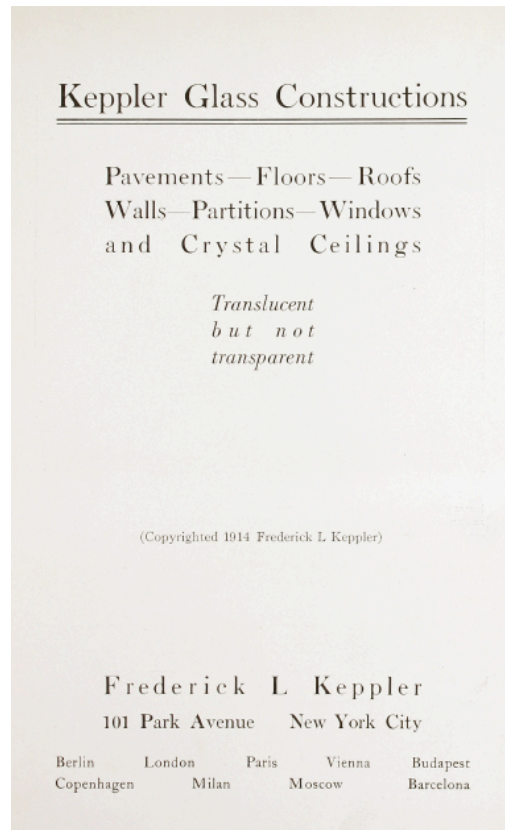


Fig. 2.18: Front page of *Keppler Glass Constructions*' catalogue (1914). The beginning of a dream for transparency? Or a more translucent one?

Taking into account that some architectural vocabulary is shared by both buildings and computers, and especially bearing in mind that glass is a material surface common to both, glass is anything but innocuous. Multi-touch devices now seem to congregate all the potentialities that modern architecture envisioned as futuristic, for instance: transmission, reflection, diffraction or refraction of light, as well as resistance, lightness, among other characteristics. In fact, the so-called *Glass Age*, gained momentum through these promises of transparency. Notwithstanding, there was always a catch that came with these promises, easily illustrated by the move from small transparent surfaces in the shape of windows, to large opaque panes of dark glass.

For Mark Hansen, glass, as a “preeminent technology of modernist architecture (...) has opened the path to our massively surveillant society” (2006: 214), a premise that was latent in Marshall McLuhan’s considerations on the “reason why the story of glass is so closely related to

the history of housing.”⁵⁶ Not to mention, the mirror as “a main chapter in the history of dress and manners and the sense of the self” (McLuhan, 1964: Chapter 13, para. 8).



Fig. 2.19: Glass reflecting glass. Isola, Milan (2016). Courtesy of Ana M. García.

Moreover, in Walter Benjamin’s 1935 *exposé*, “Paris, the Capital of the Nineteenth Century,” the prevalence of glass already seems to be a reality (despite the fact that it was considered by many as a utopia). Considering Benjamin’s perspective of glass was largely influenced by Paul Scheerbart’s *Glass Architecture* (1914), it is worth recovering an excerpt of this historical account:

We live for the most part in closed rooms. These form the environment from which our culture grows. Our culture is to a certain extent the product of our architecture. If we want our culture to rise to a higher level, we are obliged, for better or for worse, to change our architecture. And this only becomes possible if we take away the closed character from the rooms in which we live. We can only do that by introducing glass architecture, which lets in the light of the sun, the moon, and the stars, not merely through a few windows, but through every possible wall, which will be made entirely of glass – of coloured glass. The new environment, which we thus create, must bring us a new culture. (1914: Chapter 1, para.1)

Finally, we can conclude this list of references on the uses and misuses of glass in modern architecture with Fredric Jameson’s account of:

[...] the great reflective glass skin of the Bonaventure, whose function might first be

⁵⁶ In Yevgeny Zamyatin’s dystopic novel *We* (1921), buildings are depicted as completely transparent and all private activity, including sexual relations, can be monitored at all times. However, despite the possibility of using curtains “for the sexual days,” the very fact of using curtains enables everyone to know what is happening inside walls, not to mention the control of sexual days by the government.

interpreted as developing a thematics of reproductive technology. Now, on a second reading, one would want to stress the way in which the glass skin repels the city outside (...). In a similar way, the glass skin achieves a peculiar and placeless dissociation of the Bonaventure from its neighbourhood: it is not even an exterior, inasmuch as when you seek to look at the hotel's outer walls you cannot see the hotel itself, but only the distorted images of everything that surrounds it. (1998, 13)

It is not difficult to foresee a near future entirely made of glass, whether more or less transparent/opaque, we can only imagine. What we know for sure is that glass is able to change the way we connect to the world (let us think for instance of its use in optical fiber), and above all, the way we see the world, which can explain much of its early industrial reputation, as well as its uses among early twentieth-century artists. Search for any avant-garde exhibition catalog or manifesto and glass will be found among the list of cherished materials, taking several possible shapes and forms. Take for example, Boccioni's *Technical Manifesto of Futurist Sculpture* (1912), in which the Italian Futurist painter and sculptor sees glass and other less noble materials, as the proper tools to translate "those atmospheric planes which bind and intersect things" into a new plastic art that refuses "the literary and traditional dignity of marble and bronze" (Boccioni, as cited in Rainey *et al.*: 2009, 114-118).

Nevertheless, when it comes to the use of glass in early avant-garde proposals, Marcel Duchamp's *La mariée mise à nu par ses célibataires, même*, also known as *The Large Glass* (1915-1923), seems to overshadow everything else, which is certainly Duchamp's most intriguing work, and a work where glass is definitely the prominent material. However, given Duchamp's choice of this material, and the hermeneutics surrounding this work, there are only a few approaches directly concerned with its materialities. According to Calvin Tomkins, the reason for Duchamp's choice was both pragmatic and idealistic. Not only does he note that "a painting on glass could be sealed hermetically, which would prevent or at least delay the gradual oxidation that causes pigments to fade and change color," but he also sees in this new medium a way of breaking with what he called "retinal art." Furthermore, Tomkins observes that, as Duchamp became progressively less interested in "art for the eye alone," and determined to erase all traces of "the artist's personal touch," he opted for glass instead of the traditional canvas (1966: 34).⁵⁷

Being less transparent than translucent, *The Large Glass* contains a plurality of dimensions. Duchamp's descriptions of the work's four-dimensionality open a window to a game of surfaces made possible by the material in question. Through the glass, one is not only able to perceive the

⁵⁷ Concerning Duchamp's choice of glass as an alternative surface to canvas, in her biography of Duchamp, *The Bachelor Stripped Bare*, Alice Goldfarb Marquis tells a slightly different story from the one told by Tomkins. Establishing a connection between Duchamp and the Czech painter Frank Kupka, Marquis states that, not only was Kupka the neighbor of two of Duchamp's brothers, he also saw glass (particularly stained glass) as "the best solution for what he was seeking." See Marquis: 2002, 39-60.

series of cogs set up by Duchamp in order to put the gear into motion, but is also made aware of one's reflection, mixing in with the space lying before and behind the glass panels.



Fig. 2.20: *The Bride Stripped Bare by Her Bachelors, Even* (“The Large Glass”). (1915-23). Oil, varnish, lead foil, lead wire, and dust on two glass panels. 109 1/4" x 69 1/4". Philadelphia Museum of Art. Source: Khan Academy <<https://www.khanacademy.org/humanities/art-1010/wwi-dada/dada1/a/duchamp-the-bride-stripped-bare-by-her-bachelors-even>>, last accessed July 30, 2017.

Yet, given that it is not a work open to rational description and interpretation, by placing less emphasis on the visual result rather than on its process, is it viable to go beyond these vitreous layers of translucent surface? If we apply this formula to the glassy surfaces of an iPad, is it possible that, in the same way the *Large Glass* “resists a consistently transparent view because it includes the reflection of the observer and his or her environment in its image” (Shanken, 2003: 78), everything is destined to happen on the screen, “the site of interaction and negotiation for meaning” (Ascott: 2003, 235)?

This line of thinking is consistent with what Roy Ascott refers to as “screens of operations,” as opposed to “screens of representation” (235), counterpointing Duchamp’s idea of “retinal art,” it being possible to claim that most screen displays tend toward visual representations that are “retinal” rather than “procedural.” Apart from a few exceptions, screens have been predominantly places of representation rather than fields of operation, wherein the transparency provided by their glassy surfaces frequently has its corollary in the retinal display of images that attempt to substitute our optical perception of the world. In other words, where

there is a promise of transparency, there is also a promise of convergence between technical image and perceived image. In short, this is the essence of the perfect cyborg human-machine interface, where the surfaces of the interface are coupled into a single perceptual system, an externalized body internalized as a natural interface.

Alex Gibney's documentary, *Steve Jobs: The Man in the Machine* (2015), raises the subject of a glass dream that came to life, more specifically, Steve Job's dream of changing the world. Apple's iconic transparent cube in New York City, which is only a small fraction of a much larger building, is often seen as a representation of the company's interpretation of transparency. However, Gibney's personal disquietude with society's gradual sacralization of Jobs (and consequently, Apple) recounts the precise opposite of transparency. This becomes even clearer as we reach the final sequence, in which we are faced with a zoom-in of realistic Japanese gardens that, in the end, reveal themselves to be just an image on the screen of an iPad. Meanwhile, we hear Gibney's thoughts:

He offered us freedom, but only within a closed garden to which he held the key. [...] As Jobs wanted it, the screen of my iPhone is dark, a zen-landscape of the unseen. If I stare into it, I see the obscure reflection of myself. But this impression lasts just a fleeting moment, before I press the home key and the screen lights up. (Gibney: 2015)



Fig. 2.21: Apple's cube on Fifth Avenue, NY. Source: Wikipedia. © Ed Uthman.

By lighting the screen, the world seems to be in our hands, with all of our decisions being made through the tip of our fingers. Considering the projection of desire and fantasy onto screens, in his book, *Interface Fantasy: a Lacanian Cyborg Ontology*, André Nusselder provides another possible explanation for the reason we tend to see the screen as the ultimate interface, by

recovering Lacan's theory of the mirror stage, in order to draw a parallel with the computer screen. As a "psychological space" for the projection of desire and fantasy, with computer screens, according to Nusselder, "there is a desire for an ecstasy of the real" (2009, 29). Furthermore, despite his emphasis on virtual worlds and avatars – phenomena that may give "a unified form to tendencies otherwise experienced as discordant and disturbing, just as the identification with the virtual image does in Lacan's theory of the mirror stage" (91), – Nusselder's considerations on the consciousness and unconsciousness of the self are not far from the idea of double-fold surfaces:

By picking an avatar, I can formalize certain tendencies (for example, eroticism, aggression, animality) that remain otherwise dark and obscure. Lacan's point is, precisely, that the unconscious is not this "dark and obscure" inside of the self, but comes to being only in externalization. It is only in the form of, for instance, an avatar that I come to recognize my "unconscious intentions"; they do not exist as such before their "materialization". Therefore, the unconscious "happens" at the interface. (91)

In Paul Levinson's adaptation of Marshall McLuhan's ideas on "media as extensions of man" to the digital age, we are told that:

The simple transparent properties of glass, in contrast to the reflective qualities of opaque surfaces, render this common technology – and the more sophisticated technologies like TV and computer screens that employ it – as profoundly informative in its own way as a particle chamber. Of course, glass backed-up by silver serves as a mirror, and therein works as a deliberate exception to its otherwise light-through performance. McLuhan seizes on this technological commonplace too, and finds meaning in it for our understanding (or misunderstanding) of media: "The youth Narcissus mistook his own reflection in the water for another person. This extension of himself by mirror numbed his perceptions" (McLuhan, 1964, p. 51), with the result that he drowned. Looking at the surface of the water, rather than through it, thus proved not only superficial and misleading but deadly in this mythical instance. Not that looking through things is easy or without risk. But it does provide us with an opportunity to get beyond our own reflections. (1999, 98)

Through Levinson's distinction between transparent glass and mirrored glass, it becomes clear that McLuhan's use of the myth of Narcissus (curiously called, in one of McLuhan's chapters, "The Gadget Lover"), demonstrates that what is at stake is not the image of Narcissus falling in love with himself (and consequently drowning), but rather the "narcosis," or "numbness," that this reflection was/is able to cause. If we add to this numbness a glassy surface like the ones that are being marketed by Apple – as "magical" and "invisible" interfaces – we may literally and metaphorically sense the perverse image of our personal reflection that these devices are able to provoke.⁵⁸ Considering that the use of the Greek word "narcosis" by McLuhan was no more

⁵⁸ Manuel Portela suggests that the verbs 'to invoke,' 'to evoke,' and 'to revoke,' could also be used here, there being arguments for the individual use of any of them. (M. Portela and D. Marques: personal correspondence, December 1, 2015).

than a way of saying that our biological body finds its balance with regard to these extensions through self-amputation, we may also ask if these intimate experiences through touch are not subject to the same numbness McLuhan refers to? And if so, how can we manage to see through their touchable glass? Which is to say, the more we touch, the less we see (which does not necessarily contradict these devices' paradoxical emphasis on visuality). What may be seen as a conscious touch or manipulation is instead an unconscious, almost automated immersive experience towards alienation. In order to revert the process, one must indubitably question these surfaces (starting with glass), digital literature being one of the possible ways this is done. On the one hand, through the creation of auto-reflexive literary works deliberately focused on provoking a certain loss of grasp in order to raise awareness; and, on the other hand, by accepting these reading experiences as an operation of estrangement that allows us to move back and forth between both sides of the surface, much like a wary Alice on the threshold of her looking-glass.

2.4.2 A Stratification of Surfaces

Let us note that the depth of the Mystic Pad is simultaneously a depth without bottom, an infinite allusion, and a perfectly superficial exteriority: a stratification of surfaces each of whose relation to itself, each of whose interior, is but the implication of another similarly exposed surface.

Jacques Derrida, *Writing and Difference*

In her article on EBR,⁵⁹ “Convergent Devices, Dissonant Genres: Tracking the ‘Future’ of Electronic Literature on the iPad” (2015), Anastasia Salter analyzes the impact of the iPad interface in the context of literature. Covering from pure remediations of print, to children’s interactive books, as well as adapted graphic novels/motion comics, and finally, the niche(s) of a more conceptual/experimental electronic literature, her contribution to the state of the art of e-lit points to a series of inescapable issues. An example of this is the capability of the iPad’s interface to “transform our point of entry into electronic literature at the physical level,” and its power as a site of tension and convergence, “tension between faithful remediation of the codex and the breaking of the page, between genres of fiction and genres of play, between turning the page and reinventing the text” (2015, para. 1). While Salter sees the interface’s “active physicality” as being “essential to its potential to redefine our interactions with books” (Section “Interfacing with Poetics,” para. 2), her emphasis on one particular multi-touch device, namely, Apple’s iPad, seems to reveal a pitfall in her argument, specifically concerning the experimentative nature of

⁵⁹ EBR stands for Electronic Book Review.

the iPad's interface, as the alleged core of its potential (this experimentality being what makes the iPad a "revolutionary device"). Although Salter is, of course, aware of its current stages of experimentation and predictions of its obsolescence in a near future, it might be of relevance to readapt Sandy Baldwin's and Rui Torres' view of literature as a technology that "includes the computer and the web, not the other way round" (2014a, XVI), by stating that literature may (or may not) include tablets, smartphones and other similar devices. Regardless of all the groundbreaking features that may come with an iPad, tactility does not seem to be one of them, as demonstrated by previous technological and artistic experiences that summoned this complex sensory modality. Let us think, for example, of Alan Kay's work on object-oriented programming and windowing GUI design, both synthesized in the cardboard mock-up of the Dynabook (1968), one of Kay's several projects imbued with the McLuhanist idea of media as extensions of man, and as being accessible to everybody, especially children. It is also pertinent to bring to mind Myron Krueger's "responsive environments' experiences," such as VideoPlace (1970-1984), an interactive system that, according to Lori Emerson, and particularly concerning multi-touch interfaces, "came to include such a remarkably rich collection of gestures and multifinger, multihand, and multiperson interaction that by comparison contemporary devices such as the iPad seem like nothing more than pale imitations" (2014, 21).

This entirely new experience of intimacy provided by touch-based equipments is one of the strongest claims in Salter's article, particularly focusing on the "shift of the screen from the laptop profile to the form of a notepad or book," a change from "typical models of digital interfaces" that request "the user to manipulate an object removed from the display," to one that does not require "a mental leap," where actions may now "intersect the corresponding digital movement" (Salter: 2015, section "The Formless Screen?", para. 5).

Nonetheless, still in relation to notepads that change "our relationship with the medium," what can be said of Freud's "Note Upon the 'Mystic Writing Pad'" (also known as the *Wunderblock*)? In his analogy between this "children's toy" and the "functioning of the perceptual apparatus of our mind," Freud starts by saying that:

All the forms of auxiliary apparatus which we have invented for the improvement or intensification of our sensory functions are built on the same model as the sense organs themselves or portions of them: for instance, spectacles, photographic cameras, ear-trumpets. (1925, 212)

As for his description of the Mystic Writing Pad's structure, while everything seems to happen at the surface, his idea of surface is far from having the connotation of superficial, having defined this device as:

[...] a small contrivance [...] nothing more than a writing tablet from which notes can be erased by an easy movement of the hand, [composed of three layers] a slab of dark brown

resin or wax with a paper edging [...] [and] a thin transparent sheet [containing two other layers], a transparent piece of celluloid [and a lower layer made of] thin translucent waxed paper. (209)

Derrida referred to this as “a stratification of surfaces” (1978, 281), another way of describing a complex surface of a double-fold nature, which Freud, in his notes, identifies with relation to the perceptual system:

I showed that the perceptive apparatus of our mind consists of two layers, of an external protective shield against stimuli whose task it is to diminish the strength of excitations coming in, and of a surface behind it which receives the stimuli, namely the system Pcpt.-Cs.[Perception-Consciousness] (Freud; 1925, 210)

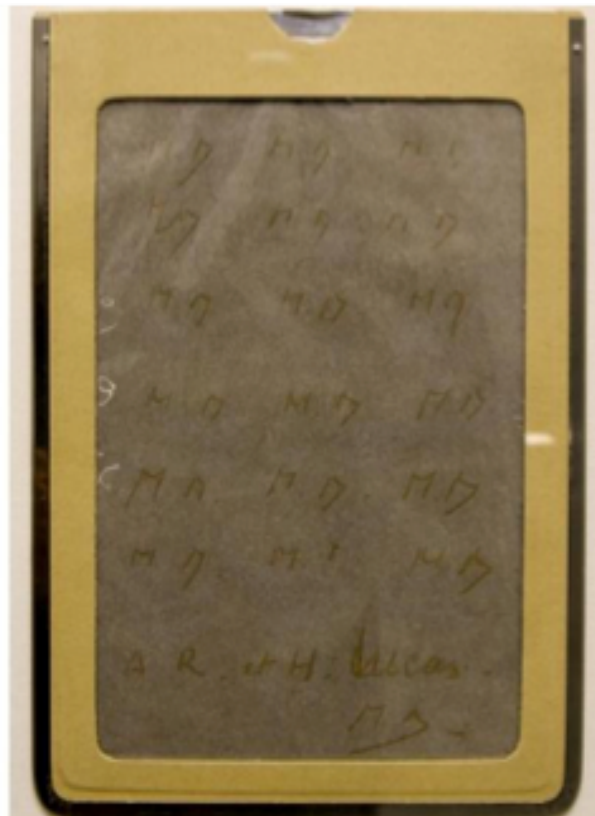


Fig. 2.22: Magic Writing Pad. Source: <<http://thejunket.org/2015/09/issue-fifteen/lines-and-lacks/>>, last accessed July 30, 2017.

He ends with the example of “one hand writing upon the surface of the Mystic Writing-Pad while another periodically raises its covering sheet from the wax slab” (212), an ergonomic observation that seems to anticipate some of our current uses of digital tablets, as mentioned in Salter’s article (here quoting Janez Strehovec):

With a stylus or touch screen we can come into very direct, although virtual, contact with the word, contact that is much more immediate and intimate than using a typewriter, which means that these devices once again establish an immediate relation between the body (in fact, the hand) and the word. (Strehovec, as cited in Salter: 2015, section “Interfacing with Poetics,” para. 1)

However, as alluring as this remark may seem, considering this alleged return to immediacy, we may ask in what ways are we now able to touch a word, beyond its figurative meaning, even if materialized as a tridimensional object, and as more than just a kinetic touchable glass screen alphabet. It appears that as much as we talk about perceptual immediacy, it does not seem plausible to escape the fact that words are chains of differential abstractions maintained by a system of traces. And in this sense, the surface is no more than a trace of the word, not the word itself.

In “Performing Apps: Touch and Gesture as Aesthetic Experience,” Maria Engberg makes use of a multisensory⁶⁰ perspective in order to present several digital literary works specifically designed for the iPad. Regarding the ways we touch and feel these “immediate” experiences, Engberg states that the “alluring and directly responsive interface hides of course high-tech machinery and while the promise is that of an immediate and immersive experience, it is nevertheless a mediated one” (2013: 23). Notwithstanding, while the argument of the black-boxed device seems to be prevalent in several research papers in the field of Media Archeology (see for example Emerson: 2014), the last part of Engberg’s conclusion – “we are touching interfaces, *perhaps even code*, as we are touching glass after all” (2013: 27, my emphasis) – is ambiguous enough to conceal the materialities of the surfaces involved in these mediations. Which is to say, we cannot touch code any more than we can touch words. As the abstract representation of differences in voltage (not the voltage values in themselves), code is as symbolic as natural language, and thus, cannot be touched. Furthermore, it is part of a “series of cascading abstractions with several layers nested on each other” (Portela: 2013,169), with folds and depths that go beyond a self-contained representation on a complex surface. Symbols manipulating symbols, manipulating other symbols, the verb *to manipulate* here directly referring to the machine, not our hands.

Modern tablets and smartphones come equipped with either a resistive or a capacitive touchscreen. Resistive touchscreens respond to the mechanical pressure of a finger or a stylus, being composed of two thin layers, each with a coating, separated by a small gap. Voltage is passed through when the two coatings press on each other, processing this pressure as touch. As for capacitive sensing (the one which we find on iPads and iPhones), it relies on the electrical properties of our body. Capacitive touchscreens come with an insulator, typically made of glass,

⁶⁰ Maria Engberg uses the term “polyaesthetics,” which she explains on her personal webpage, in the following way: “Originally, *polyaesthesia* was a rarely used medical term that described an abnormality of sensation in which a single stimulus is felt in several places. I use polyaesthetics to connect to that older term, in a way that retains the original Greek understanding of *aesthesia* as the perception of the external world by the senses. I also want to expand the term to refer to the desire in contemporary media culture to foreground the use of multiple tools, practices, and modes of reception.” <<http://polyaesthetics.net/what-is-polyaesthetics/>>, last accessed September 11, 2015.

with an interior coating of transparent conductive material, which is the reason behind changes in the screen's electrical field, as we touch them with one or several fingers.⁶¹ Given both types of touchscreens need direct physical contact in order to function, the electrical charges involved in these human-machine interchanges make us think of the more “direct” ways we may feel with regard to touching and manipulating code. And in this sense, the illusion involved, seems to be provided by glassy surfaces and the effects they are able to produce.

2.4.3 Behind the Surface Gloss

First, there's the room you can see through the glass—that's just the same as our drawing room, only the things go the other way. I can see all of it when I get upon a chair—all but the bit behind the fireplace. Oh! I do so wish I could see THAT bit! I want so much to know whether they've a fire in the winter: you never CAN tell, you know, unless our fire smokes, and then smoke comes up in that room too—but that may be only pretence, just to make it look as if they had a fire.

Lewis Carroll, *Through the Looking-glass*

Going back to Lori Emerson's thoughts on the role of digital literature, there may be more behind the surface gloss than one would think at first glimpse (and first touch). As multi-touch devices (particularly the iPad) were able to change the way in which we interact with computers, it is only natural to assume a consequent increment of research and artistic experiences around these devices, as recently observed by Jason Edward Lewis, director of the Obx Labs,⁶² at the ELO2015 conference (Bergen, Norway), while presenting his and Bruno Nadeau's P.o.E.M.M. project.⁶³ When asked how he viewed the increase of tactile/haptic processes through multi-touch devices (and as a result, of electronic literature metamedially exploring the intensification of these processes), in the context of all the artwork and research undertaken by the Obx Labs since their first artistic experiments, his answer proved to be incredibly pragmatic. He claimed that such an increase naturally followed the availability of these devices on the market, an opportunity he and his team believed met their demands. Making use of the intimacy enabled by the iPad's portability and scale (“It wasn't small enough to fit into my pocket, but it was still mine, it still felt intimate”), Jason Lewis sees the iPad as currently the

⁶¹ For more on resistive and capacitive touchscreens, please visit the following webpage: <<http://www.makeuseof.com/tag/differences-capacitive-resistive-touchscreens-si/>>, last accessed on November 14, 2015.

⁶² <<http://www.obxlabs.net/>>, last accessed August 2, 2017.

⁶³ <<http://www.poemm.net/>>, last accessed August 1, 2017.

better technological option to deal with poetry (also, “an intimate experience”).⁶⁴ His pragmatism, however, reveals more than a mere technological *status quo* and trendy features, evident in his equation of poetry and intimacy, pointing less to a necessary relation between the iPad and poetry, than to a certain idea of poetry, directly connected to a historical and cultural model of intimacy, associated with a particular reading habitus, already provided by pocket books from both manuscript and typographic cultures.

Nonetheless, without bringing attention to all kinds of artistic experimentation focused on multisensory perception, I believe that their difference lies less in the “active physicality” and in its supposed individualization, “marketed as a more personal computing experience than the ‘personal’ computer has ever conveyed” (Salter, 2015: section “The Formless Screen,” para. 5), than in the materialities of the text conveyed by the device, and critically and aesthetically appropriated as poetic signifiers. As John Cayley states:

We speak of the “materiality of the text” or the “materiality of language” in general, as if this might be an abstract characteristic when, in fact, it is the critical marker of linguistic and literary embodiment, recognizable only in terms of that embodiment. As N. Katherine Hayles puts it, “*The materiality of an embodied text is the interaction of its physical characteristics with its signifying strategies*” (2003, 277; emphasis in original). (2006, 307)

Emphasizing “the materialities of text” that are not inherent to the device, but which result from working with the device, is precisely what defines Jason E. Lewis’ and Bruno Nadeau’s *P.o.E.M.M. Cycle* project (*P.o.E.M.M.* standing for “Poetry for Excitable [Mobile] Media”). This series of poems is specifically designed for mobile media, and not just mobile in the sense of mobile screens, but also by taking into account its exhibition on large-scale surfaces (some of which are accompanied by poetic performances by Jason E. Lewis), as well as large printworks. All of these different instantiations of the *P.o.E.M.M.* project, represent the authors’ work in the context of the “Writing Complex,” a branch of the ObX Labs, “focused on creating work that consciously exercises different affordances of the digital media environment as core components of the meaning-making dimensions of the texts” (Lewis and Nadeau: 2014, project statement).⁶⁵ As a result, one of its variants was the creation of apps for the iPad, enabling the exploration of the affordances of this device, which since its introduction by Apple, appears to allow for a more intimate interaction and a better reading experience than the ones provided by other mobile and non-mobile computer devices. Being freely available almost in its entirety, according to Lewis, this was not an easy project, since Apple initially refused to buy the argument

⁶⁴ The full video of Jason E. Lewis’ presentation can be accessed here: <<https://mediasite.uib.no/Mediasite/Play/c380c8f4a9f742bba8bd51268b93dfb91d?catalog=32d41cb3-5cd7-489f-bd55-f8f2b08528f9>>, last accessed August 2, 2017.

⁶⁵ <<http://www.poemm.net/about/research.html>>, last accessed August 2, 2017.

of the project being geared towards poetic experimentation and creative investigation. Considering it was a new market and way of commodifying symbolic production at its most basic levels, Apple's relentlessly commercial rationale did not fit entirely with ObX Labs's vision regarding the intimacy that "the combination of touch interaction and portability" could allow users to experience. Nevertheless, perhaps in the end Apple preferred to ignore the issue, opting to release the code for the apps under an open source license.

Despite these incongruities, according to Lewis, the possible affordances of the iPad, namely intimacy and migration, "will lead to new forms of media that will ultimately compel, provoke and delight" (2015, 72). This connection between the notions of "migration" and "intimacy" are the two sustaining pillars of the interrelationship between form and content that each of the eight available *P.o.E.M.M.s*' self-reflexive nature is able to express.⁶⁶ Taking Jason E. Lewis' biography into account, is perhaps the best way to come to the realization as to why the themes of "migration" and "intimacy" are so highly significant in the context of his (art)work. According to Lewis, the genesis of *The P.o.E.M.M. Cycle*:

[L]ies in documents filed in a 1956 Louisiana court case (*Green v. City of New Orleans*) seeking to ascertain an adopted child's racial classifications. The judge claimed that the proper identification of the child's race was "vital to the general public welfare," or in other words, that however the child's race was classified, a wrong classification could endanger the fundamental fabric of the dominant society.

That claim seems cartoonishly hyperbolic, until I remind myself that I was adopted only eleven years later in 1967, as a Cherokee/Hawaiian/Samoan boy who was given a loving home by a White family from rural northern California. The cartoonish aspects then pale next to the insidious implications of what that meant at that time, and in that place. (2015, 74)

Adding these facts regarding Lewis' personal life to his professional life as an artist, poet, software developer, educator, and designer – all of these categories culminating in his work as Director of the Obx Labs, a laboratory for Experimental Media specifically focused in providing "both the inspiration and the means for others to push the boundaries of computationally-based expression,"⁶⁷ – can perhaps be a good way to understand why intimacy is so closely related with migration. David Jhave Johnston brilliantly sums up the intricacies of such plot, especially concerning to Lewis' relationship with digital poetry:

When an outsider-insider arrives in a discipline such as poetry, refertilisation occurs at material and practical levels. Digital poetry is the classic outsider-insider: a techno-art at the core of a societal transformation, perceived as a barbarian by classic literature. Jason is

⁶⁶ To be understood as a cycle, in its present version the reader can experience eight different P.o.E.M.M.s. Yet, according to Jason Edward Lewis, the cycle will end with the inclusion of two more apps, with no scheduled dates. Moreover, the cycle is intended to represent the concept of music albums, or print-based poetry books, with all of its parts composing a whole.

⁶⁷ <<http://www.obxlabs.net/>>, last accessed August 2, 2017.

both inside that transformation and outside it: as software engineer and Indigenous artist, his presence complicates what is already a turbulent transition. (Johnston: 2015, 97)

It is also in this sense that “the visual and tactile interactivity of the P.o.E.M.M.s demand a different category of cognitive effort than reading lineated verse; touch redefines relations to reading into a most intimate action” (97).

By taking a closer look at the P.o.E.M.M. apps, we will find that *Speak* – the iPad app for *What They Speak When They Speak to Me* (2007)⁶⁸ – emulates difficulties in communication, mistaken identities, and the confusion that these situations can generate. From an initial experience of seemingly scattered letters across the screen, the reader can generate lexias by dragging a finger across the screen, an action that will highlight several letters and create sentences along a moving line. A more prolonged dragging of one’s finger will enable a longer reading of the several sentences that compose the poem’s textual database.⁶⁹

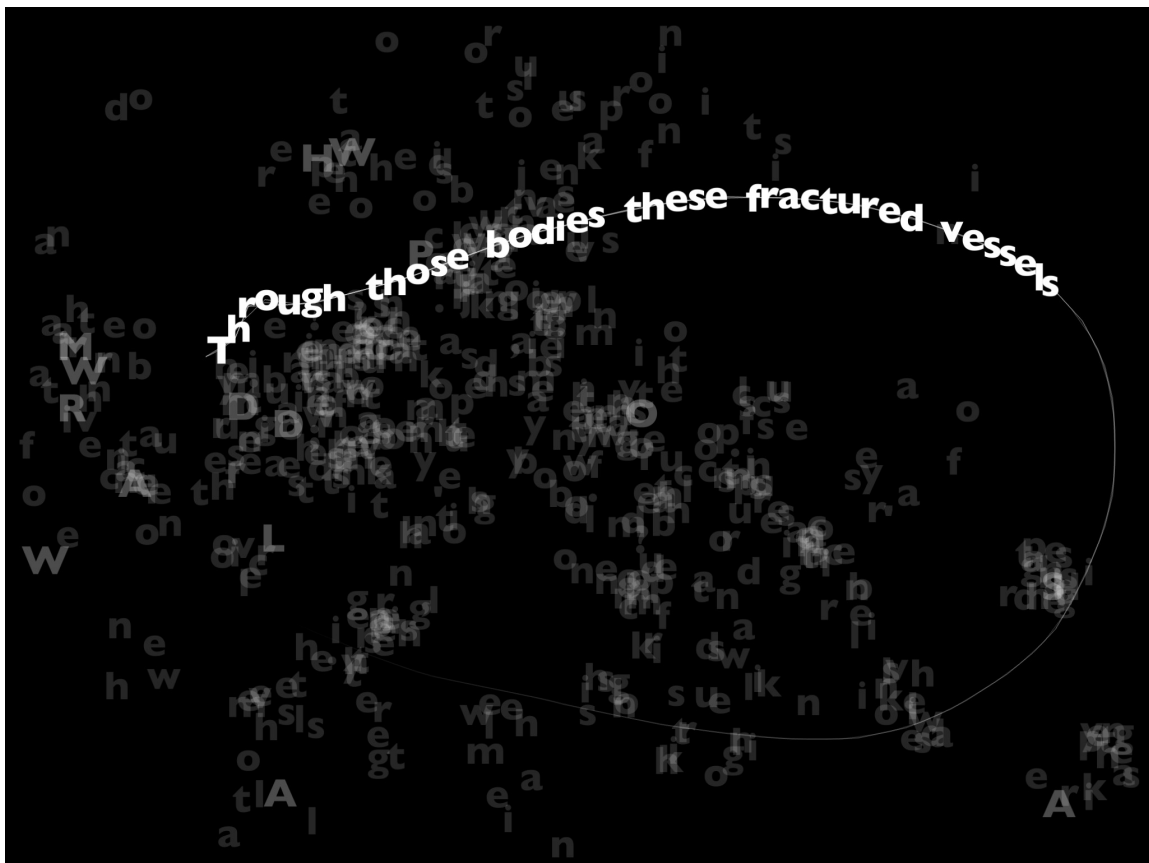


Fig. 2.23: *Speak*. App for iPad. Screenshot.

If on the other hand the dragging stops, the letters will go back to their scattered form. Since the volatile nature of these lines is emblematic of the inconstancy of “lines of communication,”

⁶⁸ <<http://www.poemm.net/projects/speak.html>>, last accessed February 22, 2018.

⁶⁹ The textual and fixed linear versions of all the poems were compiled by Jason Edward Lewis in *P.o.E.M.M. The Album*, a collection of the work around the P.o.E.M.M. project. For more information on the Album, please visit: <<http://www.poemm.net/about/album.html>>, last accessed January 9, 2017.

according to Lewis, this volatility also highlights the “necessity for intense concentration such efforts require” (Lewis: 2007, project statement).⁷⁰

Given the required interaction with the iPad’s screen interface, the P.o.E.M.M.s highlight the necessity of moving and changing pre-given configurations in order to keep on reading. *Choice* – the app for *No Choice About the Terminology* (2013)⁷¹ – is another P.o.E.M.M. highly representative of these strategies of affect and signification.

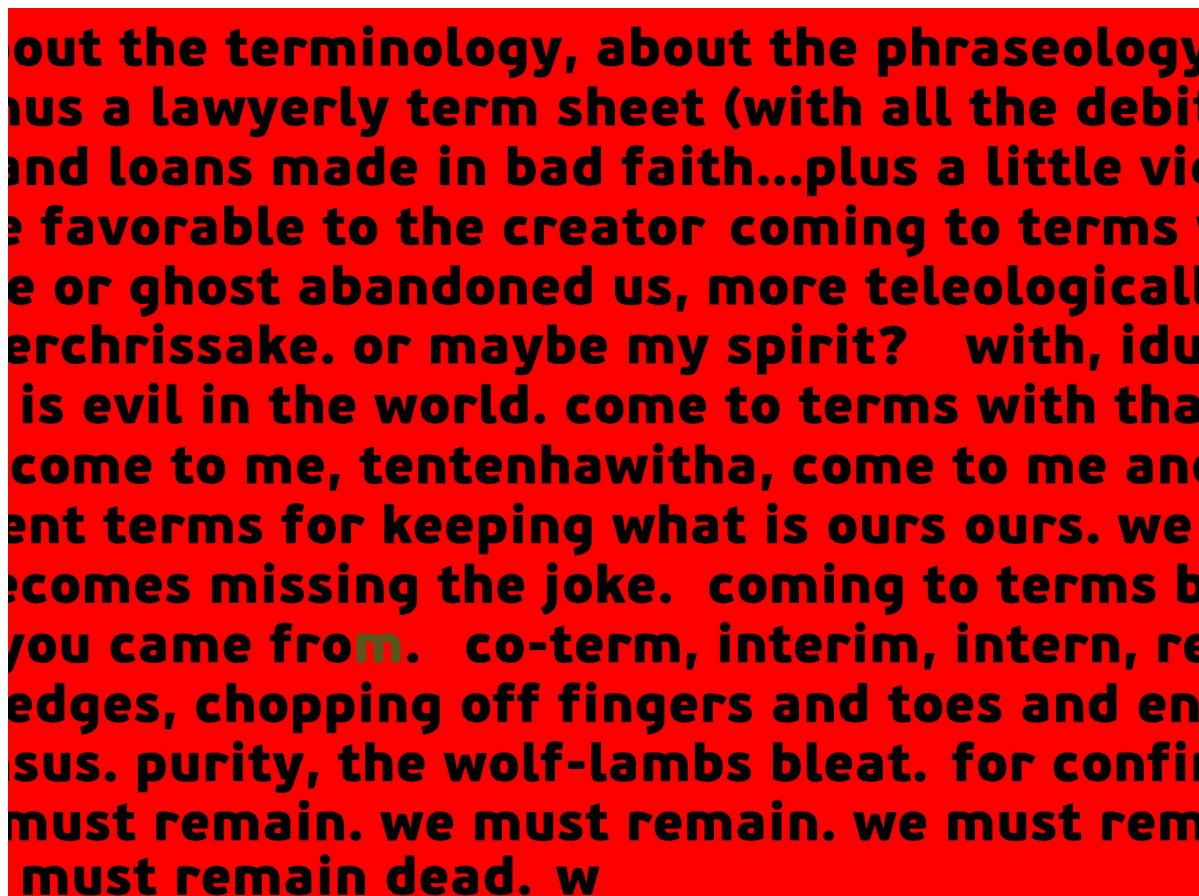


Fig. 2.24: *Choice*. App for iPad. Screenshot.

The reader has to find his/her way through a red background in which lines of text are in a constant frenzied motion, making it impossible to read the poem in its entirety. The action of tapping on these lines will slow them down, only to come to realize that while we may sometimes feel that “though we might have some choice about our terminology, we have no choice about our ontology.”⁷² The same goes for language. Since this rhetoric of interaction used by the authors in order to describe their artwork is influential on both the discourse on digital media and the discourse on literary practices, it is of significance to raise the question as to how the poems are more or less than the apps. Considering the exploration of the interface’s expressiveness

⁷⁰ <<http://www.poemm.net/projects/speak.html>>, last accessed August 2, 2017.

⁷¹ <<http://www.poemm.net/projects/choice.html>>, last accessed February 22, 2018.

⁷² <<http://www.poemm.net/projects/choice.html>>, last accessed August 2, 2017.

operates within the same dialectic between opacity and transparency that defines the instantaneity of touch and the hapticity of both device and apps, it appears that, although the poems can have a life of their own outside the device enclosing them, the fact that they rely on the use of this specific medium turns it into a different artifact, which has to be understood in light of a metamedial poetics that is part of the artwork.

Contrary to what large corporations like Apple offer us, in terms of making software and hardware *disappear* from our eyes, the disruptiveness purposed by Lewis and Nadeau in the app versions of *The P.o.E.M.M. Cycle* does exactly the opposite: the more we touch, the more we are told. Such *revelations* are part of any form of reading, but in this case, the reading experience is enabled through one of the most intimate gestures: touching – touching words waiting to be touched – these words and gestures being that which turns a seemingly mere piece of glass and cold metal into an extremely intimate device specifically designed with our fingers in mind.

Erik Loyer's *Strange Rain* (2011)⁷³ is another example of a digital literary work that self-reflexively rethinks the iPad's affordances and constraints, in this case by questioning an idea of familiarity that is often taken for granted. Being a narrative, as it is a poem and a game, this universal app developed by opertoone⁷⁴ for iPad, iPhone and iPod Touch, is an aesthetic experience that is able to defy common assumptions about sensory perception. Ultimately, by putting together all the pieces, one may find that it is all about defamiliarization, an assumption that confirms opertoone's synopsis of the work: "before your eyes and beneath your fingers, the familiar becomes strange, and the strange familiar."⁷⁵

Strange Rain may be experienced in three gradual modes: "Wordless," "Whispers," and "Story" mode respectively. The first mode provides us with the work's ambience: a skylight on a rainy day, with raindrops hitting the screen, and the imminent possibility of being guided by our fingers. The second mode will include another layer to the previous one, with raindrops changing into words as we tap the screen. The third mode presents us with a narrative, namely, "Convergence," in which a character who is going through a family crisis (after his sister's car crash), goes to a backyard "to just think things through a bit, and get rained on, and contemplate what's going on" (Loyer: 2011a, project statement). Single taps on the screen allow us to activate his thoughts, one by one, or as a sequence, if we drag our fingers across the screen. As we tap and drag the main character's (Alphonse) rainy thoughts, we start to sense unfamiliar phenomena, such as temporary layers of sky, an airplane passing over, "visual anomalies and shifts in speed and color" (2011a), and a literal haptic rainstorm that truly makes us cling on to

⁷³ <http://erikloyer.com/index.php/projects/detail/strange_rain/>, last accessed August 2, 2017.

⁷⁴ <<http://opertoone.com/>>, last accessed August 2, 2017.

⁷⁵ <<http://opertoone.com/2010/11/strange-rain-for-ipad-iphone-ipod-touch/>>, last accessed August 2, 2017.

the device. Since it is also a game, in order to complete all of the achievements/levels, one needs to be constantly alternating between the actions of slow and fast tapping: a perpetual tension that seems to be the only way of revealing Alphonse’s own anxiety with regard to going inside or staying outside, which also implies the acceptance or refusal of his/our crisis.



Fig. 2.25: *Strange Rain*. App for iPad. Source: ELMCIP. <<https://elmcip.net/creative-work/strange-rain>>, last accessed July 30, 2017.

As for the haptic experience it provides, this perceived tension – not only as we progress with the story, but also through forced feedback triggered by the device –, according to Mark Sample, can be defined in terms of “haptic density – because it reveals the outer edges of the interface of the system” (Sample: 2012).

As we gradually negotiate these complex surfaces, making use of touch and gesture as necessary means for experiencing hidden layers lying behind the visible surface of glass, we also experience not only Alphonse’s anxious thoughts, but also, our own anxiety towards the device.

Transmitted as a reflection of thoughts that start to become our own, *Strange Rain* is also a reflection on the ways we read and write through touch and gesture on these haptic inter[(SUR)Faces].

The double-fold nature of haptic interfaces is, primarily, a temporal stratification of surfaces. In this sense, the traces left on the glassy surfaces of digital screens are no less of a palimpsest than the *Wunderblock*. Through the analysis of many different kinds of *digital* literary works – one that mixes print and screen-based texts; another created to be multimedially experienced on a PC, tablet or smartphone; others requiring the use of distinct interfaces in conflation with a PC; and others still, specifically designed for multi-touch devices such as the iPad and the iPhone – I tried to show that the specific metamedial poetics that define these works of electronic literature, can furnish different perspectives of the cultural effects of interfaces.

In addition, as digital touch and gestures increasingly become part of our lives, tending toward the indistinguishability from actual touch and gestures, so too do the literalizations/instrumentalizations of tactile/haptic perception. The previously proposed definition of a haptic reading experience may be a way of subverting the process, particularly since it rethinks the whole circuitry. In fact, by means of what I call a *machimanipulation*, a manipulation shared by both human and machine, digital literary works are questioning devices, media and concepts, perhaps like never before, so as to take into account other apparatuses mediating between humans and machines – including language.

3. Hands That See

3.1 Scene 1: Blow (The Hand as Trope and Metonymy)

For with our hands we sue, entreat, beseech, solicit, call, allure, entice, dismiss, grant, deny, reprove, are suppliant, fear, threaten, abhor, repent, pray, instruct, witness, accuse, declare our silence, condemn, absolve, show our astonishment, proffer, refuse, respect, give honor, adore, worship, despise, prohibit, reject, challenge, bargain, vow, swear, imprecate, humour, allow, give warning, command, reconcile, submit, defy, affront, offer injury, complement, argue, dispute, explode, confute, exhort, admonish, affirm, distinguish, urge, doubt, reproach, mock, approve, dislike, encourage, recommend, flatter, applaud, exalt, humble, insult, adjure, yield, confess, cherish, demand, crave, covet, bless, number, prove, confirm, salute congratulate, entertain, give thanks, welcome, bid farewell, chide, brawl, consent, upbraid, envy, reward, offer force, pacify, invite, justify, contemn, disdain, disallow, forgive, offer peace, promise, perform, reply, invoke, request, repel, charge, satisfy, deprecate, lament, condole, bemoan, put in mind, hinder, praise, commend, brag, boast, warrant, assure, inquire, direct, adopt, rejoice, show gladness, complain, despair, grieve, are sad and sorrowful, cry out, bewail, forbid, discomfort, ask, are angry, wonder, admire, pity, assent, order, rebuke, savor, slight, dispraise, disparage, are earnest, importunate, refer, put to compromise, plight our faith, make a league of friendship, strike one good luck, take earnest, buy, barter, exchange, show our agreement, express our liberality, show our benevolence, ask mercy, exhibit grace, show our displeasure, fret, chafe, fume, rage, revenge, crave audience, call for silence, prepare for an apology, give liberty of speech, bid one to take notice, warn one to forbear, keep off and be gone; take acquaintance, make remonstrance of another's error, weep, give pledge of aid, comfort, relieve, demonstrate, persuade, resolve, speak to, appeal, profess a willingness to strike, show ourselves convinced, present a check for silence, promise secrecy, protect our innocence, manifest our love, enmity, hate, and spite; provoke, hyperbolically extoll, enlarge our mirth with jollity and triumphant acclamations of delight, note and signify another's actions, the manner, place, and time, as how, where, when, etc.

John Bulwer, *CHIROLOGIA: or the NATURAL LANGUAGE of the HAND*.

A disembodied hand. Its contours against an invisible wall. But it is a static hand. Its potential movement has to come from the movement of another hand and other fingers. Our own. Besides, the word "TOUCH" below this hand impells us to do exactly that. Will this action be capable of bringing some light to this ergodic mechanism? Will our own fingerprints reveal other poetic fingerprints?

This specific hand is the main interface chosen by Serge Bouchardon, Kevin Carpentier and Stéphanie Spénlé for their digital literary artwork *Touch: Six Scenes on the paradox of Screen Touching* (2009), a Flash and Javascript piece that explores touch in its multiple meanings. With each one of its five fingers corresponding to five different scenes representing different ways of touching – Move, Caress, Hit, Spread, and Blow, – exploring the artwork will reveal a sixth scene,

“dissimulated in the interface,” and corresponding to the action “Brush.” Moving the cursor over the tip of a finger activates a different scene, some of which ask for special multisensory equipment: mouse, headphones, microphone, plus a webcam.

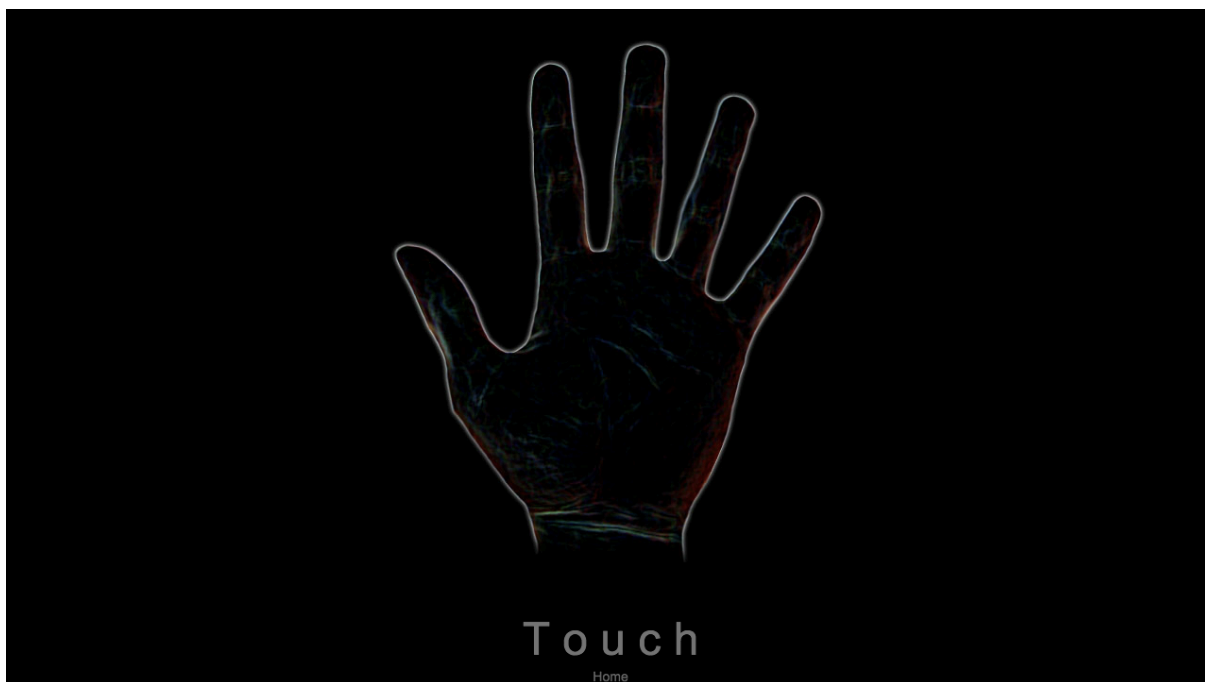


Fig. 3.1: *Touch*. Main interface. Screenshot.

This need for specific interfaces seems to be one of the main gateways to raise awareness of interfaces as constitutive of the work. Differently from a print-based book in which the tactile act of reading consists of turning the page and holding the book,⁷⁶ in this piece the process of reading can only be performed if the reader attends to the different meanings of touch enacted by the use of *Touch*'s different interfaces. Even if some of them can only be fulfilled by means of a series of metaphors. Making use of *touching* in order to *reveal*, the authors themselves state that it “may seem paradoxical to create an online work on touching. One cannot touch directly” (Bouchardon *et al.*: 2009, project statement). Unlike print-based books, which only require the turning of the pages through an eye-hand operation (with vision being always primary in this experience), *Touch* offers an interpretation of reading as a truly multisensory experience, since it requires (and questions) all of the aforementioned interfaces in order for one to fully experience its digital content.

Let us start with a random finger, since there seems to be no particular order in these fingerprints. Last, but not the least. The little finger, commonly known as pinky, for being the smallest finger of the human hand. Its correspondent action: “Blow,” in which antagonistic gestures come to life. In order to read a series of lexias hidden behind continuously falling

⁷⁶ At an ergonomic level, we also have to take into consideration the positions of the body assumed by the reader.

emulations of snowflakes, the reader has to coordinate between a gentle and a slightly strong blow (using a microphone), wherein a weak blow will not remove the snowflakes and too strong a blow will remove everything altogether. Once again, form and function are in perfect harmony, as evidenced by some of its lexias: “I can hear without being heard, see without being seen but I can’t touch without being touched” or “What is touching me when I touch you?”

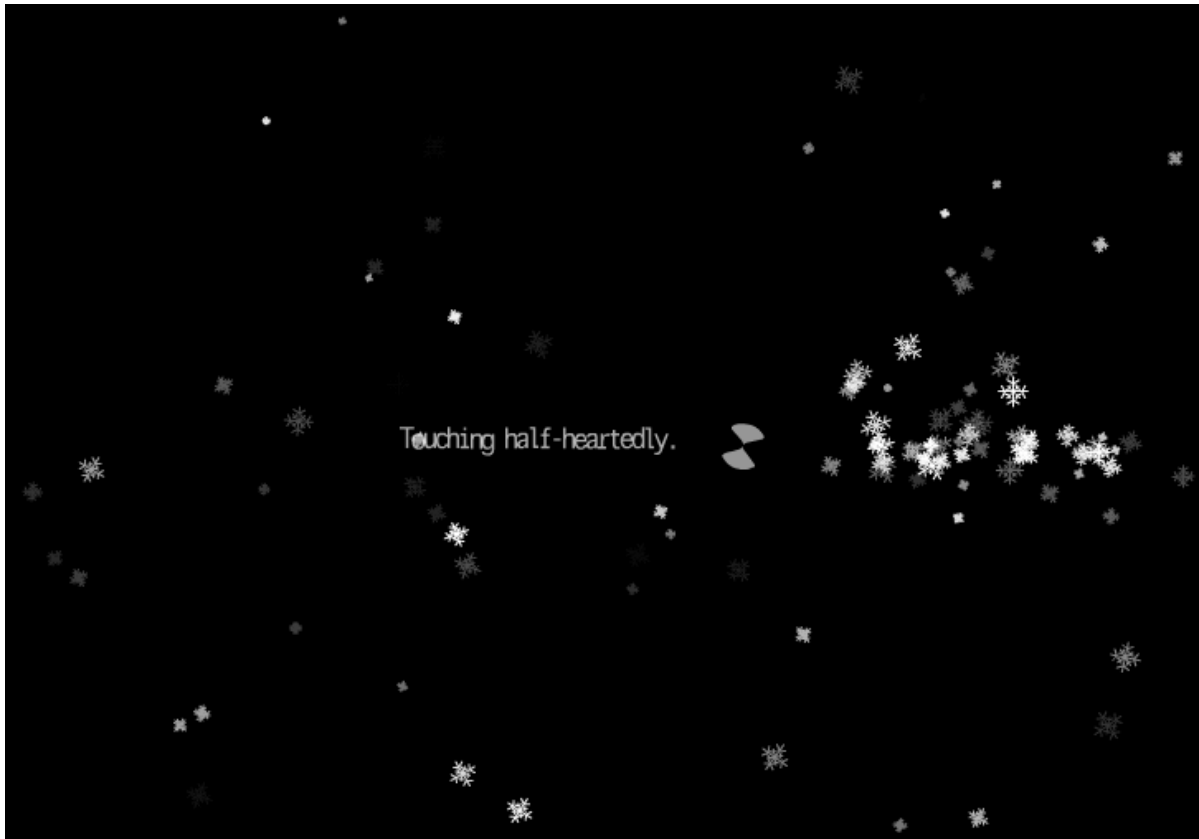


Fig. 3.2: *Touch* (“Blow”). Screenshot.

By means of an intense questioning of the ways touch tends to be literalized as an exteroceptive sensory modality, *Touch* points towards an interrelationship between sensory modalities which, with regard to literature, could be classified as a haptic reading experience. As stated by Manuel Portela, concerning his analysis of *Touch*, “human-machine interactions mediated by the sense of touch are recontextualized through those literary uses of the sense of touch as metaphorical expression of the possibilities of connecting with others and with oneself” (2013, 43) –, a trope which can also be found in *Opacity* (see Chapter 2), as well as in other artworks by Bouchardon *et al.* This way, Portela sees these virtual representations of touch as something that does not differ that much from other non-digital experimental artworks, since, in all of them, “reading is experienced as reciprocal haptic and affective exchange: I touch the text, and the text touches me” (43). But, for the time being, let us return to this specific disembodied hand.

In the *Book of Daniel*, there is an episode, known as “Belshazzar’s feast” or “The Writing is on the Wall,” which tells the tale of a disembodied hand that appears at Belshazzar’s feast and writes an inscription on the wall. Since nobody was capable of interpreting the meaning of those words, Belshazzar is advised by the queen to call for Daniel, the prophet. When faced with the inscription, Daniel tells the king that this hand had been sent by God as a premonition of the destruction of Babylon as a consequence of Belshazzar’s blasphemies against the Almighty. “MENE, MENE, TEKEL, UPHARSIN,” read the inscription, interpreted by Daniel in the following way:

Mene; God hath numbered thy kingdom, and finished it.
Tekel; Thou art weighed in the balances, and art found wanting.
Peres [singular of *upharsin*]; Thy kingdom is divided, and given to the Medes and Persians.⁷⁷



Fig. 3.3: “Belshazzar's Feast” (1635), Rembrandt, oil on canvas, 66.0 in × 82.4 in (National Gallery, London). Public domain. Source: Wikipedia.

Used as an idiom, “the writing is on the wall” is often used to describe an unfortunate event that, though predictable, cannot be avoided. This disembodied hand is representative of many Biblical passages in which the hand of God serves as a metonymy for all of His actions. It

⁷⁷ Daniel 5: 27-29, *King James Bible*. <<http://biblehub.com/daniel/5-25.htm>>, last accessed August 5, 2018.

is a hand (frequently the right hand) that gives and takes, that is both merciful and merciless, and a hand that writes and reads, a hand equally made of flesh and spirit, a human hand as well as a divine hand. In addition, it is a hand that provides revelations, taking revelations as something that may constitute “the identity of the revealable and the revealed, of the ‘divine’ and the ‘human’ or the ‘worldly’ (...) the identity of the invisible and the visible,” to use Jean-Luc Nancy’s words (2008, 4-5). Constituting part of *Noli Me Tangere*, a volume comprised of a series of considerations on *noli me tangere* paintings by painters such as Rembrandt, Dürer, Titian, Pontormo, Bronzino, and Correggio, Nancy’s aforementioned thoughts serve to illustrate the way in which Christian parables expanded beyond the sphere of religion in art and culture.⁷⁸ As shown by Nancy, these expansions can be encapsulated in a single phrase, and all its possible variants: “*mē mou bapton*,” “*noli me tangere*,” “DO NOT TOUCH [ME].” According to him:

[It] is a phrase that touches and that cannot touch, even when isolated from every context. It says something about touching in general, or it touches on the sensitive point that touching constitutes par excellence (...) and on what forms the sensitive point within it. But this point is precisely the point where touching does not touch and where it must not touch in order to carry out its touch (its art, its tact, its grace): the point or the space without the dimension that separates the touch in what touching gathers together, the line that separates the touching from the touched and thus the touch from itself. (13)

So it follows that, in order to *see*, one must not touch, as if solely by means of a potential contact – a contact that does not permit itself to be constituted as pure vision and neither can it be made of exclusively pure touch – are we able to grasp, to touch, to traverse a surface. Continuing with Nancy:

It is with the hand that one touches, and it is the hand that that one first touches. In numerous cultures and, in any case, in that of Modern Western painters, to touch the hand is the minimum of touching, one involving no intimacy. It does suggest a peaceful disposition though, even a beneficent one (...). (31)

Kirmen Uribe, a contemporary basque poet, reimagines these sensorialities in Caravaggio’s paintings, specifically in a passage of his preface to a series of poems under the title *Mientras Tanto Cógeme la Mano* (“Meanwhile, grab my hand”):

Para Caravaggio los gestos eran lo más importante. Un día vio cómo recogían del río el

⁷⁸ For Patrícia McTighe, in her understanding of Nancy’s tangible intangibility, “Nancy’s conceptualization of touch does not appear to propose an unproblematic unity between toucher and touched or a guarantee of presence. Touch, contact, and proximity are permeated for Nancy by distance and separation. He employs the image of the ‘syncope’, the interrupted beat, to express this paradoxical formulation of the notion of touch, as contact-in-separation. This conceptualization of touch informs Nancy’s configuration of the relationship between sense (discourse) and matter (body). (...) He argues that touch is part of Christianity’s complex obsession with presence: touching, ingesting the ‘body’ of Christ, is part of the revitalizing rituals of that faith. Yet these rituals are predicated on the absence of that body, long ascended, gone. These rituals are thus failures of touch, forever incomplete.; yet the Christian tradition compels its adherents to enact them.” From here, it follows that, “In Nancy’s understanding, body is a limit point, a place, where sense and matter, word and body, touch. (...)The self ‘takes place’, in Nancy’s terms, at the moment of contact and separation, between discourse and matter, word and body” (2013, 8).

cuerpo de una prostituta ahogada. No podía quitarse de la cabeza la expresión de la muerta. Y utilizó esa misma expresión para representar a la virgen en La Virgen Muerta. Era la primera vez que un artista pintaba esa escena como nocturna. (...). En sus cuadros, apunta Berger, los personajes están siempre a punto de tocarse. Una pluma acaricia el muslo de un muchacho. Si no pones atención ni siquiera te das cuenta. La mano de la virgen está por debajo del manto del niño, acariciándole lentamente. Un ángel tira de la mano de San Pedro como una prostituta tiraría de la mano de cualquier cliente. Son muchos los gestos, y la mayoría denotan el deseo erótico. (Uribe: 2008, 7-8)⁷⁹

Confirming Nancy's thesis that in "classical painting, the hand has often played a decisive role in the organization of the design, like a second-degree sign arranging, indeed indexing, all the scene's other gestures" (Nancy: 2008, 32), Uribe's description of a constant focus on gestures perpetuated by the hand already denotes a certain paradox of intangible tangibility that is part that of the auratic dimension of western culture.⁸⁰ Nonetheless, there is a specific painting by Caravaggio that can be extremely useful in providing a meditation of the ways in which the hand takes on all its potentiality in denouncing actual and virtual contacts.

The "Incredulità di San Tommaso" (*circa* 1601), is a painting that recreates an episode from St. John's Gospel, namely, "Doubting Thomas." According to this gospel, Thomas the apostle was not able to be present at one of Jesus' post-ressurrectional appearances to the Apostles, which lead him to doubt the veracity of those claims. A week later, Jesus appeared to Thomas, offering His hand to guide the apostle's fingers into His wounds in order to make him believe: "Thomas, because thou hast seen me, thou hast believed: blessed *are* they that have not seen, and *yet* have believed,"⁸¹ said Jesus to Thomas. In the eminence of a confirmation of the actual presence of Jesus Christ, depicted in the painting, without a halo most probably in order to give emphasis to His corporeality, Thomas shows a surprised look on his face, as two other apostles behind him also seem to be astonished before such tangibility. Thomas' action can be described as a confirmation by means of another typology of touch (and gesture), also being

⁷⁹ "For Caravaggio gestures were the most important thing. One day he saw how the body of a drowned prostitute was being collected from the river. He could not get out of his head the expression on the dead woman's face. And he used that same expression to represent the virgin in Death of the Virgin. It was the first time that an artist painted that scene as nocturnal. (...) In his paintings, says Berger, the characters are always about to touch. A feather caresses a boy's thigh. If you do not pay attention you do not even realize it. The virgin's hand is under the child's robe, caressing him slowly. An angel pulls the hand of St. Peter as a prostitute would pull the hand of any client. There are many gestures, and most denote erotic desire."

⁸⁰ I am aware that notions such as 'Western culture' and 'Western civilisation' may pose some problems, but since they are not crucial for the purposes of this thesis, I have chosen to maintain their general modern acceptance. For more on this subject, see Kwame Anthony Appiah's article in the Wednesday, 9 November 2016 online edition of *The Guardian*, <<https://www.theguardian.com/world/2016/nov/09/western-civilisation-appiah-reith-lecture>>, last accessed January 12, 2017.

⁸¹ John: 20:29. King James Bible. <<http://biblehub.com/kjv/john/20.htm>>, last accessed August 2, 2017.

reminiscent of a passage from Diderot's *Letter on the deaf and dumb for the use of those who hear and speak*:⁸²

And I found that of all the senses the eye was the most superficial, the ear the most haughty, smell the most voluptuous, taste the most superstitious and inconstant, touch the most profound and philosophical. (Diderot, as cited in Paterson: 2007, 1)

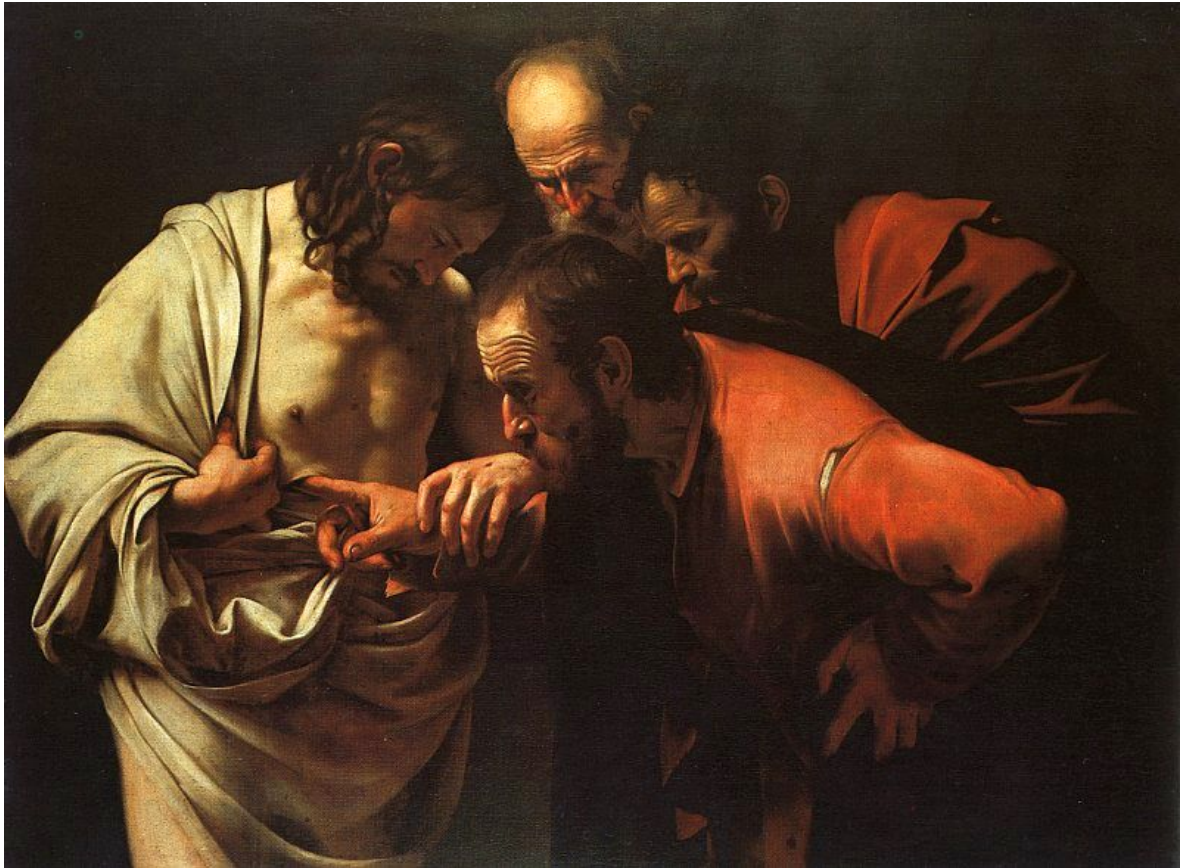


Fig. 3.4: “The Incredulity of Saint Thomas” (circa 1601), Caravaggio, oil on canvas, 42.125 × 57.5 in (Sanssouci Picture Gallery, Potsdam). Public Domain. Source: Wikipedia.

It can also be read as understanding of touch representing a reverse movement, now with touch superseding vision, and thus representing an inversion of hierarchies, from an ancestral tendency for ocularcentrism which even haptic visuality cannot eliminate – on the contrary, it possibly amplifies it – to a fetishization of direct access to knowledge via touch. If what is now at stake is the idea of a *seeing hand* rather than a *touching eye*, what can be the implications of this chiasmatic game of inversions? One of its problems concerns the way this metaphor continues and reinforces a fetishization around the metonymy of the hand, namely in popular culture.

Consider, for instance, the *Hamsa*, or *Hand of Fatma*, an ancestral symbol representing an open eye in the palm of a hand, used often as a talisman for many cultures (Dur: 2015, 22). Given

⁸² The bibliographical reference used by Paterson in his epigraph of Diderot's phrase is not correct. Paterson refers to *Letter on the Blind for the Use of those who can see*, but the correct reference is *Letter on the deaf and dumb for the use of those who hear and speak*.

its power to symbolically combine omnipresence and omniscience, and despite its ancestry, the “seeing hand” has also had repercussions in today’s cultural manifestations. In Guillermo del Toro’s film *Pan’s Labyrinth* (2006), a story intertwining a real world (the early Francoist period, five years after the Spanish Civil War) and a mythical world (an abandoned and mysterious labyrinth hiding within it a mysterious faun creature), little Ofelia, the main character, is incited by the faun to perform several odd tasks in order to save her pregnant mother from death. In her second task she has an encounter with the Pale Man.



Fig. 3.5 - Tunisian Hamsa. Source: Wikipedia. Public domain.

With the help of three fairies, Ofelia has to retrieve a dagger from the lair of this creature with a special appetite for children. Before giving her this task, the Faun warns her that she is not to eat any food from the table guarded by this strange mythical figure with eyes in the center of his palms, since failing to obey this warning will make the creature open his eyes and hunt her. The Pale Man’s character seems to be inspired in an ancient Japanese creature, the *Te-no-me*, which in Japanese means “eyes on hand.” The tale tells the story of a blind man who is robbed and left to die by his perpetrators without ever having been able to see their faces. Granted as a last death wish the possibility of seeing the faces of his robbers, even if just with his hands, the blind man returns as a ghost, with eyes in his palms. However, in this case, rather than presenting itself as an omniscient creature, the moral of the story seems to tell us a very different thing, being perhaps

an ocularcentrist tale of how vision detached from the head (and thus, kept away from the brain), is associated with blind anger, to the point of causing an incapacity to distinguish between an innocent child stealing a piece of fruit and an actual burglar.



Fig. 3.6: The Pale Man. Still from *Pan's Labyrinth* (2006), Guillermo del Toro. Esperanto Films.



Fig. 3.7: Te-no-me, from Toriyama Sekien's *Gazu Hyakki Yakō* ("The Illustrated Night Parade of a Hundred Demons"). Circa 1781. Public Domain. Source: Wikipedia.

Curiously enough, the symbol of an eye in the palm of a hand was also the image chosen as the logo for Second Life, a VR platform created by Linden Lab. Frequently in association with

the platform's tagline, "Your World. Your Imagination," the cool green and blue logo seems to suggest exactly what is to be expected by its potential pioneers, an intense and dream-like, though virtual, experience, filled with adventure, exploration and discovery.



Fig. 3.8: Second Life logo. Source: <<http://thegg.net/general-news/second-life-the-virtual-life-lives-on/>>, last accessed July 31, 2017.

Following a series of cultural beliefs, the association of these two symbols in the form of metonymies representing two of the most essential sense modalities, vision and touch, conveys the idea of a union of thought, observation and knowledge (mind), with action, movement and pragmatism (body); a union of Cartesian nature representing an idea of perfect human existence, by its direct association between the power of knowledge (omniscience) and the power of strength (omnipresence).

The recurrent use of the hand as a trope and metonymy for the biological body is far from being recent,⁸³ as painted images found in ancient caves of archaeological sites attest (Dur: 2015, 22). Despite belonging to an ancestral collective imagination, such mystification and fetishization of the hand ended up being intensified as a result of the ubiquity of screens in both private and public spaces. Take for instance *My Stepmother is an Alien* (1988), a Hollywood production from the 1980s in which the main character (Kim Basinger) is an alien creature that embodies the life of a woman in order to seduce an earthling and steal his scientific project as a

⁸³ For more on the recurrence of the hand trope in poster design, see Dur: 2015, 19-28.

means to save her planet. At a certain point, she manages to get access to a personal computer and *read* different types of data in just a matter of seconds, specifically by placing her right hand's palm in contact with a computer screen that immediately responds to this contact.⁸⁴ Not satisfied with her first *digital* results, she also approaches some bookshelves in order to perform a reading of the *Complete Works of Shakespeare* by placing her forearm between folios.⁸⁵



Fig. 3.9: Stills from *My Stepmother is an Alien* (1988). Directed by Richard Benjamin. Production: Weintraub Entertainment Group. Distribution: Columbia Pictures.

Regardless of the ergonomics enhanced by both surfaces, what this co-dependent relationship between her prosthetic body extremities and the surfaces they touch seems to represent is an ancestral desire for having direct access to knowledge through cutaneous perception, that is to say, an association of eyes and vision with reading as a task of the mind that requires a great deal of time in order for knowledge to be attained, with an ergodic task that could supposedly be bypassed by the hand as a symbol for pragmatism. It turns out that her eye gestures and other facial microexpressions are very significant in order for the viewer to understand her feelings of discovery, surprise, joy, and even disgust and repugnance, which is the first sign of a fallacy of the hand that would continue to be used in popular media culture, namely by the Hollywood film industry.

Another example is Steven Spielberg's *Minority Report* (2002), a film based on Phillip K. Dick's 1956 short-story "The Minority Report," which, according to some bloggers, worked as an experiment for the development of Oblong industries' g-speak™ interface.⁸⁶ In one of the movie's sequences the audience is presented with John Anderton, a futuristic chief of police (Tom Cruise) moving his hands and fingers (using a pair of haptic gloves) around a transparent glass screen filled with data provided by three mutants called precogs that are able to

⁸⁴ See Benjamin, 1988: min. 44:00-44:25. The full video is available on Youtube. Last accessed on May 15, 2015. <https://www.youtube.com/watch?v=XYpEC_A4IbM>

⁸⁵ *Id.*: min. 44:25-45:26.

⁸⁶ <<http://www.oblong.com/g-speak/>>, last accessed August 2, 2017.

“previsualize” crimes about to happen. Seeing it as a co-effort between the fields of science and arts, blogger Steve Anderson believes that this HCI is much more than a mere “visual effect,” since the whole sequence seemed to anticipate “a real system that would operate according to a gestural logic that was not yet technically feasible.”⁸⁷



Fig. 3.10: Still from *Minority Report* (2002), 2.25:00, Directed by Steven Spielberg. Amblin Entertainment et al, USA.

Again, vision and touch working together in order for knowledge to be obtained, despite the fact that images of the hand tend to dominate as being truly responsible for the success rate in the anticipation of crimes. It turns out that, with the unfolding of the story, and although they represent an almost hidden layer due to their near absence of physical presence, precogs prove to be much more crucial than the hands of Chief John Anderton (an example of this being the two kinds of persecutions that are initiated against John and the precogs, the former being identified as an expendable element, and the latter being seen as of vital interest to the future of that Precrime unit). There is yet another seemingly transparent layer between John’s hands and the precogs’ visions: machines that technologically and mechanically mediate and convert the nonsense information provided by the precogs, since these do not seem able to understand it. In addition, machines automatically ensure the physical maintenance of these almost immobile mutants. Curiously enough, Philip K. Dick’s last line is quite significant in the way it returns vision to its ocularcentrist metaphorical power: “Better keep your eyes open. (...) It might happen

⁸⁷ <<http://www.criticalcommons.org/Members/ironman28/clips/minority-report-gestural-interface/view>>, last accessed August 2, 2017.

to you at any time.”⁸⁸

Finally, reference can be made to a more recent example, the remake of *Total Recall* (2012) – another movie based on a Philip K. Dick short story, “We Can Remember It for You Wholesale” (1966) –, specifically the part in which a renewed Douglas Quaid (Colin Farrell) senses a ringing cellphone embedded in his right palm.



Fig. 3.11: Still from *Total Recall* (remake). 2012. Lev Wiseman, Columbia Pictures, USA. 1.58:00.

After answering this call from a supposedly unknown person, Quaid is told to look for any kind of glass surface in order to consummate the communication. Never mind where the audio speakers may happen to be: the sequence is so seemingly *transparent* that we tend to forget the actual constraints of such a *marvellous* prosthesis. We can take these three examples as being representative of an archeology of the screen (monitors, glass walls, and gadgets embedded in one’s skin), all of them seeming to share the same desire for transparency through tactile/haptic perception.

But when it comes to (ideal) transparency embodied through the hand, perhaps one of its best sources is in catalogues and other advertisement and marketing materials, or in this case, ones popularized by computer technology corporations. The following image is just one of many examples in which hands do matter, not just as a powerful symbol which conveys the idea of sincere communication – not to mention its significance in places like business meetings, the handshake being merely one of many common, yet extremely powerful, gestures used – but also, and in this particular case, to convey the idea of transparent interaction between humans and machines, specifically between data and perception/cognition.

⁸⁸ <<http://www.cwanderson.org/wp-content/uploads/2011/11/Philip-K-Dick-The-Minority-Report.pdf>>, last accessed August 2, 2017.

3.2 Scene 2: Spread (Humanualism and Haptocentrism)

The operation of which I am speaking is contemporaneous with what is called a surgical one [surgery: Greek *cheirurgia*, from *cheir* (hand) and *ergon* (work)], done by hand, the hand of the other, and thus by touching, even if, as always, machines and technology are indispensable in this.

Jacques Derrida, *On Touching Lean-Luc Nancy*

The ring finger, the third from the thumb, the fourth proximal digit of the human hand, also called *digitus medicinalis*, *digitus annularis*, *digitus quartus*. The action corresponding to this particular finger: “Spread.” In choosing this finger, an instruction will tell the reader to move and click the mouse upwards, downwards and sideways in order to create a musical painting. Two different arts combined together, by a series of gestures. Several tunes can be heard each time the reader chooses this action. One of them is particularly curious, since the reader can almost hear the sound of fingers sliding over the strings of a guitar. But the music will progressively cease to play if the reader temporarily steps outside the frame of this strange painting. Hence the suggestion to use headphones, another hardware interface that will allow “the reader to *touch* the music” in a “more user-friendly” way. As these “technical mediators” call our attention to the paradox of producing “an artistic web-based creation on touching (...) multimedia content on screen,” according to Serge Bouchardon, it also “reveals a lot about the way we touch people, objects in everyday life” (Bouchardon *et al.*: 2009, project statement).

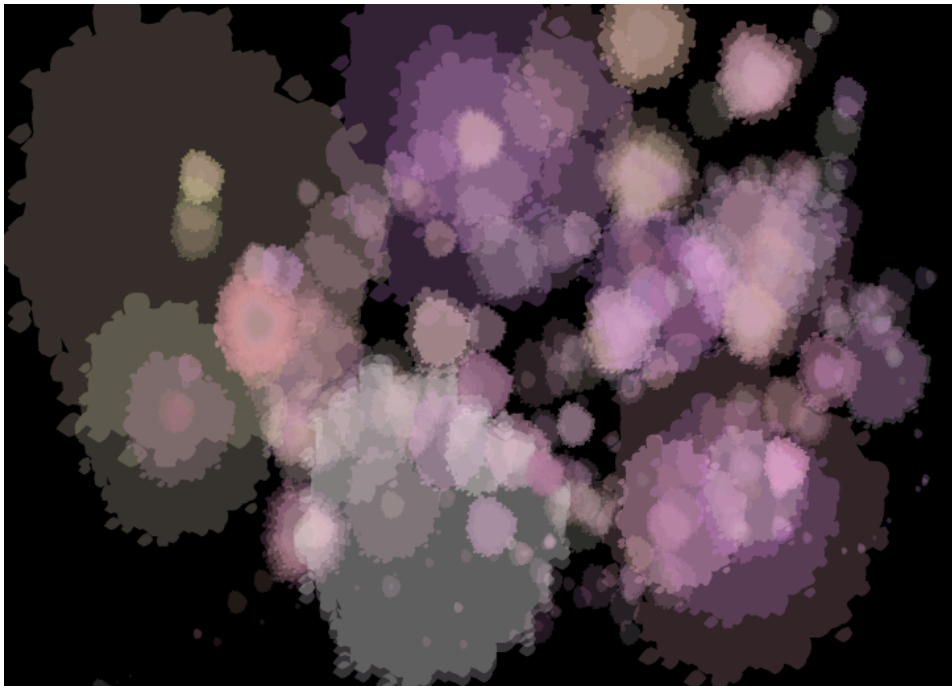


Fig. 3.14: Touch (“Spread”). Screenshot.

As I mentioned earlier, the recurrence of metonymies of the hand in popular culture

cannot be separated from its ancestral uses in religion. As I also referred in my earlier introduction to Jean-Luc Nancy's thoughts on "*la levée du corps*," this association is the basis of a paradox of intangible tangibility, which this thesis attempts to deconstruct throughout its various chapters. Nancy's *Noli Me Tangere* cannot be separated, though, neither from his other volume titled *Corpus* nor from Jacques Derrida's book *On Touching—Jean Luc Nancy*, a direct dialogue with Nancy's philosophies of touch, structured as a chain of haptic philosophies that Derrida sees as a result of a post-Cartesian "haptocentrism" in which touch often tends to be primordial to all senses (particularly vision). For instance, in Husserl's phenomenology, the "primacy" of touch is understood as a continuity of what Derrida calls "humanualism" (2005: 152-3) – *humainisme*, in French, suggesting an association of hands (*mains*) with humans (*humaines*)—, whose hypocenter he had already located in Maine de Byran, with touch superseding all other sense modalities, and reaching its peak in the establishment of a "pre-eminent tactile experience [in] the act of manual and digital touching" (Pirovolakis: 2013, 106). This metonymical variation of the hand is described by Derrida as a paradox:

[M]ore than any other part of the body proper, the hand has imposed a detour leading through visibility and exposition to a surface, precisely when it was meant better to illustrate the pure, psychic auto-affection of the touching-touched. (2005, 181)

Another philosopher for whom haptocentric theories proved to be crucial was Kant, namely in his idea of numerical equality of both senses and fingers on our hand as something more than just a coincidence. Following on from an Aristotelian separation of the senses, this division is present in a specific philosophical moment which Derrida titled "Kant's Hand, before Husserl's and Heidegger's":

The senses should be five in number—no more and no fewer, he [Kant] confirms the objective ones (*tactus, visus, auditus*) and the subjective ones (*gustus, factus*). The former contribute more to knowledge, and among them touch (*Betastung*) comes first, at least in accordance with certain criteria. (40)

Understood by Kant as a sense that is able to bring us "certainty" but also as being "the clumsiest (*grobste*) among the external senses," touch is also seen as the "foundation of the other two objective senses, sight and hearing" (41). According to Derrida, Kant reaches his conclusions solely based on the hand as an organ, with its fingers and fingertips – and due to their nerve endings – being what "informs us, human beings, about the form of a solid body" (41). Moreover, it is the hand that distinguishes human beings from other animals, since, and he quotes Kant here:

Nature seems to have endowed man alone with this organ, so that he is enabled to form a concept of a body by touching it on all sides. The antennae of insects seem merely to show the presence of an object; they are not designed to explore its form. (Kant, as cited in Derrida: 2005, 41-42)

But, just as there is a Kantian hand, a Husserlian hand or a Heideggerian hand, “there is also a Biranian hand” (Derrida: 2005, 149). Derrida’s thoughts on Maine de Biran’s analysis of the hand are also worth considering, particularly for being not that divergent from Kant’s observations, but including also a significant addendum:

Now, this hand is the hand of man, the human being as *animal rationale*. Humans are the only beings who have this hand at their disposal; they alone can *touch*, in the strongest and strictest sense. Human beings touch more and touch better. The hand is properly human; touching is properly human: it is the same proposition. Without playing too much, we could call this Maine de Biran’s “humanualism” (...) involving the same teleological hierarchy and the same presuppositions about the animal; yielding the same knowledge, the same will, the same will to know, but frequently also the same obscurantism. (152-153)

Such obscurantism is in fact the purpose of his whole book dedicated to Jean-Luc Nancy’s philosophies of touch, not just in what concerns the problematic of the human hand, but above all, the aporetic condition of tactile/haptic perception. And despite his observation of the fact that Nancy does not explicitly make any reference to the hand – at least in *Corpus*, in which Nancy opts always to use the “my body” formula –, Derrida does not fail to point that the hand “could well be the *best* ontoteleological figure, the *best* rhetorical figure, or a trope among others to expose what an ‘organ of touch’ or tactility is in general” (154). Nonetheless, such statement does not prevent him from questioning the primacy of the hand, particularly within this longstanding and paradoxical haptologic tradition in philosophy, beginning with Aristotle (through the lens of Jean-Louis Chrétien):

Although things *manual* and *human(ual)* are on a par here, as they so often are; although this teleological excellence of human touching is most often embodied in the hand; although the “hand” is the very thing itself that most often extends between human touching and divine touching (256, his emphasis),

as noted by Jean-Louis Chrétien, Aristotle seems not to give any specific role to the hand in the excellence of the sense of touch. Given that, for Aristotle, “the sense of touch is *universal*,” that is to say:

(...) first, the way of touching is “common to all animate living beings”; second, this way “extends nearly to the whole body, or in any case to all flesh” – two sufficient reasons for Aristotle not to insist so much on hands; third, the way of the touched or the tangible covers the whole field of the sensible. (256-7)

Moreover, to turn the hand as an organ, along with its “tactile excellence,” into a representation of “human touching,” would necessarily lead to the deletion of “one of the three universalities of the sense of touch, the one that makes it coextensive with flesh in general by extending it to the whole body” (257). And, as Derrida notes, of course there would be counterarguments to this reading of Aristotle by Chrétien, but all of them are resumed to a final answer that seems to be irreducibly irrefutable: “there is no ‘hand in general’ before man’s or God’s hand,” meaning that:

(...) our preunderstanding of this word, the hand, involves at least the *transitive* ability to touch and know, and therefore to present, make present, give, and give an actual intuition of the present (always of something else or other to someone else or other, even if this presentation also presents itself to itself, and so forth). (259, his emphasis)

Not to mention that such a transition inevitably carries with it a mediation, not just the mediation of carnal touching, but also the “unfailingly transitive” nature of “totally immediate” “spiritual touch” (259-260).

3.3 Scene 3: Move (Supraprothetic Hands)

A hand is a good example. It is made of bones, muscles, tendons, connective tissue, a network of blood vessels and another of nerve pathways, and several layers of skin, all put into place according to a specific architectural pattern. When such a biological object moves in space, it performs an action, for example, your hand pointing to me. Both object and action are physical events in space and time. Now, when neurons arranged in a two-dimensional sheath are active or inactive according to the inputs they receive, they create a pattern. When the pattern corresponds to some object or action, it constitutes a map of something else, a map of that object or that action. Grounded as it is in the activity of physical cells, the pattern is just as physical as the objects or actions it corresponds to. The pattern is momentarily drawn in the brain, carved in the brain by its activity. Why would circuits of brain cells not create some sort of imagetic correspondence for things, provided the cells are properly wired, operate as they are supposed to operate, and become active when they should? Why would the resulting momentary activity patterns necessarily be any less physical than the objects and actions were in the first place?

Antonio Damasio, *Self Comes to Mind*

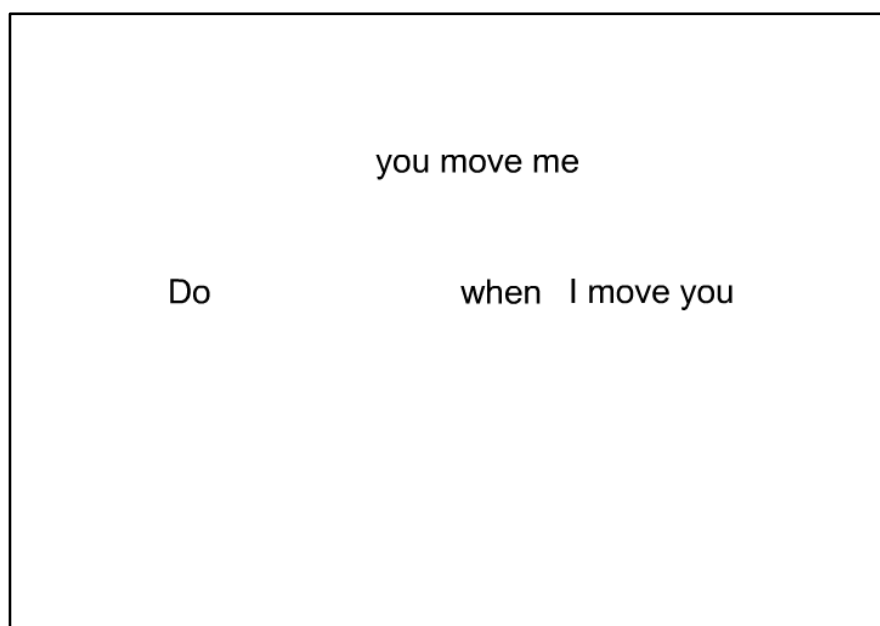


Fig. 3.15: *Touch* (“Move”). Screenshot.

The thumb. The outermost digit. *Pollex*. Differing from the other fingers in having only two phalanges, hence allowing greater freedom of movement. Simultaneously, a finger capable of opposition and apposition. Two movements at the center of the action enclosed in *Touch's* thumb. We are now working with language here. But also with gestures. "Touch the words, replace, them, move them," so says the instruction. Oppositions: me/you; "Do you touch me when I touch you." And appositions: To love, to attract, to move, to touch, to caress; "Do you touch me when you touch me." Each instantiation possible by the movement of the reader's hand, literally moulding language. Like a sculpture. In order to grasp a tool, a meaning, a thought.

Holding in mind an inevitable interconnection between the evolutionary paths of technology and the human being, one might wonder why part of such coevolution – with human beings having gradually replaced their reflexive and motor abilities with the production of new technologies which, to a large extent, have tried to overcome natural imperfections of the biological body, not to mention the body itself – has been based on the search for a new prosthesis that has gone in the opposite direction of the brain. This can be observed, for instance, in ancient measurement techniques based on the cubit and, subsequently, the digit (namely, the thumb). In other words, there seems to be a particular incongruence in the way human beings have continuously progressed towards a nullification of the biological body (in which the brain is seen as the ultimate and final prosthetic possibility) and at the same time, have consistently reaffirmed the hand as a prosthesis.

In *Gesture and Speech* (1964), Leroi-Gourhan offers us two possible explanations: one basing itself on Broca's findings of adjacent areas in the brain that might be responsible for our reflexive and locomotive capacities (in both gesture and speech); the other being the account of the consequences at the reflexive level, triggered by the transition from a quadrupedal stance to a bipedal/upright stance, gradually releasing the forearm from its locomotive function, both forearm and hand from their function as tools, until these are exclusively functioning as driving forces, and practically all of the biological body from its reflexive and motor functions, as a *work in progress* towards its (*quasi*) obsolescence (Leroi-Gourhan: 1993, 1-3). But among the most relevant arguments in Leroi-Gourhan's book, the hand and language nexus is certainly one to consider. Leroi-Gourhan himself being a specialist in areas such as archeology, paleontology, and anthropology, and with a particular interest in aesthetics, technology and structuralist philosophy, it is no wonder that Randall White starts his introduction to the English translation of *Gesture and Speech* by pointing out Leroi-Gourhan's capacity for being "multivocal," seeing that his "literally paleontological" work on "cranial equilibrium in vertebrates" as a way of highlighting the extreme significance of bipedalism for "evolutionary changes that followed," conjoins with the

way he metaphorically views “operational sequences” (*chaines opératoires*) as “the bones of the extinct societies or *ethnies*” (White: 1993, xx-xxi). Moreover, in the context of Leroi-Gourhan’s line of thought, “operational sequences” can be defined as a series of gestures that are to be understood as “the building blocks of technology, indeed of culture,” since “they are culturally or ethnically conditioned and highly structured but through repetition and conditioning at a young age become more-or-less subconscious” (xviii). Hence Leroi-Gourhan’s understanding of humans as a species “defined, not by genetic barriers, but by barriers constructed of linguistic, material, and figurative expression” (xxi).

It does not come as a surprise then, the fact that the hand, along with the face, plays a crucial role in Leroi-Gourhan’s argument, while the brain, particularly the idea of large brains, appears as a secondary criterion “in terms of strict evolution,” “correlative of erect posture” (Leroi-Gourhan: 1993, 19), and as a “beneficiary” of locomotion (26). In this way, for Leroi-Gourhan, erect posture, and consequently locomotion, are what distinguish humans from monkeys, being the first key factor in the differentiation process of both species, not just in terms of biological evolution but also as “the determining factor of modern social evolution” (26). Moreover, since “the conditions created by erect human posture had consequences in neuropsychological development,” this meant that “the development of the human brain was something other than just an increase in volume” (20). Which is where the hand and the face, technics (tools) and language, motor and verbal activity, come in, not as two separable and distinct human abilities, but as a “single mental phenomenon neurologically based on contiguous areas and expressed jointly by the body and by sounds” (402-3). Of particular relevance here is another key concept in his argument, namely, “conscious contact.” According to Leroi-Gourhan:

The whole of evolution boils down to this search [for conscious contact]. All spirituality and all philosophical and scientific exploration are the end goal of the same search for contact, which is governed by the mind. At all levels such contact is achieved through the two coordinated structures of the body and the nervous system. (59)

In this sense, freer hands correspond to larger brains, “for manual liberation and the reduction of stresses exerted upon the cranial dome are two terms of the same mechanical equation” (60). For this statement, Leroi-Gourhan found support in Neurology, particularly in experiments which demonstrate that “the zones of association” surrounding the motor cortex of both face and hand “are jointly involved in producing phonetic or graphic symbols” (88). This might also be a possible explanation for the reasons why, for the “very purpose of expressing thought, hand and voice remain intimately linked” (215).

For Leroi-Gourhan, the relevance of the hand is then, less a question of “what it is,” than of “what it makes” (241), meaning that its role as the “most perfect agent” (402) of motor activity

lies less in the fact of being a “fairly simple osteomuscular device capable, from the monkey, of performing, in a mechanically very economical manner” (for him, freedom of movements while walking would be a “sufficient precondition”) than in its association with the “ability to walk upright and its paleontological consequences for the development of the cerebral apparatus” (241-242). Also, it becomes even more significant in the face of evidence that prove that its activity is crucial to the “balance of the brain areas with which it is connected” (255).

While Leroi-Gourhan’s interdisciplinary approaches proved to be successful in the association of paleontology and ethnography in order to understand human evolution, his incursions into other fields of knowledge have been the target of much criticism, namely when it comes to aesthetics. For Leroi-Gourhan, the term “aesthetics” is still equivalent to “the subject that in philosophy is the science of the beautiful in nature and art” (271). While it is interesting that he does not restrict aesthetics to audition and vision, believing that “the whole gamut of perceptions” must be consulted, he does not abandon the ocularcentrist paradigm of the beautiful. Nevertheless, such an apparently biased point of view is not impeditive to the attribution of relevance to an intersensibility in aesthetics, namely, by defining that “reference points of human aesthetic sensibility are to be found in deep visceral and muscular sensibility, in the sensibility of the skin, in the senses of smell, taste, hearing, and sight, and lastly in the mind's eye which symbolically reflects the whole fabric of sensibility” (272). It is important, however, to state that viscerality, for Leroi-Gourhan, is to be understood as the “driving force of feeding behavior” (282), and not as a sense modality *per se*. It is perhaps this particular understanding of proprioception and interoception that leads him to assume an ocularcentrist stand, a position that seems contradictory of his thoughts on the role of the hand:

Visceral rhythms are the driving force of feeding behavior, while smell, taste, and touch are the agents of perception. Affective behavior is determined by perception of the play of the muscles as well as by touch, smell, and sight. Behavior pertaining to one's position in space and time is served by the organs of balance, *and perception of the body in space is determined by reference to the dominant sense, which in the human is the sense of vision* and in other species the senses of smell, touch, or hearing. (282, my emphasis)

Nonetheless, it is to viscerality that he ultimately attributes the final responsibility for rhythmic balance of one’s body, taking into account, of course, his own definition:

However, if we bear in mind that in all cultures many unusual motor or verbal phenomena occur as a result of individuals being “transported” to a mental state other than their normal one, we must acknowledge that disturbances of the rhythmic balance do play an important role. In exceptional rituals – ecstatic revelations, states of possession during which individuals dance or make music highly charged with the supernatural – one of the methods employed all over the world consists in putting performers outside their daily rhythmic cycles by breaking their physiological routines with fasting and lack of sleep. The end result may be excitement of the *psyche*, but the starting point is visceral. The change of register cannot be brought about unless it starts in the very depths of the

organism. (284)

Reminiscences of Leroi-Gourhan's *Gesture and Speech* can be found in *The Hand: How its Use Shapes the Brain, Language and Human Culture* (1998), a volume published only five years after the English translation of *Gesture and Speech*, by neurologist and former pianist Frank R. Wilson. In it Wilson presents a general historic compendium on the origins of the hand, focusing particularly on the issues of an "interdependence of hand and brain function, [and] the historic origins of that relationship," as well as "the impact of that history on developmental dynamics in modern humans" (1998: 17). While this volume tends to be more generalist than specialized in the way it analyzes the anatomical and neuroscientific perspectives of the human hand, it poses a series of questions that seem to be more relevant than the absence of concrete answers. For instance, Wilson states that:

(...) from the perspective of biomechanical anatomy the hand is an integral part of the entire arm, in effect a specialized termination of a cranelike structure suspended from the neck and the upper chest. Should we agree that the hand must be conceptualized in biomechanical terms, we invite further complexities of definition. (...) Are the nerves controlling the muscles and tendons that cause the hand to move also part of the hand? (18)

However, from the perspective of physiological or functional anatomy, another series of complexities arises, since a

set of observations, beginning a little over a century ago, have made it clear that the hand can be rendered useless by damage to the brain from injury (a fall or a gunshot wound), or as the result of a disease process (stroke, multiple sclerosis, or Parkinsonism, for example). (18-19)

Wilson then questions: "Should those parts of the brain that regulate hand function be considered part of the hand?" (18-19). Given these two different accounts of the term hand, while it is true that it is much more than a mere extremity of our bodies, it also has its mirrored example in the brain, the latter having to be understood as something more than "a solitary command center, floating free in its cozy cranial cabin" (19). Which is why for Wilson, the movements of a body and the activity of a brain are to be seen as "functionally interdependent" (20).

Concerning the frequently unrated role of the hand in the learning process of a child, Wilson states that:

Coupling of hand and eye movement is an enormously complex learning task in which the child must be intensively engaged before it can ever hope to pry its bottom off the floor. Before the baby can (or should) stand and walk, its brain must develop and integrate a multisensory reference system to track limb movements on an ongoing basis – the nervous system must know at all times where each hand is with respect to the midline, with respect to its root at the shoulder, with respect to the other hand, to the foot, to the mouth, and to the eyes. Inevitably, this same process helps to establish a coordinate system for external objects located in three-dimensional space. Where is the

hand with reference to mother's breast, a tattle, a handle, or the puppy's ear? Increasing the range of exploration permits the calibration of bodily movement against space and objects in the real world. And while all this is going on, the hand is learning to operate at the end of the arm, beginning to capture objects of interest and to bring them closer to the body. (114)

Despite the significance which Wilson attributes to the hand, namely in such a fundamental phase of a human being's development, what is normally seen as a common organ of our daily interaction with the world is involved in a series of other "functions" that go well beyond that which is designated as intelligence. This all becomes more complicated when the need to establish interconnections between functions such as – "bipedality, brachiation, social interaction, grooming, ambidexterity, language and tool use, the saddle joint at the base of the fifth metacarpal, 'reaching' neuron's in the brain's parietal cortex, inhibitory neurotransmitters, clades, colons, amino acid sequences" (181), to name a few – clashes with the individualization of disciplines, singularly dedicated to their "own private domain of multiple infinite regressions – knowledge or pieces of knowledge under which are smaller pieces under which are smaller pieces still (and so on)" (181). According to Wilson, this fact can be related to our necessity for the compartmentalization of knowledge, a taxonomic procedure which can also be applied to the establishment of the hand as a metonymy for all human touch.

One last question posed by Wilson is also worthy of consideration, specifically what he calls the "hand-thought-language nexus" (212). According to Wilson, the "manipulation of objects and words by the child proceed in such transparently parallel fashion that the brain must be: (a) applying the same logic or procedural rules to both; and (b) using the same anatomic structures as it does so" (182).

Working as an addendum to Leroi-Gourhan's considerations on the intricacy of technics and language, Wilson's *The Hand* seems to owe much to *Gesture and Speech*. It is important to remember that *Gesture and Speech* was written in the 1960s, inevitably carrying with it the risk of obsolescence, particularly when emphasis is put on what Leroi-Gourhan defines as "audiovisual techniques." In addition, it includes forced and easily refutable statements. For example, according to Leroi-Gourhan, there is no evidence that these audiovisual techniques are responsible for changing "traditional anthropoid behavior" (McLuhan and Kittler would have a word or two to say about this). Also easily refuted are his considerations on reading and writing, him signaling that the first, regardless of the devices chosen to store information, will not change significantly, and that the latter is "probably doomed to disappear rapidly, to be replaced by dictaphonic equipment with automatic printing." Leroi Gourhan calls such consequence "manual regression," a new "liberation" that, due to the "loss of manual activity and the reduction of the human physical adventure to a passive one will cause more serious problems" (Leroi-Gourhan:

1993, 404). At this point, it is worth questioning what would Leroi-Gourhan think of contemporary digital technologies such as mobile multi-touch devices? In fact, the multiplication of haptic instruments and processes does not replace the hands altogether, since technical mediation seems to be more concerned with extension rather than substitution. This extension can achieve an autonomous logic, but without eliminating the presence of the subject and the human body coupled to the device. Take the example of drone warfare: drone pilots have manual controls in virtual piloting booths, which may be thousands of miles away. The drone chamber and flight handles, widen the eyes and hands without making them obsolete, via the telecommunications networks which allow the sending and receiving of signals from the remote-controlled aircraft. Notwithstanding, in terms of writing gestures, Leroi-Gourhan believes such manual regression cannot be compared to the “most profound change in behavior based on the balance between the psychic and the physical (...) brought about by the transition to city life.” Such changes are defined by him as a “transition,” since despite the substitution of manual operations with verbal and intellectual activity, writing continued to be used: “their hands formed words and punctuated their speech; the forelimb had lost none of its importance in intellectual synergy, and we are therefore entitled to speak of a transposition” (405).

Considering the increasing interest of digital technology industries in haptics, whether in tactile processes of the hand and fingers in “conscious contact” with digital multi-touch devices, or in the search for multivariate forms of presence through the use of digital technologies such as Virtual Reality (VR) and Augmented Reality (AR), it might also be worth asking if such technology is not just another variation of “transposition,” and, in addition, one that completely contradicts the idea of “manual regression,” particularly when writing and reading processes start to rely on these same haptic processes.

3.4 Scene 4: Hit (Handwriting, Typewriter, Keyboard)

Nos momentos felizes, a mão anda sozinha. A cabeça está a ver ao longe e fica contente, porque são as palavras certas que a cabeça não encontraria. É a mão. (...) É a mão que escreve. A nossa mão é mais inteligente do que nós. Quando estou a escrever, parece que estão a ditar-me e a mão a reproduzir.⁸⁹

António Lobo Antunes

⁸⁹ “In the happiest moments, the hand goes by itself. The head is watching from far away and is happy, because those are the right words that our head would not be able to find. It is the hand. (...) It is the hand that writes. Our hand is more clever than us.” Excerpt from an interview with Portuguese writer António Lobo Antunes, by Maria Augusta Silva in 2004. “Saber ler é tão difícil como saber escrever”. Source: *Diário de Notícias* (s/e, November 2004). 8 Feb 2015 <http://www.dn.pt/inicio/interior.aspx?content_id=588769&page=-1>, last accessed August 2, 2017.

The middle finger, long finger, tall finger, or *digitus medius*. “Hit” is the action enclosed in this finger. A brutal and quick touching action compared with a caress. But that is precisely what is now asked from the reader in order to unveil this fingertip’s content. There is an annoying fly that the reader needs to hit in order to access the verbal text (excerpts of Aristotle’s “The History of Animals,” concerning the senses of insects). Fragments of broken glass keep appearing each time the reader fails to hit the fly, which makes it even more difficult to read the text. An onomatopoeic track pertaining to the virtual fly increases confusion. Its characters resembling those produced by a typewriter. A device hit by writers, for example, modernists.

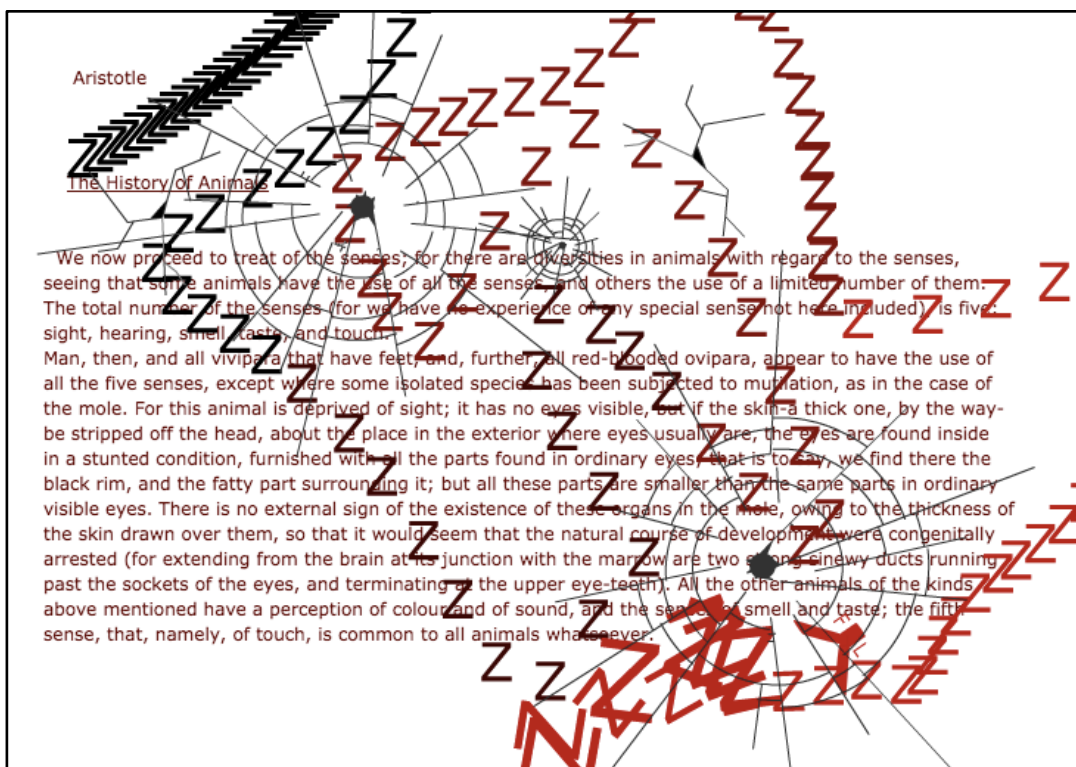


Fig. 3.16: *Touch* (“Hit”). Screenshot.

According to Abbie Garrington, “the human hand and related sensations of touch and the tactile,” already constitute a comprehensive part of modernist literature (2013, 2). During this particular period, the hand is often used as a “synecdochic stand-in for the tactile experiences of the whole body” (16). Furthermore, for Garrington, modernist literature provides the basis for many of the instantiations of the haptic in the late twentieth and twenty-first century. This basis makes modernist literature “a kind of ‘hinge point’ in the multi-stranded history of the haptic,” namely due to the influence of theories of perception from the eighteenth and nineteenth centuries (17), to which “humanualism” is no exception, as illustrated by Derrida. But in order to understand this “contemplation” of the human hand by modernist writers, another variable has to be considered, consisting in the way “modernist writers perceive the civilisation that has been wrought by the dexterity and motility of the human hand” (35), a paradoxical situation, since

according to Garrington, this is also the period in which “the ‘rule of thumb,’ the attempt to know (...) using the touch or shape of the hand, is (...) most conspicuously outmoded” (33).

Furthermore, Garrington posits:

[T]echnologies synonymous with the modernist period, including the typewriter and the telephone exchange (...), use the hands as ancillary devices, a quite different relationship to the pen/chisel/hammer tool set, which may be read as at once symbiotically connected to the hand and echoing its operations in their form. (33).

What Garrington sees as a paradox, is plain clear for Anne Mangen, for whom Heidegger’s analysis of phenomenological differences between handwriting and “the impersonality and mechanization of writing introduced by the typewriter” (Mangen: 2006, 237), can be applied when it comes to word processing in Graphical User Interfaces (GUIs). For Mangen:

When handwriting with pen on paper, we experience a direct and phenomenologically unambiguous relation between the noetic act of inscription (as well as the noetic act of reading) and the noematic correlate of the pen moving across the paper (and, correlatively, the written text that we read). Both as writers and as readers, we co-intend the materiality of the technology (both the instrument and the surface of inscription) as we intend the conceptual (signitive, symbolic), that is, the content of what we write/read. This close and embodied relationship between the means or technologies of writing/reading and our experience of both the act of writing/reading as well as the result – the text – is dramatically changed, first with the typewriter and, perhaps even more dramatically, with the digital word processor. In these two technologies, the embodied dimension of the text/inscription is replaced by first mechanized and then digitized features by means of which the text/inscription is phenomenologically detached and disembodied; the phenomenological trace of the tangible is completely eradicated with the digital GUI. (238)

Largely influenced by Heidegger’s (in)famous statements on the question of authenticity in writing by hand versus typing (writing using a typewriter), Mangen’s position in applying this Heideggerian point of view to the GUI is grist to the mill, since there is no mention of the ways in which print-based books are now completely dependent on digital processes, as N. Katherine Hayles already illustrated in her 2010 book *Electronic Literature* (not to mention automation processes used in printing since Gutenberg). Moreover, Heidegger’s position that in the action of writing using a typewriter “the hand is removed from the essential realm of the word” (Heidegger, as cited in Mangen, 237), hence depriving writing from a process of authenticity, seems to be what sustains Mangen’s argument in full. In his volume *Gestures* (2014), Flusser counterpoints this position, dedicating a series of essays of phenomenological background to the expression of signification through gestural movements. His constant appeal for a hypothetically urgent theory of gesture is mainly based on the idea that these movements, as a specific kind of consciousness, are able to mediate affect between subject and world. Taking into account the specific gesture of writing, Flusser points to the materialities of writing which this gesture denounces, stating that:

There is no thinking that has not been articulated through a gesture. Thinking before articulation is only a virtuality, which is to say, nothing. It is realized through the gesture. Strictly speaking, there is no thinking before making a gesture. (Flusser and Roth: 2014, 24)

Thus, for Flusser, these gestures of writing depend on structures such as an “accidental linearity,” which influenced a series of cultures (not just Western culture). As a result of this, and since it “gives a form (and informs) a whole dimension of our existence in the world,” to change it would mean “to change our way of being in the world.” This way, modern innovations such as the typewriter simply give continuity to a “form that is ‘historical, logical, scientific and progressive’ (...) whose specific linear character has made our gesture of writing irreversible” (20). For Flusser, to believe that the machine is a constraint to “the freedom of the gesture,” is plainly, a “widespread, erroneous belief,” since the action of typing entails a much more freer gesture than that of writing with previous prosthetic writing devices, such as the fountain pen, “not only because one writes more quickly and with less effort but because the machine more readily permits an overstepping of the gesture’s rules, in fact, exactly because it makes the rules obvious” (21). As for the supposed authenticity of the gesture of writing with a pen, given that it seems to be more of an “engraver,” Flusser states that it is an “error,” since the machine and its action of hammering is more “incisive,” making typewriting a “more open form of thinking than writing with a pen, a stick of chalk or a pencil” (21).⁹⁰

Flusser reminds us, however, that we are now at a specific moment in which Western culture begins to stop being governed by writing (a similar position to that of Leroi-Gourhan’s), leading us to a new literacy triggered by the exponential increase of an elite expressing itself by means of a “programming of cybernetic data banks and computational facilities that are structured differently from the gesture of writing” (25). For that reason, Flusser believes that there is a need for a dialectics that can only exist by means of other more refined codes and gestures equally concerned with other types of materiality, for instance, those of the video, “analog and digital models and programs,” and “multidimensional codes” (25).

Ultimately, Flusser’s observations bring us to the following question: if phenomena like cyberliterature, with all of its variants, are now more dependent on these latter gestures than on previous gestures of writing, what kind of rhetorical adjustments should be taken into account in order to keep considering it an act of reading? On the one hand, these types of reading depend of a series of gestures resulting from physical interaction between reader and artwork, given that only by means of these gestures is the reader capable of accessing information contained within

⁹⁰ For a philosophical and historical account on the presence of handwriting and questions of authenticity in digital media, see Neef, Sonja, Dijck, José van, Ketelaar, Eric (2006). *Sign Here: Handwriting in the Age of Technical Reproduction*. Amsterdam: Amsterdam University Press.

digital devices. On the other hand, the intensification of a search for immediate tangibility and total sensory emulation in the human-machine interaction strongly influences our relationship with media. For example, considering “remediation” processes from one type of media to another, the trend is often a transmedial emulation, which can be observed, for instance, in the act of representing on a digital screen the terminology and codes of technologies such as the codex or the manuscript. Moreover, at an ergonomic level, namely in the way buttons/keys evolved from its analog form to its current digital configuration, regarding today’s virtual configuration of interfaces such as the keyboard in mobile multi-touch devices, there is a vestigial legacy of previous configurations. Just as the interface of digital audio programs features buttons that emulate the interface of the analogue radio, the turntable or the cassette player, the spatialization of letters on a virtual keyboard also results from the historical conventions and familiarity of use that they presuppose. That is to say that although software has the potential to suppress the preceding legacy of analog interaction interfaces, digital interfaces retain some of these conventions for reasons of functional optimization and cognitive familiarity.

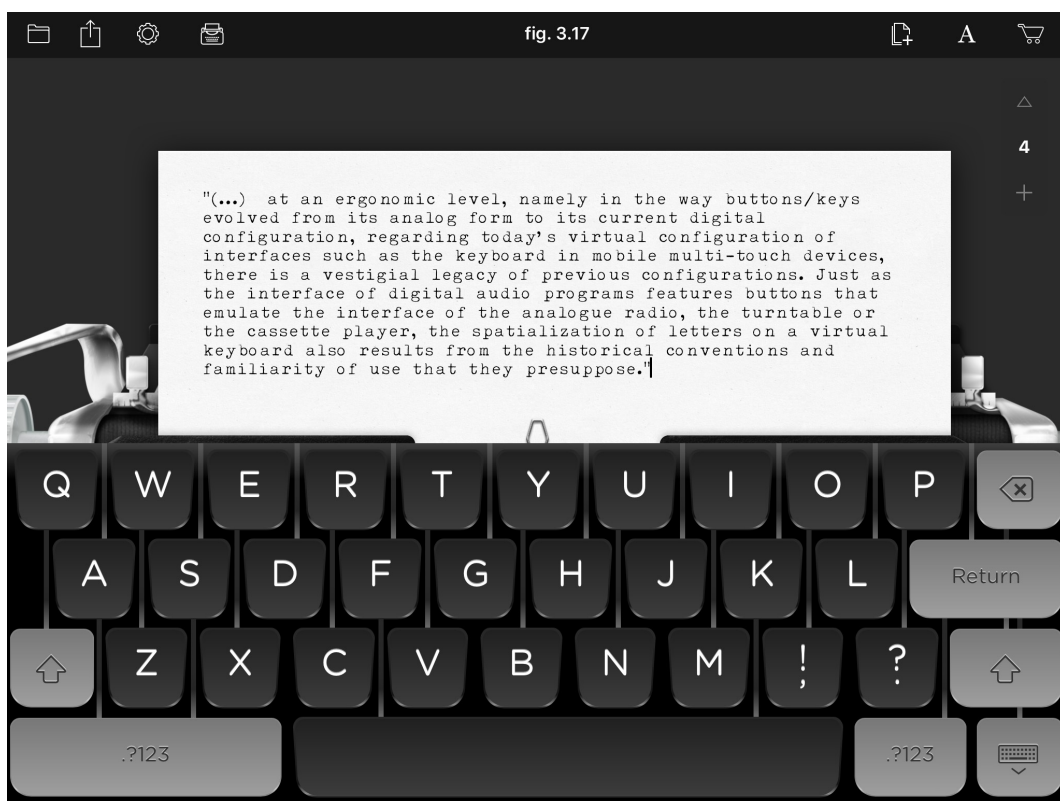


Fig. 3.17: Emulation of a typewriter’s analog mechanisms. Image created with “Hanx Writer,” an app for iPad and iPhone developed by Tom Hanks and Hitcents.

Another example of this is the mechanic-electronic computer keyboard, which in turn, already emulated the purely mechanical structure of typewriters and similar technologies. Nonetheless, there is a fundamental difference between the two. Despite the archaeological memory of the purely analog key, to touch the plastic key of a personal computer’s keyboard

implies a previous *digitization* of the mechanical impulse, in so far as this same impulse presents itself with the exclusive role of closing a circuit able to activate a representational code of writing, according to a given computer protocol, and no longer as just a physical representation of a letter.

Moreover, regarding the keyboard's virtualization in mobile multi-touch devices or tactile screens and tables, there is an intensification of the process of virtualizing the letter, already included in the personal computer's keyboard. It is this intensification of the virtual that ends up, in a paradoxical way, reinforcing the existing visuality of the alphabet's spatial configuration, this paradox stemming from the reinforcement of vision and visuality against an increasing demand for our touch. For that same reason, these three distinct gestures of writing, in its various ergonomic forms, share the common feature of synthesizing the combinatorial nature of the alphabetic code (and therefore, of the differential principle that enables human verbal language).



Fig. 3.18: “PENNA,” a bluetooth wireless retro keyboard for iPad that emulates a typewriter’s keyboard. Source: <<https://www.theverge.com/circuitbreaker/2017/4/7/15221566/penna-retro-typewriter-bluetooth-keyboard-kickstarter>>, last accessed July, 30 2017.

This way, given that neither the analog gesture is completely analog – ultimately due to the virtual already implied in cognitive processes – nor the digital gesture is entirely digital, since its materialization always implies a kind of actuality, it can be agreed upon that *digital* means a series of actual and virtual machimanipulations that readers produce and experience in their contact with digital media.

In “Digital Gestures,” Carrie Noland argues that the biological body and its kinetic energies are emphasized by digital literature, for instance, in the replication of corporal energy

channeled by the gesture of handwriting (2006, 217). In other words, what digital poetry exposes in the movements and metamorphoses of letters composing a substantial part of this specific field of cyberliterature is a “will to reengage with and express the kinetic impulses of the body” (218), intensifying, and not counterpointing, the production of “conscious sensations in a body that cannot be entirely changed” (221).

In order to make viable her argument on digital poetry as a gestural form, Noland refers to two visual artists from the twentieth century, Robert Morris and Cy Twombly, who during the 1940s and 1950s, focused part of their artistic creations in painting the “gestural origins of inscription.” Noland’s point here is that, in this artistic search for a “protowriting,” the bigger the exposure to the kinetic act of inscription, the less legible it becomes (219). Noland’s argument for analog gestures being retrieved by digital gestures brings up the possibility of a parallel with some of the main concerns of Portuguese Experimental Poetry (PO.EX). Of particular relevance here is the name of Ana Hatherly, one of the founders of the Portuguese Experimental Poetry movement during the 1960’s, whose “metaphor of the intelligent hand” reflects in a unique way a ceaseless attempt to lose the meaning of both writing and language in order to shorten the distance from the originary act of inscription, as a way of finding potential residues of an inaugural act of writing.

Regarding the “intelligent movement of the hand” which Hatherly’s metaphor is able to convey, Manuel Portela states that:

De toda a obra de Ana Hatherly – poesia, ficção, ensaio, tradução, performance, cinema e artes plásticas – se poderia dizer que manifesta o movimento inteligente da mão. O desejo profundo do artista é entregar-se à inteligência da mão, a esse sistema cognitivo expandido, apenas parcialmente consciente, que o seu corpo explora na relação com a matéria. [...] Na mútua imbricação da mão e da escrita, a matéria do mundo e a matéria dos signos podem encontrar-se. Através das inscrições da mão, da mecânica fina dos seus movimentos musculares, o sujeito torna-se capaz de enfrentar a linguagem. De inventar-se através do gesto impensado da mão. No traço quase originário – quase fonte da linguagem e quase fonte da poesia – emerge o desenho da escrita. (2015, para. 2-3)⁹¹

Put in another way, in the exploration of the gesture underlying the exercise of writing, an act presupposing an abandonment, although temporary, of signification, only through a conscious loss of an apparently fundamental element for a possible comprehension of the poem does it

⁹¹ “All of Ana Hatherly’s work – poetry, fiction, essay, translation, performance, cinema and visual arts – expresses the intelligent movement of the hand. The artist’s most profound desire is to surrender herself to the intelligence of the hand, to that expanded cognitive system, only partially conscious, that her body explores in its relationship with matter. (...) In the mutual imbrication of both hand and writing, worldly matter and the matter of signs can find each other. Through the inscriptions made by the hand, through the refined mechanics of its muscular movements, the subject becomes capable of facing language. Of inventing herself through the thoughtless gesture of the hand. In its quasi originary trace – quasi source of language and quasi source of poetry – emerges the drawing of writing.”

become possible to “traçar novos significantes” [“trace new signifiers”], by means of a “retroalimentação exploratória entre movimentos e inscrições” (Portela: 2014, 53).⁹²



Fig. 3.19: “Metáfora da mão inteligente,” Ana Hatherly (1975). Drawing: India ink on paper, 15,9 cm x 22,1cm. © Ana Hatherly and Centro de Arte Moderna, Calouste Gulbenkain Foundation, Lisbon.

Consequently, what these feedback loops identified by Portela bring, is a productive tension between cognitive and sensory-motor activity that the gesture of writing presupposes. Therefore, these are conceptions of touch and gesture that are able to surpass their common exteroceptive connotations, and which should be seen as fundamental to a broader understanding of complex notions such as writing, language and poetry. Regarding the ways in which the gesture of writing metamorphosed itself along a series of analog-digital technologic evolutions, Hatherly identifies a gradual tension similar to the one previously mentioned, this time, between text and act:

Os textos serão cada vez mais textos-atos. Ao texto-ato corresponde o poeta-ator, porque a obra será cada vez mais ação – opera/ação. A performance que atualmente se faz é já um passo nesse sentido. / Creio que a antiga ambição de realizar o espetáculo total (que foi ensaiada pela ópera, inventada no período barroco) poderá vir a ser concretizada pela ação do poeta-operador (...). (Hatherly, as cited in Dias: 2015, 383)⁹³

Following Hatherly, and as representative of an epigonism influenced by the first generation of Portuguese Experimental Poets, Fernando Aguiar would give continuity, from the

⁹² “exploratory feedback loop between movements and inscriptions.”

⁹³ “Texts will increasingly become texts-acts. The text-act has its correspondence in the poet-actor, given that the artwork will become more and more frequently an action – opera/(ac)tion. Current performance is already a step in that direction. / I believe that the ancient ambition of carrying out a total work of art (already attempted by the opera, invented in the baroque period) may be accomplished through the action of the poet-operator.”

1970s onwards, to that gestural dimension of poetry, namely by means of a fusion between performance arts and “language arts.” Using manual techniques such as collage, Fernando Aguiar as “poet-actor,” would invariably include the biological body as part of the poem’s semiotic field (Aguiar: 2001). In addition, the hand and fingers would become a recurrent theme in his work. Examples of this are the collages “Soneto digital” (“Digital Sonnet,” 1978), “Dois dedos de conversa” (“Two Fingers of Conversation,” 1978), “Ensaio deste tamanho” (“Essay of this size,” 1980), or more recently, “Caligrafias” (“Calligraphies,” 2006) – visual texts which due to their hybrid features, can be exhibited in multiple contexts, from the codex to the gallery, and including *mail art*, museums or webpages.



Fig. 3.20: From left to right: *Soneto digital*, *Dois dedos de conversa*, *Ensaio deste tamanho*, *Caligrafias*. © Artworks: Courtesy of Fernando Aguiar; Photo: © www.brunomartins.pt.

Moreover, it would be to that particular intersensory poetics that Aguiar would refer to in 1985, as a possible future of/for the poem:

Vivemos o tempo do signo. O tempo em que a poesia deixou definitivamente os discursos para entrar no domínio das formas, no terreno do audiovisual e na dimensão do táctil. Aliás, não poderia ser de outro modo, considerando que toda a nossa estrutura vivencial se baseia nos indícios, nos sinais, nos símbolos, nos códigos. / É numa floresta semiótica que existimos e comunicamos. (Fernando Aguiar: 1985, 155)⁹⁴

Furthermore, given that by means of a “haptic contact” between performer and spectator the “poem-act” would be ready to receive new meanings:

O fruidor deverá fazer uma leitura integral da intervenção poética, como um todo que ela na realidade é, e não se deve contentar em apanhar somente o significado daquilo que vê, pois este é apenas um dos componentes do acto poético. Para isso tem que haver um sincronismo no emprego dos sentidos, para uma decifração e compreensão do poema, e, conseqüentemente, uma participação crítica. (164)⁹⁵

⁹⁴ “We live the time of the sign. The time in which poetry permanently left discourse behind in order to enter the domain of shapes, the territory of the audiovisual and the dimension of the tactile. Moreover, it could not have been any other way, given that all of our experiential structure is based on traces, signs, symbols, codes. It is in a semiotic forest that we exist and communicate.”

⁹⁵ “The spectator should give an integral reading of the poetic intervention, as the whole that it really is, and should not content him/herself with just the meaning of what he/she sees, because that is only one of the many parts of the

3.5 Scene 5: Caress (Putting one's Fingers on Digits)

The gangster term “to put the finger on” says that somebody's “number” has come up.

Marshall McLuhan, *Understanding Media*

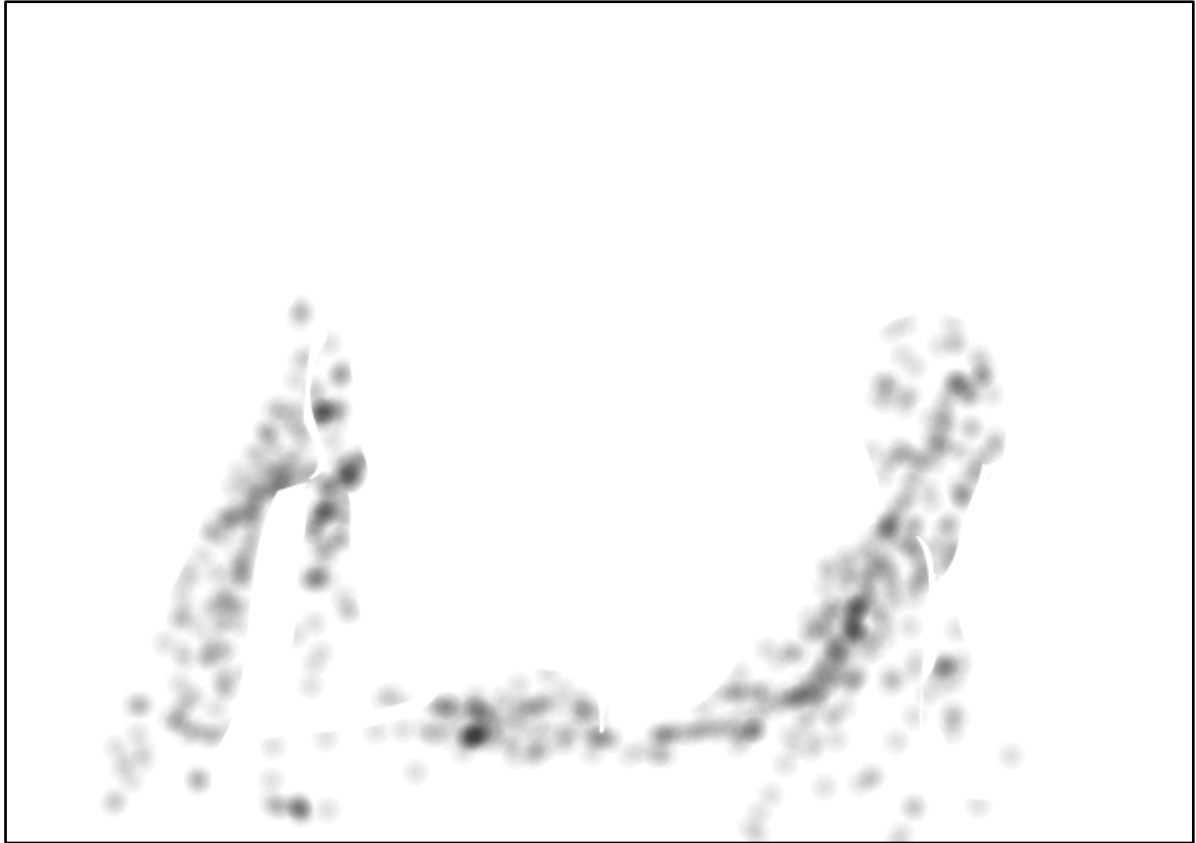


Fig. 3.21: *Touch* (“Caress”). Screenshot.

A “pointing finger,” the index finger, also known as forefinger, trigger finger, or *digitus secundus*, but also the finger usually used to refer to number one in Western culture. The digit, par excellence. The most dextrous and sensitive finger of the hand. And perhaps, for that reason, it is the reader’s pointer finger that discovers the action implicit at the point of this fingertip: “Caress.” A gesture involving a certain paradoxical condition of touching/not touching, at least of not touching too much. Indeed, there are certain types of touch that require a special *touch*, such as an almost imperceptible, tender and erotic one, for instance, the one enclosed in this particular scene, in which a naked woman’s silhouette can only be unveiled by avoiding disruptive movements and gently following sound cues and contours of that silhouette. But how can this be? That we get to be touched by something that cannot be physically touched?

poetic act. For this, there has to be a synchronism in the use of the senses, in deciphering and understanding the poem, and consequently, a critical participation.”

Also known as digits, fingers are often represented alongside large residues of paternalism and authority. As with hands (fingers and hands that point, accuse, indicate), fingers carry a great portion of the burden caused by current mediations between human and machine. Such possibilities of representation led Fernando Aguiar to create *O Dedo* (“The Finger”), a series of poems concerning the relationship between finger and digit, the cover of the aforementioned volume emulating an actual pointing finger. In this brochure, from 1981, the finger is represented in 22 movements in an alternative acceptance of the expression *digital format*.

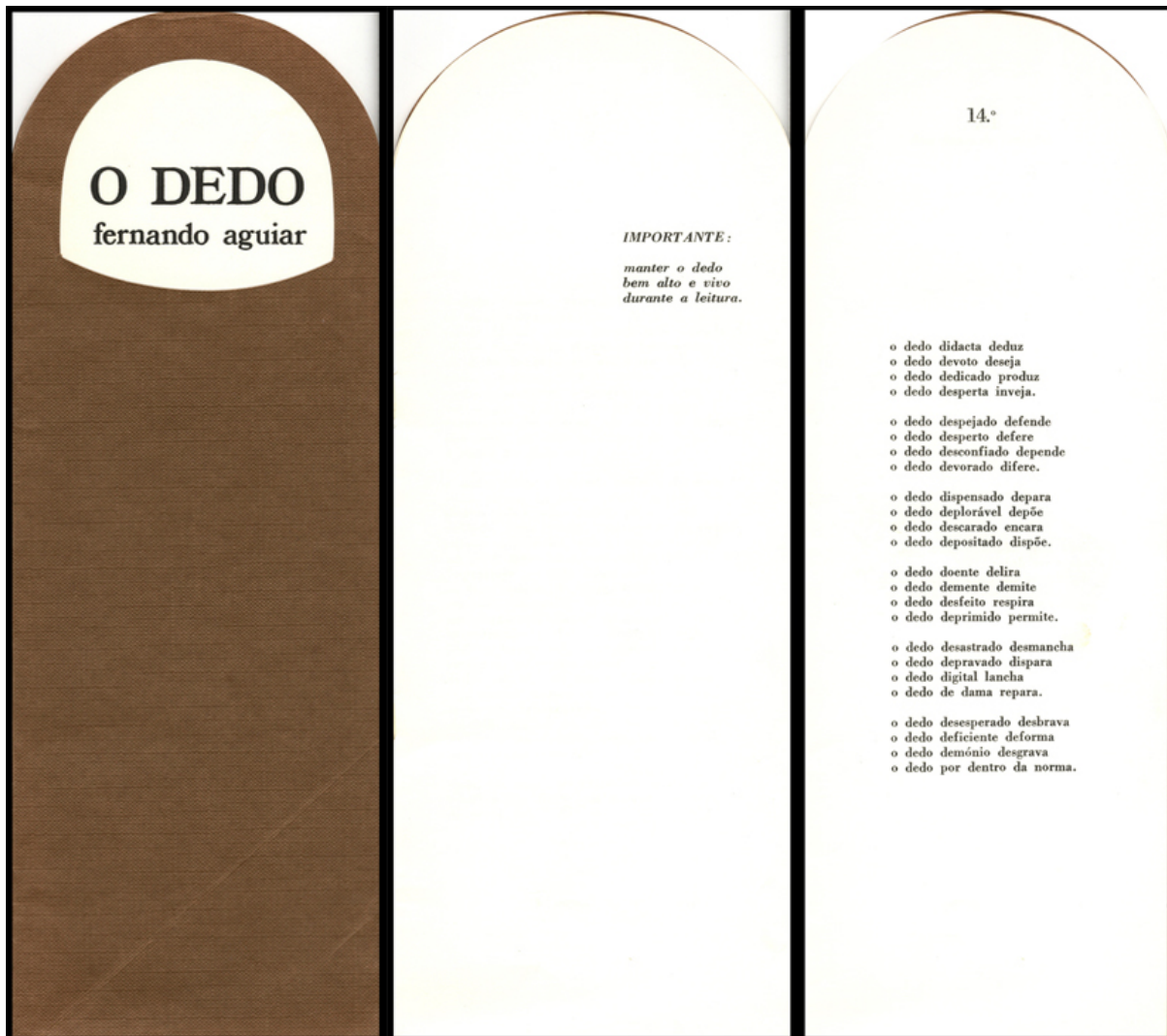


Fig. 3.22: *O Dedo* (The Finger”), brochure by Fernando Aguiar, (1981). From left to right: Front cover, Epigraph, Movement n.º 14.

<<http://po-ex.net/taxonomia/materialidades/planograficas/fernando-aguiar-o-dedo>>, last accessed July 31, 2017. © Fernando Aguiar and Assírio & Alvim.

Right at its beginning, the reader is faced with an early warning (a first pointing finger), filled with the following information: “IMPORTANTE: / manter o dedo / bem alto e vivo / durante a leitura” (“IMPORTANT: / keep your finger / high and live / while reading”). As readers traverse the book with their own fingers, a series of finger-shaped poems varying between

discursive and visual formats gradually reveal the metonymic condition of this organ.⁹⁶ For instance, movement 14 is composed of a series of verbal actions, which in turn, come associated with another series of adjectives that classify all kinds of fingers: “o dedo doente delira / o dedo demente demite / o dedo desfeito respira / o dedo deprimido permite.”⁹⁷ This exercise, difficult to fully understand in English because of the way the author plays with paronomastic relationships between words in the Portuguese language, attains a double metonymic status in the verse “o dedo digital lancha” (“the digital finger snacks”), a situation summarized by Vieira in the following way: “the finger that represents man, also means the digit representing the language of machines. That is, technology becomes natural, and machines become humanized” (2012: 106, my translation).

Without wanting to delve too much into the etymologic acceptions of *finger* and *digital* – from the latin *digitus* – which both humans and computers share, and not forgetting the various ways in which several researchers have already demystified such relation,⁹⁸ it may be relevant, nonetheless, to retrieve at least two of these approaches. Anne Mangen, for instance, puts a large focus on tactility and corporeality, which are at the root of the Latin origin of the term “digital” (2006: 37), whereas Marianne van den Boomen sees the digital as an extension of the human finger:

It is an extension of the ability to point at, touch, tap and push on things, as well as the ability to count discrete entities, to assign numbers to things and to remember them. All in all, this constitutes the basic ability to represent things by embodied symbols, and to do things with symbols and with machines. In other words, human acts – acts of manipulation as well as acts of attribution and interpretation, performed by designers and users – are indispensable for the operation of a computer, no matter how sophisticated its machinery. This is no trivial statement [...], it has profound epistemological and political implications if we acknowledge the human attribution labor that is incorporated in digital praxis, along with the digital-material configurations that enable and disable particular practices. (2014, 32)

⁹⁶ This artwork can be consulted in PO.EX’s Digital Archive: <<http://po-ex.net/taxonomia/materialidades/planograficas/fernando-aguiar-o-dedo>>, last accessed August 2, 2017. Despite its digital format, for reasons of preservation through archive, and no longer having a direct contact with paper, the reader’s finger continues to have a fundamental role with the ‘digit’, by means of digital interfaces that mediate it (mouse and screen, for instance). It is relevant, however, to distinguish this digitalization from another work by Fernando Aguiar, namely, *Digital Sonnet*, a “digital remediation” created in Flash. See Vieira, F. M.: 2012, 73-110.

⁹⁷ “(...) the ill finger is delirious / the demented finger demits / the broken finger breathes / the depressed finger permits (...).”

⁹⁸ In his analysis of the term ‘post-digital,’ Florian Cramer states that, “Something can very well be ‘digital’ without being electronic, and without involving binary zeroes and ones. It does not even have to be related in any way to electronic computers or any other kind of computational device“ (take for instance, the Roman alphabet, a piano’s keyboards, mobile types of Guttenberg’s press, as digital systems). Just as it is possible to demystify the idea that computers are a synonym for electronic. Cf. Cramer, Florian (2014: para. 10). “What is Post-Digital?”. In *Post-Digital Research (aprrja)*, vol 3.1. <<http://www.aprrja.net/?p=1318>>, last accessed April 19, 2015.

In a sense, it is as if the quasi-touch at the center of Michelangelo's "Creazione di Adamo" (*circa* 1511) transfigured itself completely in order to become truly synaptic, only this time in the form of two touching fingers between a human being and a machine, instead of an authoritarian finger that almost touches an almost passive hand. Yet, such an exercise carries with it the same haptocentric problem mentioned with regard to the hand, with the digit equally assuming the role of the hand as a metonymy, and simultaneously, due to its recurrent association (perhaps too recurrent), with the idea of a prosthesis. For this exercise to work, it would be necessary to change, in the same manner, the perspective of bodies, thus altering the whole picture (or painting).

In his article, "Tap, tap, flap, flap. Ludic Seriality, Digitality and the Finger," Till A. Heilmann attempts to answer the following question: "What is digital about digital media?" For that purpose he uses "Flappy Birds" (2014), a game by Dong Nguyen for iOS and Android, in which the only possible action is to tap the screen in order to flap the virtual bird's wings and avoid it from falling into the ground or from hitting obstacles (pipes). According to Heilmann, when it comes to gaming, whether more or less serialized (the number of actions determining its degree of serialization), "the norm is the use of hands and fingers on sticks and buttons," since, regardless of the game, "what we are really doing (...) is guiding our hands and fingers through a series of motions, pushing mice and sticks, clicking buttons and keys, swiping, pinching, and tapping trackpads and screens" (2014, 39). The premise for this claim is that, "*There is no seriality but digital seriality*" (40; his emphasis), and in order for one to understand this premise, it becomes necessary to take into account alternative definitions of the word digital. Heilmann starts by drawing a distinction between the words *discrete* and *digital*:

Regarded in isolation, parts are simply discrete – discreteness meaning they are individual objects insofar as they can or could (if only hypothetically) exist independently of each other. It is when they are combined to constitute a system that discrete parts turn into digital elements. For it is the structural configuration of separate parts in a larger framework that renders each part of the framework a digital element. This is to say that "digital" is a relational or a functional term while "discrete" is typically used as an ontological term. Collected in a glass jar, wooden beads are discrete objects; strung on wires in a frame, the same beads can act as digital elements of an abacus. (40)

This way, just as "the seriality of the alphabet allows, for example, for sorting and collation of information," by using numbers instead of letters, digital computers have become "our most recent and sophisticated tools for data processing" (40). Meaning that discrete elements such as *on* and *off*, or ones and zeros (or representations of them), which enable a serialization carried out by the machine in order to translate "changes of state of transistors and bits" (41), are intrinsically dependent on the human ability for counting, often by relying on the discrete nature of fingers or digits (41), which according to Heilmann, makes the finger the answer to his initial

question regarding “what is digital about digital media” (42).

A similar, though simpler description, is given by Florian Cramer:

“Digital” simply means that something is divided into discrete, countable units – countable using whatever system one chooses, whether zeroes and ones, decimal numbers, tally marks on a scrap of paper, or the fingers (digits) of one’s hand – which is where the word “digital” comes from in the first place; in French, for example, the word is “numérique”. (2014, para. 19)

Given these accounts, and particularly considering the relevance of fingers and hands in the context of contemporary technologies such as mobile multi-touch devices, common designations such as digital literature, digital poetry, or even digital media, seem to gain a completely new meaning. Due to their gaming features, digital literary artworks are completely dependent on serialization. In fact, literary artworks specifically designed for mobile multi-touch devices rely more and more on repetitive gestures like tapping and swiping, with the significant difference that, in comparison to print-based technologies that most often require a serialized process of turning pages, in digital literary artworks these gestures have a meaning of their own.

Let us consider, for instance, *He Liked Thick Word Soup* (2014), a digital literary artwork specifically designed for tablets and smartphones which, according to its description by author Ariel Malka, will increase our fingers’ dexterity by an exponential factor and completely change our “point of view on Modernist literature and experimental apps.”⁹⁹ The main reason for this is the fact that Malka’s work has James Joyce’s *Ulysses* as its textual database, a book that, according to Abbie Garrington, “foregrounds its interest in bodily exploration” (2013, 49). But in Malka’s artwork, the reader does not experience the whole book, since a mere 100 sentences taken from four chapters – more or less the equivalent to four pages of plain text – are available for interaction. Going from chapter to chapter, the reader has to be able to build sentences, through a process of increasing difficulty, a process that was certainly part of Joyce’s signature (as Malka shows us in the “About” section). The title of the work is a derivation of a sentence right at the beginning of “Calypso,” a chapter which begins with one of many viscerally haptic descriptions, as follows:

Mr Leopold Bloom ate with relish the inner organs of beasts and fowls. He liked thick giblet soup, nutty gizzards, a stuffed roast heart, liverslices fried with crustcrumbs, fried hencods' roes. Most of all he liked grilled mutton kidneys which gave to his palate a fine tang of faintly scented urine. (Joyce: 2008 [1922], 53)

Malka’s substitution of “giblet soup” for “word soup” is patent in the concrete/visual nature of its physically interactive interface: tangled strings of text against a white background (emulating blank pages of a print book) which have to be stretched with the help of two fingers in order to

⁹⁹ <<http://chronotext.com/WordSoup/>>, last accessed January 13, 2017.

be read. In each chapter, the author provides a series of lines with words in black and grey. Each string of text will contain at least one word that is already present in the default phrases. Dragging strings of text up the screen in order to match equal words, will absorb the strings and turn the matching word from grey to black. As I have already mentioned, each chapter brings with it a new level of difficulty. The first chapter, “Telemachus,” works like a trial version, since the reader only has to coordinate movements of the fingers in order to stretch and drag strings of words.

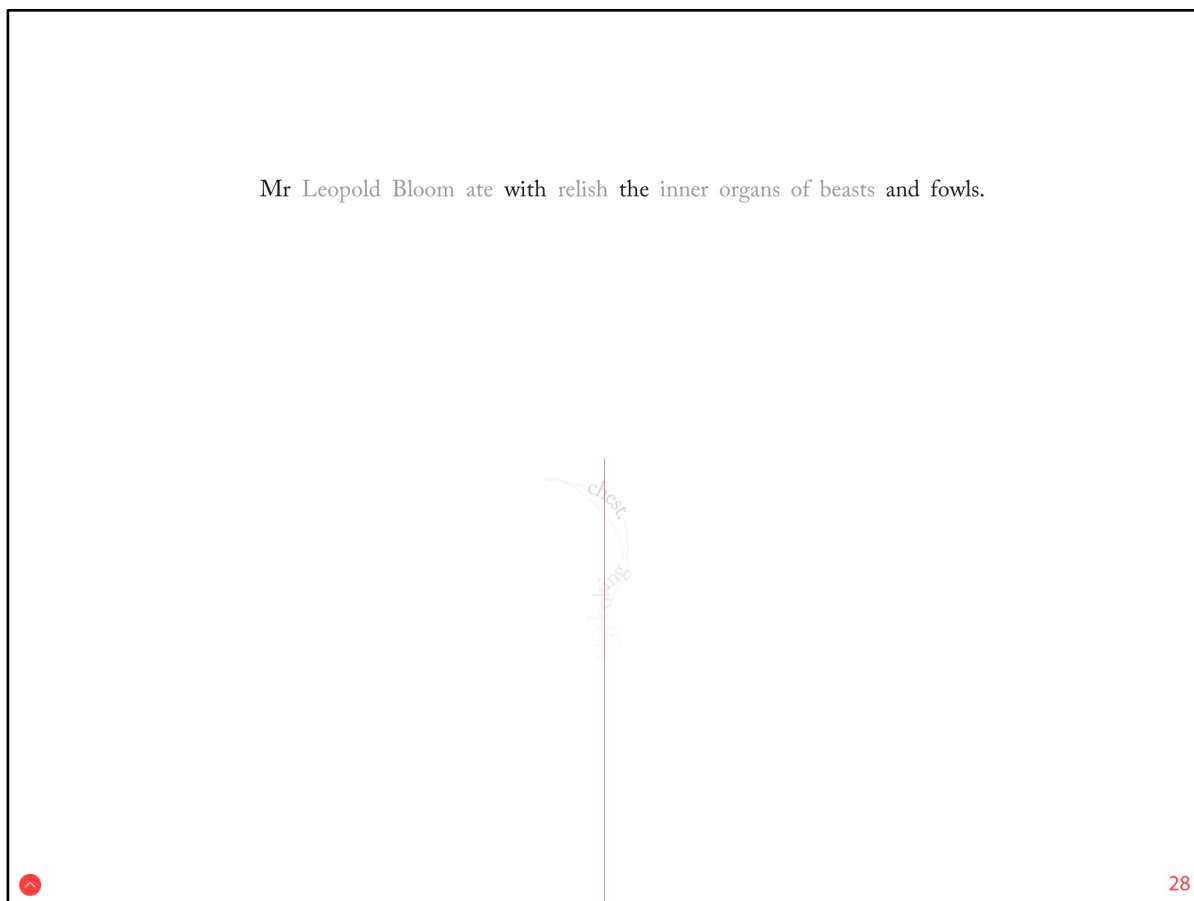


Fig. 3.23: *He Liked Thick Word Soup* (2014). App for iPad. Screenshot.

In chapter two, “Nestor,” textual strings are invisible, and only by touching them is the reader able to find the matching word. Chapter three, “Proteus,” adds a new element: a vertical red line from the center to the bottom of the screen, which works as a *lens* which enables the reading of words otherwise invisible. Finally, chapter four, “Calypso,” gathers all of the previous features. Contrary to what might be expected, at least taking into account some experimental psychology theories concerning the interrelationship between vision and touch in perception, the fact that touch is used here does not affect the reading process. Instead, there is a reinforcement of the attention given to the words in the strings, since the reader has to go through every single word in order to identify a possible match. Thus, the greater the need for attention with each passing

chapter, the more accurate the reader's movements need to be. An observation that seems to contradict some recent discoveries on experimental psychology concerning tactile and visual attention.¹⁰⁰

For its subversion of reading processes, particularly in bringing to light the relationship between touch, vision and attention, *He Liked Thick Word Soup* is a fine example of a digital literary artwork that materializes the act of reading. According to Abbie Garrington, in order to understand his own struggle with ophthalmic problems, Joyce became familiarized with studies of blindness from the seventeenth and eighteenth centuries, which led him to admit that in blindness there is a “compensatory access to other modes of ‘seeing’” (2013, 98). Taking into account Joyce's episodes of poor vision and partial blindness, Malka's artwork can also be understood as an emulation of an experience of blindness (being in a way, a tactile reading and writing system, just like Braille), since only with the aid of instruments capable of reinforcing the materiality of text, like fingers and “lenses,” is the reader really able to *see*.

3.6 Scene 6: Brush (The Hand-Eye-Device Relationship)

A visual sense is born in the fingertips.

Filippo Tommaso Marinetti, *Tactilism*

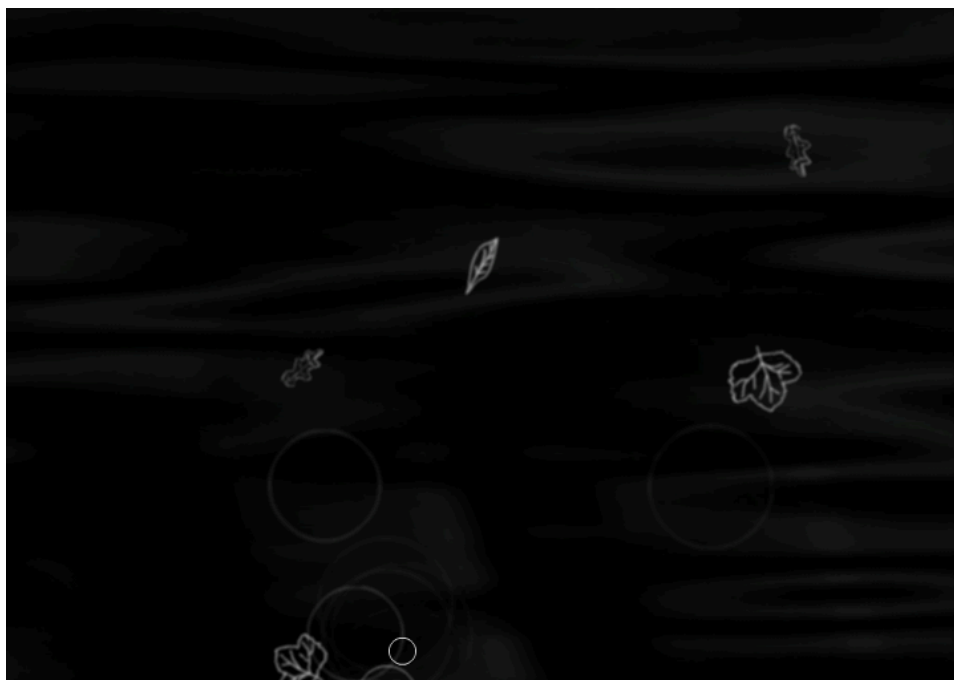


Fig. 3.24: *Touch* (“Brush”). Screenshot.

¹⁰⁰ See Gallace and Spence: 2014, 147-148.

There is one last fingerprint, one that does not belong to any of the fingers of the disembodied hand that has been following us since the beginning of this chapter. A sixth action, “Brush,” “dissimulated in the interface,” like a sixth sense, perhaps, although there seems to be no apparent connection between the number of senses and the number of fingers in this hand. Clicking this fingerprint will lead to the following instruction: “Touch with your eyes.” As soon as the reader gives permission to enable the use of a required webcam, immediately, s/he is confronted with his/her image in the form of a shadow over a greyscale with some leaves floating. The detection of our movements creates a pattern of circles following it and expanding across the screen.

In *Finding Augusta: habits of mobility and governance in the digital era*, Heidi Rae Cooley posits that, concerning itself more with tracking than with surveillance, mobile media cannot be separated from a three-fold perspective of human individuals as, “biological beings, expressive (e.g., cognitive) subjects, and members of populations,” a position that, according to Cooley, can offer “possibilities intervening in the techniques of governance that define and manage persons within populations” (2014: xvii-xviii). In her thesis, against the dominant view of mobile media as a surveillance apparatus, one of Cooley’s concerns is the relation between hands, eyes and devices. Cooley is able to apply her theory in such a way so as to show that that relationship goes well beyond its connections with industrial design’s instrumentalization, and the already known “managerial gesture” behind it. (3) Cooley explains such instrumentalization in the following way:

I find that the “nature” designers and engineers imagine collapses a plurality of individual hands into the abstract ideal of a universal “human hand”, a category that cares very little for skills-based, talent-oriented, or economically informed distinctions that seem to typify early twentieth-century discourses promoting affordable (“professional”-like) technologies for “amateurs”, that is, people who have disposable income and free time. (28)

Inevitably, just as Lori Emerson postulated in the context of her *Writing Reading Interfaces* (2014), Cooley also sees Apple’s mobile multi-touch devices (in this case, the iPhone), “as a representative example of contemporary industrial design’s commitments to evoking an ‘intuitive’ feel and interface” (28). Drawing on Steve Jobs’ keynote address at MacWorld in January 2007, in which Apple’s CEO made a rhetorical appeal to the significance of the hand in contact with these “new” devices (“We’ve designed something wonderful for your hand... It fits beautifully in the palm of your hand.”), Cooley begins by questioning “whose hand is imagined by design processes?” Meaning that “Apple’s industrial design team follows an institutionalized practice of forgetting that ‘your hand’ may be unlike any other,” an issue that is just as significant as their deliberate avoidance in drawing attention to the role of these devices as computer interfaces (29), and hence effacing device and hand as interfaces altogether.

For Cooley, however, there is more to hands than meets the eye, since the conceptualization of hands by designers goes well beyond the “explicit interests of commercial retail” (33). To support her argument, Cooley recalls the example of the hinged door given by Bruno Latour in the context of his “actor-network theory.” Just as one notices the door’s powerful agency from the moment it ceases to work, or starts to malfunction (34-35), and given that mobile media are now a part of individual beings who in turn are immersed in participant communities aware of this condition, mobile media’s constraints are used to develop its affordances and, consequently, change the status of this symbiotic body altogether. To put it in her own words:

Governance always exists in tension with how people inhabit their environment, including their technologies. And so we can admit that, precisely because they work biopolitically, designers really do understand something about human bodies. Because design does not impose its model of the hand “from above” but rather develops it from experimental contact with particular hands, this holding a well-designed object, such as an iPhone, in one’s hand, may have unpredictable consequences. (35)

Unlike previous media devices, mobile media are about “fusion,” in the sense that their degree of interaction should no longer to be thought of in terms of attachment, but rather, in terms of “integration” (36). As Cooley reminds us, such integration can be understood as a “becoming one,” a term she borrows from Frank R. Wilson, to describe “an experience of bonding between a person (specifically, a person’s hand) and a tool or device” (36). Moreover, Cooley also recognizes that to think in terms of “personal attachment” raises a paradox, in the sense that it is not a counterpoint to “commercial motives,” since, “in truth design efforts establish such attachment as a condition of possibility for continued capitalist relations” (38).

To illustrate her point of “how bodies live this condition of in-relation to mobile devices,” Cooley makes use of three different perspectives, namely: Bergson’s idea of “perception as a cognitive process that unfolds across matter and memory” (38); Antonio Damasio’s tripartite structure of the proto-self, core self and autobiographical self; and, Charles Sanders Peirce’s non-phenomenological and non-Cartesian semiotic accounts of habit and habit change. In consonance with Cooley, Bergson’s non-distinction between subject and object, as well as his idea of perception as something intrinsically connected to the bound up in matter “molecular movements of the brain” (39-41), is neurophysiologically confirmed by Antonio Damasio. Since both provide a “means of explaining how industrial design works on ‘nature’ without it itself becoming ‘nature’” (43), reading them together “allows us to move beyond the normative strictures of industrial design” in order to conceptualize the kind of vitality that she attributes to the in-relation between hand and handheld device (43), as well as enabling an idea of our “relations with our mobile devices as potentially open and variable” (44). Ultimately, as a

consequence, “we become equipped to locate a complex transaction between hand and device that explains why industrial design works the way it does, and in terms that industrial design itself cannot supply.” Moreover, it is within this discursive space that she locates “the potential for habit change” (44). Informed by Peircean interrelation of habit and habit change, such potential comes from the handheld device in-relation, in the sense that “because of its feel, a mobile device in hand encourages such responsiveness” (46):

Latourian interpretation encourages a recognition that the collective mind evolves over time as part of technological assemblages. Thinking that knows, for example, how to approach hinged doors differently than sliding sensorized ones exhibits such transformation. In the same way, the mobile device, as a convergence of telephone, computer, Internet, camera, and audio player, among other devices, is necessarily a product of a shift or change in some previous routine or habit of thinking. Change is sure to occur again. To figure this out, we need to understand the device as human-machine assemblage, in the way Latour and other actor-network theorists see it. Being in relation with a mobile device opens onto semiotic habits that are not readily explained in terms of “what I choose to do with my phone.” Rather, the terms we ought to be using are “what my phone and I do together”. (50)

Meaning that, “read together, Peirce, Bergson, Damasio, and Latour underscore that change will be a largely nonconscious process that occurs in relation to our technological devices” (51).

In addition, this view completely differs from industrial design’s understanding of the human-device relationship, since, “less concerned with subjects – and subjectivity – than, for example, retailers, content providers, and analysts,” in its separation of “the body from the individual in order to work on the device as if it were an autonomous thing,” industrial design “continuously registers and evaluates multiply [sic] proliferating statistics to optimize size, shape, and heft for the target market” (50-51).

However, in such interrelation, the eyes are not to be disregarded, since both touch and vision work “in tandem: the brain engages in analogous processes simultaneously, treating the sensitive portions of both the fingers and the retina in comparable fashion” (46). Such a conjoint effort was already discussed by Cooley in an article from 2004 titled, “It’s All About the Fit: The Hand, the Mobile Screenic Device and Tactile Vision.” In it, Cooley readapts the biomechanical and industrial design’s notion of *fit*, as a specific relationship between hand and what she calls “mobile screenic devices” (MSDs), in order to describe the “active and responsive quality of this relationship, which enables a manner of seeing that is material and dynamic – tactile” (2004, 133). With the help of Walter Benjamin’s notion of tactile, Cooley sustains that “tactile vision” emerges out of this idea of *fit*, providing for a “more visceral mode of experiencing the world” (133). In spite of the ten year gap between this article and the volume *Finding Augusta* – with huge developments in mobile digital technologies in-between – when it comes to academic discussions on these handheld technologies, the differences are not that clear. Then, as now, “talk in and out

of the academy has focused in large part on the social implications of the proliferation” of devices such as the mobile phone, (133) with one specific issue attracting the most interest over the years, namely, that which concerns users’ personal liberty and privacy due to the possibility of tracking (135), there being but little interest on the social consequences and specific materialities of the relationship between hand and handheld device.

Given the huge oscillating differences in hardware (size, shape) and software (capability, multifunctionality), ergonomically speaking, the notion of *fit* has to be understood within a range of possible human-computer interactions. Nonetheless, taking into account Cooley’s biopolitical arguments, her notion of *fit* seems to go beyond ergonomics. Distancing her *fit* from McLuhan’s considerations of fit in televisual space, Cooley maintains that the difference lies in the fact that these devices are handheld and mobile, hence gaining “access to places beyond the reach of other screens” (137). This way, in the relationship between the hand and MSDs, *fit* is to be understood as a happening occurring “at the instant of contour when the hand forms to the MSD and the MSD gives to the hand,” therefore revealing a “potential for dynamic and reciprocal engagement” (137).

Fit, then, cannot be understood as a self-contained, although ongoing, experience, meaning that fit is never an end in itself. Instead, it dilates into something larger or more encompassing than itself; it opens onto what can be understood in terms of interface, the threshold at which users and their surroundings meet and interact. Thresholds, as liminal spaces, are permeable; they are without definitive borders, even though they function as the boundaries between spaces. Because fit instantiates a very permeating and material relationship between MSD users and their surroundings, it is a mechanism of interface. (...) And fit must be maintained in order for interface to continue; consequently, it becomes one with the happening of interface. (145)

Despite a somewhat natural unconscious primacy that is given to vision, and probably due to differences between mobile phones back in 2004 and current state-of-the-art devices, Cooley’s understanding of “tactile vision,” in that “seeing becomes tactile and, therefore, is no longer limited to the eyes” (137), is not to be confused with the notion of “haptic visuality” (see Chapters 1 and 2). For Cooley, since touch is an integral and active sense modality in seeing, seeing “itself must happen differently” (135). Therefore, given that her understanding of “screenic seeing” is based on mobile technologies from the beginning of the twenty-first century, it is not especially strange when she affirms that the object “converges or fuses with the screen, its physicality becoming the physicality of the screen,” or that, “in this way, vision involves opacity, not transparency” (143), a particular phenomenology, which once again, might have to do with the dominion of flat and non-tridimensional screens at that time. Notwithstanding, in her discourse, there is already an impetus for equalizing vision and touch, especially given the fact that “screenic seeing acquires a sort of tangibility, a physicality of its own,” since, “in looking at

the screen, the MSD user engages the screen and, subsequently, enters into a relationship with the screen” (143). Although, this relationship is developed above all, through what she defines as a “material experience of vision,” a “syncopated fashion” resulting from the interaction between “hands, eyes, screen and surroundings” (145).

Equally related with eyes and hands, the verb *to pry*, both in its intransitive and transitive forms, can mean, respectively, “to look closely or inquisitively,”¹⁰¹ as it can refer to the action of raising, moving, or pulling something apart, for instance, with a lever. It also means to, “extract, detach, or open with difficulty.” All of these multiple synesthetic meanings seem like a plausible reason for the title of *Pry* (2014), a digital literary artwork by Tender Claws (Samantha Gorman and Danny Cannizzaro), specifically designed given the affordances (and constraints) of multi-touch devices running on an iOS operating system. Costing \$2.99 (USD), this artwork was released in two separate parts, a first series of chapters having been released in 2014, and another in 2016. Described by its authors as an “App novella that re-imagines the form of the book,” *Pry* tells the story of James, a young man returned from the Gulf War suffering from post-traumatic disorder in his current life (loss of vision, bad job performance, and strained relationships with his brother Luke and their best friend Jessie). Notwithstanding, as the reader soon finds out, nothing in this story is what it seems, it being, after all, told through a person who is experiencing a series of mental and physical disorders.

More than just another war story told in a technological fashion, *Pry*'s main concerns are far more complex, since *Pry*'s story intermingles with the reader's own experience, enhancing a dialectic tension between a series of dualisms, starting with the one between characters. Like the tale of Esau and Jacob in the *Book of Genesis*, in which Jacob deceives his older twin brother Esau in order to attain the latter's birthright (in passage 25:26 of *Book of Genesis* we are told that Jacob tries to pull Esau back into the womb, by grasping his brother's heel, in order to be the firstborn, a gesture of the hand that can be read as a premonitory symbol of Jacob's deceptive behavior), James constantly sees himself as having a secondary role in his relationship with Luke. Examples of this are the several insinuations that James might be tremendously in love with Jessie, his best friend but also Luke's girlfriend, or James' constant feeling of being surpassed by Luke in the management of their father's demolition company, two distinct situations, which in turn, make James' feelings towards Luke a constant blur and chaos, to the point where he does not even recognize him as a brother. Designed as a thread that guides the whole story, this tension between brothers is emulated in *Pry*'s use of function and form, in order to illustrate other possible dualisms, like the ones between conscious and unconscious, body and mind, “external

¹⁰¹ <<http://www.merriam-webster.com/dictionary/pry>>, last accessed August 2, 2017.

vs. internal world,” seemingly opposing scenarios – in which the desert gives way to water and vice-versa, or a comfortable room with a view gives way to a window with prison bars –, perceptive and cognitive processes, vision and touch, and, last but not least, text and gesture.

Due to its particular structure, I will opt for a close reading strategy that tries to seek a proper balance across all of these dualisms. As such, this will not be an analysis sustained on a chapter-by-chapter basis. Instead, I will attempt to structure my description of this artwork through its interface, which responds to two main gestures: “Spread and hold open to see through James’ eyes,” and, “pinch and hold closed to enter James’ subconscious” – as well as a third neutral perspective, made possible by the reader’s inaction, a main thread which guides the reader along the story. Moreover, this two plus one structure is also emulated by the relationship dynamics between characters, since Jessie can also be seen as a thread between James and Luke, and a crucial one at that, given that the story involves a mystery around her presence/absence. The dualistic nature of this piece seems to be analogously based on Brunian/Cusian theories on the *coincidence of contraries*, with one perspective constantly contradicting the other, for example, the relationship between brothers, namely James’ contradictory feelings towards Luke, or even word associations produced by his mind (which are able to be read when accessing his subconscious), such as “pity/money,” “leering/laughing,” “anchor/release,” “conveys/covers,” “vague/vivid.” *Pry’s* most visible dualism, however, concerns its interface, in which two perspectives are constantly in a process of contaminated communication, one constantly affecting the other: if the reader opts to see through James’ eyes (often a virtual emulation of an eye opening and closing), s/he most certainly will miss parts of the story which are kept in James’ subconscious (pinching and holding closed comes associated with images and sounds of (un)crumpling paper, perhaps simulating thoughts that appear just as fast as they vanish into the recesses of memory) – and vice-versa. This also means that such ergodicism aims towards multicursal readings of this piece, linearity not being an option here.

Keys to the whole picture of the story involving James, Luke and Jessie come in fragments enclosed within chapters, which can only be accessed through a full reading of both conscious and unconscious layers (not to mention bits of significant information which only became accessible with the second installment of chapters in 2016). Examples of this are the fact that only further ahead does the reader come to know the real reason for James’ progressive lack of vision – “Patient exhibits intermittent symptoms of optic hypertension indicative of abnormal aqueous humor. Optic neuropathy may trigger visions. Inconstant episodes suggest psychosomatic origin.” (Chapter 6) –; as well as the revelation of a brotherly link between James and Luke, a fact which begins to be unveiled in episodes like the one of Esau and Jacob (Chapter

3), in which the reader is faced with an excerpt of the biblical tale of these two brothers, twin sons of Isaac and Rebecca.¹⁰²

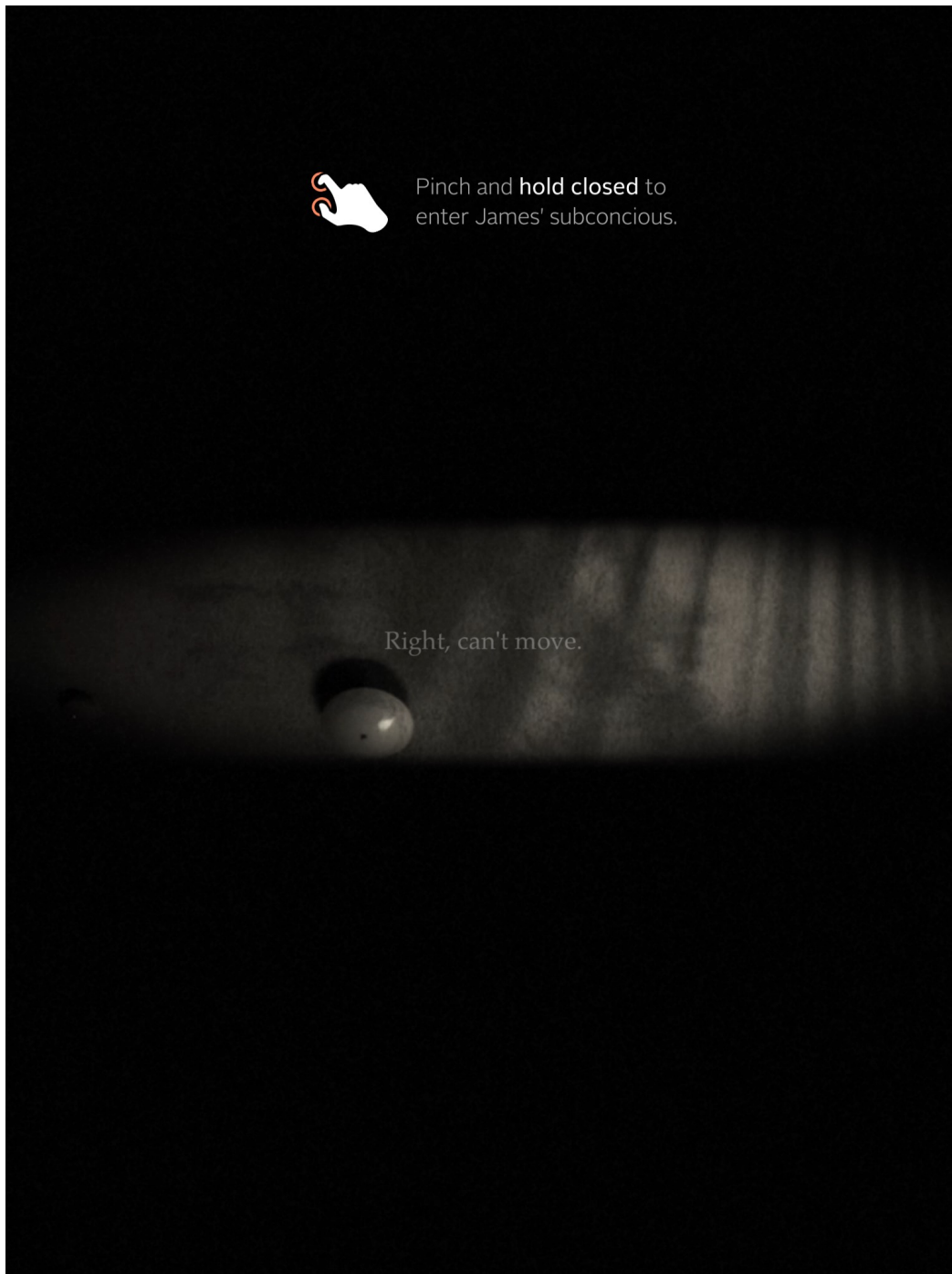


Fig. 3.25: *Pry*. Chapter 1 – “Below and Above.” App for iPad. Screenshot.

¹⁰² This relationship between brothers, reminiscent of the biblical tale of Esau and Jacob, is a recurrent theme in literature. One of the most famous pairs is the twin brothers Shem the Penman and Shaun the Post, from James Joyce’s *Finnegans Wake*. Brothers to Issy, whose characteristic of being an object of secret and repressed desire to both also seems at times to be represented by Jessie’s character, these twin sons of HCE (Here Comes Everybody) and ALP (Anna Livia Plurabelle) fight for their father’s role in order to gain Issy’s affection. Other examples of enemy brothers in literature and mythology are Set and Horus, Cain and Abel, Romulus and Remus, among many others.

Like James' memory and perception (along with his deteriorating vision, James also experiences neurotic episodes and difficulty in moving), fragments of the story have to be solved by the reader in order to complete the puzzle (or to use another common trope, in order to reach the end of the labyrinth). This defragmentation is dependent on perceptual and cognitive processes, in an intrinsic association between text and gesture ("hand-thought-language nexus," to use Frank Wilson's terminology). For instance, James' movement constraints (Chapter 1) are an example of that intrinsicality between text and gesture, as well as form and function: or as James puts it, "Right, can't move," the reader is struck with the impossibility of advancing without entering James' subconscious through a pinch and hold closed gesture.



Fig. 3.26: *Pry*. Chapter 5 – “The Red Bridge.” Screenshot.

Another example of how form is embodied in the interactive functionality of the reading interface can be found in Chapter 5, in which James is given another job opportunity by Luke, when sent to inspect an old rusty bridge. As James moves across the bridge, he starts experiencing some problems with his vision. In order not to fall into the water (an option that will dramatically change the course of reading), the reader needs to be aware of James' constraints, made evident, in this case, by closing James' eyes and entering his subconscious. In other words, only through entering James' subconscious will the character be able to properly evaluate the structural problems of this bridge and consequently, its future demolition, a necessary dialectics between reason and emotion in order to enable James reaching the end of that bridge (both literally and metaphorically speaking). This means that there has to be a proper balance between what is visualized and what is touched by the reader, in order to unravel all the possible endings to this chapter.

This structural mechanism is a constant in almost every chapter: in Chapters 1, 2, 4 and 5, the necessary balance between James' actual and virtual vision(s); in Chapter 3, the need to read the story of Jacob and Esau in Braille, which, in a digital device, and for a non-blind reader, is always a combination of vision and touch. Also, chapter 6, which is largely composed of verbal text, with the possibility of having several different meanings through a syntactic combination of sentences, not to mention access to fragmented visions when reading between the lines (made possible by a spread and hold open gesture); chapter 7, in which sound becomes, perhaps for the first time, really significant, due to the fact that it is composed of previously fragmented videos (James' previous visions), appearing now more as revelations and less as hallucinatory visions, the reader being able to hear for the first time what the characters will futurely say to each other. In addition, chapter 7 is also where James decides to open himself up a little bit more to the reader, revealing facts which were only suppositions up until that moment: "Alright,/let's speak of her./We were playing poker across the street/when the scud hit./ I saw her before the game./Said she didn't feel like playing./She seemed pissed. /(...)/ We started the game without her./Twenty minutes in, hit the barracks and/we ran outside/and just watched/until we heard the names./Hers was one of the last.", a series of confidences which end with the sound of James' voice saying, "she wasn't at the game because of me." (In a previous animation the reader is informed of Jessie confronting James because of a decision he made against her will). And eventually, a moment of self-redemption: "Jessie was her own person James,/we all make our own choices." This affirmation comes as a possible way of saying to readers that we all are responsible for our choices, especially if we are to take into account the content of the Epilogue, in which the two main gestures of spreading open and pinching closed will unleash two TV

speeches that completely changed the world: one being the announcement of war against Iraq, in 1990, by George Bush; the other being the announcement of the invasion of Iraq, in 2003, by George W. Bush. But again, even here, one is always contaminating the other, so that, even if the reader opts for one of these two speeches, the other one will always be present as a background sound. A touch of the hand that leaves the reader with a final question: Free will or Determinism?

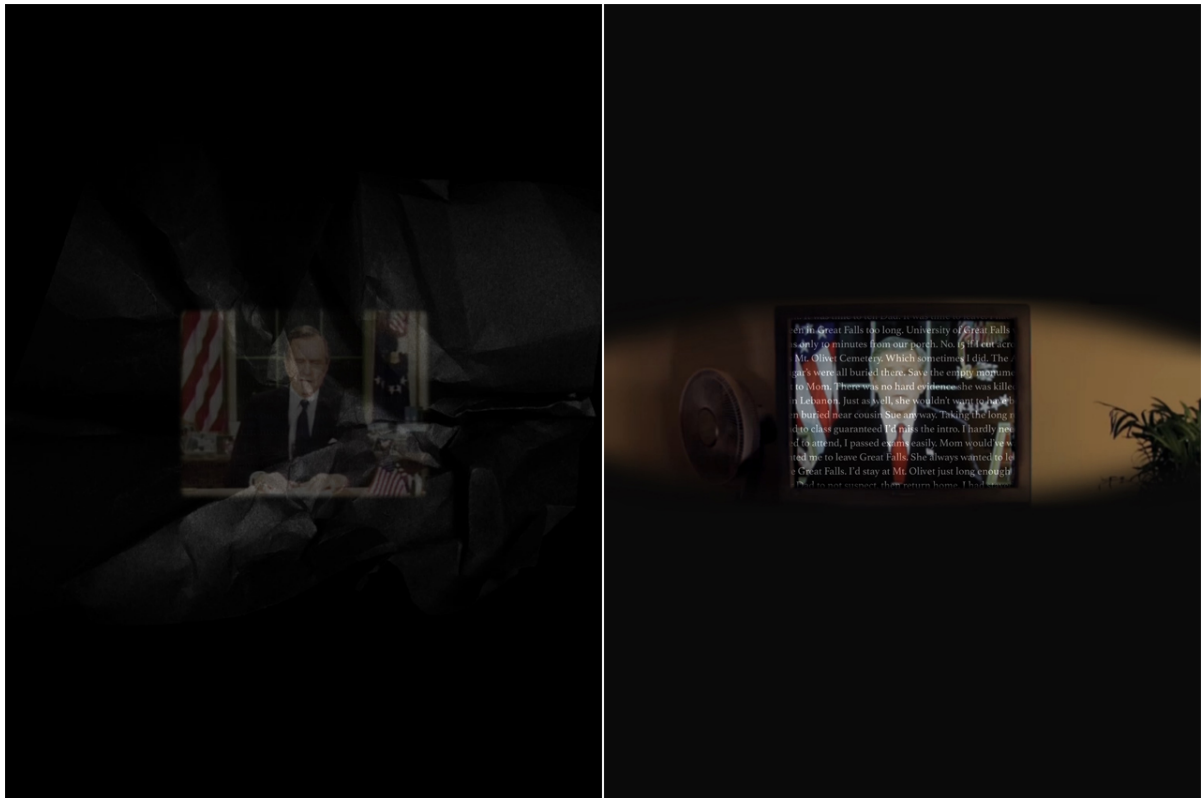


Fig. 3.27: *Pry*. Epilogue. Videos triggered by movements of pinching and holding close (left) and pinching and spreading open (right). Screenshots.

Since the reader's ability with hands and fingers is crucial to the advancement of the story, one might also question if the essentiality of these organs in the use of digital multi-touch devices is not a continuation of a given fetichization of the hand, in detriment of the whole body. In this case, however, the fact that this piece is composed of physically interactive cinematic pieces makes the experience transcend the hand, since in many occasions, like in a piece of virtual or augmented reality, the reader is positioned in accordance with a first-person perspective, hence being able to visceral feel similar anxieties in relation to the different environments traversed by James' body (and mind). Furthermore, this feeling becomes even more overwhelming given the fact that the device used to experience this work is related to aspects of intimacy (see Chapter 2).

As we have already seen before, a significant feature of digital multimodal artworks like *Pry*, is their use of affordances and constraints of media and devices, in this specific case, by putting touch and gesture at the service of literature. Notwithstanding, given the materiality of

gesture and *Pry*'s very thin line between literature (experimental prose and poetry), cinema (physically interactive and non-interactive videos) and games (where tasks are to be accomplished), one might question its instructions for "reading" right at the beginning of the interaction ("Table of Contents"). Recalling some of the main arguments in this thesis, namely, that in digital literary artworks, *the reader* (not the user, nor any other similar convention) may experience specific haptic reading processes (with its own specificities), Gorman and Cannizzaro sustain that, in *Pry*, reading is a "cohesion of haptic and cognitive processes," since *the reader* "literally touches the thoughts of the main protagonist" (2014, project statement). As an example of an antiocularcentrist perspective, an aspect which this thesis also tries to develop, *Pry* foregrounds an idea of "reading" as something different from its traditional definitions as a pure visual process, typical of print-based conventions, even in the case of "traditional" e-books. In this sense, *Pry* is capable of surpassing the idea of a regular e-book, taking digital literature to a whole other level of perceptive experience, particularly when it comes to pieces specifically designed for digital multi-touch devices. But there are paradoxes in this apparent praise of touch. For instance, a large part of Chapter 6 is the literal fulfillment of the intangible tangibility's paradox, given that in *Pry*, touching too much can be synonymous of a premature ending. This way, the reader has to execute a performance balanced between touch and vision in order to read between the lines (sometimes in a literal way), in which touch always "remains limitrophe":

[I]t touches what it does not touch; it does not touch; it abstains from touching on what it touches, and within the abstinence retaining it at the heart of its desire and need, in an inhibition truly constituting its appetite, it eats without eating what is its nourishment, touching, without touching, what it comes to cultivate, elevate, educate, drill [*dresser*] (*trephein*). (Derrida: 2005, 67)

In other words, it is a paradox dealing with the action of doing it by not doing it, a conjunctive as well as disjunctive movement (68) that gives shape to a series of syncopes between the realms of different sense modalities (if one is to believe that such division is to be kept).

4. “Grasp all, Lose All”: Loss of Grasp and Transmission of Affect through Apparently Functional Mechanisms

4.1 Scene 1: “Grasp all, Lose All”: A Rhetoric of Manipulation

Grasp – A practice of the hand associated with knowledge in gathering, tool use and the communication of emotion. Also the successful psychological effort to understand.

Abbie Garrington, *Haptic Modernism*

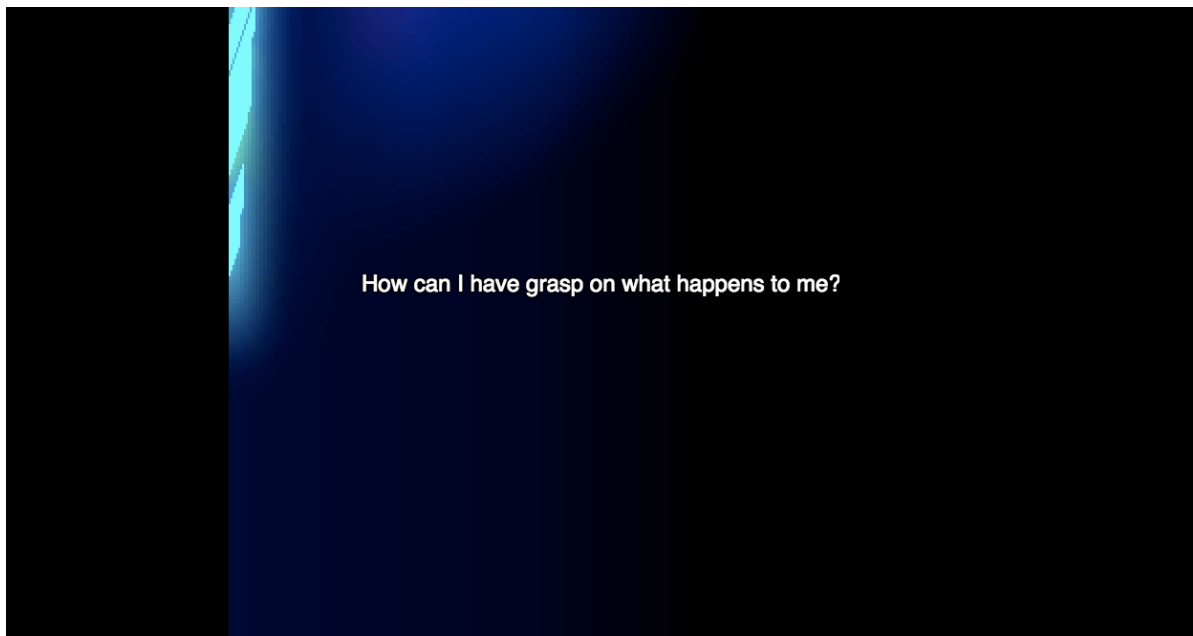


Fig. 4.1: *Loss of Grasp*. Scene 1. Screenshot.

The first solicited manipulation is driven by a voice-over asking to turn the computer’s sound on and press the hash key. This is the first premonition that nothing will function as expected, since pressing any other key will have the same effect. While executing this routine, a “Welcome” note and an exclamatory, although ironic, “Congratulations” are heard, this simple action triggering the first of many paradoxical lexias: “My entire life, I believed I had infinite prospects before me.” An unformed reader can soon fall into this first trap: a single unwary movement of the mouse hand pointer over these “dynamic lexias” (Ensslin: 2014, 81) not only prevents the reader from an attentive reading but also triggers another lexia, excluding the possibility of turning back. Such manipulations give shape to a continuous feeling of elusive control by the reader over the words that keep appearing at the command of a reckless touch of the hand, a feeling that continues for three more auto-reflexive sentences on the illusion of control: “The whole universe belongs to me/I thought/I have the choice/I control my destiny.”

Controlling one's own destiny can also imply controlling the story's progression. As such, one last rollover by means of an assertive hand pointer icon is required in order to advance. Now the story seems to start making some sense: "I am the king of the world/ /I will become what I want / I followed my own path." Yet, as the reader is led to believe that s/he is now an informed one, this temporary feeling soon vanishes, considering no matter how careful the navigation may be, any action will trigger, a series of random musical notes associated with circles of different colors, followed by colored flashy stripes in place of the previous circular shapes. These colorful landscapes suggest that there is more to this scene than meets the eye, given that they present an aesthetic of glitch and noise, represented by means of imperfect lines reminiscent of the effects of pixelation. As such constituting the complete opposite of a standard "functional" interface. Meanwhile, as if sensing the reader's current anxieties, the piece presents us with another series of paradoxical sentences: "I browsed beautiful landscapes/No wonder because *I had chosen them*/But for a while *I have had doubts*" (my emphasis). Consequently, there is a blending of the story's subject with the reader's perspective, ultimately making the latter wonder who this "I" may be: subject, reader, user, author, or all of these? "How can I have a grasp on what happens to me," if I am not even able to decide who the subject here involved may be? Furthermore, as "Everything escapes me/Slips through my fingers" appears, notice that the cursor disappears (Bouchardon: 2014, 170). Suddenly, a strong monochromatic yellow blur fills up the entire screen. End of music. Followed by another group of lexias: "Objects, people/I feel I've lost control." As soon as readers become aware of their inability to control the situation, a more somber tune is heard, associated with a series of colored circles that keep appearing and disappearing from the bottom to the top of the screen, its size varying according to the duration of the respective musical notes. The reader is once again faced with the impossibility of control, apart from rolling over and waiting to see "what comes next."

Continuing with the logic of rolling over lexias in order to trigger new ones, a clock with the exact time of the user's current geolocation succeeds. Time to wake up from the preceding lull, with the help of a voice-over saying that it is time for a meeting. This voice confronts the subject with three choices regarding one's predilection for the time of that meeting: "in ten years, press 1," "three hours, press 2," "now, press 3." Nonetheless after these three possibilities have been presented, it can be read, for the second time, the command of elusive freedom, namely, "Press any key," yet another variation of this paradox of grasp and control. This means that, while there is an illusion of a possible multiple choice involving three possible keys, the only real option, corresponding to each and any key of the keyboard, is to have the meeting "now." In addition, tick tock goes the clock, complicating the situation with an even stranger and gradually

increasing feeling of anxiety.

Loss of Grasp, a digital literary fiction created by digital artist and researcher Serge Bouchardon in co-authorship with Vincent Volckaert (2010), is probably one of Bouchardon's most closely read artworks (see Heckman: 2011; Ensslin: 2014; Bouchardon and López-Varela: 2011). Nonetheless, I believe that there is still a gap to be filled concerning haptic reading processes, some of which this piece is able to convey, particularly in what concerns the use of apparently functional digital interfaces in electronic literature. Briefly described as "an online digital creation about the notions of grasp and control" (Bouchardon: 2010, project statement), *Loss of Grasp* is an interactive narrative divided into six scenes that gradually interconnect with each other, featuring a character who paradoxically loses grasp as he tries to get a grip on his life. Serving as an allegory for tropes of functionality and transparency (namely in digital multimodal environments), this piece also has the ability to lead both reading subject and character towards a gradual state of awareness, which only becomes possible through a progressive and unavoidable loss of grasp.

For years, Bouchardon, has been working on the notion of a "rhetoric of manipulation" in interactive digital creations (Bouchardon: 2008, 2), a specific grammar for distinct and meaningful units of gesture in contact with digital interfaces (Bouchardon: 2014, 160). According to Bouchardon, in the context of interactive writing, "figures of manipulation" (166), "a category on its own, along with figures of diction, construction, meaning and thought," are often used by artists in order to "introduce a loss of grasp" (2008, 1). For Maria Angel and Anna Gibbs, Bouchardon's understanding of *loss of grasp* seems to focus more on the ways digital creations question embodiment in reading with gestures, than in "outdated debates about interactivity and its limits in artworks, or in discourses of the power, control or freedom of the reader." As such, for Angel and Gibbs, "the experience of manipulation is characterized not only by grasp, but also, and crucially, by its loss" (2013, 131). Yet, the fact that it is characterized by a loss makes it impossible not to think of a macrostructure of gestures that go beyond its microstructure, namely, by taking into account several possible meanings of the word *manipulation*. In this sense, if manipulation can mean a "hand filled with something," a "skillful handling of objects," another way of saying that it "is the gesture of the reader which *reveals* the materiality of the text" (Bouchardon: 2008, 5), its loss can also mean *manipulating* a person in the sense of deceiving them. Therefore, regardless of the author's aesthetic and poetic intentions, and in face of such ambiguous meanings, from the moment that metamediality becomes part of the artwork's poetics, it becomes impossible to avoid bringing up the relevance of its social, cultural and

political dimensions. As we will see further on, artistic subversion is inevitably played out across these various areas.

A significant distinction to take into account in Bouchardon's observations is the one made between the ergonomic idea of "control" engineered by digital industries and the "traditional anthropological meaning" of *grasp*. While the user may have control (for instance, over a control panel), this does not mean that he has a grasp on what he is supposed to control (2008: 11). The opposite also being valid, since a user can have "less control and paradoxically more grasp" (8), in being aware of a situation by questioning a mechanism's inoperability or dysfunctionality, for instance. Thus, while figures of manipulation may or may not give control to the user, in "interactive writing" they are often used in order to invite "the user to have a reflexive attitude towards his/her interactive practice," by means of an intended loss of grasp (11). Given that this is a crucial aspect in his artwork, *Loss of Grasp*, in it Bouchardon seems to question the ways in which interaction is engineered as the production of an instrumentalized relation with devices and their interfaces. In this manner, by means of an interactive reflexiveness, *Loss of Grasp* is able to show how the reader constitutes himself as a subject, specifically through a manipulation rhetoric, triggering, through this same process, an embodied subjectivity built upon the actions the device requires from him/her, thus questioning the autonomy of the reader by showing how the interface has already included him/her in its particular mode of control.

As it would be expected, Bouchardon does not disregard the significance of other (gestural) manipulations in literary artifacts found outside the digital realm. Nonetheless, while he is aware of the implications of notions such as "ergodic literature" and "cybertext," for instance, in what concerns the need for a non-trivial effort by readers in order "to traverse the text" (Aarseth: 1997, 1), Bouchardon argues that "what is somewhat new in interactive digital works is the fact that it is the text itself, and not only the physical medium, which acquires a dimension of manipulation" (Bouchardon: 2014, 159).

Such process is gradual, given that Bouchardon's terminology for his "repertoire of gestures" includes five levels that should be analyzed as interlinking units. The lowest level corresponds to the "gesteme," resulting from the "coupling of a physical act and an input interface" (163), followed by the "acteme," described as a "sequence of gestemes" deriving from the combination "between the gesteme and the process on which the manipulation bears." Bouchardon also confronts us with three types of actemes: (a) the "actuator," representing a change of state; (b) the "parameter," that sets a parametric process; (c) and the "perturbator," a

process of co-management between users and machines in which the machine can take control of an act “incompatible with the user’s instructions.”

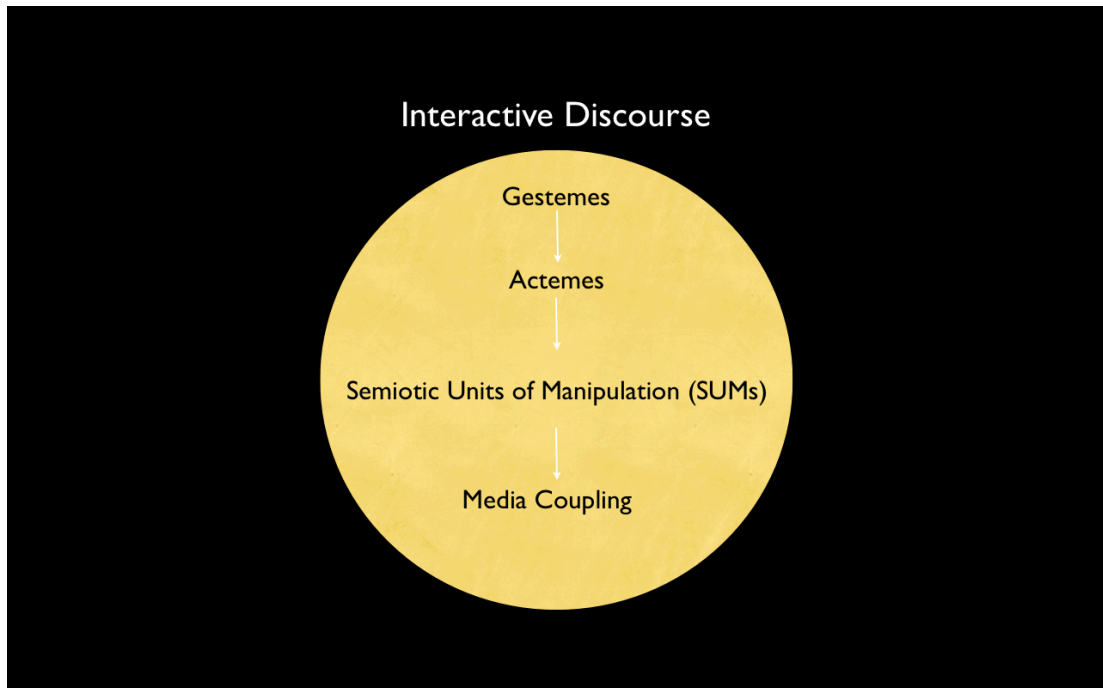


Fig. 4.2: Diagram showing the several units of articulation within Interactive Discourse.

The next level in this articulation of gestural units is the combination of actemes, resulting in the formation of “semiotic units of manipulation (SUMs).” These are units that bring to mind “features of iconicity,”¹⁰³ corresponding to “actions in the physical world” (164), for instance, *swipe*, *roll over*, *scratch*, or *tap*, not to mention the traditional metaphorical triad, *cut*, *copy* and *paste*. From the connection between a SUM and its media context emerges a “media coupling,” in which a certain medium can give full realization to the SUM’s iconic features. Moreover, a media coupling can be “conventional” or “nonconventional,” depending on how wide “the intersection between the significant features of the gesture and the media to which it is applied” is (165). In the case of electronic literature, while some works seem to present a narrower intersection, for example, through the use of inactive buttons/keys (often dysfunctional commands and hyperlinks), some artworks present a dialectic relation between conventionality and nonconventionality, for instance, through a parodic transformation of conventional signifiers of interaction, or even, through the application of this dialectics by using the conventions of one medium with another, in order to produce effects of familiarity or estrangement. Finally, in order to obtain a complete articulation of a sequence of gestures of manipulation intended to be

¹⁰³ To my understanding, Bouchardon’s use of the terms “iconic features” and “iconicity” is a general form of referring to the metaphoric processes applied to the representations and interactions of the graphical user interface.

meaningful, there is the need for a final unit with the capacity of closing the circle, defined by Bouchardon as “interactive discourse” (166).

Through a close reading of *Loss of Grasp*, it is possible to denote that Bouchardon’s rhetoric of gestures is present in each scene performed by the reader (along with the computer). Moreover, as already shown by Bouchardon, these figures of manipulation may be applied to other digital literary creations (2014, 160-61), namely those placing part of their focus on the tactile/haptic dimension.

4.2 Scene 2: Approaching and Departing (Variations on a Larger Paradox)

Machination reverses the direction, and hence the impact, of forces. Aristotle gives as an example the movement of a circle and, in principle, the movement of any *mèchanè*. The extremity A of the diameter of a moving circle moves in a direction opposite to that of the other extremity B: point B goes up when point A is going down. The point A' of a circle at a tangent to the first one at point B will be pulled in the same direction as B, hence in the reverse direction to A. This circle transmits the movement that animates it, but reverses its direction. The tangential point is a limit point, where the movement is twisted back. The circumference of the circle, the site of these points, is a *limes* of inversion of the movement.

Jean-François Lyotard, *TRANS/formers*

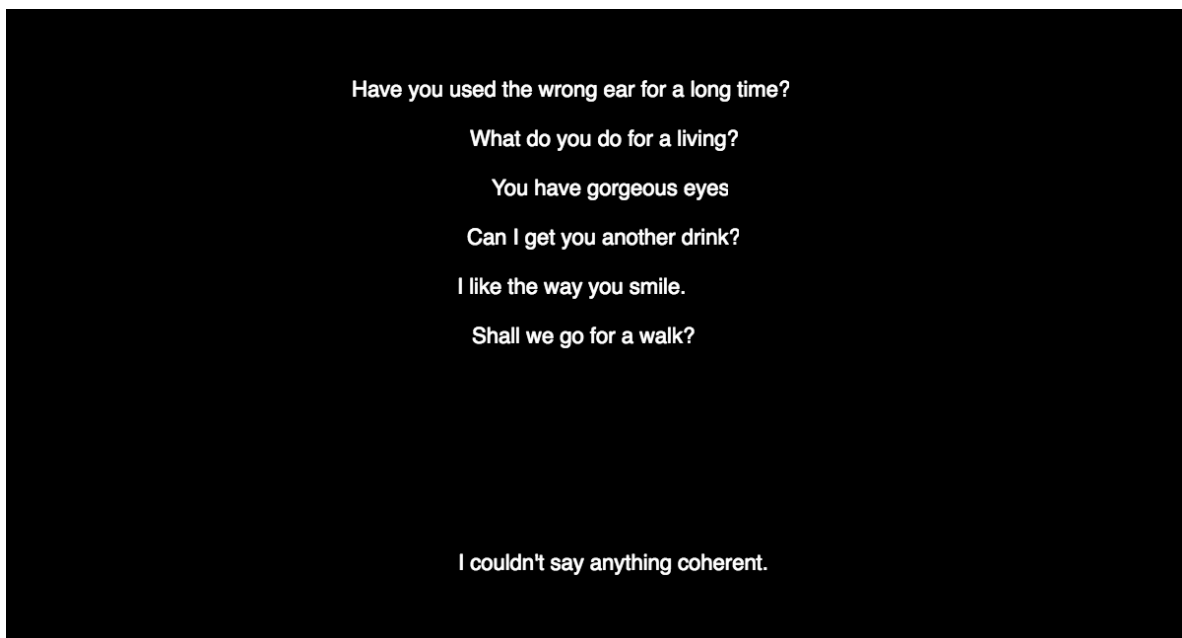


Fig. 4.3: *Loss of Grasp*. Scene 2. Screenshot.

The sound of what seems to be a public space (some people speaking in French), followed by the notice that, after all, there was no meeting. All that unnecessary anxiety for

nothing. There is, however, the imminent possibility of another type of meeting, since a new group of lexias announces an unprecedented situation for the character, namely, an encounter with a “beautiful woman.” As the character continues to describe this encounter, it can be read: “I couldn’t say anything coherent.” Now the object of confrontation concerns another variation of the loss of grasp: a series of lexias that soon lose their initial structure, giving the impression that the simple presence of this mysterious woman affects the character in such a way that the words that come out of his mouth are completely different from what he has in mind. For instance, rolling over “Have you lived here for a long time?”, triggers the gibberish homophone lexia, “Have you used the wrong ear for a long time?” However, despite being “distracted,” the character does not quit, as he senses that he has “to ask questions to reveal her.” This time, the questions are not as awkward as initially, appearing alongside a big question mark and the core part of some general questions, such as: “What do you think about...,” “Do you like...,” and so on. This new variation of manipulation asks for two types of similar gestures with the same final purpose: to unveil the image on the right-hand side of the screen by means of numerous questions (both literally and metaphorically). This way, either clicking on the left question mark or rolling over the black rectangle on the right, will reveal a woman’s face. One soon learns, by means of an associated lexia that appears during the “interrogation process,” that this woman was to become his wife, with whom he “shared everything.” Nonetheless, one also comes to read that he “never got to know her truly.” The same happens with the reading subject, since the most s/he can fathom is a blurred face that is continually changing and creating new iterations of questions so long as the mousepad cursor keeps moving over the picture. Which raises the question: is the reading subject following the story or propelling it forward?



Fig. 4.4: *Loss of Grasp*. Scene 2. Screenshot.

The dialectic tension between approach and departure, contained within the idea of losing grasp in order to become aware of something, is another variation of the intangible tangibility paradox. As we shall observe in the section that follows, this tension is already implicit in the binomial of tradition/innovation, but can also be applied to language and communication, namely in what concerns the confluence of analog and digital gestures as *wreading* processes. On the one hand, approach/departure is reminiscent of the difference established by Deleuze and Guattari between “close-vision” and “long-distance vision” – a difference that can also be found in their distinction between haptic and optic (Deleuze and Guattari: 1987, 494-496). On the other hand, it may also be indicative of the haptic movement that we recognize today in the digital processes of zooming-in and zooming-out experienced on the surface of digital interfaces. It is this visual translation of the movement in space – characteristic of virtual environments, for example – that would also contribute to the origin of the *optic-haptic* synesthetic metaphor for the perceptual experience of digital representations, that is, the synesthetic induction of the haptic-kinetic sensation of presence in virtual space, for instance, in virtual contact and digital manipulation with/of text. It is on the basis of these intersensory pairings, that cyberliterary artworks can be understood as resulting from multiple ancestral tensions reenacted in digitality.

PONTOS: a transpoetic and intermedial textual recombination (literally meaning “DOTS,”¹⁰⁴ in English) is a digital literary artwork in the Portuguese language exploring all of the aforementioned tensions. It combines analog and digital gestures that, through their plasticity in the way they are reproduced by means of different digital technological devices (a result of programming language through web technology, namely HTML5 and JavaScript), enable a self-reflection on the linguistic processes involved in the construction of poetic speech. Created for the purpose of a digital arts festival based in Lisbon – Festival PLUNC 2015¹⁰⁵ – whose call for artworks was aimed at presenting digital art projects focused on the two banks of the river Tagus, or more specifically, the geographical points of Cais Do Sodré and Cais do Ginjal,¹⁰⁶ *PONTOS* makes use of the paradox of approach and departure that characterizes these two locations on opposite riverbanks, to spark questions at the level of intermediation and cybertextuality in analog and digital media.

Along the lines of generative textual innovations made by Pedro Barbosa using the computer from the 1970s onwards, *PONTOS* begins by presenting in its introduction, a mirrored

¹⁰⁴ <pontos.wreading-digits.com>, last accessed August 3, 2017.

¹⁰⁵ <<http://www.plunc.pt/en/>>, last accessed January 6, 2018.

¹⁰⁶ Cais do Sodré and Cais do Ginjal are two geographically strategic locations in Lisboa and Almada. The connection between these two frontally opposed sites is made by boat and it is a crossing point for thousands of people everyday.

title, without any possibility for physical interaction, and being accompanied by an audio recording that reproduces the sensation of the continuous approach and departure of water from a river. The reorganization of characters in the mirrored image, in which the word that gives name to the title never appears with its known morphological representation, but rather, as anagrams of that same word, reveals from the outset a gradual loss of sense that will be present, as we shall see, in the three phases that constitute the artwork (albeit in different ways).



Fig. 4.5: PONTOS. Introductory Scene. Screenshot.

Following the introduction, the reader is faced with a tripartite division of the screen, composed of a black middle section, and two white margins proportional to each other. Whereas in the boundaries between black and white sections a waving motion is continually reproduced, on the upper white margin randomly appears one of fourteen possible instantiations of lexias each time the webpage is refreshed. It is between these two margins that the reader can experience the processes of syntactic construction, consisting in dragging words from one margin to the other. Like objects drifting between the banks of a river, these words can be chosen by the reader to form a new arrangement in the margin that initially appears blank.

At this point, the loss of control, which is the main effect of estrangement involving author, reader and artwork, is due to the fragmentary nature of the lexias, or verses, which operate on the upper margin. It is also due to their condition as fragments that one is initially made aware of the possibility of previous and alternative texts. A brief interaction with the lexias on the upper margin will allow us to, firstly, observe that each word removed from that margin is immediately replaced by another word of the same grammatical category. Secondly, that every word successfully dragged to the bottom edge reproduces a sound recording of that same word,

yet another fragmentary element. Finally, the attempt to construct meaning on the lower margin – the product of conventions in traditional discursive and communication processes – directly *pollutes* the already contaminated meaning of the sentences presented at the top (as we shall see below, contaminated due to the process of mixing the poems from the two authors into a single one through a combinatorial process, hence intensifying the inherent difficulty in the creation of meaning).

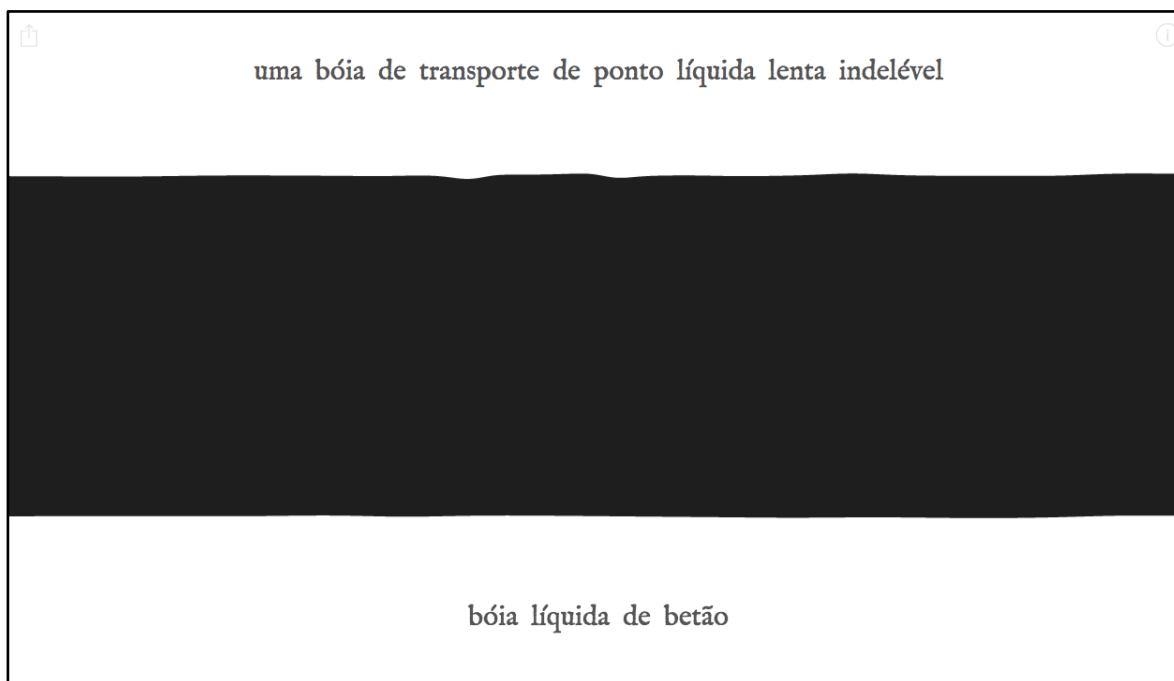


Fig. 4.6: *PONTOS*. Main Interface. Screenshot.

As for the constant breakdown of barriers between game and literature, which the digital also potentiates, if the reader focuses solely and exclusively on the physical interaction with the lexias, s/he will hardly leave the field of *ludification* of the poem. Therefore, a complementary reading of two other phases that compose the work is necessary in order for the reverse process to take place, or in this case, for a possible *poetification* of the game to occur. The game then becomes inverted in the interaction with the information icon that is available on the upper right margin of the screen. By clicking on this icon, the reader comes before several items that point to a genesis of the project. Thus, the “Sobre” (About) and “Fases” (Phases) items provide an illustrated description of the three phases that constitute *PONTOS*. This description gives account of the different variations of the paradox of approach and departure that sustains the work. For instance, in reference to the notion of open circularity that this piece also explores, represented by a dialectic between a point A and a point B (point A descends when point B rises, and vice versa), but also in the “tentativa (im)possível de aproximação entre margens por meio de visões que se entrecruzam.” (“An (im)possible attempt at the approach between margins by

means of intersecting visions”).¹⁰⁷ From this description, the reader also learns that the first step taken in the embryonic phase of the project consisted in the creation of a series of four handwritten texts with discursive poetry characteristics, by two of its authors (Carolina Martins and Diogo Marques). We are told that the basic premise for these texts consisted in a process of alterity, in which each of the writers imagined what the vision from the opposite margin would be like, by trying to get into the skin of the other writer (writer A thinks margin A from actual margin A and virtual margin B, subject B thinks margin B from actual margin B and virtual margin A). With time limited to one hour for the exploration of the two margins, and one text per author on each of the margins, the process thus implied the need to cross the river in a literal and metaphorical way, so that a dual perspective could take place.

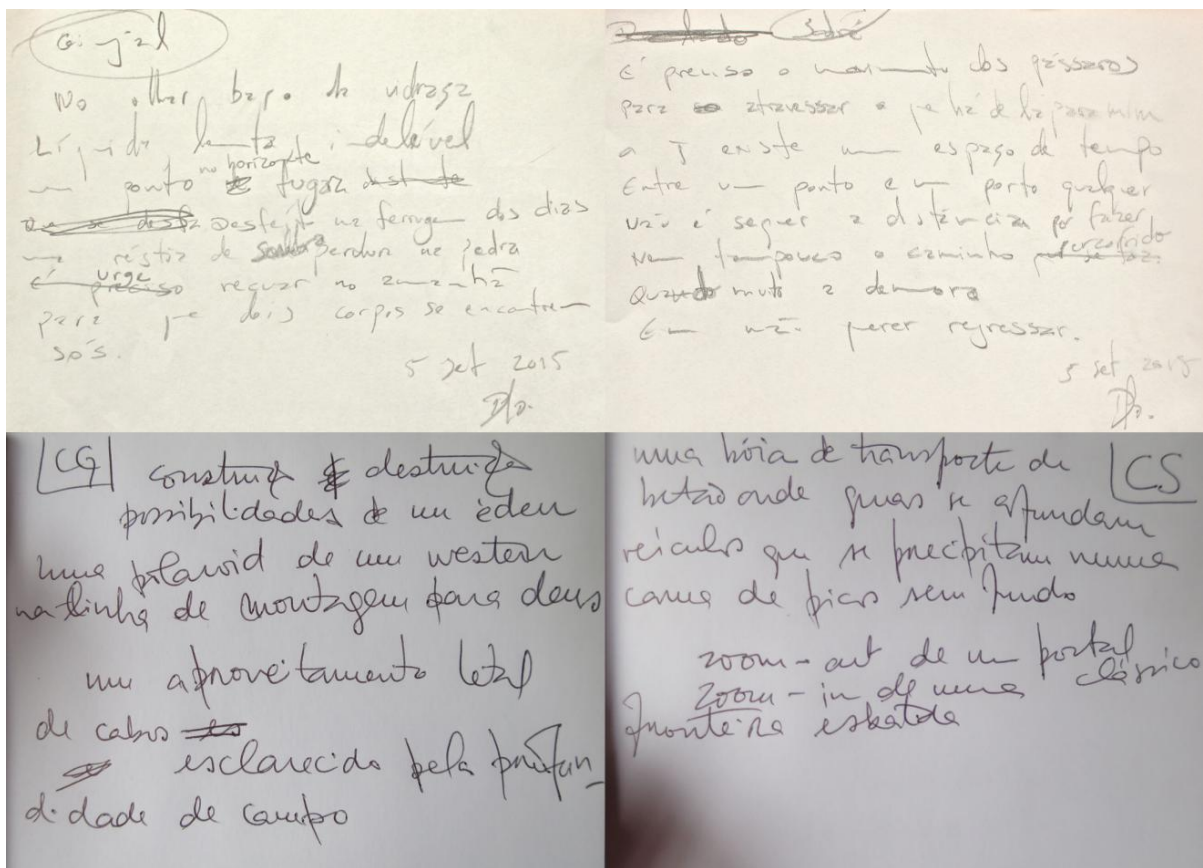


Fig. 4.7: PONTOS. Manuscripts written during the first phase of the project.

The gesture that results from the temporally and spatially limited contemplation of a material margin – whose visualization depends on a process of virtualization that is a product of both imagination and memory – places the tension between various bodies in space (from the distribution of elements in the city to the words on the paper). In this regard, the impossible task of creating a text in a state of alterity, turns out to be crucial in the way it influences the

¹⁰⁷ <Pontos/wreading-digits.com>, last accessed August 3, 2017 (see section “Sobre”).

subsequent phases, explaining why on its menu and in the descriptive text of the several stages, there are also digitized copies of the manuscripts.

Its second phase consists of a combinatorial process, using syntactic combination software recreated by the authors, by adding an intermediate contamination. In this phase, the four texts are merged, consequently increasing the loss of meaning, while paradoxically generating new syntactic constructions. Each of the 14 sentences created through the randomization process feed the third phase, which can be defined as a recombinant and interactive one, and corresponds to the main digital interface of the artwork. This means that the manipulation carried out during the third phase is shared with the multiple readers who interact with the work through the said dragging process. At the same time, it is by way of the continuous attempts to construct meaning that one operates and becomes aware of a gradual loss of control.

At the junction of the three phases mentioned above, by means of a gradual loss of grasp and control, but also through the permanent confluence between analog and digital gestures, the reader may become aware of the potential messages conveyed by the artwork. As a consequence, it is this same loss of grasp that turns out to be crucial to this emergent awareness, as expressed in one of the descriptive texts that accompanies the piece:

Numa concretização do texto poético enquanto tentativa constante de criação de pontes entre palavras, e numa partilha intermedial de processos que, apesar de distintos, se ligam entre si, *PONTOS* é, em suma, este caminho que tem de ser feito para que se crie uma imagem possível de aproximação, ainda que esse caminho signifique deixar para trás uma das margens.¹⁰⁸

Using the metaphor of the bridge to elicit the paradoxical notions of approach and departure, *PONTOS* allows us to rethink the processes of writing and reading within the intermedial ecology that surrounds us, for example, by means of reencoding the handwritten text via a permutational process of computer-generated language. Moreover, this artwork makes use of poetic language, in its different (trans)mediations, allowing for a reflection on the multiple meanings of margin and bridge.

¹⁰⁸ “Through an embodiment of the poetic text as a constant attempt to create bridges between words, as well as an intermedial sharing of processes that, although distinct, are linked to each other, *PONTOS* is, in short, this path that has to be taken in order to generate a possible image of approximation, even though it may mean leaving behind one of the margins.” <<http://wreading-digits.com/pontos>>, last accessed August 3, 2017.

4.3 Scene 3: Futurist Tactilism

O que resta então aos artistas fazer nessa sociedade repressiva e convencional até ao delírio, que propõe como únicas saídas o pietismo ou a mitologia? O mesmo que em todas as épocas eles mais ou menos sempre fizeram: subverter pela invenção.¹⁰⁹

Ana Hatherly, *A Casa das Musas*

Scene three opens with lexias of a similar nature as the preceding ones, appearing against a dark background (“Twenty years have gone by since we first met”). However, this time a voice can be heard singing, a tune impossible to clearly make out due to its distortion. Nevertheless, after several random movements around the screen, it becomes possible to hear the song’s melody clearly and at the right tempo, turning out to be the famous aria from Bizet’s opera *Carmen*, “L’amour est un Oiseau Rebelle” (also known as “Habanera”). Notwithstanding, in order to proceed with the story, distortion is inevitable. Thus, it can be read: “This morning I read a note she left me / I am at a loss / I don’t know what to make of it / Love poem or break up note?”). By means of a gradual loss of grasp, the action in this new scene consists in playing up and down, left or right, with the sentences of this “love poem/break up note.” As the tune accompanies the chosen movement, it becomes more or less distorted, according to its direction.

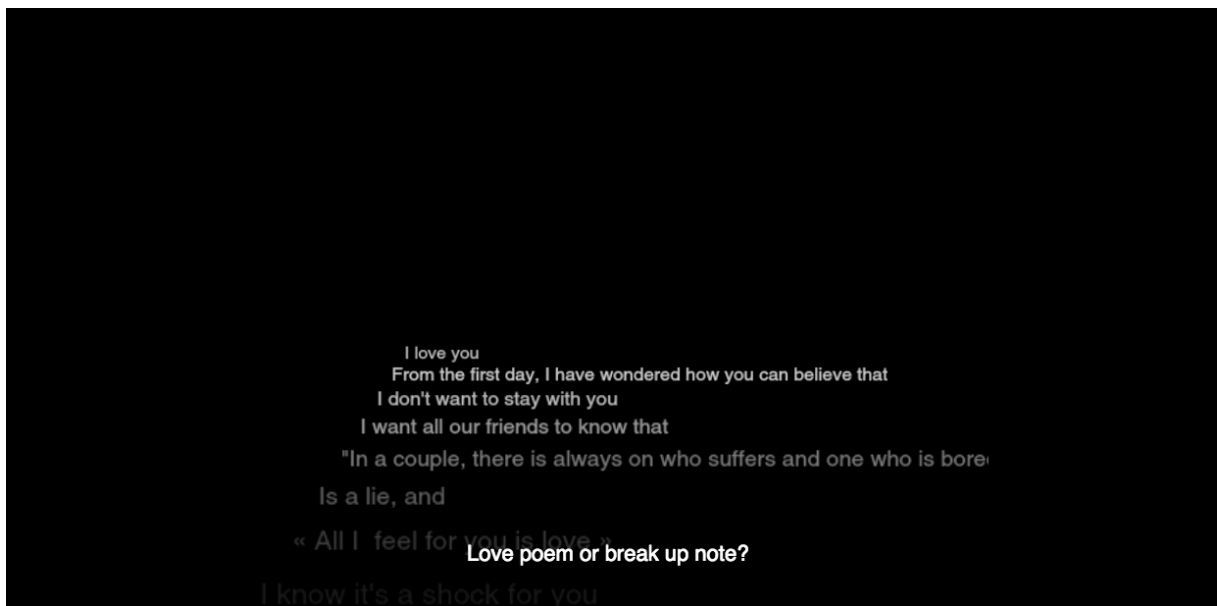


Fig. 4.8: *Loss of Grasp*. Scene 3. Screenshot.

In this sense, if the left side, commonly associated with the heart, informs the subject that his wife no longer loves him, the right side, possibly reason, may point towards the idea that the

¹⁰⁹ “What is then left for artists to do in this deliriously repressive and conventional society, proposing pietism or mythology as the only way out? The same that they have more or less always done throughout the ages: to subvert through invention.”

letter can also be read backwards, hence becoming a love poem. However, one must not forget that the screen is also a mirror, leaving us wondering what kind of game is actually being played here. Of all of the scenes in *Loss of Grasp*, this is perhaps the one in which multisensory processes are most present, since the combination of audio (the different tempos of the song), gestures (moving text in several directions), and the reading of the text itself, are what give rise to a possible message. Notwithstanding, it is the gesture of *touching* the text, enabling the reader to hear the song both with and without distortion, which seems to be the main sensory channel conveying information waiting to be revealed.

Engaging with electronic literature's remediations of those prefigurations, a 2003 essay by Teemu Ikonen begins with the claim that "[r]ecent innovations in digital environments may suggest that the possibility to manipulate the literal movement of the text could be one of the essential variables separating digital literature from printed literature" (2003: para. 1), an assertion that was to be reinforced by other electronic literature specialists. Serge Bouchardon, for instance, states that in digital creations one cannot separate the materiality of the text from the "action of the reader," since "it is the gesture of the reader which reveals the materiality of the text," making us wonder if "the nature of a digital text is not to be *manipulable* more than to be readable" (Bouchardon 2008: 5; his emphasis). Nonetheless, in positing his assumption, Ikonen also states that "[t]his bipolar distinction between digital and print media hides (...) a complex historical background," hence the need for a "clarification of the historical development from the 'analogies of movement' in printed literature to the innovations in video art, experimental film and multimedia poetry" (Ikonen: 2003, para. 2). What Ikonen affirms with regard to kineticism, directly implies sensory perception, and more specifically, haptic touch. That is to say, while the influence of avant-garde artistic proposals in electronic literature is undeniable (see for example Manovich: 2002),¹¹⁰ both in its pre-transhumanist fusion of human and machine, as well as in the enhancement of multisensory perception through the dynamics of movement, electronic literature has specificities of its own, ultimately revealed by its particular intermedial aesthetics. Moreover, by taking into account a history of tactile/haptic considerations developed, for

¹¹⁰ There are several researchers who point towards evidence of an inheritance passed down by avant-garde artistic practices to today's experimentalisms, observable both in a more comprehensive idea of media, and in digital poetic practices. Gianni Eugenio Viola, for instance, notes the possibility of recognizing today, in both ideas, some of the proposals anticipated by Italian Futurism: "Tuttavia generale è il riconoscimento di alcune straordinarie anticipazioni del Movimento; è difficile non vedere nelle composizione per intonarumori una netta anticipazione della musica concreta, le tavole parolibere sono certamente – nella loro sintesi di parola e immagine – una anticipazione degli esperimenti di poesia visiva che saranno tanto cari alle neoavanguardie. Le "serate" e le sintesi teatrali futuriste non possono, ancora, non essere viste come una anticipazione degli happening e del teatro sperimentale del secondo dopoguerra del Novecento. Infine come non vedere negli aspetti linguistici delle sintesi ed analogie marinettiane la premessa alle espressioni sinestetiche che sono diventate la base stessa della comunicazione pubblicitaria (ma anche di tanti aspetti necessariamente veloci della comunicazione sociale negli anni di più accentuato sviluppo delle comunicazioni di massa?" (Viola: 2004, 172)

example, by Filippo Tommaso Marinetti and other Italian futurists in the first manifestos, as well as in Futurism's tactilist phase, it is impossible to deny strong reminiscences of a longstanding haptic tradition in philosophy – from Aristotle to Bergson.

Similarly to the complexities surrounding some of the most recurrent words now associated with the digital (such as screen, interactivity, code, computer, interface, and so on), the potentiated loss of grasp present in digital works so as to raise awareness, is not something born out of the digital realm. Within historical avant-garde movements of the early twentieth century, namely in various inflections of Futurism and Dadaism, estrangement often came in association with apparently functional mechanisms.

Considering these movements' increased emphasis on the confluence of several arts and media, it can be noted that their performative nature often sought to engage an audience by means of deliberate provocation, a major concern in their agendas aiming at a fusion between art and life. With these innovations, which contrary to some erroneous beliefs and self-proclaimed principles, do not fully ignore tradition, there was also need for radical changes in the way sensory perception was understood in the context of art's reception. Particularly in order to embrace notions representing modernity such as "simultaneity," "dynamics," and "motion," often by means of a genuine attempt at *poliespressività* (polyexpressiveness; De Maria: 2014, xxxvi), which already assumed a symbiosis between human and machine. Luciano de Maria is one of the few researchers who points out the complexities of this aforesaid connection between human and machine in Italian Futurism. Taking into account the confluence of tradition and innovation in the manifestos and other artworks by Marinetti and several generations of Italian futurists, De Maria claims that this duality should not be understood so much as robotic triviality, but rather, seen as representing the more emblematic idea of the "mettallizzazione della carne umana corruttibile come superamento della morte e glorificazione del corpo" (De Maria: 1983, xli).¹¹¹

An interesting way of viewing how the Italian Futurists attempted to materialize the ideas of polyexpressiveness and simultaneity, is through the analysis of the covers that accompanied their literary production throughout the years, and their respective artists, spanning several generations. Whereas in 1909 a strong classic trend in the form and content of the magazine *Poesia*, founded by Marinetti, was still visible, in the following years there would be a series of gradual changes indicative of the evolution of the movement itself. In Boccioni's illustration for the cover of Balilla Pratella's *Musica Futurista* (1912), for example, one can already sense the exaltation of dynamism expressed in the first manifestos. During that same year, Marinetti would

¹¹¹ The "metallization of corruptible human flesh as the overcoming of death and glorification of the body." My translation.

bring to life the (in)famous *parole in libertà*, a multisensory account of the Battle of Adrianopolis (now the Turkish city of Edirne). Following Marinetti's strict instructions for the production of "words in freedom," Luciano Fulgore's *Ponti sull'Oceano. Versi liberi e parole in libertà* (1914), presents in its title a simulation of a bridge by Futurist architect Antonio Sant'Elia. In *BİFŞZF+18: Simultaneità e chimismi lirici* (1919), published by *La Voce*, a magazine run by Prezolini and Papini, belonging to another Futurist branch from Florence, it is of significance to notice the use of a technique of typographic collage made by the author himself, Ardengo Soffici.



Fig. 4.9: From left to right: *Poesia* (1909); *Musica Futurista* (1912); *ZANG TUMB TUMB* (1912); *Ponti sull' Oceano. Versi liberi e parole in libertà* (1914); *BİFŞZF+18: Simultaneità e chimismi lirici* (1919), *Les Mots en Liberté Futuristes* (1919), *Poesia Pentagrammata* (1923), *Parole in libertà futuriste olfattive tattili-termiche* (1932).

In 1919, Marinetti publishes an anthology of his texts, *Le Mots en Liberté Futuristes* (1919), in which different uses of mobile types can be observed, synthesizing about 15 years of research and artistic creation. In it, the reproduction of analogies of movement is done not only through "words in freedom," but also through calligraphic writing and hand-drawn types, amongst other forms. Another synesthetic example is the cover of Francesco Cangiullo's *Poesia Pentagrammata* (1923), in which the use of typographic characters in an association between poetry and musical notation is emphasized, presenting letters in place of musical notes. Another later example, from 1932, is the *Parole in libertà futuriste olfattive tattili-termiche*, a tin book (*libro-latta*) consisting of fifteen colored sheets of tin, lithographed by Tullio d'Albisola. Brought to life five years after Fortunato Depero's publishing of a paper-print edition that mechanically used screws to bind pages, Marinetti took it one step further, replacing, along with printer Tulio d'Albisola, the sheet of

paper with sheets of metal, a technique seen as an innovation in the relation between human and machine explored by Italian Futurists. Nonetheless, I would like to emphasize above all else, the attempt at sensorial union, or reconciliation of the senses, intended by its creators, announcing on its cover the possibility of olfactory, tactile and thermal sensations. Not to mention, the tactile visuality potentially generated, especially through oxidation, as well as the sound produced by turning the metal pages, in complete consonance with the onomatopoeia in the *parole in libertà*.

Another significant example of the way Futurists attempted to reproduce the analogies of movement, in many cases, through the inclusion of gestures of the hand and sometimes the whole body, is Anton Giulio Bragaglia's work with photography, having invented by 1911 "photodynamism," along with his younger brother Arturo Bragaglia.



Fig. 4.10: "The Typist" (1911), by Anton Giulio Bragaglia. Gelatin silver print 11.9 x 16.7 cm. The Metropolitan Museum of Art, Gilman Collection. Source: <<http://www.metmuseum.org/art/collection/search/286592>>, last accessed August 7, 2017.

Given the fact that it was a photographic technique, it soon was rejected by the founders of Italian Futurism, whose interests for photography as an art were not coincident with Bragaglia's vision. Boccioni, for example, believed this form of art was a "merely mechanical means of capturing objective appearances, and hence (...) a threat to the creative power of the true artist" (Poggi: 2009, 314).

As a reaction to this exclusion by Italian Futurists, Anton Giulio Bragaglia published the manifesto, *Fotodinamismo Futurista* ("Futurist Photodynamism"), in which the artist manifested the

desire to “achieve a revolution in photography (...): in order to purify, ennoble, and truly elevate photography to an art,” different from “pedestrian photographic reproduction of the real as something static or caught in a pose in a snapshot.” (Bragaglia: 2008 [1911], 364-5). Examples of works like “The Typist” (1911) attest Bragaglia’s search for the “living sensation of a particular reality’s deep expression,” a “sensation of movement” able to reveal and to grasp the unspeakable and ungraspable that is “not seen on the surface” (366). Hence, for Bragaglia, gesture was to be depicted as a “pure dynamic sensation” in order to “re-experience” it (367) through the rendering of a gesture’s “dynamic result” (375).

But, the idea of gesture in Italian Futurism would take a significant turn from the one that occurred in the first two decades of the twentieth century, namely with Tactilism. Although there were already certain haptic implications implicit in the first manifestos – such as “Futurist Painting” (1910), by Boccioni, Carrà, Russolo, Balla and Severini, or “The Painting of Sounds, Noises and Smells” (1913), by Carrà – in its tactilist phase, during which there was an association with the “Teatro della Sorpresa,” the *empresario* Marinetti elevated (haptic) touch to the category of primordial sense, in the creation and fruition of aesthetic experiences. With great part of its propagation and promotion having taken place between the years of 1921 and 1924, Tactilism was presented by means of performances in conferences specifically created for that purpose, as well as through the publishing of its corresponding manifestos in French and Italian periodicals. Respectively, “Il Tattilismo”¹¹² – read at the Théâtre de l’Oeuvre (Paris), at the Esposizione mondiale d’Arte Moderna (Geneve) and published in the journal *Comoedia*, in January 1921 – as well as “Tattilismo” – published in November 1924 in the Milanese periodical *l’Ambrosiano*.¹¹³

Despite the international impact that the presence of Marinetti continued to have in the years following the First World War, the only records of the tactilist phase that remain today are the aforementioned manifestos, as well as some correspondence between Marinetti and other futurists that were active during that period, in which it is possible to read some general observations on the genesis of Tactilism, and its subsequent reception by the public attending the *serate* (also worth referencing is the *tavolla tattile Paris-Sudan*, mentioned by Marinetti in his 1921 manifesto).¹¹⁴ In these historical documents, it is possible to read that the tactilist proposal served

¹¹² See Marinetti, F. T., “Il Tattilismo,” 1921, in Luciano De Maria, *Marinetti e il Futurismo*, cit., pp. 244-250.

¹¹³ Marinetti, F. T. “Tattilismo.” In *l’Ambrosiano*, Milano, 08 Novembre 1924, p. 3, <<http://api.unipv.it/lettura/6/31/?index=generale>>, last accessed August 6, 2017.

¹¹⁴ The attribution of authorship of both the tactile panels and the tactilist manifestos to Marinetti is, in fact, the most common in literature analyzing this specific period in the history of Futurism. Notwithstanding, there is also a growing consensus on a possible co-authorship between Marinetti and his wife, Benedetta Cappa Marinetti, an often misunderstood Futurist agent, largely ignored by academics, who had a decisive role in the way the movement evolved namely after 1921. On the influence of Benedetta Cappa during the tactilist phase, see Viola: 2004, 185. On the futurist works by Benedetta Cappa and their current reception, see Larkin: 2013, 445-465.

as an attempt to revitalize Italian Futurism, in face of the huge shock that came with the devastating and unexpected consequences of the First World War (consequences which Italian Futurism was not able to escape). In an attempt to extol the movement, Marinetti proposed a total reevaluation of sensory perception in the creative act, placing the emphasis on the sensory role of skin as a conductor of thought, viewing it as a solution capable of surpassing “symptoms of a deep and mysterious malaise (...) probably a consequence of the great, tragic effort which the war imposed on humanity” (Marinetti, as cited in Rainey *et al.*: 2009, 265). In order to meet the demands of this new scenario, and given the consequent need for a bigger effort in the retrieval of a new paradigm of sensibility, Marinetti chose to raise the odds, taking the theoretical and practical boundaries of his proposal to their limits.

Despite having taken this new course, his preference for the sense of touch as a sense modality capable of influencing other senses, leading inclusively to the discovery of new ones, cannot be regarded as a *tabula rasa*. Although this scenario was quite different from the one experienced during the initial years of Italian Futurism (besides propounding a more refined argument) – Marinetti was no longer the young Marinetti, and the movement, by this period, had reached other international circles of new players, like the Dadaists – the tactilist project was the result of a series of previous efforts, as mentioned in the 1921 Manifesto by Marinetti himself. In it, the *empresario* mentions the existence of precursors¹¹⁵ of tactile sensibility, such as Rachilde – in her literary works *Monsieur Venus* (1884) and *La Jongleuse* (1900) – and his own friend Boccioni, who according to Marinetti, “was feeling tactilistically when he created his plastic ensemble *Fusion of a Head and a Window*, with materials entirely contrary to each other in weight and tactile value: iron, porcelain, clay, and a woman’s hair” (Marinetti, as cited in Rainey *et al.*: 2009, 269).

Given the expansion of Marinetti's agenda so as to include the politicization of aesthetics (and vice-versa), by this time Marinetti's target audience went way beyond the visual artist, now encompassing “young poets, pianists, stenographers, and all erotic, refined, and powerful temperaments” (Marinetti, as cited in Rainey *et al.*: 2009, 269). In Marinetti's well known predilection for theatre, in detriment of his brief experiences with cinema, and in accordance with his programmatic desire to spectacularize art and life to their highest degree, Tactilist values conveyed by theatre represented a “total bodily involvement of the spectator, who had to be

¹¹⁵ Despite Marinetti's acknowledgement of the several precursors of Tactilism, he was accused several times of being outmoded by the Dadaists, giving Marinetti a little taste of his own medicine. He would also not be able to avoid multiple accusations of plagiarism, namely by Francis Picabia, who during the Theatre de L'oeuvre's session claimed to have invented Tactilism five years before Marinetti with his “sculpture à toucher,” exhibited in 1916 at the Marius de Zaya New York gallery, under the pseudonym of Miss Clifford Williams (Antonello: 2013, 38). Gianni Eugenio Viola also gives us a detailed description of an accusation of plagiarism made by the Catalan Gabriel Alomar, who in 1904 gave a conference lecture titled “El Futurisme.” See Gianni Eugenio Viola: 2004, 43.

physically as well as emotionally touched by the event,” as Pierpaolo Antonello’s affirms (2013, 53).

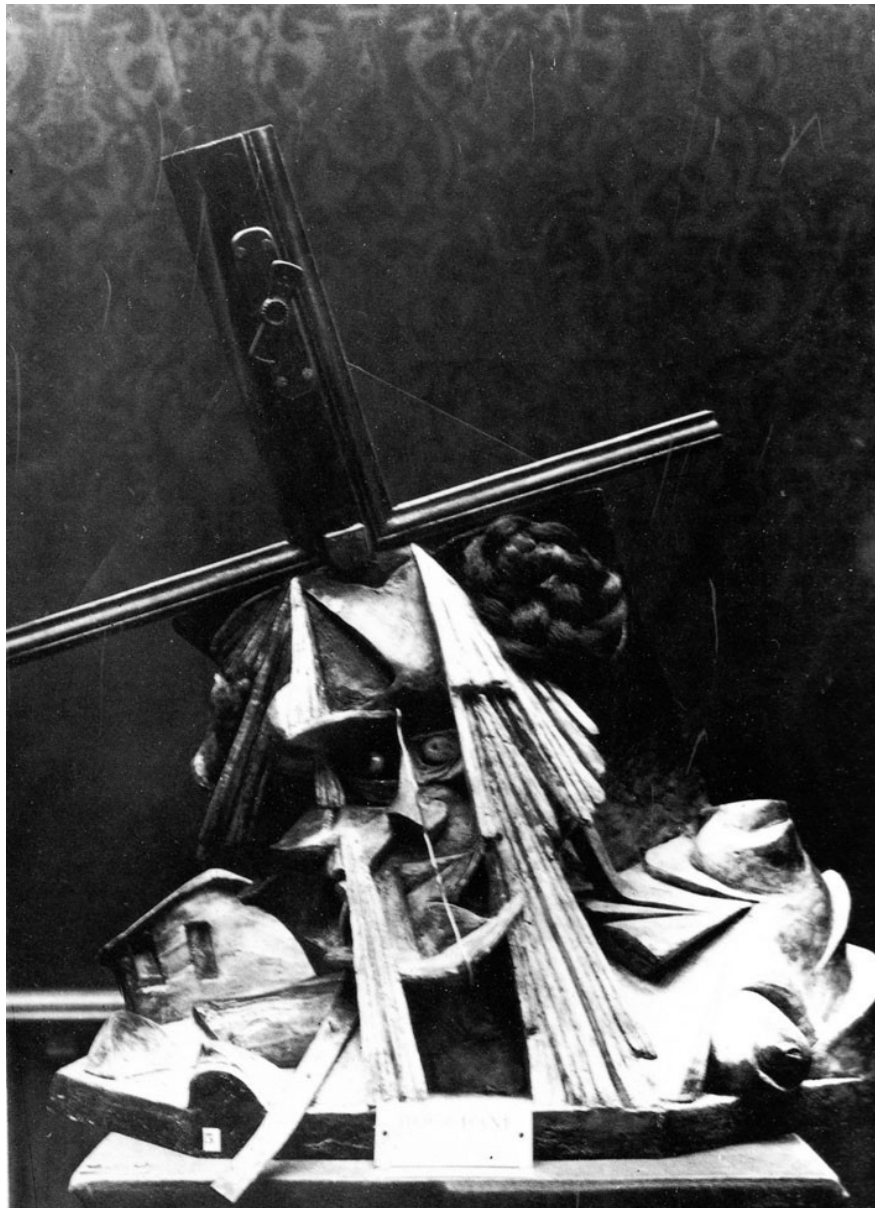


Fig. 4.11: “Fusione di una testa e di una finestra” (1911-12), by Umberto Boccioni. Work destroyed. Source: <<https://inanimanti.com/2017/01/02/come-diventare-un-oggetto/>>, last accessed August 8, 2017.

Perhaps for this reason, Neapolitan futurist Francesco Cangiullo referred to Tactilism as “the apex of futurist activity” (48), in the sense that it was a final attempt at establishing an absolute contact between Art and Life. As such, Tactilism may be perceived as “the perfect metonym or genetic seed of Futurist art” (53). One may wonder, however, if the apex that Cangiullo sees as having been reached with Tactilism, is not just the tip of the iceberg that several researchers seem to recognize in this avant-garde movement.¹¹⁶ In other words, given that Tactilism consisted in a

¹¹⁶ For more on the utopian issue in Italian Futurism, see Viola: 1994.

literalization of tactile/haptic sensory perception – for instance, in the way in which tactile panels would be passed from hand to hand in a futurist *serate* – it can be considered as a utopia in itself, in the sense that it was a mystification of direct access to knowledge delivered through touch (43).



Fig. 4.12: “Sudan-Parigi” (1920), by Filippo T. Marinetti and Benedetta Cappa Marinetti. 63 x 37 x 10 cm. Private Collection. Source: <http://www.sitographics.it/futurismo_tatilismo.html>, last accessed August 8, 2017.

Thinking in terms of interfaces, it is possible to establish a comparison with more recent instrumentalizations of the digital interface, either through digital industrial technologies or via means of artworks making use of such technology¹¹⁷ (note the tone of *industrialization* that Marinetti uses in the tactilist manifesto with regard to the potential manufacturing and subsequent ubiquitous distribution of artworks). Likewise, it is possible to compare the paradoxical reinforcement of vision and visuality by digital media – propelled by the urge to achieve complete tangibility and sensory emulation in the contact between human and machine – to the criticism of Tactilism by European Dadaists, who saw it as an art that reinforced visual processes, when that which was intended was precisely its reverse, namely, to draw attention to the haptic/tactile characteristics of artworks. This perspective is not dissimilar to Antonello's in relation to the *Paris-Sudan* tactile panel, and its visible contradictions:

[Q]uite surprisingly for somebody who invented the so-called “words-in-freedom” – and against the notion of simultaneity extolled by Marinetti and his fellow Futurists in early manifestos – *Paris-Sudan* is structured with a very obvious vertical, topological linear narrative (with the sole inversion of the two geographic poles). (2013, 44)

Not to mention,

[T]he intrinsic discontinuity of tactilism and of tactile experience, which cannot perceive aesthetic or natural forms in their totality, as with sight; there is an intrinsic temporality in the haptic perception of an object, which resembles the act of reading a text or listening to a tune, rather than the holistic visual appreciation of a painting or a sculpture. (44)

Similarly to what occurred with several of his previous creations, Marinetti seemed to yet again fall into a creative conservatism contrary to the theoretical radicalism of the manifestos, ultimately encapsulated in the subsequent reduction of tactilism down to several literary tactile syntheses, consisting of simple descriptions of haptic sensations by means of discursive poetry (44). At least in this regard, the argument for the influence of a Romanticist and Symbolist (even Baroque) inheritance in Marinetti may be brought forth, an influence that we believe to be crucial to a rigorous analysis of his literary results. In other words, if the presence of such features arising out of artistic and literary traditions is the variable which, on the one hand, enables us to locate the hypocenter of futurist utopia, on the other hand, it points towards a necessary demystification of Futurism as an absolute break with the Past. To what extent is this “return to order” by Marinetti closer to a reading of literary and historical moments such as the one represented in Ovid's *Metamorphoses* – whose myth of Galatea and Pygmalion is a perfect illustration of how it is possible to maintain both tactile and visual dimensions in literary writing, by means of the *ekphrasis* (Pires: 2013, 140) – and than an incongruence between artistic creations and their respective theoretical proposals (if both are to be understood separately)?

¹¹⁷ See Chapter 2.

4.4 Scene 4: Gestural Experimentalism

The baroque is the regulating of the soul by corporeal radioscopy.

Jacques Lacan, *Encore*

In Scene 4, the character is confronted with a second moment of loss of grasp concerning his family, when asked to read his son's paper concerning the notion of hero, without, however, being able to "focus on the words," the letters that compose the words of the paper ascending from the bottom, one by one. Nonetheless, the character cannot avoid reading between the lines, perhaps reminding us that we are often our own worst enemy. The instance the reader clicks over recently formed words, new words scatter around in order to form new lexias, making it possible, for instance, to hear and read a series of harsh, blunt lexias, such as, "I don't love you," "Soon I will leave," "You are not a model for me," or, "I don't want anything from you." Furthermore, in reading the enigmatic last phrase of his son's paper – "The author's offspring will meet their own audience, occasionally finding on their way a few harsh and envious reviewers" – one cannot avoid thinking of the way an author needs to kill his/her own master(s) in order to stop being a disciple, that is, to find his/her own style as much as possible, similarly to what happens in a relationship between father and son, in which the latter eventually must cut the umbilical cord that keeps him attached to his parents.

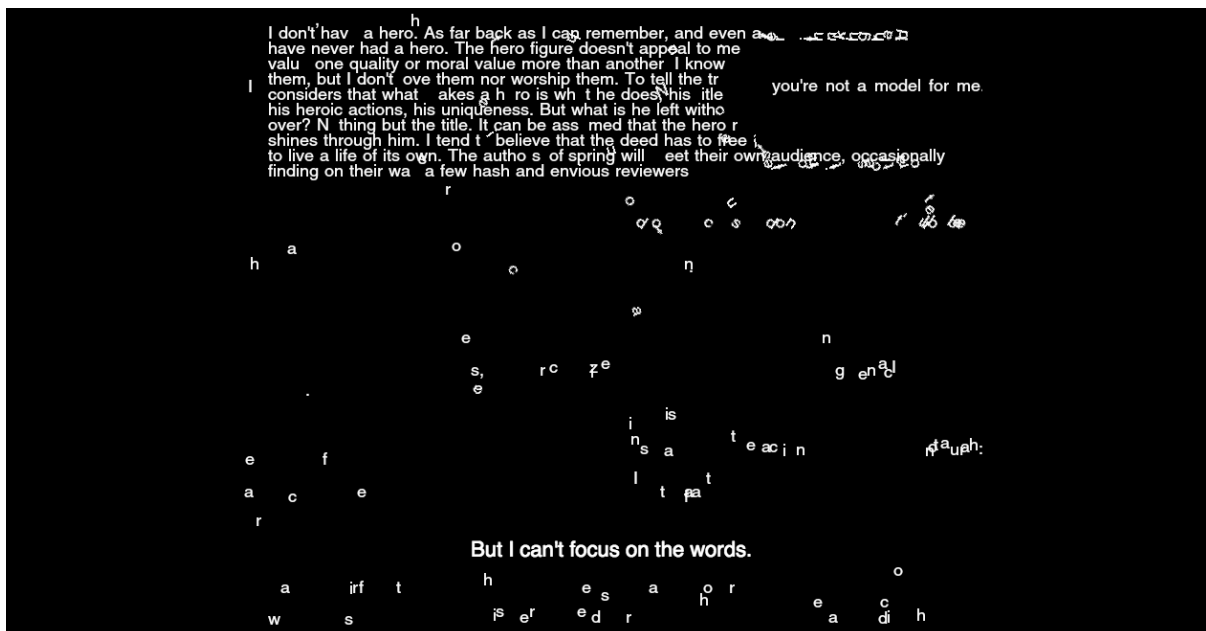


Fig. 4.13: *Loss of Grasp*. Scene 4. Screenshot.

One of the problems of a dialectical vision of movements that encompass several periods, from the Baroque to Cyberliterature, concerns their differences and similarities. Take for instance, the differences between an avant-garde movement like Italian Futurism, and neoavant-

garde movements from the second half of the same century, such as Portuguese Experimental Poetry (PO.EX). This type of analysis becomes crucial to understanding how a metamedial poetics of digital literary artworks may be related to the poetics of those previous experimental avant-garde movements. I propose that an interconnection between all these different periods and movements can be established by means of the idea of subversive gestures that characterize each and all of them at the same time. This is an argument based on a relationship between tradition and innovation that characterizes experimental literature. By drawing attention to the presence of Baroque influence in the literary art of Italian Futurists and Experimental Portuguese Poets, I argue that, if cybernetic poetry is to be seen as a continuation of Experimentalism by other media, its growing emphasis on gesture and touch must be analyzed in accordance with theories that point towards the presence of a gestural dimension in the Baroque, and consequently, in posterior historical avant-garde movements.

In labelling cybernetic poetry as marginal literature, just as Arnaldo Saraiva had already done in 1980 with experimental poetry (along with concrete, visual and sound poetry), Rui Torres contradicts the idea that Portuguese Experimental Poetry (PO.EX) is confined to the years of its foundation, preferring instead a perspective of continuity with various ramifications, as “um conjunto de actividades que marcam novas formas de expressão da criatividade humana” (Torres, 2014: 16).¹¹⁸ In this manner, by using Saraiva’s formula of “literary ideology” along with the “economy of the publishing market” as the main reasons for its marginalization, Torres states that experimental poetry “joga-se na superação dos limites da teorização dos géneros,”¹¹⁹ thus concurring with Pedro Reis in the identification of a “atitude transgressora face a convenções dominantes e gramáticas específicas” (17).¹²⁰

As such, and in line with Torres’ considerations, it becomes easy to acknowledge the PO.EX movement as an avant-garde, particularly if we are to take into account its oppositional role against the prevailing ideology of that period (the Portuguese Second Republic, or Estado Novo, lasting from 1933 to 1974), hence its consequent marginality and marginalization, as well as its need for “subverting through invention.” However, in the act of subverting, a combination of reactive and revolutionary elements is already implied, insofar as, in order for a transition from one state to another to occur, an inversion of the polarities of tradition and innovation is needed. Such tension was defined by Ana Hatherly as a “reinvention,” a “rereading,” as well as a

¹¹⁸ “a group of activities characterizing new forms of expression of human creativity.”

¹¹⁹ “plays itself out in overcoming the limits of genres’s theorization.”

¹²⁰ “transgressive attitude towards dominant conventions and specific grammars.”

“subversion by means of invention.”¹²¹ Which brings us to the question: a reinvention, rereading and subversion of what and/or whom?

In her 1985 balance of what had been done and what remained to be done within PO.EX, Hatherly peremptorily claimed that Experimental Poetry did not start with Mallarmé, Apollinaire’s calligrams, or even with Futurist and Dadaist experiments (Hatherly, 1985: 16). In what concerns the roots of PO.EX, Hatherly prefers to go back to the visual texts of Alexandrine Greeks, repeatedly insisting, as well as being in consonance with E. M. de Melo e Castro (also a founding member of PO.EX), on the enlargement of a “perspectiva histórica, como bandeira de afirmação dos valores perenes da criatividade crítica (...) à defesa da poesia barroca portuguesa” (16).¹²² On the other hand, Hatherly does not hesitate in classifying PO.EX, in its peak moments, as “avant-garde poetry.” As she affirms, it was a “reação violenta porque a sua acção era violenta: era não só um acto de rebeldia contra *um status quo* mas também um questionar profundo da razão de ser do acto criador e dos moldes em que ele vinha sendo praticado.”¹²³ Taking into account the specific situation of Portuguese Experimentalists, such reaction also included the refusal of a “crítica oficial com todo o seu cortejo de repressões e obscurantismos” (15).¹²⁴

Concerning “violent reaction,” it can be identified, from its outset – both in this previous excerpt, as well as in so many other critical writings produced by the first PO.EX generation – as an inheritance of a certain tone of manifesto that was the brand image of Italian Futurists.¹²⁵ Furthermore, the “renovação da comunicação literária e a consequente desmontagem do discurso do poder instituído”¹²⁶ – a series of characteristics that Pedro Reis associates with PO.EX in the second half of the twentieth century – may also be applied to Italian Futurism, given both the role it occupies as the first historical avant-garde movement, as well as its decisive relevance as a

¹²¹ In 1978, Alberto Pimenta also proposed the term ‘recombination’: “A modernização dos processos (resultado da fenomenologia da modernidade) não é substancialmente um fenómeno de *inovação*, mas antes de *recombinação*, de combinação nova, com um novo peso relativo, dos processos já existentes.” (See Pimenta: 2003, 126)

¹²² “historic perspective as an affirmation flag of the perennial values of critical creativity (...) at the defense of Portuguese baroque poetry.”

¹²³ “violent reaction because its action was also violent: it was not just an act of defiance against a status quo, but also a profound questioning of the *raison d’être* of the creative act, and the ways through which it had been exercised.”

¹²⁴ “official criticism and its entourage of repression and obscurantism.”

¹²⁵ Rui Torres considers the absence of a PO.EX manifesto that could synthesize the group’s theoretical propositions quite intriguing, suggesting several possible explanations: “Por um lado, a PO.EX rejeita de todas as formas possíveis uma classificação, incluindo as que o próprio manifesto pressupõe. Por outro lado, a natureza pluralista do grupo impede a síntese de ideias num texto único. Por fim, o manifesto instaura uma certa permanência contrária aos objectivos do grupo. A verdade é que vários pequenos manifestos foram escritos por vários membros.” [“(On the one hand, PO.EX rejects the idea of classification in every way possible, including those that the manifesto itself implies. On the other hand, the group’s pluralist nature prevents the synthesis of ideas into a single text. Finally, a manifesto brings with it a certain permanence that is contrary to the group’s goals. The truth is that several short manifestos were written by several of its members.”] See Torres: 2014c, p. 11, n.6.

¹²⁶ “renewal of literary communication and its consequent disassembly of discourses by the prevailing power.”

“una sorta di propulsore o catalizzatore generale” (De Maria: 2014, xiv; xxxvii)¹²⁷ of the avant-garde spirit.

This multiplicity of relationships, however, raises at least two fundamental questions. One concerns the (im)possibilities of comparison between two artistic movements with clearly divergent programmatic guidelines, namely, Italian Futurism and PO.EX. The other pertains to a seeming contradiction between an avant-garde attitude assumed by PO.EX, and its restoration program for a specific historical period, expressly, the Baroque, equally characterized as “an entourage of repression and obscurantism.” As we shall observe, both issues are related.

Firstly, the fact that both movements emerged out of antagonistic political and ideological contexts cannot be ignored, PO.EX having radically distanced itself from the idea of a possible aestheticization of politics, at least as it was designed by Italian Futurism (an avant-garde that, in spite of its specific differences with Italian Fascism, offered its support more than once to Mussolini’s regime).¹²⁸ Which is to say, with PO.EX there was a place for an adjustment of the levels of utopia in art and life, to the extent that PO.EX would come to focus its efforts on literary/artistic creation as a way to express its ideas. Hatherly is quite clear on this issue: “A ruptura que o Experimentalismo português trouxe para a poética do século XX não foi uma ruptura igual, por exemplo, à do Futurismo, que postula um desligamento total do passado e sobrevaloriza o futuro.”¹²⁹ Adding: “O Experimentalismo assume o presente para intervir nele, contesta o passado, no que ele possa ter de académico ou imobilizante, e reata com a tradição no que ela pode ter de dinâmica” (1995, 13).¹³⁰

It so happens that, just as with the First Italian Futurist Manifesto published in *Le Figaro* on February 20, 1909, the politicization of aesthetics within PO.EX was not total, meaning that the break with the past was far from being a reality. Nonetheless, the aestheticization of politics was not completely absent from its program for a “questionamento profundo da razão de ser do acto criador” (15).¹³¹ It is at this juncture that I believe both avant-gardes meet each other. Reading between the lines of futurist manifestos, the idea of a total break with tradition assumes the contours of an intentional utopia (mostly because it was necessary to the cause, whose main goal was a complete synthesis of Art and Life), being also observable a pattern of continuity,

¹²⁷ “propellant or general catalyst.”

¹²⁸ For more on the complexities of the relationship between Italian Fascism and Italian Futurism, see Viola: 2004, 93-104.

¹²⁹ “The rupture that Portuguese Experimentalism brought to the poetics of the twentieth century was not a rupture equal to the one of Futurism, for instance, since the latter postulates a complete disconnection from the past and overvalues the future.”

¹³⁰ “Experimentalism assumes the present so as to intervene in it, contesting the past on what it may have that is academic or immobilizing, and recovering tradition in what it may have that is dynamic.”

¹³¹ “profound questioning of the *raison d’être* of the creative act.”

even of reinforcement of supposedly undermined traditional values.¹³² In order to address this apparent contradiction, it becomes necessary to size up a series of historical and cultural factors. Firstly, we must take into consideration the context – the youth of Marinetti and his companions, the industrial city of Milan, the French cultural model, as well as the fragilities of the Italian social, cultural and political systems – and respective historical period, namely, the first decade of the twentieth century. Moreover, Marinetti himself mentions these factors, specifically, in an interview given to *Le Temps* newspaper, two years after publishing his inaugural and controversial manifesto:

Non potete comprendere il nostro stato d'animo di giovani artisti italiani. In Francia tutti gli elementi si fondono. Non vi immobilizzate nel passato come in un cimitero [...] In realtà, noi non rinneghiamo il passato, lo mettiamo al suo posto, che non deve essere che episodico nella nostra vita [...] Noi non abbiamo inventato nulla, e non facciamo che sintetizzare in una forma aggressiva dei sentimenti, delle idee che tentavano di esprimersi. (Marinetti, as cited in Viola: 2004, 58)

Secondly, while Marinetti's testimony mellowed out, up to a certain extent, the violent impulse evidenced in the manifestos (the Marinetti that defended the drainage and paving of Venice's canals being the same Marinetti that during the last years of his life would contemplate the Ponte di Rialto from his window), as well as their propagandistic nature, which propelled a global diffusion of such manifestos, was so overwhelming that any kind of moderation in discourse was impossible. On the other hand, because Italian Futurists were completely unaware of the unimaginable and devastating consequences of World War I, the impetuous nature that characterized the first Manifestos was seen as the only medicine sufficiently powerful to cure Italy's "illness" during that period, namely, the end of the first decade of the twentieth century. Lastly, and also concerning the way Italian Futurism ended up being a vehicle for the same values that were a target for their critique in the Manifestos, it might be worth reading the following observation by Alberto Pimenta:

Os próprios futuristas mostraram (...) a sua sintomática fragilidade no que toca à autenticidade de soluções estéticas radicais. Com efeito, embora a sua intenção declarada fosse romper a identificação de arte com manifestação de belo, o que na prática

¹³² There are several researchers that point to the clear presence of Romantic and Symbolist influences, and even baroque influences, in Italian Futurism, namely in the literary artworks of its founder, Marinetti. Marjorie Perloff, for instance, in her analysis of the First Italian Futurist Manifesto: "Could anything be more late Romantic than that second paragraph with its emphasis on the pride of the isolated protagonist, the metaphors of man as 'proud beacon' or 'forward sentry against an army of hostile stars, glaring down at us from their celestial encampments'? And what could be more kitschy than the image of those stokers 'feeding the hellish fires of great ships', or the images of locomotives, with their 'red-hot bellies' and 'drunkards reeling like wounded birds along the city walls'?" See Marjorie Perloff, "The First Futurist Manifesto Revisited." <<http://marjorieperloff.com/essays/marinetti-revisited/>>, last accessed September 26, 2017. See also Viola: 2004, 13.

realizaram foi a substituição de um conceito de belo por outro conceito de belo (...) a substituição da Vitória de Samotrácia por um “*automobile ruggente*”. (Pimenta: 2003, 134)¹³³

This might explain why a few years later, and in a different cultural, social and geographical context, the futurist *persona* of Fernando Pessoa, Álvaro de Campos, felt the need to balance the scales, revising Marinetti’s use of a comparative degree of superiority with the adjective “beautiful” (“più bello”), opting instead for one denoting equality (“tão belo como,” or, “as beautiful as”):

O binomio de Newton é tão bello como a Venus de Milo.

O que ha é pouca gente para dar por isso.

óóóó — óóóóóóóóóó — óóóóóóóóóóóóóóóó.

(O vento la fóra).¹³⁴

By means of a comparison between a tool of thought, Newton’s binomial, and a mechanical result of technique, the Venus de Milo, Álvaro de Campos’ poem is one of many examples from early Portuguese modernism that point towards a desire for a confluence between tradition and innovation. Such tension, however, while not exempt from aggressiveness in some of its most radical formulations, would not use it as its main propeller engine for creation. Notwithstanding, if the aforementioned dialectical tension between tradition and innovation is an integral part of both Italian Futurism and PO.EX, this leaves us with two final options: either we accept the theory that Italian Futurism would influence, both directly and indirectly, all subsequent avant-gardes, or we agree to applying the Neo-Baroque label to several avant-gardes, the latter option still needing further exploration. With the proviso that, ultimately, such label would apply to each and every artistic avant-garde.

In his research on the notion of Neo-Baroque, Vincenzo Russo alerts us to the extreme complexity of this notion. Relying on studies by Omar Calabrese and Gilles Deleuze, Russo demonstrates that such notion is the history of a “impulso conceptual originado pela reflexão *in progress* sobre o barroco, ao longo do século XX” (Russo: 2009, 57).¹³⁵ In his argumentation, besides pointing to several potential meanings of Neo-Baroque, even within the limits of the visual arts (58), Russo makes reference to how Melo e Castro settles the question of what remains of the aesthetic inheritance of the Baroque, namely, the political and ideological dimension that served as a post-modernist critique on the use of the aforementioned concept:

¹³³ “Futurists themselves proved (...) their symptomatic fragility in what concerns the authenticity of radical aesthetic solutions. Indeed, while their declared intention was to put an end to the identification of art with the idea of beautiful, what they ended up doing, in practice, was replacing a concept of beautiful with another (...) replacing the Victory of Samothrace with an ‘*automobile ruggente*’”

¹³⁴ According to Teresa Rita Lopes, this poem has a problematic authorship, since even its date is unknown. See Lopes: 1997, 377.

¹³⁵ “conceptual impulse originating from the thinking in progress on the baroque during the twentieth century.”

[O] duplo gesto crítico de Melo e Castro, já levado a cabo em 1976, que consistiu em: a) uma descontextualização histórica em relação aos séculos XVI, XVII, e XVIII e b) uma recontextualização em relação à segunda metade do século XX nossa contemporânea (Melo e Castro, 1976), talvez se torne no melhor contributo teórico da vanguarda relativamente ao conceito ideológico de barroco. O barroco, longe de ser entendido nos seus aspectos sociológicos de época ou de cultura da Contra-Reforma, da Inquisição, do Jesuitismo, transforma-se, na ressemantização dos poetas da década de 60 e 70 em Portugal, numa arma de resistência e de luta contra o regime salazarista, que pode apenas reevocar o Seiscentismo na comum característica de serem ambos períodos sem liberdade de expressão. (69)¹³⁶

He adds that, ultimately, in spite of its “ephemeral existence,” behind its Baroque aesthetic practices, the Portuguese Experimental avant-garde brought with it “an entire modern political project,” consisting in using the Baroque as an instrument of dissolution of repressive and coercive discourses by the prevailing power structure. (69)

While I do not disagree with Russo in what concerns the inevitable politicization of artistic practices continued by PO.EX, I disagree with the use he makes of the adjective “ephemeral,” mainly because it concerns an Experimentalism which is given continuity to through *new* cyberliterary forms such as cyberliterature. As such, although their instruments of power are irredeemably distinct, evidence of certain creative processes of “subversion by invention” remains. For instance, in the use of a metamedial poetics focused on questioning its own concepts, media and devices. According to Russo, the solution to unleashing the forms of subversion adequate to the contingencies of this specific period, the Po.Ex, was through experimental rewriting. To that effect, if the “invenção da tradição por parte da vanguarda justifica a luta num determinado período histórico, mas não só, adapta-se também às condições e aos novos desafios do presente” (70),¹³⁷ to what extent may the metamedial poetics of cyberliterary artworks not be, in its own way, a projection, or at best, a variation, of said invention?

In face of divergences concerning the concept of Neo-Baroque (namely, the division that arose between those who proclaimed the cult of the historic Baroque, and those who vindicated the Post-Modern Baroque), Melo e Castro would come to propose the concept of Meta-Baroque. Referencing this research as “particularmente significativo na medida em que ilustra uma saída

¹³⁶ “Melo e Castro’s dually critical gesture, which he had already carried out in 1976, consisting in: a) a historical decontextualization in relation to the sixteenth, seventeenth and eighteenth centuries; and b) a recontextualization in relation to the second half of the twentieth century (...), may be the best theoretical contribution by the avant-garde to the ideological concept of baroque. The Baroque, far from being understood with regard to the sociological aspects of the period and culture of the Counter-Reformation, Inquisition, and Jesuitism, became, in the resemantization by the poets of the ‘60s and ‘70s in Portugal, a weapon of resistance and struggle against Salazar’s regime, which can only re-evolve the seventeenth century in the shared characteristic of both periods, as lacking in freedom of expression.”

¹³⁷ “invention of tradition by avantgardes justifies a struggle in a determined historical period”, but also, “adapts itself to the circumstances and new challenges of the present moment.”

encontrada pelo Experimentalismo através da valorização do Barroco sem se enfeudar, quer à sua imitação, quer à sua recusa” (Hatherly: 1995, 192-193),¹³⁸ Hatherly gives two creative examples from the field of PO.EX: Melo e Castro himself, with his Meta-Baroque poetry, privileging cutting edge technology in order to execute his artworks of strong visual impact, and the experiments of Pedro Barbosa, namely, his computer-generated writing, of a more literary nature (193), whose research would be published, between 1977 and 1980, in both volumes of *Poesia Cibernética*.

However, in order for the argument for the Baroque inheritance of the several historical avant-gardes to prove valid, namely concerning hapticity and the ways the gestural dimension was explored throughout all of these different movements and their respective artists, an explanation is needed in order to examine the ways in which a sensory dimension was already latent during this period, specifically, with regard to the notion of gesture.¹³⁹ We could begin, of course, by mentioning the gestural presence in Bernini's sculptures, or the quasi-touch in Caravaggio's paintings. However, for now our interest will rest on the ways these inherited traces showed up in literary creation, largely because there seems to be a contradiction between the Baroque's exploration of gestural dimension in the various arts, and its representation in speech. In other words, between that which is the expression of the soul and a product of the body, the metaphysical and the ludic, between art and ingenuity, as well as a series of dichotomies expressed, for instance, in the textual elements that served as appendices to visual texts. In what concerns the latter, I would like to quote the dialogue between Dedalus and Perdix, that was to be read together along with a mirrored labyrinth, that comes up in one of the several Portuguese Baroque visual texts recovered by Ana Hatherly:

D. – Que te parece, Perdix, esta empresa concebida por mim?

P. – É um ornamento não pueril do engenho.

D. – Admiro-te, Perdix, por seres capaz de ficar estupefacta com admirável razão, porque se o ignorante fica estupefacto por não saber, tu ficas estupefacta sendo sabedora.

D. – Serias tu capaz de imitar com arte esta arte?

¹³⁸ “particularly significant to the extent that it illustrates a way out found by Experimentalism through the valuing of the Baroque, without it becoming entangled either in its imitation or its refusal.”

¹³⁹ Despite of this argument, the significance and prevalence of vision in the baroque period must be taken into account, as stated by Martin Jay, through his reading of Roland Barthes assertion that during the period of Middle Ages the “perceptive sense *par excellence*,” was hearing, followed by touch, and only after came sight, a paradigm that would fall with the baroque, with the eye becoming the “prime organ of perception.” But Jay also adds that “it is precisely the baroque's subversion of the dominant visual order of scientific reason that makes it so attractive in our postmodern age.” (...) Resistant to any totalizing vision from above, the baroque explored what Buci-Glucksmann calls ‘the madness of vision,’ the overloading of the visual apparatus with a surplus of images in a plurality of spatial planes” (Jay: 1994, 47-48).

P. – *Não é isso trabalho de mãos mas ilustre obra da mente.* Eis porque esta imagem da novidade merece o respeito dos deuses. Daí considerar eu que a alma supera a cultura. (58-59, my emphasis)¹⁴⁰

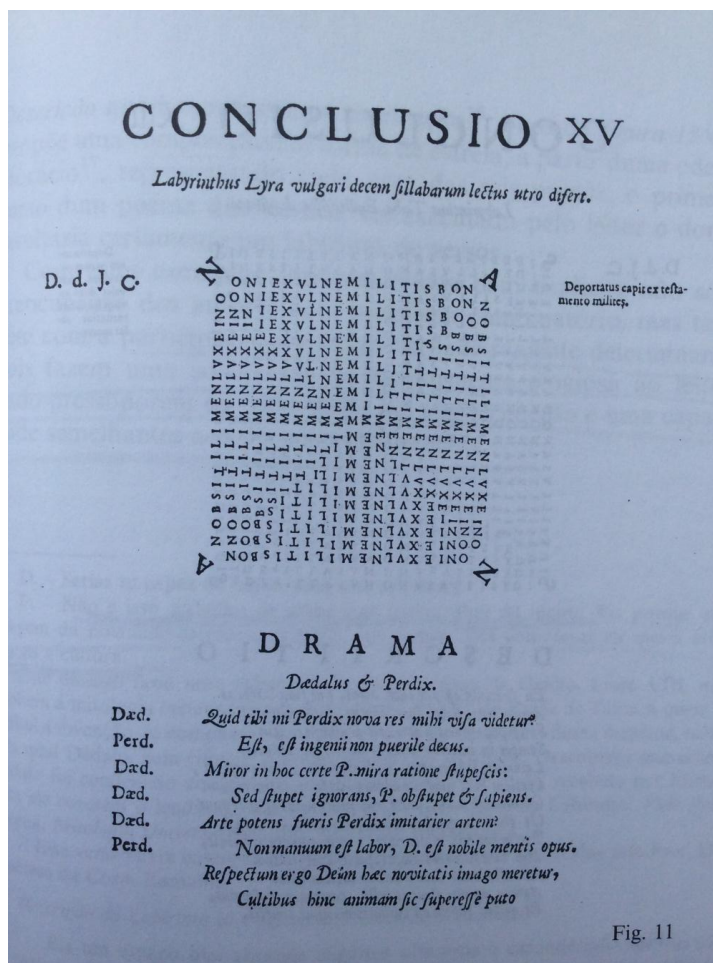


Fig. 4.14: “Conclusio XV,” a visual text with the shape of a mirror labyrinth, belonging to Emmanuel A. da Gama. In Hatherly, A. (1995). “Uma Experiência Programática da Poesia: Labirintos Portugueses dos Séculos XVII e XVIII.” *A Casa das Musas*. Lisboa: Estampa. P. 59.

Hatherly made some considerations on this subject, by analyzing the ways in which the labyrinth would become a trope for the visual texts from the Mannerist and Baroque periods. Firstly, during the mannerist period, by means of a conception of the world as “uma espécie de *labirinto poético de Deus*,” manifested, specifically in literature, “pela preferência dada à dificuldade de acesso ao entendimento imediato, pelo culto duma certa incompreensibilidade, atingida pela representação visual enigmática e pelo recurso a metáforas e a associações paradoxais” (42, her

¹⁴⁰ “D. – What do you think, Perdix, of this enterprise conceived by me?”

P. – It is a non-puerile ornament of ingenuity.

D. – I admire you, Perdix, for being capable of becoming astonished with such admirable reason, because if he who is ignorant becomes astonished without knowing, you become astonished by knowing.

D. – Would you be capable of imitating such art through art?

P. – *That is not the work of the hands, but the illustrious work of the mind.*

That is why such image of novelty deserves respect from the Gods. Hence why I consider that the soul overcomes culture.”

emphasis);¹⁴¹ and secondly, during the Baroque period, by means of a representation of “*vida como um sonho e o mundo como um teatro*” (43, her emphasis):¹⁴²

É assim que tudo se torna espectáculo: da pintura à música, da arquitectura à literatura, do sermão ao debate académico, tudo se torna arte de representar, tudo apela para o fascínio da ilusão e da mestria do gesto criador, obrigatoriamente prodigioso e ao serviço das forças do poder vigente: – o absolutismo político e a recuperação da Igreja Católica.
(43)¹⁴³

Hence the relevance, “in art, literature and life,” of the cult and pleasure of play, the “conception of theatre as a complete picture of the world,” especially when it comes to the “enorme necessidade de concretização e visualização exibida por essa arte sensual, que apela aos sentidos, que quer seduzir pela magia, pela ilusão, pelo enigma, pelo artifício da retórica e da representação” (43).¹⁴⁴

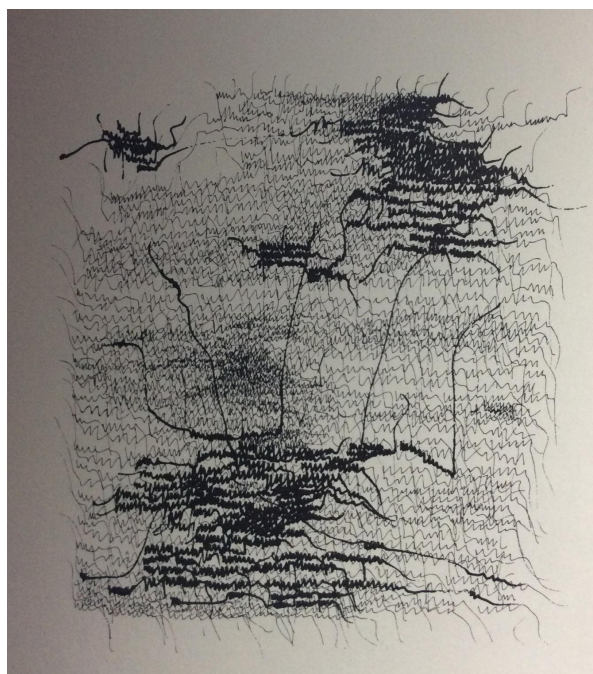


Fig. 4.15: Ana Hatherly, “Le Plaisir du Texte” (1975), In Hatherly, A. (1975), *A Reinvenção da Leitura*. Lisboa: Futura.

In addition, it is also of relevance to state that it was from this tension between signification and affect that the Baroque was able to trigger – through “composições em que o

¹⁴¹ “(...) a kind of poetic labyrinth of God (...) by the preference given to a difficult access to immediate understanding, by means of a cult of a certain incomprehensibility, possible to be reached by enigmatic visual representation and with recourse to metaphors and paradoxical associations.”

¹⁴² “(...) *life as a dream and the world as a theatre.*”

¹⁴³ “This is how everything becomes a spectacle: from painting to music, from architecture to literature, from sermons to academic debates, everything becomes an art of acting, everything is an appeal to the allure of illusion and the mastery of the creative gesture, mandatorily prodigious, and at the service of the prevailing power: – political absolutism and the regeneration of the Catholic Church.”

¹⁴⁴ “enormous necessity of concretization and visualization that is exhibited by that sensual art, that appeals to the senses, that wants to seduce by magic, illusion, enigma, and the artifice of rhetoric and representation.”

programa era um factor determinante,”¹⁴⁵ and since “esse *programa*, além de um valor estético, tinha um *valor experiência*, tanto para o autor do texto como para o seu destinatário” (10, her emphasis)¹⁴⁶ – that Hatherly conceived her own creative process, thus contributing incomparably to the Baroque tradition as a genealogy invented by Experimentalism. This can be seen, for instance, in the way she is able to illustrate “the value of the awareness of creative gesture,” by means of a metaphor of the *hand that becomes intelligent*, due to being capable of observing, while performing, the act of knowing (11). To paraphrase Hatherly, the reintroduction of the act of writing’s gestural dimension follows on from the idea of a continuum as a process of the creative act that does not justify repetition (12), as well as justifying the artistic forms of the Baroque period whose study contributed to the enlargement of the experimentalist field, to forms beyond “traditional poetry (dependent on certain rhythmic rules and few rhetoric resources),” so as to reach a “creative discourse, even when it stops being verbal” (15). It is at the intersection between these two processes, that the gestural dimension of poetry can re-emerge, similarly to what we witness in the historical artistic avant-gardes from the beginning of the twentieth century, whose subversion methods would lead to “modifications in the concept of reading” and to a “re-invigorated, reanimated and reinvented (...) vision of writing” (38). It is possible to also extend this to the seventeenth century, during which Hatherly, paraphrasing Mario Praz, identifies a climax in the cult of the image (only comparable to the current “cult” of the digital image), hence the desire to “exteriorize, transpose and accentuate it by accompanying a word with a plastic and visual representation,” as is the case with theatre and opera, “that baroque invention” (45). In other words, a “theatricization of existence,” to borrow Christine Buci-Glucksmann’s fine expression, “where the scenography of drives subjects bodies to energetic thought which does not allow itself to be enclosed merely within the model of representation” (1994, 133).

There is, however, a fundamental difference in the way this gestural dimension would be used by historical artistic avant-gardes, a difference that will directly influence the argument for its extension to cyberliterature. While during the Baroque period, “o espectador é chamado a participar mas em que só participa dentro do seu gorizonte de expectativa – determinado, programado, previsto” (Hatherly: 1995, 44)¹⁴⁷ with avant-garde movements, namely Italian Futurism, there would be an inclusion of the public as another active and creative element, through the reconfiguration of reading conventions, as well as at the level of public performance

¹⁴⁵ “compositions in which the *program* was a determining variable.”

¹⁴⁶ “that *program*, beyond its aesthetic value, had a *value of experience*, for both author and reader.”

¹⁴⁷ “(...) the spectator [was] called to participate but (...) only [*participated*] *within its expectation horizon* – determined, programmed, foreseen.”

(the famous futurist *serate*), and including the manifestos.¹⁴⁸ One instance of that inclusion can be found in the way Marinetti integrated whistling, whooping and other violent reactions from the public into these *serate*,¹⁴⁹ a practice that would later be appropriated by the Dadaists. Therefore, in proclaiming an embodied experience, demanding both intero- and exteroceptive multisensory involvement, evidenced by the performative nature of the *serate*, manifestos, and other futurist creations that served as new ways of making poetry, Italian Futurism sought to involve the public, through a series of estrangement operations such as deliberate provocation and loss of grasp, in order to raise awareness.

One way to understand the experimentalist character of cybernetic poetry is through a reconfiguration of the several retreats and advances that the avant-garde movements established amongst themselves, as well as in relation to other historical periods. Different processes of subversion tend to follow a spiral-like path that is born out of the genetic database of each of the historical periods already referenced. As Ana Hatherly affirms:

Em Arte, os Movimentos e os Autores podem suceder-se, mas nem por isso se anulam: Picasso não destrona Leonardo da Vinci; Shakespeare não destrona Eurípides, etc. Em Arte, tudo o que «vem depois» e cria a sua própria validade passa a coexistir com o que «havia». A criatividade não é uma corrida com uma só meta a atingir por um só atleta. Cada grande Artista ou cada grande Movimento, cumpre uma dada órbita e continuará a cumpri-la sem mudança. A leitura que as sucessivas gerações vão fazendo desse percurso irá deslocar-se, mas só relativamente, porque também as sucessivas leituras se irão acrescentando às sucessivas órbitas. (Hatherly: 1995, 116)¹⁵⁰

Based on a tension between tradition and innovation, subversion through invention is to be found in performative proposals from the 1980s onwards, as well as in the intensification of artistic practice with digital media. In cyberliterary experimentalism, we see an incorporation of both traditional and innovative elements. Presenting less of a primacy of technique in its creative processes, and more of an intermedial aesthetics in association with a media-reflexive poetics, cyberliterary experimentalism gives continuity, while being disruptive at the same time, to strategies of signification and affect already identified in its predecessors, placing particular emphasis on the (im)possible transactions between the literary and the digital.

¹⁴⁸ On the performative dimension of the manifestos, Rainey states that: “Many of the manifestos are also recognizably imbued with a performative dimension. That is not surprising, especially as some of the earliest ones (e.g., the “Manifesto of the Futurist Painters”) were routinely read aloud at the Futurist ‘evenings’ or *serate*, performed onstage in halls and theaters.” See Rainey: 2009, 46.

¹⁴⁹ See Marinetti, F. T., “La voluttà d’esser fischiati” (De Maria: 2014, 30-33).

¹⁵⁰ “In Art, Movements and Authors can follow each other, but that does not mean one annuls the other: Picasso does not dethrone Leonardo da Vinci; Shakespeare does not dethrone Euripides, etc. In Art, everything that ‘comes after’ and creates its own validity, begins to coexist with that which ‘came before’. Creativity is not a race with only one finish line to be reached by a single athlete. Each great Artist or each great Movement fulfills a given orbit, and will continue to fulfill it without change. The readings that successive generations make of that path will change, but only in a relative way, since successive readings will also follow on from successive orbits.”

A poignant example of these transactions is María Mencía's *Transient Self-Portrait* (2012).¹⁵¹



Fig. 4.16: *Transient Self-Portrait*. Introduction. Screenshot.

In this artwork, the reader literally interacts with two renowned Spanish poets, each one represented with a sonnet: the Renaissance poet Garcilaso de la Vega, and Baroque poet Gongora. Although the latter can be read as homage to the first, both sonnets revolving around common themes such as the ephemerality of life, the 60 years that separate these two poems illustrate two slightly different stances towards these themes. In the case of Gongora, his perspective is much less optimist, preferring to speak of “the unavoidable event,” in contrast to Garcilaso’s “pass of time.” Taking into account these two perspectives, a reader from the 21st Century will unavoidably process his reading through the cultural aspects that surround him, namely, the fact that he lives in a highly mediated society and accesses the work of these two poets through a digital medium. However, the main feature of *Transient Self-Portrait* is its metapoetic and self-reflexive nature, given that the reader is told that he is part of the poem, that the poem needs to be caressed in order to speak, that it needs light so that the reader can become “its ink, its colour, its surface.” More specifically, playing with the poems will create a transient portrait of the reader (by means of the computer’s camera), resulting from the process of interacting with the sonnets, which may be described as follows: in reading others, through time, I read myself.

¹⁵¹ <http://www.mariamencia.com/pages/transientself_portrait.html>, last accessed February 20, 2018.

Between what you see with your hands and what you touch with your eyes, there is a world to (un)veil. It is in this dual gesture, that the previously mentioned cyberliterary machimanipulations, inherited from Baroque metaphors and Baroque labyrinths, fit in today, (and in which the avant-gardes and the neoavant-garde of the twentieth century also find a place). Inheriting many aspects of twentieth-century avant-garde movements, cyberliterature will certainly continue to deal with old problems, such as the presence of tradition in the inevitably consequent innovation, or even, at a different level, the old/new problematic of the senses. It is in this whirlwind of proceeding simultaneously forward and backward, that the shifting sands on which literature moves can be found.

4.5 Scene 5: Transmission of Affect through Seemingly Functional Interfaces

AFFECT/AFFECTION. Neither word denotes a personal feeling (*sentiment* in Deleuze and Guattari). *L' affect* (Spinoza's *affectus*) is an ability to affect and be affected. It is a prepersonal intensity corresponding to the passage from one experiential state of the body to another and implying an augmentation or diminution in that body's capacity to act. *L' affection* (Spinoza's *affectio*) is each such state considered as an encounter between the affected body and a second, affecting, body (with body taken in its broadest possible sense to include "mental" or ideal bodies).

Brian Massumi, "Notes on the 'Translation'" for *A Thousand Plateaus*

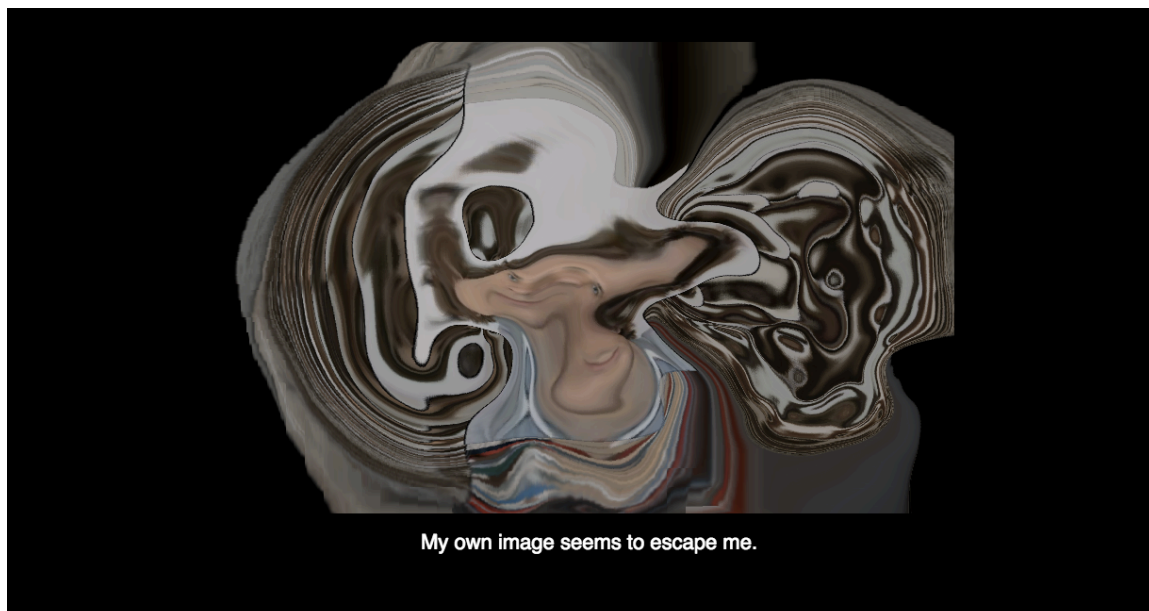


Fig. 4.17: *Loss of Grasp*. Scene 5. Screenshot.

Inevitably, the gradual process of losing grasp had to fall upon both character and reading subject. Prior to the delivery of a self-distorted and melting image of ourselves enabled through a live recording by means of the computer's camera, it is possible to read the following lexias: "Am

I so little here? / So easily deformed? / My own image seems to escape me / It fails me.” A sparse melody accompanies this haptic *melting* process.

In terms of its mechanisms, the main digital interface of *Loss of Grasp* (the screen) may be seen as an entirely functional digital interface, even though despite its *dysfunctionality*, it still maintains a series of characteristics that give the illusion of being functional in terms of the standard design of interfaces. Seeing that the priority is to give the illusion of control, so as to take it away, the reader needs to be led towards a literal and metaphoric gradual loss of control in order to grasp some sort of meaning.

This is also the case with *Control* (2013a), by Irish artist and researcher Kieran Nolan, an art game that deals with metamediality, by addressing current issues such as the limitations of physical interfaces and the nature of human-computer symbiosis in videogames. While *Control* is not a piece of electronic literature *per se*, its characteristics function as an overview of a series of metamedial features highlighted by several digital literary artworks. In it, the user becomes faced with the need to control the representation of a hand that mediates the negotiation process through a series of complex mirrored movements. Created as an installation, this game¹⁵² runs on a computer “part early IBM PC compatible, part tape loading 8bit home micro” (Nolan, 2013b: para. 2). The user must go through 10 stages, using eight possible directions and one action button, in order to control which finger of the downsampled representation of a hand will click on the action button. Each of the game’s 10 levels represents a variety of controllers throughout the history of videogames, as well as a futuristic one, namely, a prototype titled “Octopad,” working as a fusion of all the previous controllers. While the main task seems easy – to press the highlighted controls in each level by controlling time and energy levels – the interaction with the joystick interface creates a constant sensation of a loss of grasp, due to the mirrored movements it produces. For instance, if we wish that the hand avatar move to the right, our actual hand should move the joystick to the left. Furthermore, each direction used in combination with the action button, is associated with a particular digit (left plus action equals thumb).

The whole atmosphere of the game is “inspired by early PC gaming graphics” (2013b: para. 6), presenting a visual interface design and low-fi aesthetics, that are far from being functional or transparent (particularly, if compared to present patterns of quality rendering in videogames). By drawing attention to restrictions imposed by digital interfaces in comparison with a “meatspace” (Nolan: 2013c, 1), *Control* raises awareness by means of what might be called

¹⁵² In the final statement that comes with the successful completion of all levels, Nolan tells the user he expects a certain meditation from him/her: “I hope that you found the process of meditating on the downsampled interface link between human and videogame via the constrained arcade control scheme of 8 directions and one action button an interesting experience :).”

a semi-functional or seemingly functional interface, meaning that, while *it works*, it does not *work* as it would be expected to work.¹⁵³

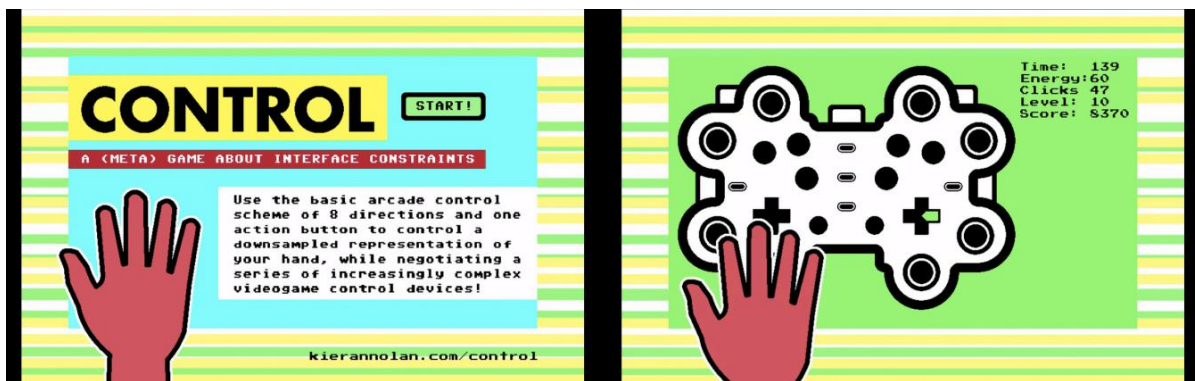


Fig. 4.18: *Control*. Left: Introduction Screen; Right: Octopad level. Screenshots from promotional video. Source: <<https://vimeo.com/74196018>>, last accessed August 10, 2017.

There are, however, digital literary artworks that may go from a dysfunctional digital interface to a completely non-functional one. Eugenio Tisselli's *degenerative* (2005),¹⁵⁴ presents that kind of experience, given that before its current version as a dark and entirely blank page, according to the author, each time the webpage was visited, one of its characters was either destroyed or replaced.

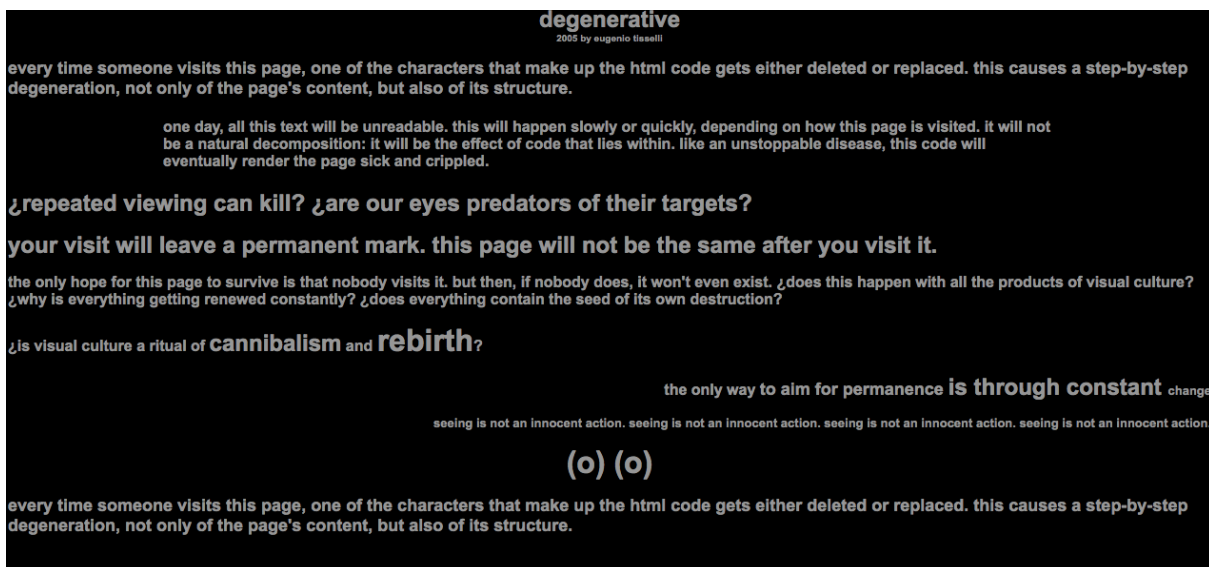


Fig. 4.19: *degenerative*. Original text. Screenshot.

<<http://www.motorhueso.net/degenerative/original.htm>>, last accessed January 6, 2018.

As the original message indicated (there is the possibility of visiting the original text, as well as some of its gradual degenerations), “seeing is not an innocent action,” especially considering that it is the act of visiting the page that gradually corrupts its behavior. In *degenerative*, the path from

¹⁵³ Digital Material Conference, at Galway, NUI, 2015, hosted an exhibit on “Materiality,” with an Installation of *Control*. To see details of the installation, please visit the following link: <<https://vimeo.com/128570538>>, last accessed August 10, 2017.

¹⁵⁴ <<http://www.motorhueso.net/degenerative/>>, last accessed February 20, 2018.

an apparently functional interface (original message) to a completely non-functional one, can be found both in the layers of code that sustain the degenerative action, intermingling with the original message day after day (for almost four months), as well as in the layer of text that progressively begins to become illegible.

Another well-known realm that allows for the exploration of the dysfunctionality of interfaces, are CAVEs and virtual reality platforms such as Second Life. Behaving like a living organism, electronic literature specifically designed for these environments tends to present a strong performative nature, especially when it comes to disrupting the notions of virtual and avatar. According to Espen Aarseth, due to the fact that it is “used synonymously with ‘digital’ or ‘computerized,’” the word “virtual” now seems to contradict its etymology as something with virtue, strength or power, since “it has come to mean a substitute which contains some but not all of the original’s feature’s, something which pretends to be, but isn’t” (2003, 429). Often playing with this contradiction, digital literary artworks in VR platforms tend to focus on a specific kind of subversion largely influenced by virtual /augmented /mixed reality’s media and devices.

Screen (2003)¹⁵⁵ is a CAVE¹⁵⁶ project collectively developed by a team of scholars, engineers and designers¹⁵⁷ at Brown University, presenting a gradual process of dysfunctionality intrinsic to its mechanisms. It is an experience of *literary virtual reality*, originally designed to establish a connection between the virtual environment in a CAVE and the virtual and unstable space of human memory. It begins with the projection of words on a wall, similar to those on a print page or wall poster, accompanied by a voice that reads the projected poem as the user moves around the space of a cube. During the reading process, words gain a life of their own, relinquishing a linear reading perspective, and begin to peel off the walls, swarming around the reader at an increasing speed. It is at this point that words attain a 3-D form, becoming volumetric and animated. By disrupting the previously linear reading experience, words come to life, the user being allowed to play with them through the use of a data glove, enabling him/her to place them back into their original positions on the wall (or into random blank spaces created through their continuous peeling-off action). At this point, the user’s auditive experience is also disrupted, through the continuous overlapping of the words’ pronunciation. In addition, as a consequence of the reader’s bodily gestures, a third level of reading comes to life, given that

¹⁵⁵ <http://collection.eliterature.org/2/works/wardrip-fruin_screen.html>, last accessed February 20, 2018.

¹⁵⁶ CAVE stands for Cave Automatic Virtual Environment, an immersive virtual reality environment where projectors are pointed towards three, four, five or six of the walls of a room-sized cube. It can also be seen as an indirect reference to Plato’s allegory of the Cave.

¹⁵⁷ Members of this team included Noah Wardrip-Fruin, Robert Coover, Shawn Greenlee, Andrew McClain and Ben Shine, who at that time were all from Brown University.

SL, there is a subversion of the often projected desires of ideals (and ideal images) in the creation of avatars.

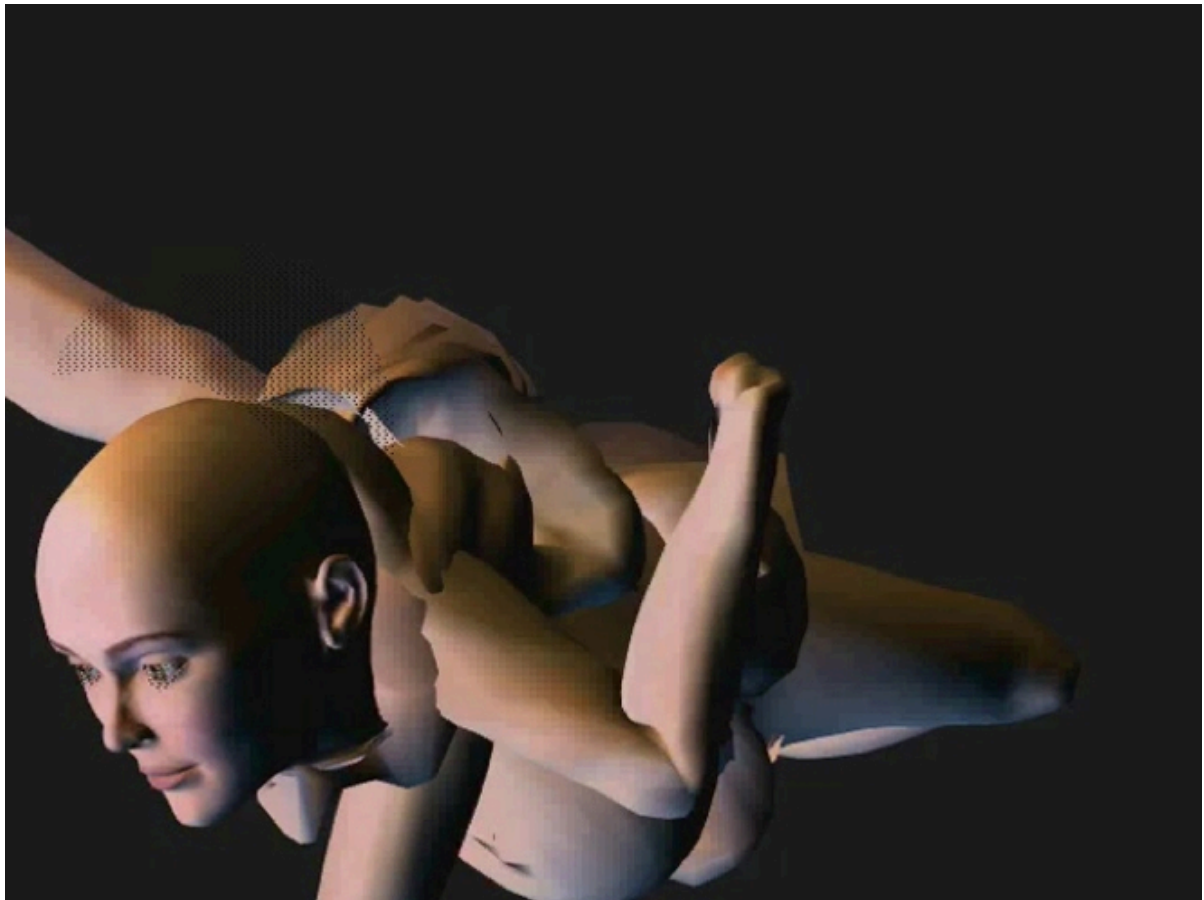


Fig. 4.21: *What Remains*. Alan Sondheim and Azure Carter. Screenshot. Source: <http://www.netfilmmakers.dk/exhibitions/real-un-real-renamed/what-remains_artwork/view>, last accessed August 10, 2017. Screenshot.

Created at West Virginia University with altered motion capture equipment, the software behind it subverts “behavior filters” of movement, body image, and also of the standard purposes devised by the corporations behind these virtual platforms. Its output is an animation in which an amalgam of distorted body parts keep interlacing each other, giving way to inhuman forms. The video also comes with a song, sang and composed by Azure Carter, its lyrics complementing the sense of estrangement provided by the animation:

Maya, Maya, Maya... What remains after the filtering, after the protocol, after numeration and enumeration. What remains after the orbit, after the rockets across softwares and hardwares. What remains, as higher ASCII, particles cleaned up, text rendered taut and distraught. What remains, after the deluge, nothing but ashes, like any work, I’ll work at a loss, Maya, Maya, Maya...

According to Wenz,

allows one to create narrative and experimental film within and through games and game engines – the result is the ability to work directly with avatars as if they are actors in a script as perfect as you can make it” (2006, 376).

The text describes the process of modifications on the code level as well as a metaphorical level by referring to life, science and technology. On the visual level beside seeing an avatar who does not represent the ideal of a perfect, idealized body as most avatars in SL do, the graphical layer that is included additionally shows how 3-D objects in virtual environments are created on the basis of abstract geometrical figures. (2008)

Also, following Wenz, since digital poetic practice studies and works frequently tend to focus more on the processes than on the objects, often readers/users experience a sense of frustration, due to their expectation being identical to the one applied in relation to traditional ways of reading.

In his PhD thesis titled *Affect Transmission through Seemingly Functional Mechanical Sculptures* (2010), Stelios Manganis seeks to understand “how seemingly functional mechanical sculptures can generate and transmit notions of affect and how preventing their activation by gallery visitors might enhance the effect of affect transmission and their overall understanding of the work” (2010, 2). By means of a series of observations and analyses of the visitors’ varying behaviors in several art galleries across the UK, Manganis explores an “affective dynamic between the artist, the artwork and the spectator” (2).



Fig. 4.22: Left: “Look At Me Now Dad” (2009), S. Manganis; Right: “I know why the caged bird sings” (2009), S. Manganis. Source: <<http://www.steliosmanganis.com/gallery/>>, last accessed August 10, 2017. © Stelios Manganis.

Mainly informed by Gilles Deleuze and Felix Guattari’s writings on theories of affect, Manganis makes use of several mechanical sculptures he built himself, whose primary feature is their apparent functionalism, in order to conclude that a “sense of functionality combined with a lack of physical interactivity is sufficient to enhance the intended purpose of an artwork” (3). Although his practice-based research focuses on Dadaist works, within the specific setting of the art gallery, some of his conclusions can be adapted to the idea of an apparently functional digital

interface, a common trait among several digital literature artworks. By “seemingly functional,” Manganis intends to refer to the subjective judgement of the viewer, and how it affects that which it is viewing. As such: “a given stationary mechanical system, in this case an artwork, contains all the necessary elements which will enable it to be potentially activated,” as for instance, with Francis Picabia’s mechanistic drawings (17-18).

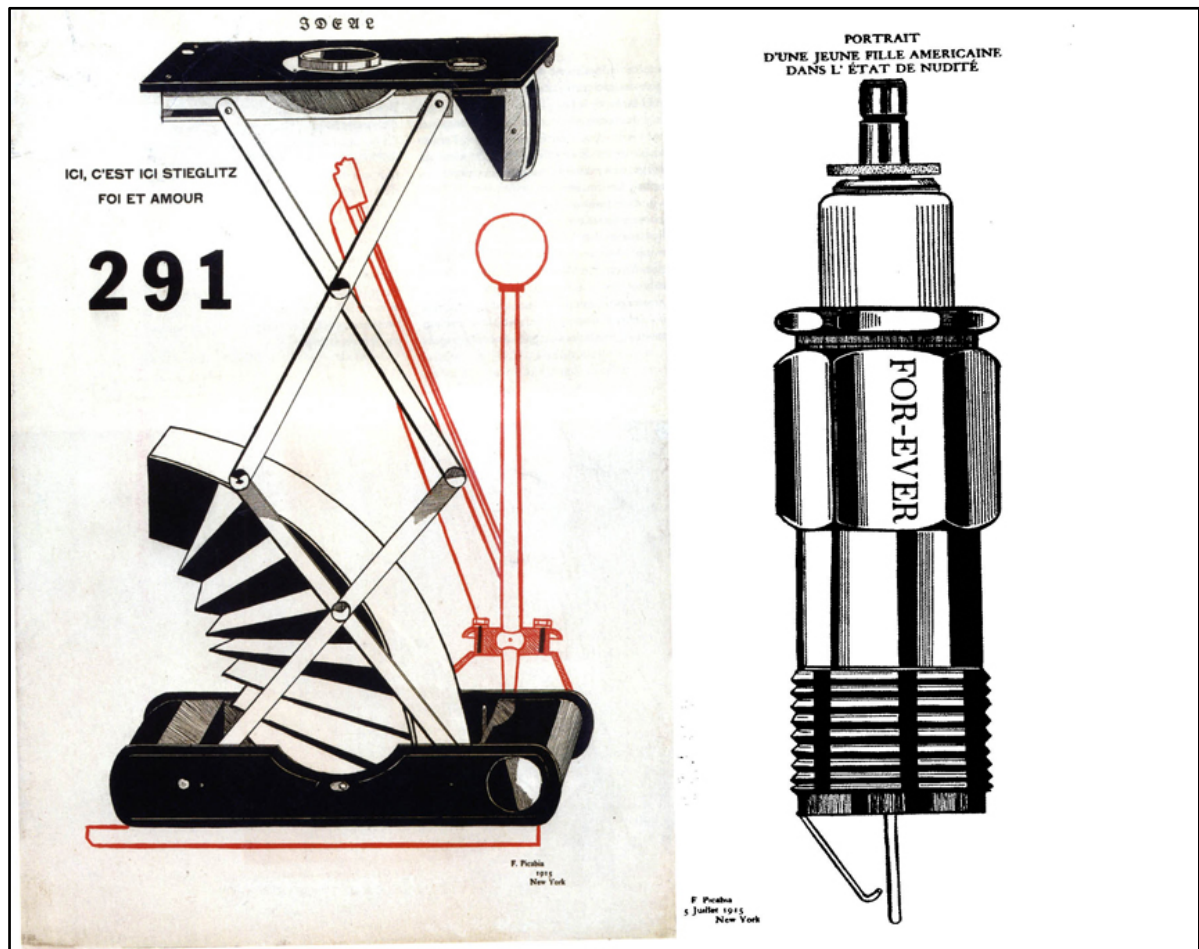


Fig. 4.23: Francis Picabia’s mechanistic drawings. Left: “Ici, c’est Stieglitz” (1915); Right: “Jeune Fille Américaine en l’état de Nudité” (1915). Source: <<http://www.metmuseum.org/toah/works-of-art/49.70.14/>>; <<http://www.edwarda.fr/2013/08/portrait-dune-jeune-fille-americaine-dans-letat-de-nudite/>>, last accessed August 10, 2017.

Of particular significance to Manganis’ argument of affective transfer, are Henri Bergson’s ideas on “Recognition and Attention.” According to Manganis, through his paraphrasing of Bergson, during the subject’s encounter with the object, his subconscious scans through memories and personal experiences in order to find a similar pattern,

[W]here he will either connect with the artwork in an affective manner or enter into affective indifference and aim towards a search for the “meaning” of the work. Thus, the work in terms of its affective function exists, or is created by the artist, in a state of affective potential, the activation of which depends upon the presence of the “right” individual viewer. (52-53)

Following Bergson's theories, and although vision is often cited as a main channel for sensory perception, such actions should be understood in light of a multisensory perspective, for instance, in the same way that when faced with a particular gesture of the body in a painting we will have a tendency to search for a similar representation of touch kept in our memories.¹⁶¹ This might explain our first impulse to touch a handle or a button in an artwork, since our memory tells us that that is the function of that particular object. In this manner, according to Manginis, the handle (as well as a title), as a "familiar form with a familiar function, works as a bridge connecting the human with the machine" (60-61). In much the same way as the human hand works as a trope for the representation of touch and corporeality, the handle works as a signifier for the presence of the human hand and touch in the machine. Which brings us to the question: how can a handle work without working?

Man Ray's installation "Self Portrait" (1916) is one of the works in which this paradoxical realization is put into question. In his autobiography, bearing the same name as the artwork, Man Ray affirms:

After Christmas I had my second show at Daniel's. There were only nine or ten items, pure inventions. One panel particularly, called "Self Portrait", was the butt of much joking. On a background of black and aluminum paint I had attached two electric bells and a real push button. In the middle, I had simply put my hand on the palette and transferred the paint imprint as a signature. Everyone who pushed the button was disappointed that the bell did not ring. Another panel was hung by one corner which, inevitably, visitors attempted to redress only to have it swing back at an angle. I was called a humorist, but it was far from my intention to be funny. *I simply wished the spectator to take an active part in the creation.* (Ray, 1967: 71, my emphasis)

Despite Man Ray's apparent naivety in describing his (and others') artworks, "Self Portrait" is far from being naive. The illusion of an erotic environment suggested by the shape of the installation - its push button and electric bells placed on strategic places of a structure resembling a cyborguean body - also works as a secondary handle eliciting our touch. In this case, however, its non-functionality might be the only key to grasping a potential message. In other words, only by recognizing that we have no control over other bodies (not to mention over our own) will we be able to find some closure.

¹⁶¹ To this purpose, it is significant to recover Martin Jay's observation of Cézanne's paintings, in which the painter "tried to present objects that were present to all the senses at once," including the notions of depth, smoothness, softness and hardness. According to Jay, "In so doing, Cezanne wanted to overcome the very distance between viewer and viewed, thus shattering the window's glass separating beholder from the scene on the other side. His task, therefore, was the recapturing of the very moment when the world was new, before it was fractured into dualisms of subject and object or the modalities of separate senses." But Jay also adds that "Not surprisingly, so ambitious a project could never be successfully accomplished. To render reality in all its sensual manifestations in a medium that remained stubbornly visual proved an intractable problem" (Jay: 1994, 159). A problem that would soon be continued by avantgardes such as Italian Futurism, Vorticism or Dadaism.



Fig. 4.24: “Self-Portrait Assemblage” (1916). Gelatin silver print, 9,5 x 7 cm. © Man Ray Trust ARS-ADAGP. Source: <<http://www.getty.edu/art/collection/objects/54745/man-ray-self-portrait-american-1916/>>, last accessed August 17, 2017.

4.6. Scene 6: (Im)movable Bodies or (Un)moving Texts?

I'm doing all I can to get a grip on my life again.
I make choices.
I control my emotions.
The meaning of things.
At last, I have a grasp.

Serge Bouchardon, *Loss of Grasp*

In the last scene of *Loss of Grasp*, the character convinces himself that “It’s time to take control again.” Meanwhile, a series of letters begin to randomly appear all over the screen. Despite all attempts, the only thing the reader will be able to grasp, is a word here and there. Moving in circles, in an attempt to grab the meaning of these letters, and make some sense of them, another premonitory and self-reflexive sentence is presented: “To stop going round in

circles.” Although this appears to be something that the reader could comply with, there seems to be no possibility of taking control over the language. Despite being given a second opportunity, in the shape of a rectangle presenting an invitation to type one’s own words, such illusion serves only to unveil the final deceit, since regardless of what is typed, the program will not obey any of the reader’s actions, delivering instead a pre-programmed phrase that is able to resume the whole piece: “I’m doing all I can to get a grip on my life again. / I make choices. / I control my emotions. / The meaning of things. At last, I have a grasp.” Period. New paragraph.

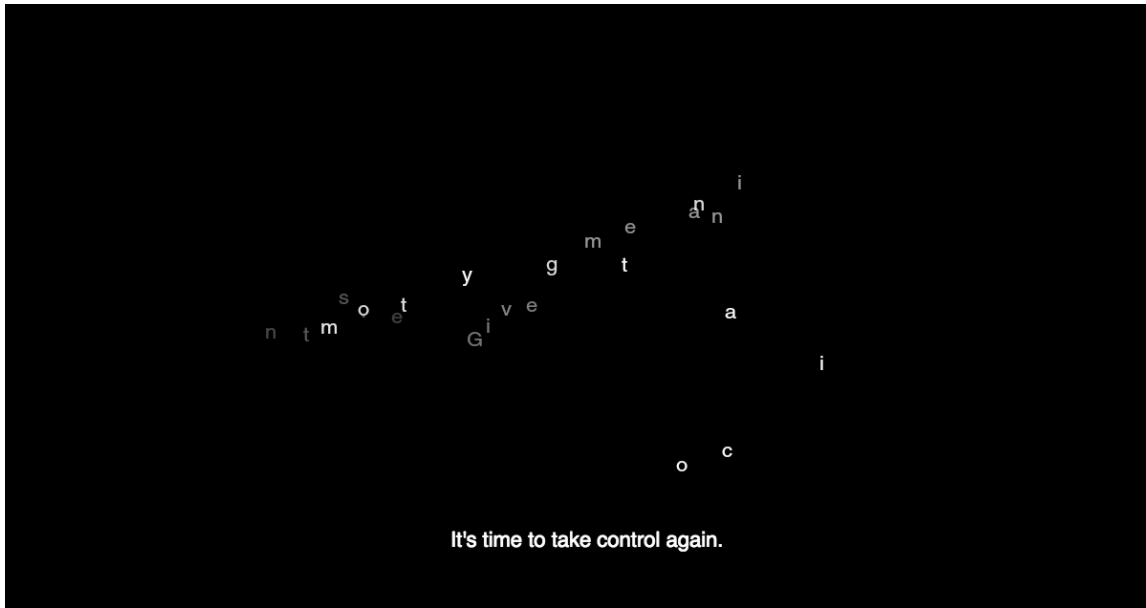


Fig. 4.25: *Loss of Grasp*. Scene 6. Screenshot.

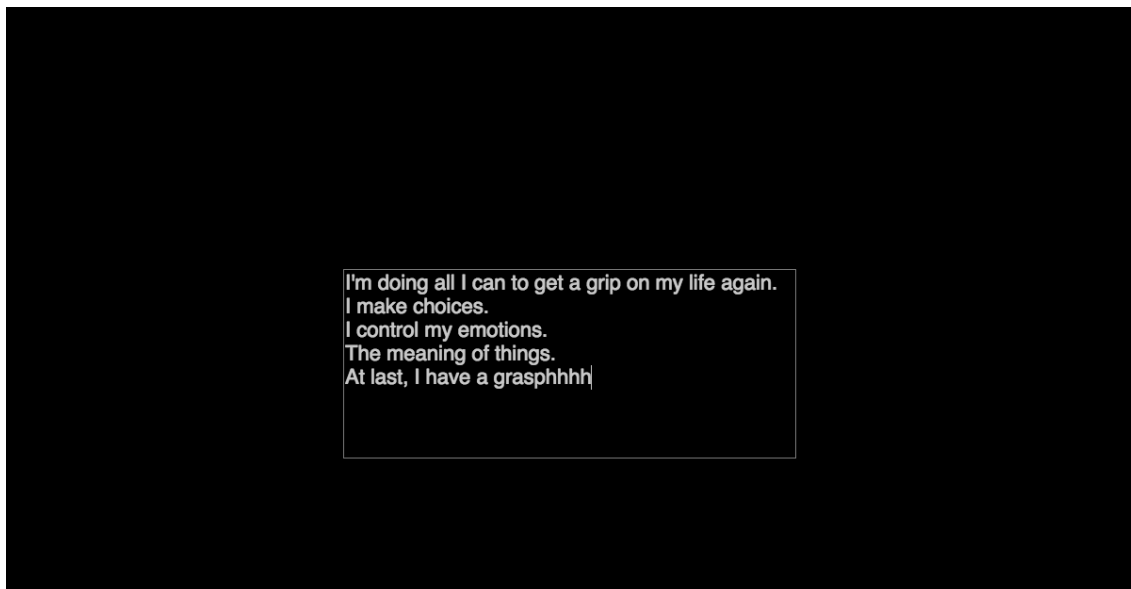


Fig. 4.26: *Loss of Grasp*. Scene 6. Screenshot.

As mentioned before, Teemu Ikonen advances that “the possibility to manipulate the literal movement of the text could be one of the essential variables separating digital literature from printed literature” (2003, para.1). But what actually happens if a digital literary artwork

subverts this very idea of movement, when non-movement is the *sine qua non* condition for the work to be experienced? Such is the main premise of *Still Standing* (2005),¹⁶² an interactive installation by Bruno Nadeau and Jason E. Lewis. One of the singularities of this artwork is that it demands a tension between movement and rest, of both the body and the text, in order to produce meaning. In this work, the reader, who is also a performer, moves in front of a white screen displaying random letters on the bottom. Movements of the feet scatter the letters in all possible directions. However, if the reader stands still for more than seven seconds, the letters rearrange themselves according to the reader's silhouette, presenting a print-like poem previously written by the authors. If the reader moves again, the poem disappears and the letters go back to their fragmented state.

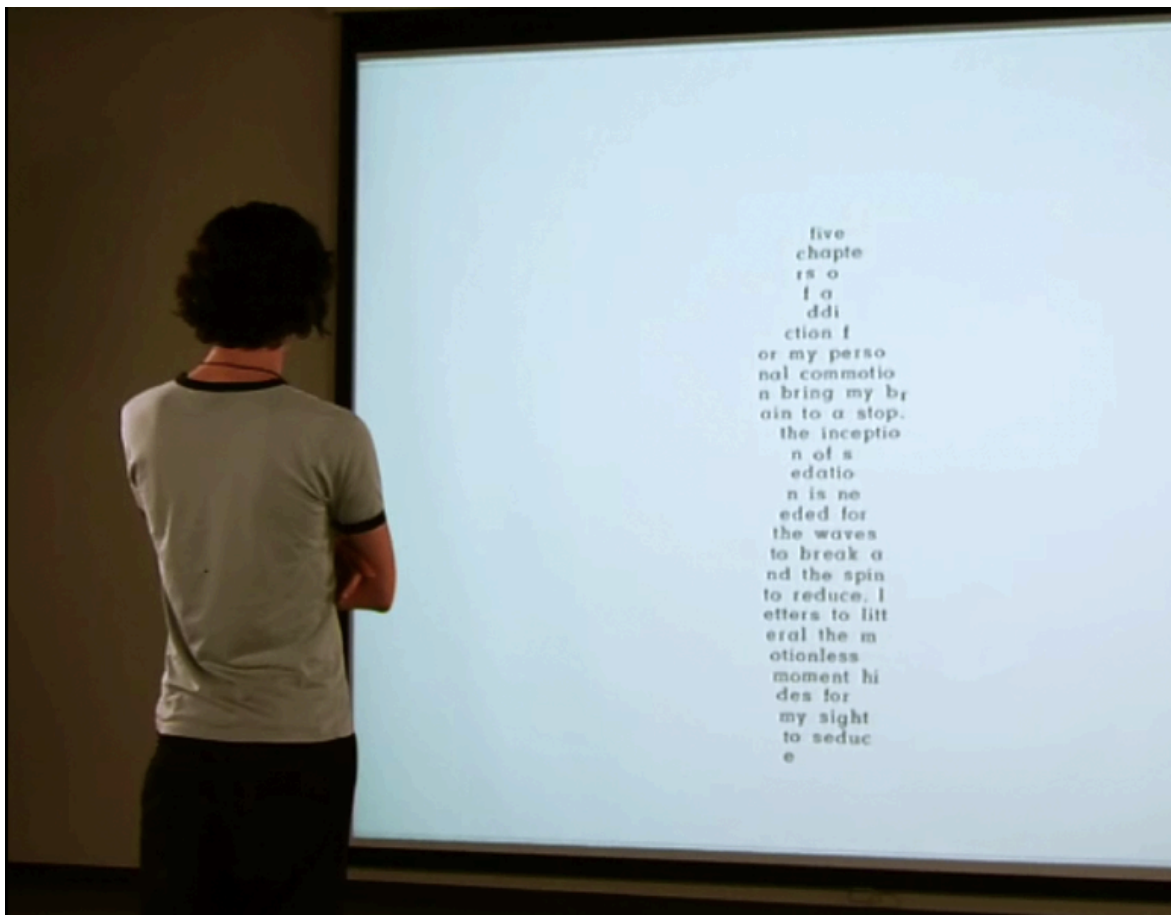


Fig. 4.27: *Still Standing*. Still from promotional video. Source: <<https://vimeo.com/265019>>, last accessed August 10, 2017.

In fact, *Still Standing* shows us that movement is a fundamental characteristic of digital literature, through the very disruption of the idea of movement. Furthermore, it elicits a reflection on readability in relation to motion and stillness, given that this piece demands a “non-functionality” of its digital mechanisms in order to be fully experienced. This inclusion of

¹⁶² <http://collection.eliterature.org/2/works/nadeau_stillstanding.html>, last accessed February 20, 2018.

stillness, or rest, as a significant part of the interaction process, led the authors to coin a new term, namely, “inter-inactivity,” described by Nadeau and Lewis as the artist’s “conscious use of participants’ stillness in defining how an interactive artwork behaves.” Continuing with the description as follows:

Inter-inactivity is formulated as an expansion on approaches to interactivity which typically requires the user to constantly and actively engage the work in order to experience it. Inter-inactive works incorporate both motion and stillness into their design, often using periods of action to lead users into moments of rest. (2005b, 1)

While it is not my intention to disavow this alternative definition of inactive participation, I believe that when speaking of motion and interactivity, such moments of rest are already implicit. This might be able to be loosely associated with Spinoza’s understanding of a body as “one with its transitions” (Massumi: 2002, 15), a transition being, according to Massumi, a way of “saying relation between movement and rest,” a capacity that gives the body power to affect and be affected.

According to Rita Raley,

Still Standing seems to require cognitive rather than physical engagement, thus rendering stillness as an integral feature of reading. But there is an important paradox here: standing still asks for physical movement that we might even call rigorous; after all, it takes a certain strength and muscular control to remain motionless. (2009, 29)

Features of stillness require the reader’s previous experience with the dispersed and fragmentary letters in motion, namely, through their initial interaction with the work, where s/he is able to kick the letters lying on the ground (i.e. displayed at the bottom of the screen). Both rest and movement contain within them a gestural dimension, a series of gestures, including the gesture of not moving. Nonetheless, the range of possible gestures elicited by the installation, does not discard attention as being a major variable for a holistic understanding of the artwork’s potential meanings. With regard to “tactile attention,” Gallace and Spence define attention as being related to a series of “neurocognitive processes that allow for the *selective* processing of incoming sensory stimuli,” in which a series of *mechanisms* help us to select stimuli by relevance in order to perform a task or achieve a goal (2014, 147). However, they affirm that with these mechanisms, shifting attention away from tactile stimuli is harder than moving our attention away from visual or auditory stimuli (148). This observation might explain why there is always a need to temporarily abstain from physically engaging with the artwork, in order focus on the textual poem that gradually begins to reveal itself, as soon as the reader stops moving his body in front of the screen.

Proceeding with the description of *Still Standing*, let us now focus on the poem borne out of the gesture of being still:

five chapters of addiction for my perpetual commotion
bring my brain to a stop
the inception of sedation is needed
for the waves to break and the spin to reduce

letters to literal the motionless moment
hides for my sight to seduce

Both the poem and its title, “Seeking Sedation,” not only show that the textual poem is to be understood as a fundamental part of the creative process, given that the words used allude to the aforementioned tension between movement and rest, but also seem to suggest that, regardless of bodily experience, no matter how much we try, there is always need for a certain hermeneutic effort. This observation seems to align with the authors’ description of the poem as being:

composed explicitly for use in the installation. It plays with the semantic and etymologic intersection between motion and commotion to advance a theme of longing for a perfect motionless moment. (...) In this way, playful interaction leads into meaningful poetic content. (Lewis and Nadeau: 2005b, 2)

Insofar as the text describes the process of reading the text, it also adds a cognitive layer to that playful interaction. Reading is subject to bodily movements that enable letters and words to affect the reading self. Relations between motion and stasis become embodied correlates of the interpretive process required to create meaningful associations. Keeping in mind that this authorial intention is less of a comparison of the ways in which we read on paper versus digitally, than the engagement of “participants in larger debates concerning the role of reading within the digital media ecology” (3), *Still Standing* emphasizes the role of multisensory perception, namely haptic touch, through the experience of an artwork via means of specific media. In it, the unique relationship between body and language established through the installation, in order to present a reversed idea of playability, and in which the reader/user refrains from physically moving and touching the artwork, also brings to the fore specific scientific concerns related with haptic touch within digital multimodal environments.

When it comes to movable/immovable bodies, it seems that the body and the text are not that different. In *Still Standing*, the body is used as a part of the semiotic field of the artwork. We are no longer working with the definition of body, as in biological body, but rather with that which Anne Mangen, in her interpretation of Vivian Sobchack’s “carnal thoughts” and Merleau-Ponty’s phenomenology of perception, describes as an assemblage of body and consciousness, matter and memory, objectivity and subjectivity, in the sense that

we both *are* a body and *have* a body. That is, we are both embodied subjects which in a way fundamentally determines our experience and relation to our lifeworld, and at the same time we are material objects and hence the focus of the attention of others. (Mangen: 2006, 104)

It seems that only through these implicit tensions in the metaphors and analogies of immovable/movable bodies and unmoving/moving texts, often through a combined operation of literal and metaphorical loss of grasp, is literature able to raise awareness with regard to its signifying and affective strategies.

5. Ex-foliations: Notes Towards a New Phenomenology of the Haptic

5.1 Ex-foliation I: Haptic Reading is a Process of Ex-foliation

Exfoliate – Verb: (of a material) be shed from a surface in scales or layers. Origin: Mid 17th century: from late Latin *exfoliat* –“stripped of leaves”, from the verb *exfoliare*, from ex- “out, from” + *folium* “leaf”.

Oxford Dictionaries Online

As I tried to demonstrate throughout the previous chapters, reading has never been a solely visual activity. Rather, it has been reconfigured through the course of history, adapting to different devices and mediations, and cannot be understood as a *tabula rasa* each time a new device or technology is introduced to readers. As such, reading cannot ignore its genotype. The richness in the history of reading, and the analysis of the reader’s behavior throughout it, sheds new light on the understanding of reading, as well as on any other kind of human activity. As such, the confluence of different devices and media in the history of reading, establishes the grounds for a new phenomenology of reading as a haptic process, enabling a renewed perception of its history and the ways readers read, in a cumulative and non-linear way. In this sense, to ex-foliate the layers of digital surfaces is always an ex-foliation of the whole gamut that constitutes old and new habits of reading. What better way than a supposedly immaterial and intangible surface in order to evidence the materiality that has always been an integral part of reading?

As I approach the end of this cycle, along this spiral path that has guided us since the beginning, I am certain that defining and analyzing certain specificities of haptic reading processes in the experience of digital literary artworks, could lead to a renewed theory of haptic reading. Due to the mechanisms representing layers of history and archeology contained within the digital surfaces we read from, the gesture of reading and writing becomes richer than ever. In the ensuing sections, I will propose a series of notes that may serve as a renewed (though non-definitive) phenomenology of the haptic dimension in reading. It should be noted that I have reinforced its non-definitive character, in order to illustrate the difficulty in establishing a theory

of the haptic, chiefly due to a necessary articulation of the phenomenological, cognitive, technological and semiotic dimensions of its process.

The ex-foliations that follow may be regarded as a possible way of holistically interpreting the haptic dimension of reading through analogies and metaphors for circularity and spirality. Mathematics, for example, may be interpreted as being embodied, acquiring form in geometrical figures such as the circle or the spiral, as complex as these may be, comprising layers in the shape of literal and metaphoric mechanisms that await to be detected through the work of thought and action. For that matter, a demystification of the ways in which Western culture has tended towards an idea of mathematics as something abstract, disembodied and purely rational (what Brian Rotman calls “technologized mathematics”) is omnipresent in my exposition of this argument. Moreover, given that it was this general idea of mathematics that ended up influencing the ways computational science developed during the second half of last century, during which the myth of mathematics as something disembodied, led to the idea of reason as a form of mathematical logic, also perceived as disembodied, hence the romanticized idea that “machines can think” (Lakoff and Nuñez: 2000. xv). In addition, this also conduced to the clash between a rational, visual and logocentrist understanding of the interaction with machines like the computer, and the growing path towards a bigger need for tangibility, as well as immediacy.

Following on from Rotman, one of the keys to understanding gesture may reside in the way it is related to non-alphabetic writing, like ideograms and diagrams used to encode meaning in mathematics. Furthermore, building on George Lakoff’s and Rafael Nuñez’s thoughts on how mathematics are embodied and rooted in “bodily experience in the world,” given that it appears to be born out of the conjunction between cognition and perception, Rotman reinforces that “mathematics rests on a network of inferences derived from metaphors of basic-body activities – such as starting, stopping, finalizing an action, continuing along a path of motion, gathering together a plurality of objects, etc. – underlying the various operations of elementary arithmetic, the theory of sets, and other mathematical abstractions out of which the bulk of mathematical concepts are formed” (2010, 34). While reminding us that in Merleau-Ponty’s phenomenology, “the subject of geometry is a motor subject” (Merleau-Ponty, as cited in Rotman: 2010, 35), he states that,

mathematics has been engaged in a two-way co-evolutionary traffic with machines since its inception. Mathematicians abstract concepts from machines – cyclicity and angular motion from the wheel-and-axle, ratios and rational numbers from the lever, modular arithmetic from clocks – and apply refined versions of them to create new machines, which are then the source of further abstraction, and so on. A materially framed historical account of mathematics alert to the presence and activity of the body would take this co-evolution as a datum. Such an account starting with the wheel and lever and then the pulley, the pump, abacus, clock, printing press, slide rule, punch-card loom, steam engine,

camera, electric motor, typewriter, gramophone, radio, and computer would yield many particular versions of such two-way traffic. (58)

Bringing to mind the geometrical figures that go to make up the mechanisms used to structure reading in any kind of media or technology, it becomes impossible to separate what these figures are grounded in from the way in which we perceive the world, and not just visually.

5.2 Ex-foliation II: Haptic Reading is Body and Soul

For a deformed body and a beautiful soul are like oil and vinegar, which, however we may shake them together, remain always distinct to the taste. They do not produce a third sentiment, the body excites displeasure, the soul pleasure; each its own sentiment for itself.

Lessing, *Laocoon*

In Canova's sculpture, "Psyche and Eros" (1787-1793), Psyche is no longer asleep. She is present, awake, albeit intoxicated by the erotic rapture that Eros' presence brings. Through the marble contours, Psyche and Eros establish a corporeal symmetry, an equilibrium of forces, the first pulling the latter (literally by his hair), and the latter embracing (while simultaneously holding) the first (by her breast and head). Perhaps they cling to each other so that they do not amalgamate into a single spirit or single body. Besides, Eros is divine, a God, son of Aphrodite (the goddess responsible for putting Psyche to sleep). Whilst it is Eros who has the ability to fly, it is Psyche who is most associated with the spirit, and as such, capable of flights of the imagination. Similarly, it is Psyche's nudity, rather than Eros', that is frontally exposed, despite the mantle that covers part of her naked body. An inversion of roles, or perhaps, a completeness of soul and body?

In this sculpture, this completeness is encapsulated in a series of metonymies that veer from the traditional acceptions with more than 2500 years of history, of body and soul as two antithetical words. Traditionally seen as complements of each other, the dual concept of body and soul gives rise to a question without an answer. However, if they are to be regarded as *combinatorial multiples*, by means of their metonymic variations, their very perception begins to take a different shape. This longstanding duality between soul and body, largely intensified by post-Cartesian "Cogito, Ergo Sum" perspectives, also closely relates to other longstanding binarisms, namely, the one setting discourse from gesture apart.¹⁶³ Seen as primitive, for centuries the idea of

¹⁶³ According to Brian Rotman, "God and 'mind' (Mind, *nous*, *psyche*, soul) are media effects of the alphabet, hypostatized entities, ghosts that emerged from the writing of 'I' in the sixth century BCE within the respective Jewish and Greek deployments of alphabetic writing, born at a point when the medium had become naturalized, the effects of written mediation invisible. (...) In particular, and of cardinal importance for the existence and features of

gesture was understood as being separated from that of discourse, and seen as something that “belongs” to the body, and not to the intricacies of the soul, in the sense that it was usually thought of as “an echo perhaps of a pre-intellectual, pre-verbal form of communication, having little to do with the articulation or expression of thought in speech” (Rotman: 2010, 21). Such division greatly influenced the way in which writing and reading were interpreted, at least in Western culture, naturally leading to a strong ocularcentrist paradigm that still haunts us.



Fig. 5.1: “Psyche Revived by Cupid’s Kiss.”. Sculpture in marble, Paris, Musée du Louvre. Source: Wikipedia Commons. © Jörg Bittner Unna.

As computers became part of our daily lives, the pervasiveness of such binarisms had its effects on the design of machines described as capable of emulating human thought. Part of this process was evidenced by the way prevalent metaphors such as the “computational mind” or the “brain in a vat,” became widely spread as a means of exploring the theme of artificial intelligence,

God and Mind, to utter ‘P’ and to write ‘P’: despite their everyday conflation within Western textual discourse, are radically different signifying acts; and it is precisely the fusing of them, the near universal awareness of their difference and what might turn on it, that provides the rhetorical matrix for belief in disembodied agencies known only through writing.” See Rotman: 2008, xxxiii.

expressly in the early days of computational science. As such, in order to harness the potential ubiquity of computers, the design of digital interfaces (not just the hardware, such as the screen, but also the software), needed to become more and more intuitive, having consequently led to a quest for complete transparency. This does not necessarily mean that interface design, specifically, graphic user interface design, precluded awareness of the user's body. In a way, transparency resulted also as an effect of making the device responsive to the user's body actions, especially those involving his/her hands and fingers, as if the device were an extension of the user's own nervous system in which the body becomes part of the interactive feedback loop that involves mechanical and electrical pulses from the user and electrical and symbolic responses from the device. However, this occurred in such a way that perception, particularly due to these interfaces' constraints in emulating features like tangibility, was channeled into separate and distinct units, or sense modalities. As such, what interface design technology perpetuated, was a secular binarism between the concepts of body and soul, as another metonymic variation in which vision continued to be understood as an extension or gateway to the intricacies of the (computer's) mind, namely through the extensive use of analogies and metaphors for the relation between human and machine.

With the evolution of technology and the need for a more tangible realization of computer technology, the body naturally came to the forefront once more, demonstrating yet again its potential to physically engage with technology through a more *natural* connection. However, as the paradigm started to gradually change, this shift led to literalizations of gesture and touch that did not live up to their potential holistic definitions related to perception, as well as cognition. As a consequence, and considering there is no ideology that does not provoke some kind of subversion, the materialities inherent to apparently less tangible gestures, such as the gesture of writing and the embodiment that it involves, began to be emphasized, namely from a critical aesthetic approach. Such questioning of the dualities intrinsic to the symbiotic relation between human and machine, which Brian Rotman refers to as a "bio-cultural-technological amalgam" (2010, 1), along with a recovery of philosophers concerned with the phenomenology of perception, such as Merleau-Ponty, led to a series of scientific and philosophical perspectives in which cognition and perception were no longer understood as two separate and independent categories. These integrative points of view also prompted scientists (and artists) to emphasize the often ignored gestural dimensions of speech (and writing), and to consequently give increasing relevance to haptic/tactile sensory modalities in the design of body and machine interfaces, more specifically, haptic interfaces designed for all kinds of purposes and practically all fields of knowledge (from medical prosthetic devices to computer games, marketing, alternative

reality platforms, arts, etc.). It thus follows that, one of the problematics involved here relates to the way in which a particular ideology came to gradually replace a pre-existing one. In other words, a specific sense modality was replaced by another, touch becoming the “dominant sense in this world of pervasive proximity, instead of vision” (Federman, as cited in Rotman: 2010, 134).

Far from wanting to give the idea of a Marxist interpretation of Hegel’s circularities as a system comprised of a thesis, an antithesis and a synthesis, what the subversion of a given paradigm, namely through the arts, seems to reinstate, is a balance between two seemingly opposite poles, be it soul and body, perception and cognition, software and hardware, vision and touch, human and machine, or any other kind of metonymic variation of such dualisms. Nonetheless, I believe that these processes of subversion, through a spiraling motion, arrive at their *synthesis* in the definition of *haptic* I have tried to convey here. In other words, haptic as a holistic operating definition of cognition and perception as a whole, which the arts – the emphasis here on digital literary artworks having resulted from the fact that this thesis mostly concerns writing and reading processes – through the use of machines like computers are able to convey.

On display at the Louvre Museum since its debut there in 1824, Canova’s sculpture, “Psyche and Eros,” is not intended to be seen from only one angle. Next to the lovers’ feet there is a handle, now disabled, built with the intention of allowing the sculpture to be revolved on its base. Furthermore, that which is not initially revealed by looking at it from the front, is that when seen from behind, laying next to the bodies of Eros and Psyche, are two elements capable of changing one’s introductory perspective: a jar and an arrow.¹⁶⁴ These two elements link the sculpture to the myth told by Lucius Apuleius in, written in the 2nd century AD. The jar containing the liquid that put Psyche to sleep, and the arrow used by Eros to return Psyche from her slumber. Because they are capable of distorting the equilibrium of the frontal view of their bodies, these two objects are also oppositely coincident, thus balancing each other, one being associated with death, the other with life. The haptic movement intended by Canova reveals a whole new reading of the two lovers that a static, frontal and more *visual* view cannot provide. The act of revolving the statue around its base, through a handle which activates a circular mechanism, also activates memory and matter, through haptic touch. What Canova’s statue is capable of transmitting, is this intermixing of gesture (through the matter used in the sculpture) and discourse (through the memories evoked by its constituent elements), creating an endless

¹⁶⁴ Please note that as it is now exhibited, viewers are allowed to move around the sculpture, and thus perceive it from various angles.

spiral vortex of interpretation and affect. In this sense, it is a literal and metaphoric mechanism, a finite composition used to represent infinity (or infinite revolutions of the combinatorics used to convey an infinite question). Due to its nature as a sculpture, its three-dimensionality sets it apart from inherently more ocularcentric paintings and visual representations. In fact, sculptures induce a more self-conscious proprioceptive perception seeing that the viewer moves around the object, occasionally touching it to feel its shape and texture. Furthermore, it is the vividness of its materialization as a 3D perceptual experience, combined with the narrative accounts of the myth, that completes the already mentioned vortex of interpretation. This raises the issue of the differences between the haptic as being embodied in the perception of this sculpture, and the haptic as being embodied in touch-screen interfaces focused on translating gestures into iconic and visual representations. In actuality, *transparent* screens can only offer a mitigated and impoverished presence of the proprioceptive haptic touch that a sculpture such as this is able to offer.



Fig. 5.2: “Psyche Revived by Cupid’s Kiss.” Source: <<https://m-a-g-a-r-t-e.blogspot.pt/2015/01/psique-reanimada-por-el-beso-del-amor.html>>, last accessed August 17, 2017.

Carving in Possibilities (2001),¹⁶⁵ by Deena Larsen (sounds by Matt Hansen) is a Flash piece of electronic literature that invites the reader to carve a sculpture of David’s face (a still image of Michelangelo’s sculpture exhibited at the Galleria dell’ Accademia, Florence). In it, the pointer

¹⁶⁵ <http://collection.eliterature.org/1/works/larsen__carving_in_possibilities.html>, last accessed February 20, 2019.

that moves through veiled lexias on-screen, replaces the chisel and stone. Reading/moving through these lexias, a blurred image of David's face morphs into a picture-clear image of his renowned cautious glare, signalling the moments before going into battle with Goliath. There are multiple readings, always subject to different interpretations, since the number of instantiations of reading does not correspond to the number of *sculpting* phases. In each new reading, through which the reader or *sculptor* is able to perfect his craft, movements of the pointer have to emulate the carefulness required of the sculptor with his chisel, meaning that a more sudden movement will not leave room for an attentive reading.

“Does your David lie only on the surface of the polished stone?”; “What makes your polished stone different from one tumbled in a riverbed?”; the reader is asked. “It will be the same stone long after his face is worn away.” In addition, “It is the ground... not the figure. The space... not the stone,” the reader is told.

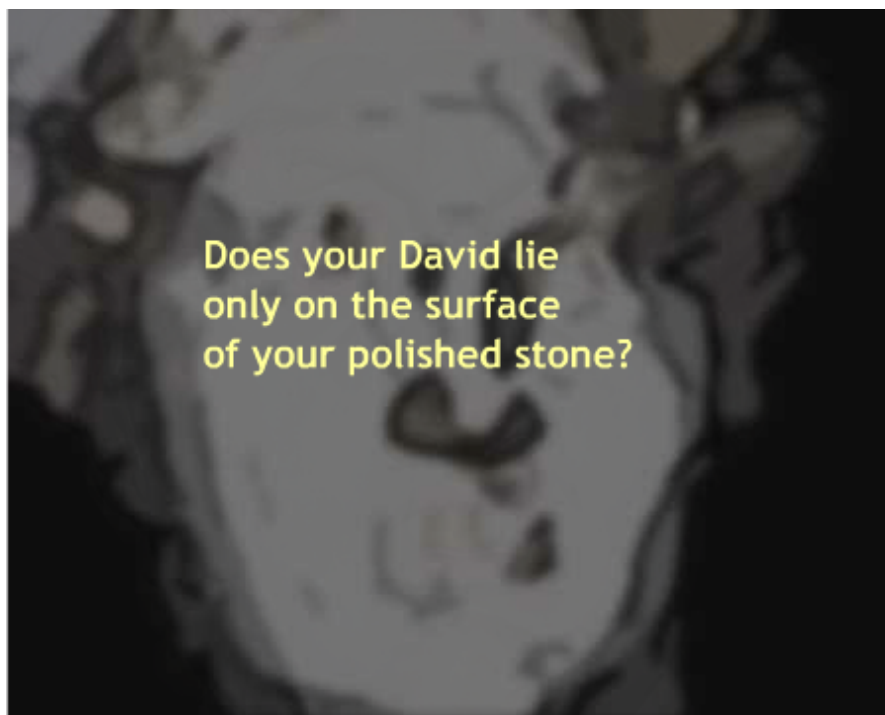


Fig. 5.3: *Carving in Possibilities*. Source: <<https://elmcip.net/creative-work/carving-possibilities>>, last accessed November 14, 2017.

This metaphor of carving a sculpture built into the interaction with the interface in *Carving in Possibilities* demonstrates how memory and matter walk hand in hand through speech and gesture, thus allowing for a process of haptic reading. Just like with ancient tombs, in which no presence of a corpse, apart from dust, is to be found, a meaning associated with a collective or individual memory remains, in face of the need to believe that that precise stone means something. The conveyance of meaning through the process of interaction is activated through the combination of perception and cognition. The sense of the haptic propelled via means of the action of

revealing lexias through the pointer, with the purpose of *sculpting* a clear image of David's face out of a blurred image, is no different from the act of seeing, perceiving or experiencing a live sculpture. Ultimately though, it does not matter which materials the sculptor uses to carve his ideas and actions. Examples such as these are what allow for the understanding of the haptic, not just as a sense modality, but also as a notion capable of containing and expressing the intricacies of both perceptive and cognitive activities. Therefore, my understanding of it as a circular notion, or rather, one more akin to that of a spiral, capable of exposing an exercise in *counter-geometry*, only made possible through the arts and their ambiguous, volatile and fluid capability to question (human) nature in its affirmations and contradictions.

5.3 Ex-foliation III: Haptic Reading is an Uttered Gesture

Being silent is not being dumb, it is to refuse to speak, and therefore to keep on speaking.
Jean-Paul Sartre, *What is Literature?*

During the course of the last year of writing this thesis, in order to rest my body and soul from abstract thinking and haptic concerns, I sat on my sofa and watched live musical performances by some of my favorite bands/musicians. It was during the viewing of a concert by Massive Attack at the MTV Studios in 1998,¹⁶⁶ that I suddenly noticed the close-up of a hand, a hand belonging to Liz Fraser, while performing “Teardrop.”

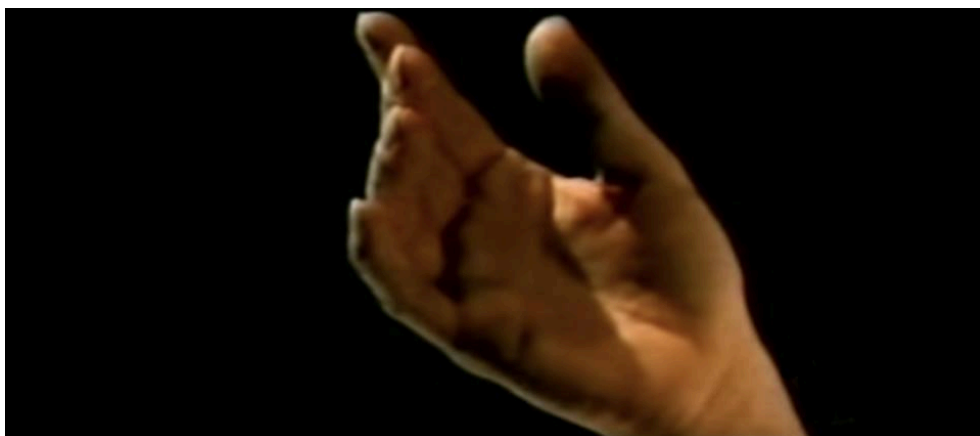


Fig. 5.4: “Hands” (Elizabeth Fraser performing “Teardrop” with Massive Attack, MTV Studios, 1998). Source: < <https://www.youtube.com/watch?v=jpLt4LB2pVU>>, last accessed August 17, 2017. Screenshot.

In an attempt to capture this gesture, at first for no specific reason, I paused the image and took a couple of screenshots. But during the next few days, this particular hand, and the gesture it

¹⁶⁶ <<https://www.youtube.com/watch?v=IKuFBxf3IA4>>, last accessed November 14, 2017.

enclosed, would turn into a reflection on the nature of gestures. What Liz Fraser’s hand seemed to communicate, was the experience of an unrepeatable moment before a singular audience, via an almost unconscious gesture reinforcing that already conveyed by the lyrics and the music. A benevolent hand trying to selflessly offer something without asking for anything in return, perhaps? A merciful act of giving from the artist to the audience? However, a rarefied one, or rather, both a rarefied voice and a rarefied gesture, muffled by a series of mediations in between. This observation led me to a creative process that consisted in searching for random gestures of the hands (and sometimes of the whole body) of particular charismatic live performances by iconic musical artists. This resulted in a series of a total of ten still shots of gestures, that I began by posting on Facebook, namely of: (2) David Bowie performing “Moonage Daydream,” Hammersmith Odeon, London, 1973; (3) Freddie Mercury performing “We Are the Champions,” Wembley Stadium, 1986; (4) Amy Winehouse performing “You Know I’m No Good,” Shepherd’s Bush Empire, London, 2007; (5) Morrissey performing “Miserable Lie,” w/ The Smiths, Live at Rockpalast, Hamburg, 1984; (6) Janis Joplin performing “Try,” Woodstock, 1969; (7) Jimi Hendrix performing “Wild Thing,” Monterey Festival, California, 1967; (8) Ian Curtis performing “Wilderness,” w/ Joy Division, Apollo Theatre, Manchester, 1979; (9) Zach de la Rocha performing “Bullet in the Head,” w/ RATM, Woodstock ‘99, East Stage, Rome, NY, 1999; (10) The Artist Formerly Known as Prince performing “Purple House,” Rave Un2 the Year 2000, Paisley Park, Minneapolis, 1999. Each image came with the reference of the respective musical performance, and was accompanied by the following description:

On the noisy trail of the gesture mediated by the hand, an increasingly rarefied voice. Although perceptible, and therefore, immune to oblivion. Just as these *virtual* words, manipulated by *actual* digits, and always certain that a single gesture is enough to change the whole world.

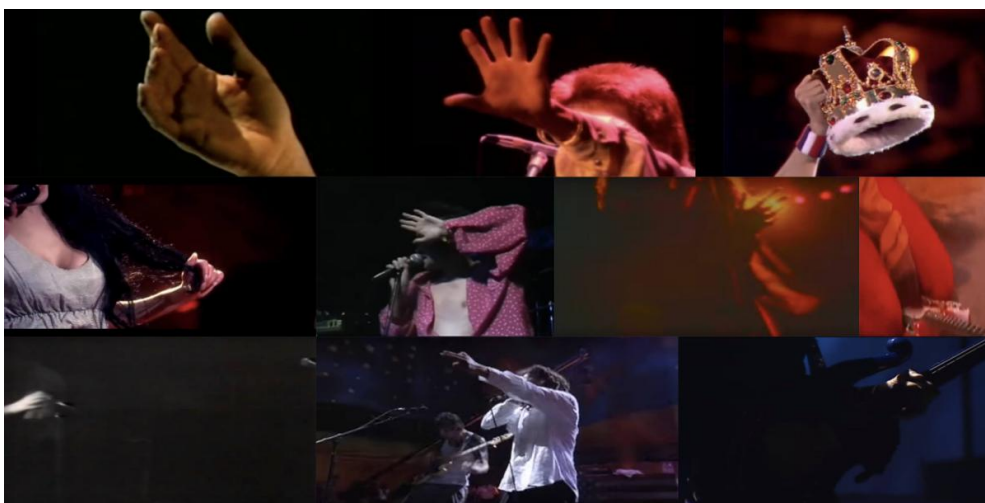


Fig. 5.5: “The Hands Series.” Stills from several videos on Youtube. <<https://www.facebook.com/diogo.marques.7982780/posts/1850872094939334>>, last accessed August 17, 2017.

However, this mediation process of rarefaction of the voice through the capture of the frozen gesture seemed incomplete, since I felt that it could be extended to other media. As such, the following step was to print postcards, in a series of ten, in order to send them to people with whom I regularly exchanged mail art, and whose personality traits I somehow associated with these artists and their unique gestures/utterances. Albeit, this time the description was different:

On the noisy trail of the gesture mediated by the hand, an increasingly rarefied voice. Although perceptible, and therefore, immune to oblivion. Just as these actual words, manipulated by virtual digits, and always certain that a single gesture is enough to change the whole world.

Ultimately, this creative process led me to think that, despite a series of mediations in space and time, these increasingly rarefied gestures still carried with them traces of utterances. Being an expression of those particular songs and singers, it seems that despite layers upon layers of mediation, one will tend to think that the gesture in itself was motivated by the act of speech. Nonetheless, one cannot ignore the significance of authorial intention behind the creative process, yet another layer to be taken into account, as well as potential future readings of these stills. On that account, this sort of reasoning will always be subject to interpretation, since we know that speech and hand gestures are deeply connected within the brain, being one of the reasons why we cannot avoid moving our hands when we speak. But at the same time, hand gestures (and body language in general) provide additional content for our speech interactions, which is to say, they are part of the multimodal pragmatics of human communication. Meaning that, between gesture and speech, there are centrifugal and centripetal forces. In the case of singers, arms and hands are specifically used as expressive elements in performing the songs. As Tim Ingold affirms, the distinction between music and dance, as well as between sound and movement, is not recognized by every society. The same goes for “vocal music (songs) and speech, and between dance movements and gestural signs, both of which rest on the assumption that words and gestures possess the property of semantic reference, conveying conceptual meanings that are detachable from the signs themselves.” Leading Ingold to believe that “it is no longer possible to draw an absolute dividing line between speech and song, or for that matter between gesture and dance” (Ingold: 1994, 345). As such, when I make reference to “rarefied gestures,” I am also referring to the process which both author (and future readers) have abstracted, connected and reallocated to these *gesturing hands*. Such gestures, are of course, recognizable to human perception, not only through vision, but chiefly through haptic perception.

In addition, this perpetuation of gestures leading to a series of subversions – from the unusual posts on Facebook, to the handling of postcards by both sender (the artist), receiver

(audience) and conveyor (postal worker) – draws attention to the intermixing of the actual and the virtual, emphasized by the dual nature of the word *digits*. The ambiguity resulting from the transmission of these gestures enables an altered form of utterance, namely, a collective one, built on both a virtual and actual network made of people and machines.

The hand is dependent on its capacity for manipulation, inasmuch as language is dependent on speech. Following on from Leroi-Gourhan's concept of "exteriorisation," intelligence may be understood as being dependent on the gesture itself, although taking into account the association between the human being, tool and raw materials at hand. This view completely rejects the idea of the brain as the center of all human operations, highlighting the body and its capacity for movement as the basis of all human actions. That which Leroi-Gourhan refers to as "liberations," - the liberation of the hand from its capacity to move, hence freeing up the face for language use, as a result of an erect posture, for instance - may as well be that which complements speech and gesture as two interdependent capacities. The indivisibility of brain and body as a single organism, may thus explain our capacity to perform activities such as walking and talking, while these activities, may in turn, be explained by an ontogenetic development which, according to Tim Ingold in his reading of *Gesture and Speech*, does not make a distinction between the biological and the social (1999, 428-430).

Digital literary artworks, as well as the haptic reading processes inherent to them, seem to reinstate the coupling between perception and action, which were separated by a long philosophical bias in which the significance of gesture was almost entirely dismissed. The capacity to think with one's fingers, hands, or the whole body, contradicts the idea of intelligence as an introspective activity, a product of the mind. In this view, consciousness is fully dependent on sensory perception as a whole, gesture being what ties it all together, giving meaning to an action by way of perception.

Another example of how gestures and discourse can work together in order to metamedially provide a haptic reading experience is *Consumição* (2017),¹⁶⁷ a "visual and sonic interactive poetry on the net" (in Jim Andrew's words).¹⁶⁸ This artwork is a digital variation of a series that seeks to reflect on the metaphor of the eating of words in language and communication, including a printed variation entirely made of edible paper and edible ink. Being in many ways circular, the poem for the edible version, written in the Portuguese language, led to the hypothesis of building a mechanism made of nine manipulable circles resembling a spiral (reminiscent of Dante's circles in *Inferno*). The circles may be moved with a pointer or finger, and

¹⁶⁷ <<http://wreading-digits.com/consumicao>>, last accessed February 20, 2018.

¹⁶⁸ Personal correspondence, from November 14, 2017.

where we started and know the place for the first time” (Pina: 2012, 15). These two lines belonging to T. S. Eliot’s *Little Gidding* (1942), the last of his *Four Quartets* (1936–1942), also speak for the entire series, spelling out the paradox between time and timelessness in a circular motion, reflected as well in the poem’s theme, form, and rhetoric. Pina’s and Eliot’s shared vision of poetry is not that different from Beckett’s view on “analogies and repetitions” in *Endgame*, or James Joyce’s genial *Finnegans Wake*, a book described by Umberto Eco as being “molded into a curve that bends back on itself (...) *finite* in one sense, but in another sense (...) unlimited,” where each “occurrence, each word stands in a series of possible relations with all the others in the text” (1989, 10, his emphasis).

In making this comparison, I am mindful of the associations with the word *revolution*, understood as an “action or an act of moving in a circular course or around some point,” a “circular movement,” a “cyclical recurrence,” a “rotation around an axis or centre,”¹⁶⁹ or, a change in paradigm, be it political, technological, social, educational, etc. The dialectical movements between texts and artifacts that I touch on in this last chapter, identify the revolutions and circularities leading up to specific movements in digital literary artworks, helping us with our proposal for a renewed phenomenology of the haptic. To put it another way, such artworks may ultimately be thought of as a series of ever-evolving cogwheels, constituting, or rather, meshing with, a much greater and continuously rotating gear, namely, that of literature in general.

Indeed, one of the shaping arguments of this thesis, is that literature comes about through complex mechanisms and processes that are deeply affected by a circularity that is inseparable from the materialities that go to make up its aesthetics, as well as the history of the affective-sensorial responses to it. To this end, this final chapter takes some time to bear witness to circularity as it is built-in thematically and formally in writers like Jorge Luis Borges, James Joyce, and Samuel Beckett. This occurs with full and counterpointing awareness that now is a crucial time for literature, currently immersed in a vexed debate with regard to its beginnings and potential endings, greatly intensified by practices and mediations with digitality at their core. One of the contexts in which this is taking place, is within the realm of increasing academic and industrial research on media that call for tactile/haptic functions, along with efforts to enhance immediacy in Human-Machine Interaction (HMI) so as to naturalize it, leading to a literalization of the electronic as machine and an instrumentalization of sensory perception. This occurs either by representing touch and gesture as exteroceptive and superficial, or by holding the promise of a remediated naturalness of presence, transparency and intimacy.

¹⁶⁹ <<http://www.oed.com>>, last accessed August 17, 2017.

In this regard, it is of significance to note that sixteen years after its founding, the Electronic Literature Organization (ELO) decided to choose as the main theme for its 2015 conference in Bergen, Norway, “The End(s) of Electronic Literature.” Unexpectedly, during the opening keynote address, Espen Aarseth suggested removing the word “Electronic” from the ELO’s name/acronym, thus leaving only the words “Literature” and “Organization” (Aarseth: 2015). Despite this having been an ironic provocation (Aarseth ended his *performance* by asking the audience to repeat after him the acronym “LO”), Aarseth’s intervention directly concerned itself with the recurrence of eschatological and teleological views that still tend to see electronic literature either as the end of literature or as a synonym of something new. According to Sandy Baldwin and Rui Torres, views of this nature “imply too much teleology and see electronic literature purely as the unfolding of the possibilities of the apparatus,” by means of which “the term ‘electronic literature’ is itself a literalization, ‘electronic’ supplying the technical answer to the aesthetic questions of ‘literature’” (2014a, XVI). As a consequence, Baldwin and Torres seem to suggest that such literalizations leave no room for a perspective of literature as the sum of its various interrelations, being a constant and intermedial process of experimentation.

Baldwin and Torres’s remarks on the subject are only a small part of their argument, given that they are intended to serve as an introduction to the English translation of a series of articles by three precursors of Portuguese Experimental Poetry, or PO.EX (Ana Hatherly, E. M. de Melo e Castro and Pedro Barbosa; see Baldwin and Torres 2014b). Strategizing intermediality, language programmability, and the confluence of tradition and innovation in their creative processes, PO.EX’s theories and artworks paved the way for a series of experiments using both electronic media and digital technologies (Pedro Barbosa’s groundbreaking work with computer-generated text would appear in the 1970s, while Ana Hatherly and Melo e Castro began their PO.EX related activities in the 1960s). The considerations that arose out of this are certainly not far removed from what Aarseth posited back in 1997. At the time, Aarseth chose to open his book, namely, *Cybertext: Perspectives on Ergodic Literature*, by quoting from Italo Calvino’s 1967 lecture on “Cybernetics and Ghosts” (Calvino: 1986, 3–27), in which the OuLiPo’s co-founder described literature as a “combinatorial game” composed of several levels, and furthermore, as a machine able to “perform all the permutations possible on a given material.” Calvino also saw poetic outcome as being dependent on “a man endowed with a consciousness and an unconscious, that is, an empirical and historical man” (Calvino, as cited in Aarseth: 1997, v). While this seems to be an efficient lever for a large part of Aarseth’s argument, his renewed reading of Calvino’s ideas was adapted to the problematic surrounding the notions of “cybertext” and “ergodic literature,” moving beyond Calvino’s metaphoric meaning of a Literature/Writing

machine. In fact, for Aarseth, “cybertext” and “ergodic literature” are to be understood as an actual machine. For this purpose, he defines cybertext as a concept focused on “the mechanical organization of the text, by positing the intricacies of the medium as an integral part of the literary exchange,” as well as, “a mechanical device for the production and consumption of verbal signs” (1997, 1–7). As for ergodic literature, it is described as a physical movement, “a machine for the production of variety of expression” (3). In addition, by way of revealing the inherent mechanisms that support them, these “organic and inorganic systems” (1) are also composed of feedback loops of a different genesis, having the ability to inform each other.

While such a description inevitably reminds us of a series of cogs that contribute toward the smooth functioning of a larger machine – each rotating in different directions so as to find the right balance in its functioning and dynamics – Aarseth does not directly speak of circles. Nonetheless, I believe that most of his theory already denotes a certain sense of open circularity, being significantly linked to the trope and literal manifestations of the labyrinth. In order to illustrate the literary machine as a comprehensive series of labyrinthine mechanisms which are not restricted to what Jörgen Schäfer calls “texts in computer-based media” – despite the evidence “that computers are particularly well suited for elucidating the main features of cybertexts” (Schäfer: 2006, 1) – Aarseth opts for the retrieval of an ancient dual meaning of the labyrinth metaphor, in which both unicursal and multicursal texts – “the unicursal [being], where there is only one path, winding and turning, usually toward a center; and the multicursal, where the maze wanderer faces a series of critical choices, or bivia” (1997, 5–6) – are able to coexist (8). This also means that, structurally speaking, these scenarios are ultimately *circular*, whether linear, maze-like, or rhizomatic in nature, each of these variations having a *center*, as well as an entrance and a way out.¹⁷⁰ In addition, while quoting Borges to express the idea of “the book and the labyrinth [as] one and the same” (Borges, as cited in Aarseth: 1997, 88), he also states that “a labyrinth without exit is a labyrinth without entrance; in other words, not a labyrinth at all” (7).¹⁷¹

¹⁷⁰ Attending to the variety and proficuous nature of labyrinthine structures, I do not wish to imply that labyrinths are to be understood as circular, at least not literally speaking. However, the use that I make of the idea of circularity, cannot be disassociated from the metaphor of the labyrinth, since it is not intended as a closed circularity, but rather, an open one, in spiral movements, which in a way, are also a form of circularity. It is in light of these open and circular expansive movements, that I have tried to reduce labyrinthine structures to circular shapes. Moreover, even though some kind of linearity in labyrinths can be assumed, this linearity may be regarded as circular, for instance, in applying it to the *coincidentia oppositorum* theory. Therefore, I believe that it is this idea of a “Theory of Contrariness” that can be read in Aarseth, namely in his interpretation of Reed Doob, of a possible harmony between two kinds of labyrinth seeming to contradict each other: “Therefore, I find it reasonable to assume that the image of the text as a labyrinth has undergone an ideological transformation, from a harmonic duality where the figurative likeness of the narrative text as unicursal coexisted with a tropology of multicursal aspects, such as repetition, interlaced narrative threads, prolepsis, and so forth” (Aarseth: 1997, 7).

¹⁷¹ Here Espen Aarseth is also referring to the transformation from a notion of labyrinth as a metaphorical trope (as in Borges’ book-labyrinth identification), to a notion of labyrinth as an actual informational structure for traversing a textual field (as in actual cybertexts).

However, if a labyrinth is to be circular, or to inescapably stage and admit circular trajectories, we may question ourselves as to what kind of circularity may be involved.

It is via Borges, a well-known master in the creation of literary labyrinths, that we are able to find several possible explanations – or better still, extensions – for these inner circularities, such as through his recurrent references to the trope of the sphere. This can be seen in some of his short fictions, like “Lottery in Babylon” and “The Library of Babel.” In the former, one reads that the Babylonians “obey the dictates of chance, surrender their lives, their hopes, their nameless terror to it, but it never occurs to them to delve into *its labyrinthine laws or the revolving spheres that manifest its workings*” (Borges: 1998, 104; emphasis added), while the Library of Babel “is a sphere whose exact center is any hexagon and whose circumference is unattainable” (113).

Moreover, the trope of the sphere would later be analyzed by Borges in an essay titled “Pascal’s Sphere” (1951). In it, the significance of the sphere as a double paradox of time/infinity and of unity/multiplicity, becomes clearer via means of a line that he draws, going from Xenophanes of Colophon to Pascal, so as to illustrate universal history as a series of distinct symbolic characteristics that the shape of the sphere contains within itself. Borges reaches the conclusion that “perhaps universal history is the history of the various intonations of a few metaphors” (Borges: 1999, 353) – a statement with distinct implications with regard to this chapter’s argument, as it is predicated on the conceptual viability of tropes of circularity and their various associations within an understanding of electronic literature, as well as their processes and effects – by retrieving several variations of the same formula, most notably, the sphere, as a geometrical figure “whose center is everywhere and whose circumference is nowhere” (352). He recalls Alain de Lille, the twelfth-century French theologian, for whom the sphere would come to represent God, adding that, the medieval mind conceived God to be present in each one of his creatures, but “not limited by any one of them” (352). Later, with Giordano Bruno’s *De la causa, principio e uno, V* (1584), the liberation from “stellar vaults” would enable the replacement of God by man as the center of universe. Nonetheless, seventy years later, with Pascal,

not even a glimmer of that fervor remained, and men felt lost in time and space. In time, because if the future and the past are infinite, there cannot really be a when; in space, because if every being is equidistant from the infinite and the infinitesimal, there cannot be a where. (352–353)¹⁷²

Relevant to an understanding of this, is that according to PO.EX poet, critic, and theoretician Ana Hatherly, the feeling of being lost in space and time that followed the Renaissance period, is one of the reasons for the proliferation of visual texts presenting a

¹⁷² This might explain Pascal’s “cancellations” and “hesitations” at the time of writing “Nature is an infinite sphere, the center of which is everywhere, the circumference nowhere,” leaving a now famous and enigmatic manuscript with scratched traces of the word “effroyable” [“frightful”] right next to the word “sphere” (353).

labyrinthine structure in the Mannerist-Baroque periods (see also Schäfer: 2006). In a series of essays that accompanied the publication of her collection of visual texts from the seventeenth and eighteenth centuries, Hatherly refers to the European mannerist as someone that began to see the world as a “poetic labyrinth,” and no longer a place dominated by classical rules of order and harmony (Hatherly: 1995, 41–42). Hence the predilection for subforms such as the optical maze, the game of mirrors, and multiple perspectives, all of which represent varied attempts to capture “the enigma of man and his contradictory world” (42). In addition, since this metamorphosis of words and images is dependent on both the “author’s pride” and the “reader’s praise” (59–60), a “nontrivial effort” is required from both author and reader in order to proceed along the text (Aarseth: 1997, 1). In relation to the theory of the cybertext, this commitment between author and reader is also reminiscent of the triangular representation of the textual machine suggested by Aarseth: a triangle composed of the verbal sign, the medium and the (human) operator, with fluid and interdependent boundaries (21) that may be extended, I believe, to a circular form. That is to say, if we combine the triangular textual machine with the labyrinthine cybertext, we may arrive at the counter-intuitive structure of a circular triangle (or Reuleaux triangle), composed of several intersections and intermediations. In fact, the labyrinthine cybertext may already be an instance of the triangular textual machine, that is, a machine in which the verbal sign is used by the human operator for manipulating the medium.

How does all this relate to Borges and the trope of the sphere? In “The Death and the Compass,” perhaps one of Borges’s most circular short stories, the reader is reminded of the ways in which an equilateral triangle turns out to be, after all, a circular tetrahedron.

It was I who sent the equilateral triangle to Treviranus. I knew you would add the missing point, the point that makes a perfect rhombus, the point that fixes the place where a precise death awaits you. I have done all this, Erik Lönnrot, planned all this, in order to draw you to the solitudes of Triste-le-Roy. (Borges: 1998, 156)

Not only does the tetrahedron prove to be *circular*, due to the geographical positions of the murders, but in addition, the implied notion of *rebirth* foreshadowed by the imminence of the main character’s death, also denotes the idea of circularity. However, this is where Borges pulls the rug out from under one’s feet, since Borges does not intend to validate theories such as Nietzsche’s “Myth of the Eternal Return.”¹⁷³

¹⁷³ The influence of the pre-Socratic *coincidentia oppositorum* is also evident, by means of which a straight line is potentially no different from a circular line (a formulation that is reminiscent of Zeno’s Paradoxes of Motion): “There are three lines too many in your labyrinth,” he said at last. ‘I know of a Greek labyrinth that is but one straight line. So many philosophers have been lost upon that line that a mere detective might be pardoned if he became lost as well. When you hunt me down in another avatar of our lives, Scharlach, I suggest that you fake (or commit) one crime at A, a second crime at B, eight kilometers from A, then a third crime at C, four kilometers from A and B and halfway between them. Then wait for me at D, two kilometers from A and C, once again halfway

The different circularities at hand are further evidenced in Sandra Bettencourt's description of Borgesian texts as "a cosmos composed of many independent microcosmos that, nonetheless, are able to form a paradoxical system of a multiple unity (...) a point of arrival and a point of departure" (Bettencourt: 2010, 85). Furthermore, expressed through an additional figure, the cosmos is an "interrelational and metarelational archipelago" (85) composed of rhizomatic spaces. Which is to say, only by travelling from text to text are we able to unravel the referred "metaarchipelago." As such, despite its recurrence, the sphere may seem to the reader as if almost assuming the contours of a spiral trajectory, making us wonder whether it is possible to reduce the circularities of Borges to the spherical trope.

The Hegelian dialectical movements in philosophy are one possible way of addressing this, especially since G. W. F. Hegel's *Encyclopedia of the Philosophical Sciences* [1817] describes a systematic "circle of circles" returning upon itself and expanding indefinitely:

Each of the parts of philosophy is a philosophical whole, a circle that closes upon itself; but in each of them the philosophical Idea is in a particular determinacy or element. Every single circle also breaks through the restriction of its element as well, precisely because it is inwardly [the] totality, and it grounds a further sphere. The whole presents itself therefore as a circle of circles, each of which is a necessary moment, so that the system of its peculiar elements constitutes the whole Idea – which equally appears in each single one of them. (Hegel: 1991, 39)

However, in order to understand Borges's actual motivations, it is crucial to examine the influence that the work on "Set Theory" proposed by mathematician Georg Cantor had on his writing.¹⁷⁴ Defined as a collection of definite and distinguishable objects of perception or thought conceived as a whole, according to N. Katherine Hayles, part of Borges's fascination with Cantor's theory relates to the paradoxical possibility of a set containing in itself, "a whole that both contains and is contained by the part," albeit, in a subversive way (1984, 27). According to Hayles:

between them. Kill me at D, as you are about to kill me at Triste-le-Roy.' 'The next time I kill you,' Scharlach replied, 'I promise you the labyrinth that consists of a single straight line that is invisible and endless'" (Borges: 1998, 156).

¹⁷⁴ Please note that Borges began referring to "Set Theory" via the work of Bertrand Russell (via William James), and not through Georg Cantor. This apparent imprecision appears in two of his non-fiction writings, namely, "The Perpetual Race of Achilles and the Tortoise" (1929) and "The Doctrine of Cycles" (1936). In the first, one may read that, "For Russell, the operation of counting is (intrinsically) that of equating two series. For example, if the first-born sons of all the houses of Egypt were killed by the Angel, except those who lived in a house that had a red mark on the door, it is clear that as many sons were saved as there were red marks, and an enumeration of precisely how many of these there were does not matter" (1999, 46). However, in the latter, the same example is used, but this time with reference to Cantor: "Cantor destroys the foundation of Nietzsche's hypothesis. He asserts the perfect infinity of the number of points in the universe, and even in one meter of the universe, or a fraction of that meter. The operation of counting is, for him, nothing else than that of comparing two series. For example, if the first-born sons of all the houses of Egypt were killed by the Angel, except for those who lived in a house that had a red mark on the door, it is clear that as many sons were saved as there were red marks, and an enumeration of precisely how many of these there were does not matter" (116).

His strategy is seduction, for he progresses to this revelation by several seemingly innocuous steps. The first step in his strategy is to transform a continuity into a succession of points, and to suggest that these points form a sequence; there follows the insinuation that the sequence progresses beyond the expected terminus to stretch into infinity; then the sequence is folded back on itself, so that closure becomes impossible because of the endless, paradoxical circling of a self-referential system. This complex strategy (...) has the effect of dissolving the relation of the story to reality, so that the story becomes an autonomous object existing independently of any reality. The final step is to suggest that our world, like the fiction, is a self-contained entity whose connection with reality is problematic or nonexistent. (143)

This sort of strategy is seen by Hayles as being circular (148), since apparent linearities suddenly become circularities, thus evincing the characteristics of a self-referential system (150), given that the “effect is to create a self-referential field from elements that we initially take to be separate and distinct” (150-151), asserting,

after he insinuates a sequence, he subverts it by making it a circle or by making the sequence consist of a single term that repeats itself endlessly. In this turning of a sequence back on itself, Strange Loops can appear that render reality itself an undecidable proposition. (148)

Nevertheless, for Hayles there is a major difference between Borges and Cantor, leading her not to hesitate in considering it a subversion on Borges’s part. Whereas Cantor saw the alephs as real, and therefore, as a means to demonstrate in a Platonic manner that “self-referential systems can be resolved,” Borges, on the other hand, uses Cantor’s logical analysis and the self-referentiality contained within the Aleph, “to show how profoundly illogical its results can be” (159-160), and by using this symbol, turns it into a “metaphor through which he can subvert Cantor’s hope that infinity would finally be tamed and brought within the bounds of rational analysis” (161). This way, Hayles concludes,

We thus come, by virtue of Borges's dialectic, around again to the realization that to confirm something is to deny it, to disrupt it is to reconstitute it. The pattern is circular. (166)

Perhaps the spherical spiral, a special type of loxodrome, resembling M. C. Escher’s woodcuts “Sphere Surface with Fish” (1958) and “Sphere Spirals,” (1958) is the best way to settle this intricately counter-intuitive, but at the same time quite rational *counter-geometry*. In fact, in considering the labyrinth as a cherished literary (sub)form, Italian poet and critic Arrigo Lora-Totino, sees visual literary labyrinths as being “a system of spirals,” in which the spiral “indicates the dynamic link between the microcosm and the macrocosm, that is, the idea of movement in the dialectics between centripetal and centrifugal forces” (Lora-Totino: n.d., para. 7), by means of which “movement is the key factor which dominates the construction of verbal labyrinths” (para. 8). Interestingly, in a different context, specifically one concerned with reading as a process, Robert Scholes adds the metaphor of a two-dimensional circle composed of “centrifugal and

centripetal postures” (Scholes 1989: 8) to the idea of a one-dimensional straight line, going only backwards and forwards. He does not, however, discard the latter, although asserting that the circle “covers a lot more territory” (8). Instead, Scholes argues that reading is “dialectical,” meaning that: “Backward and forward movements and then centripetal and centrifugal impulses are the differential forces that drive the reading process,” without which “the process stops, becomes dead, ceases to be” (9).



Fig. 5.7: Left: “Sphere Surface with Fish”; woodcut. Right: “Sphere Spirals”; Woodcut. Source: <<http://www.mcescher.com/gallery/recognition-success/>>, last accessed February 22, 2018.

For Nico Israel, spirals are recurrent in the artworks of twentieth-century writers and visual artists, functioning as a means to “illuminate how conceptions of modernity, history, and geopolitics are mutually involved” during this particular century:

Embodying tensions between teleology and cyclicity, repetition and difference, locality and globality, spirals challenge familiar modes of organizing disciplines of study. Spirals not only complicate literary and art history’s familiar spatiotemporal coordinates (including those based on nation and period), but also offer a way of reconceiving the “distribution of the sensible” across that century.” (Israel: 2015, 2)

Despite the historical approach Israel uses to trace the use of the spiral in arts – one that does not discard its duality, already present “in proto-Baroque and Baroque representations” (28) – a significant association proposed in his volume, is his interpretation of the spiral as embodying a certain eroticism, which should also be understood in light of his idea of “recoiling entropy.” For that matter, Israel searches for arguments in the heart of the word’s etymology, which, according to the OED,

is a term from geometry describing a “continuous curve traced by a point moving round a fixed point... while steadily increasing (or diminishing) its distance from this” fixed point. As with many familiar forms – take the classic example of a line – geometry gauges the relation between a fixed or an original point and a point or points in the distance. Unlike many other familiar geometrical forms, however, of crucial importance in and for

the spiral is the movement that connects those points. The spiral curves or swerves around in such a way as to produce what Barthes calls “levels” of distance from or proximity to the fixed point. (22-23)

Beginning with avant-garde movements from early twentieth-century, namely Italian Futurism, British Vorticism and Russian Constructivism, in which spirals were a way to demonstrate an association with these movements’ conceptions of “modernity, energy, and spatiotemporal expansion” (8), Israel proceeds to analyze the use of spirals in the works of modernists, expressly, James Joyce and Marcel Duchamp, as a “sign for an energy-sapping anemia that challenged those early-century associations.” Furthermore, this idea of “recoiling entropy,” would later be fulfilled in the works of Samuel Beckett and Robert Smithson, calling “into question the very foundation of the project of modernity and the colonial-imperial project and man-centered histories it subtended” (8). In addition, according to Israel, Duchamp and Joyce make use of “entropic spirals” as a way of connecting “sexual desire to proclivities within language.”



Fig. 5.8: Left: Constantin Brancusi, “Symbol of James Joyce” (1929). Source: <<https://www.pinterest.com/pin/560768591087626491/>>, last accessed January 12, 2018. Right: “Anémic Cinema” (1926), by Marcel Duchamp. Screenshot. Source: <<https://www.youtube.com/watch?v=dXINTf8kXCc>>, last accessed January 12, 2018 (right).

In Joyce, this occurs through the use of a quasi-Esperanto that flows “toward the whirlpools of (homo)eroticism and colonial power relations”; whereas in Duchamp, “the whirling, obscene, transatlantic pun is structured like a tendentious Freudian joke that operates against the gender and class dynamics it seems to propound” (118). Whether in pieces like “The Large Glass” and “Étant Donnés,” two works infused with eroticism, or in the “Precision Optics” series (which includes “Rotary Glass,” “Rotary Demispheres” and “Rotoreliefs,” as well as “Anémic Cinema”), spirals are a challenge to what Duchamp called “retinal art,” in which language is seen as a trigger of desire (114-116), a trigger that is far from depending solely on vision and visibility.

As Borges would put it, in his story bearing the same name as his 1945 volume, *The Aleph*,

I come now to the ineffable center of my tale; it is here that a writer's hopelessness begins. Every language is an alphabet of symbols the employment of which assumes a past shared by its interlocutors. How can one transmit to other the infinite Aleph, which my timorous memory can scarcely contain? In a similar situation, mystics have employed a wealth of emblems: to signify the deity, a Persian mystic speaks of a bird that somehow is all birds; Alain de Lille speaks of a sphere whose center is everywhere and circumference nowhere; Ezekiel, of an angel with four faces, facing east and west, north and south at once. (It is not for nothing that I call to mind these inconceivable analogies; they bear a relation to the Aleph.) (1998, 282)

To paraphrase one of Borges's sharpest conclusions, perhaps literature is the history of the diverse spiralizations of these inconceivable analogies. This outlook is at the core of this chapter, interested in both circularity/spiralization and the inconceivabilities therein. The examples used, which could have been taken from a potential history of literature so as to describe the dynamic circularity of contraries, are in fact abundant and prolific, providing a useful foil for an understanding of associated processes in the mechanics and aesthetics of electronic literature today.



Fig. 5.9: Robert Fludd and Johann Theodore de Bry. Pages 26 and 27 of *Utriusque Cosmi, Maioris scilicet et Minoris, metaphysica, physica, atque technica Historia* [1617–1621]. Source: microfilm from the original in the Bancroft Library. Source: <<https://archive.org/details/utrusquecosmima01flud>>, last accessed January 12, 2018. Screenshot.

Ultimately, if we were to agree with Samuel Beckett – when referencing Giordano Bruno’s ideas on the *coincidentia oppositorum* theory – in that “there is no difference (...) between the smallest possible chord and the smallest possible arch, no difference between the infinite circle and the straight line” (Beckett: 2001, 21), a single page would suffice to illustrate this, specifically, page 26 of Robert Fludd’s *Utriusque Cosmi, Maioris scilicet et Minoris, metaphysica, physica, atque technica Historia* (“The metaphysical, physical, and technical history of the two worlds, namely the greater and the lesser”), published in Germany between 1617 and 1621 (with the help of engraver Johann Theodore de Bry). Despite its embedment within the finite page of the codex, strangely enough, this illustration enables us to think of the codex as a circular mechanism with no actual beginning or end, depicting the infiniteness of the cosmos and its origin by means of a black square surrounded by four repetitions of the inscription *et sic in infinitum* (“and so on to infinity”).

Nonetheless, regardless of the codex’s status as “one of the most flexible and powerful information tools yet invented, with a capacity for change that is not exhausted yet” (Aarseth: 1997, 9), functioning as a machine able to introduce new platforms/paradigms for thinking in a truly revolutionary fashion, my main interest lies in another type of revolution performed by its mechanisms. An example of the latter may be found in what Manuel Portela affirms with relation to the topology of the codex, when describing it as a “multidimensional space for meaning, exploring the articulation between the page as a unit and the motions from page to page,” thus revealing “itself as a computational engine, that is, as a mechanism that governs the distribution of letters and blanks on the page surface,” its “signifying power [depending] upon various layers of symbolic inscription” (Portela: 2013, 23).

Portela's argument concerning the machinic and computational characteristics of the codex is based on a specific case study, a novel that makes use of the circle and the Möbius strip as the center of a relationship between “bibliographical coding,” “linguistic coding,” and “narrative coding,” namely, Mark Z. Danielewski’s *Only Revolutions* (2006). In his analysis, Portela establishes a complex numerical and topological analysis of Danielewski’s novel, revealing the circularity of its mechanisms, and developing an argument that goes beyond “the tradition of complex and dynamic print works” in the sense that, despite having the codex as its reading device, these artifacts should be read as “digital typographic novels” (Portela: 2012c, 53). On that account, we may observe interesting relations of prefiguration across Borges, Danielewski, as well as in electronic literature’s processes and aesthetics.

5.5 Ex-foliation V: Haptic Reading is both an Endgame and an A(wake)ning

The end is in the beginning and yet you go on.

Samuel Beckett, *Endgame*

A way a lone a last a love a long the

James Joyce, *Finnegans Wake*

The endgame is the final stage of a chess game, when there are only a few pieces left on the board. Given that it is the most decisive phase in the game, it allows scant room for rethinking one's strategy. In other words, the player should already have, as much as possible, a clear idea of the movements he must perform in an almost automatic fashion, in order to win the game. *Endgame* is also the English title of *Fin de Partie*, a 1957 one-act play by Samuel Beckett, in which two pairs of characters, - namely, Hamm and Clov, and Nagg and Nell - confined to a room, talk about anachronic ends and beginnings in a circular fashion. In this tridimensional chessboard, each character's confined movements have a very sharp surgical purpose, together with each line of speech, both being of crucial importance to the "final movement" – whether a checkmate or a stalemate, we do not know (Adorno: 1982, 146).

We do know, however, that Beckett was an avid player of chess: suffice to say, in *Murphy* [1938], his first published novel, he dedicates almost an entire chapter to a chess game between Murphy and the most intriguing patient in a mental hospital, Mr. Endon. Murphy's moves, which may be considered normal within the context of a conventional match, cannot compare in any way to his opponent's contemplative moves. In an exquisite dance of circular and repetitious movements, Mr. Endon moves his pieces with no intent of either losing or winning, paling Murphy's moves in comparison, a situation that culminates with the latter's total capitulation.¹⁷⁵

Such strange and circular aesthetics seem to be mirrored in several of the analogies and repetitions we are able to find in *Endgame*. It is Theodor Adorno who sets the tone for its critical reception, specifically, in "Trying to Understand Endgame," an essay published four years after the play's first staging. Through a negativist comparison of life with the final stage of a chess game, Adorno states that despite Hamm being the king, "about whom everything turns and who can do nothing himself" (1982, 146), the audience is condemned from the beginning to leave the play without a final resolution. Yet, when the play starts, these characters' fate is already plotted.

¹⁷⁵ For a virtual chessboard visualization of the movements described by Beckett, visit <<http://www.chess.com/blog/thompunton/chess-in-literature-murphy-vs-mr-endon-in-murphy-by-samuel-beckett>>, last accessed August 8, 2015.

It is a chiasmatic game between beginnings that are ends, and ends that can mean new beginnings, a Möbius strip representing “the threat of cyclical existence” (Gontarski: 2008, 426), in which sentences like the one uttered by Hamm during his central monologue, “The end is in the beginning and yet you go on” (Beckett: 1992b, 126), instigate a continuous blurring of hypothetical beginnings and ends, shattering any possibility of fine temporal distinctions.

There are multiple comparisons that can be made between Adorno’s essay and the end(s) of electronic literature. Take for instance Adorno’s interpretation of Hamm’s identity, or better still, “a non-identity with himself.” For Adorno, while “he desires the end of the torment of a miserably infinite existence, he is concerned about his life, like a gentleman in his ominous ‘prime’ years” (Adorno: 1985, 145). This unavoidably leads one to think of electronic literature itself, in its search for a (non-)identity. But I do not wish to exhaustively explore this here, since it would require too much of a hermeneutic effort. For this chapter’s argument, what is crucial, is the specific material aspects that these works’ mechanisms convey, which may be used to rethink digital literary works. Moreover, I believe that this is an assumption that may not be simplistically reduced to the metaphorical view of electronic literature as an endgame being played by literature. On the contrary, these materialities can become quite literal, bringing to mind the Aristotelian notion of a circle as the basic principle for the operation of mechanisms, “the origin of all wonders,” an expression often attributed to Aristotle, capable of comprising contradictory movements, as described by Lyotard with reference to Marcel Duchamp’s “The Bride Stripped Bare By Her Bachelors, Even” (1923):

Machination reverses the direction, and hence the impact, of forces. Aristotle gives as an example the movement of a circle and, in principle, the movement of any *mèchanè*. The extremity A of the diameter of a moving circle moves in a direction opposite to that of the other extremity B: point B goes up when point A is going down. (Lyotard: 1990, 43)

This principle alludes to not just a circle, but the movement(s) of a circle: a clash of forces; a contradiction between approximation and deviation that can be found in language and communication, in the way we interact, through touch and gesture, with media and devices; and finally, in a certain intangibility that is sometimes needed in order to have some grasp, hence presupposing a *haptocentrist* rather than *ocularcentrist* perspective (see Jay: 1994).

Considering these opposing contiguous movements, in one of the most intriguing parts of Adorno’s essay, we find that Hamm and Clov, the two main characters, who form an inescapable relationship (one being blind and unable to stand; the other having a limping and being unable to sit), cannot live without each other, enabling one to view the latter as being “the glove with which the master touches the world of things, which he can no longer directly grasp” (Adorno: 1982, 144). Despite being open to several interpretations, not to mention Beckett’s

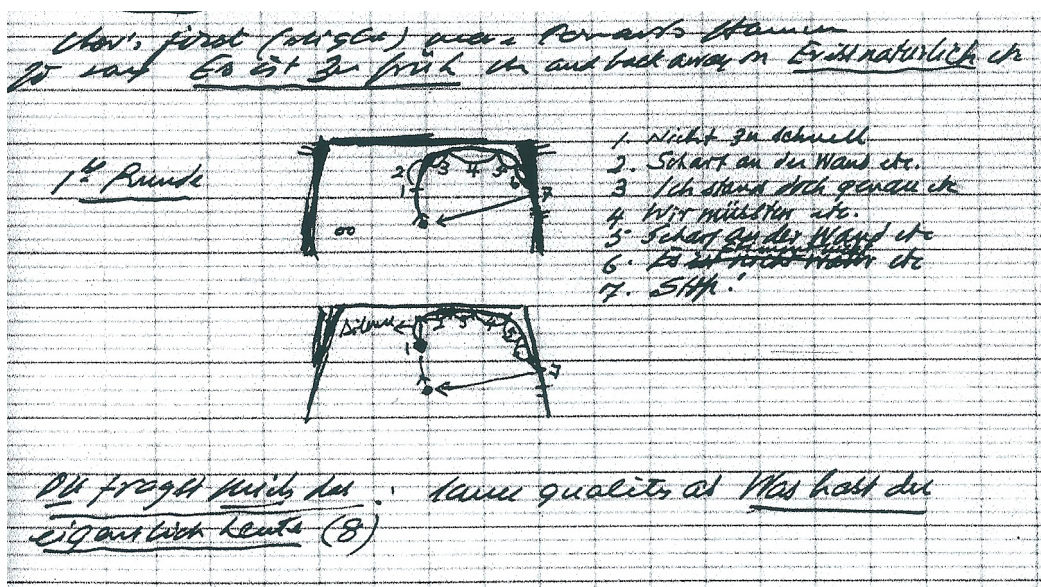
reserves in providing explanations, it is highly unlikely that the choice of names for his characters was a matter of chance (Gontarski: 2008, 423; Cohn: 1973, 141). With respect to such multiplicity of meanings, while some of these interpretations make reference to the Beckettian trope of war as “a hammer (Hamm) driving three nails – Clov (from the French *clou*), Nagg (from the German *Nagel*), and Nell (from the English *nail*)” – hence echoing Christ’s crucifixion, “a death that itself was not a death, an ending that entailed a new beginning” (Gontarski: 2008, 423), Adorno’s view is somewhat different:

Only the name of the old mother, Nell, is somewhat common even if obsolete; Dickens uses it for the touching child in *Old Curiosity Shop*. The three other names are invented as if for bill-boards. The old man is named Nagg, with the association of “nagging” and perhaps also a German association: an intimate pair is intimate through “gnawing” (*Nagen*). (1982, 142)

As for Hamm and Clov:

According to his name, Hamm’s counterpart is what he is, a truncated clown, whose last letter has been severed. An archaic expression for the devil sounds similar - cloven foot; it also resembles the current word “glove”. He is the devil of his master, whom he has threatened with the worst, leaving him; yet at the same time *he is also the glove with which the master touches the world of things, which he can no longer directly grasp*. Not only the figure of Clov is constructed through such associations, but also his connection with the others. (144; emphasis added)

This places Adorno’s haptic considerations in direct dialogue with Beckett’s haptic concerns, a term that, in the work of Samuel Beckett, according to Trish McTighe, “does not only indicate contact and connection, it also describes disruption of space, time and bodies, imaged in the formal structures that surround them” (2013, 8). Let us consider, for instance, Beckett’s diagrams in “The Berlin Diary” for the Schiller Theatre in 1967, showing Hamm and Clov’s precise movements and positions on stage: firstly in a clockwise motion, and subsequently in a counter-clockwise manner.



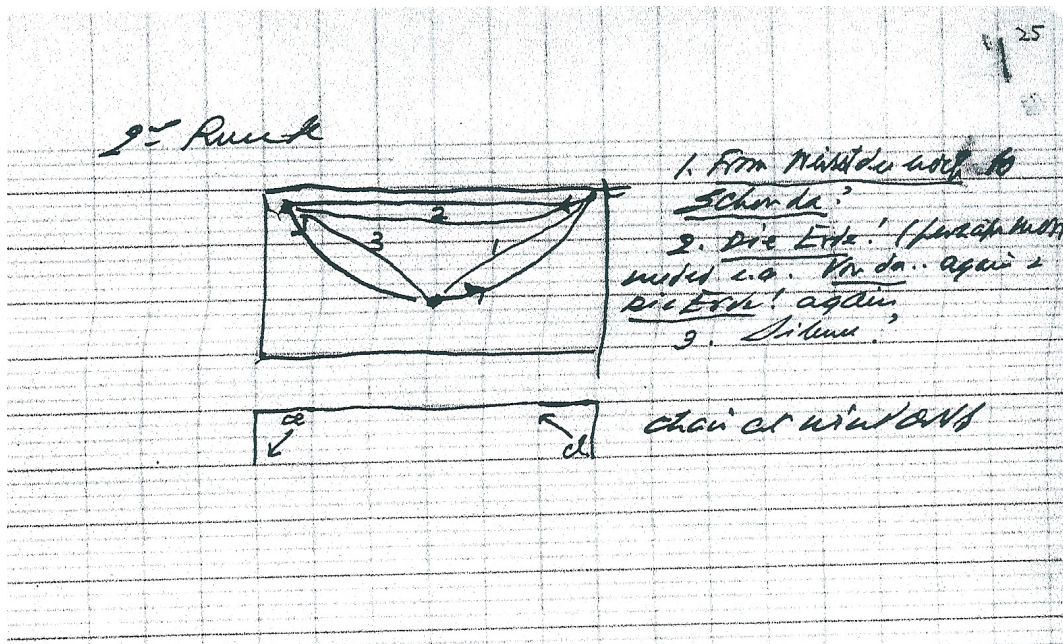


Fig. 5.10: Beckett's notes for movements and positions of Hamm and Clov. First round: clockwise; second round: anti-clockwise. From the "Berlin Diary." In *The Theatrical Notebooks of Samuel Beckett: Endgame* (1992). S. E. Gontarski (Ed.). London: Faber and Faber. Pp. 96; 140.

Not only are these two circular movements congruent with the character's identities, but also with the play's structure, resembling a game of chess played on an actual chessboard. In fact, in chess, whether played on a board or on a stage, not everything revolves around rationality. Like any game, chess also possesses its own materialities. Considering the way in which a player predicts a movement, it can be said that the eye, through all its physical actions, fulfills more than a mere optical function, in addition to the tactile aspects that are necessary to perform each movement along the board, as well as the haptic sensations that can affect players during the game, for instance, the *ZugZwang* (from German *Zug* ["to move"], plus *Zwang* ["compulsion"]), a situation typical of an endgame, in which a player is put into a tight spot and forced to make a move, when it would have been preferable to pass. Moreover, in this compulsion to move, the player (and analogously, the *wreader*) is forced to compromise his position, risking losing a game that up to that point seemed to have been going in his favor. In other words, a dynamic of forces involving not just good eye-hand coordination, but also, invisible lines of thought, pervade the chessboard.

Such lines of thought were given an actual form in the *Thinking Machine 4*, an artificial intelligence program designed to create an artwork by making visible "the elusive nature of thought" (Wattenberg and Walczak: n.d.). In a play of chess against a "transparent intelligence," the board becomes a map for potential movements, as well as a visual representation of the areas

of influence for each piece (reminding us of the way Beckett’s friends used to describe him sitting in a *café* playing an invisible game with the objects on the table).¹⁷⁶

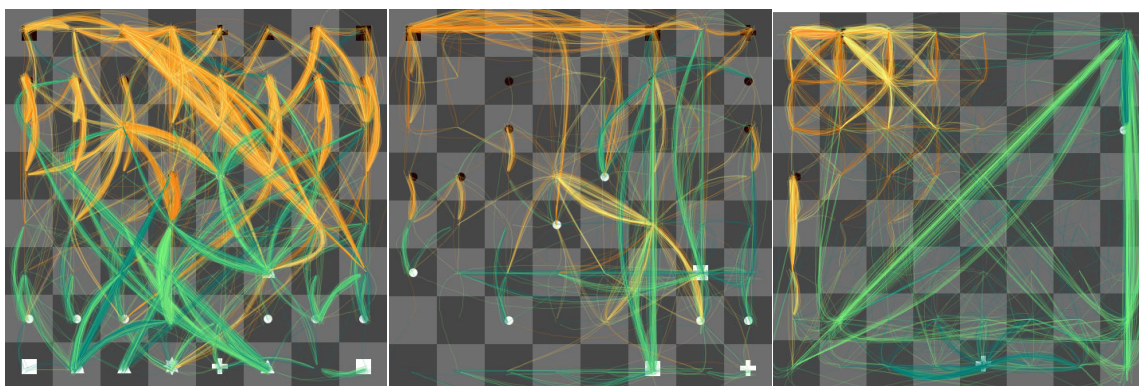
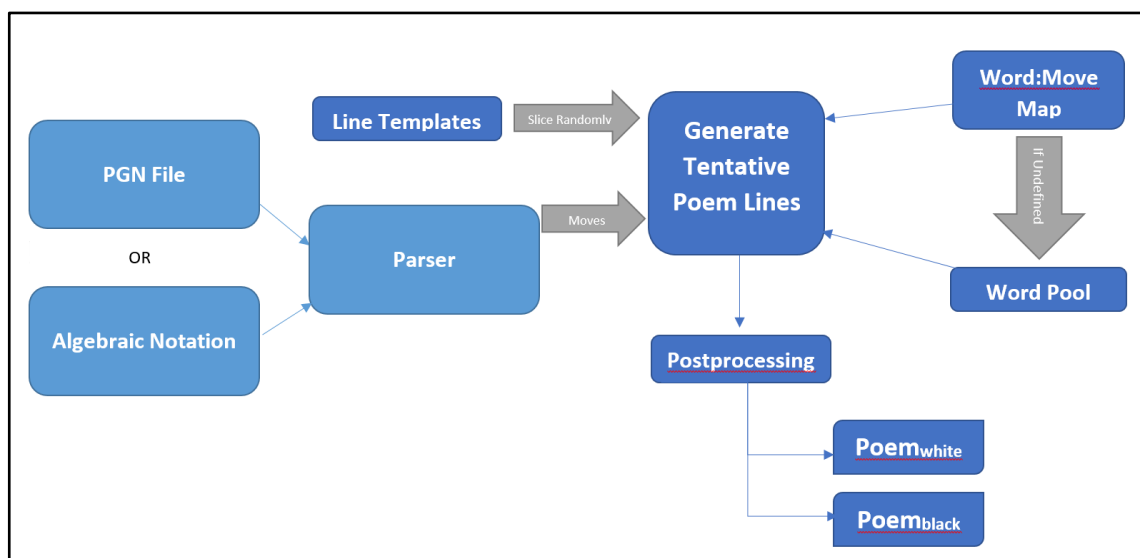
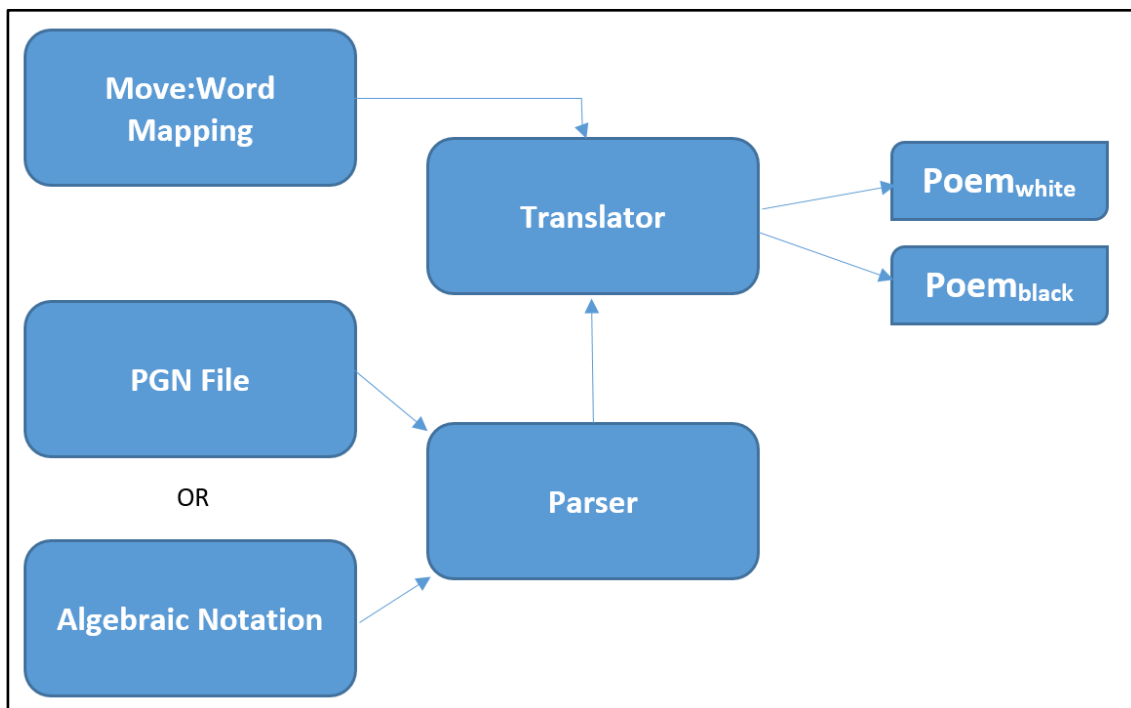


Fig. 5.11: *Thinking Machine 4*. “The machine’s thoughts” (opening, mid-game and endgame). Source: <<http://archive.turbulence.org/spotlight/thinking/index.html>> © Martin Wattenberg and Marek Walczak. Reproduced with permission.

ChessBard is a digital literary game/poem created by Aaron Tucker and Jodi Miller. Described by its authors as an algorithm that “takes the input of the algebraic notation for a chess game in .PGN format (digital file format for archived chess games) and outputs a poem,” the complexity of the mechanisms involved in this work being an invitation to a much more exhaustive analysis, starting with the website hosting it (Tucker and Miller: 2015, section “About,” para. 1). Apart from being an homage to chess as a poetic art in its own right, chesspoetry.com is an archive of famous games, openings, and defences, all of which acquire the particularity of being translated into poetry form. These poems result from “The ChessBard Translator,” the aforementioned algorithm that translates .PNG chess game files into poems (among the list of famous games, the one played in 1996 between Deep Blue and Kasparov is offered as a template). Moreover, *ChessPoetry* also presents a playable feature, namely, “Play against the ChessBard,” an actual game of chess and poetry in which the user can play “with/against” an AI agent. The mechanisms inherent to both features are essentially the same, consisting of a textual database composed of word pools (used to fill the gaps of undefined combinations), in addition to twelve “source poems” written by Aaron Tucker: six poems for each color, each poem being composed of sixty-four words corresponding to the sixty-four

¹⁷⁶ The list of authors and works using the circularity of chess as a metaphor for life and its cycles is extensive, not to mention the use of a chessboard structure as a recurrent strategy in the creation of visual texts, particularly during the mannerist-baroque period (Higgins: 1987, 196), a few of these having resorted to the use of a mechanism that combined bibliographical, linguistic, and sometimes narrative coding. An example of this particular mechanism is evident in Borges’s pair of sonnets entitled “Chess” (1960), in which the author establishes a mirror symmetry between physical and metaphysical levels (of both chess and life), the chessboard being open to multiple representations, including life itself. Another major work using chess moves as a way of developing narrative sequence, is Georges Pérec’s *La vie mode d’emploi* (1978), in which the building that is the focus of the story has been divided into 10x10 squares, and the chapters are structured so as to focus the narration on the various rooms and floors of the apartment building in accordance with the knight’s/horse’s moves in chess.

squares of a chessboard, and simultaneously, “a sixty-four word poem for each colour’s pawns, knights, rooks, bishop, queen and king.” Although I will not detain myself in analyzing each of the source poems,¹⁷⁷ it is interesting to note that each poem was titled after a relevant figure or character from the worlds of arts and chess (some of them being connected to both). Besides the algorithm that fills the spaces with words from both source poems and word pools, the process also involves a series of language templates designed by the authors (although different words are used for the same moves).



¹⁷⁷ <<http://chesspoetry.com/poetry/original-poems/>>, last accessed August 28, 2017.

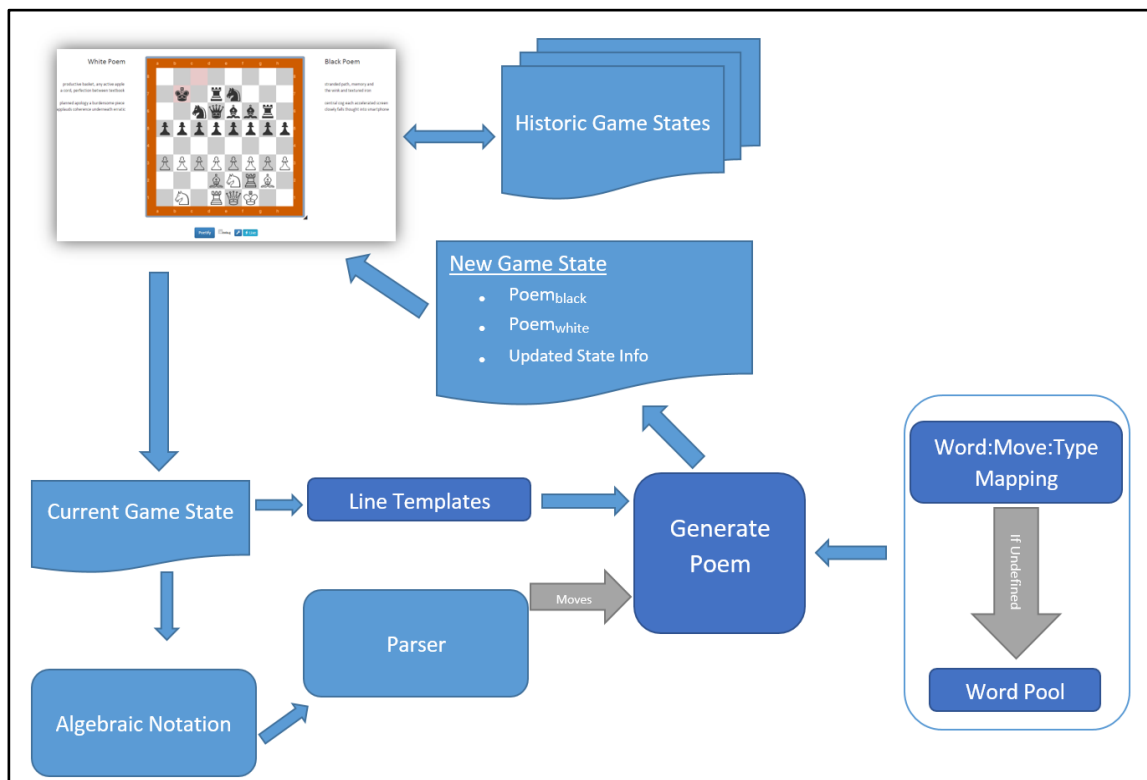


Fig. 5.12: Diagrams describing the project’s three stages of development. © Aaron Tucker and Jodi Miller. Reproduced with permission.

Given these two main possibilities for interaction with *ChessBard*, we could easily divide the piece into two different objects, both of which have their own specificities and unique contributions to the ways we interpret a piece of electronic literature as a poetic machine. Furthermore, in the project’s description, Tucker and Miller reveal how the work was developed through a series of more or less independent gradual stages. Nonetheless, for the purposes of this section, I shall focus on four interconnected circularity-inducing processes common to both features: transduction, intermediation, translation, and, combination.

Transduction: According to Tucker and Miller, one of the central inspirations for *ChessBard* was “Reunion,” a famous performance/game between John Cage and Marcel Duchamp, performed in 1968 for a live audience at Ryerson University (a Canadian institution to which both Tucker and Miller are connected), with the particularity of having been played on a special board, designed by Lowell Cross, which allowed for the transduction of the players’ haptic movements into sound. Here I use the word *transduction* with reference to Steve Shaviro’s reading of Gilbert Simondon’s theory of individuation, by means of which the individual is always in “the course of an ongoing process” (Shaviro: 2006, para. 3). In this sense, transduction would be “the mechanism driving the process of individuation” (para. 5),

a physical, biological, mental, or social operation by means of which an activity propagates itself from one location to another (*de proche en proche*) within a given domain,

basing this propagation on a structuring (*structuration*) of the domain operating from one place to another (*de place en place*). (para. 5)

According to Shaviro, and relevantly to the matter at hand, Simondon takes the concept further, insofar as, “transduction is any transfer of information through a material medium” (para. 5). In this sense, in the same way that the moves and movements of Duchamp and Cage were transduced into sound by a programmed machine (keeping in mind the agency of both human and machine involved in this process), *ChessBard* transduces moves (and movements) into words.

Intermediation: Because it maintains the quasi-random characteristic of “Reunion,” and in consonance with the nature of chess and poetry, *ChessBard* is both “mechanical” and “human,” in the sense that it is open to a series of both predictable and unpredictable rules and factors. This means that, firstly, it depends on a combination of a series of source poems, language templates, and word pools, as well as on a series of algorithms designed by both human and AI agents enabling a game to be played while simultaneously composing a poem; secondly, and particularly with regard to the playable version, in order for this to occur, human action is required, so as to “poetify” the chess moves being made along the chessboard. In producing a poem or game that is dependent on both human and machine, *ChessBard* is an example of a “human-machine intermediation,” and of the “dynamic heterarchies” between both poles of this interaction (Hayles: 2010, 51). Moreover, it is a series of “recursive feedback and feedforward loops” (48) that, according to Manuel Portela, and interestingly able to be applied to electronic literature, take place both “at the level of writing and reading,” meaning that there is a “series of cascading and interacting processes [that] makes human and machines part of a single system of emergent cognition” (Portela: 2010, para. 9). Notwithstanding, if we are to accept Kittler’s technodeterminism (whereby media affect sensory perception), or McLuhan’s naturalization (whereby media become perceivable as extensions of man) (see Jones: 2010), while alternative concepts for the human-machine paradigm emerge, and older ones are recovered – for instance, Grusin’s notion of “radical mediation” (Grusin: 2015, 124–48) and Varela *et al*’s understanding of “enactive cognition” – it will become increasingly more difficult to describe these interactions in terms of two distinct poles, especially given their dichotomic nature.

Translation: As one may read in the Chess Poetry website section titled “Poetics,” in which Tucker gives a thorough account of the longstanding relationship between both arts, “[t]he key term to understand in the first two stages of *ChessBard*’s iteration is ‘translation’” (Tucker: 2015a, para. 7). Tucker begins by mentioning the influence of Caroline Bergvall’s sound poem “Via (48 Dante Variations)” – a list of forty eight English translations by several writers of the *Commedia*’s first triplet – expressly, its presentation of “the different ways in which the opening to Dante’s *The Inferno* has changed as the translators time and place and language [sic] has changed”

(para. 7). Considering the combination pairs involved in human-machine interactions (including writer-reader, writer-machine, machine-reader/user, as well as machine-machine), these translations may be another way of expressing a “series of cascading abstractions with several layers nested on each other” (Portela: 2013, 169). In this context, the words *transduction* and *translation* may also be viewed as a series of recursive feedback and feedforward movements, both present in the transfer of genetic material from one organism to another, as well as in the transfer of information from one language to another.

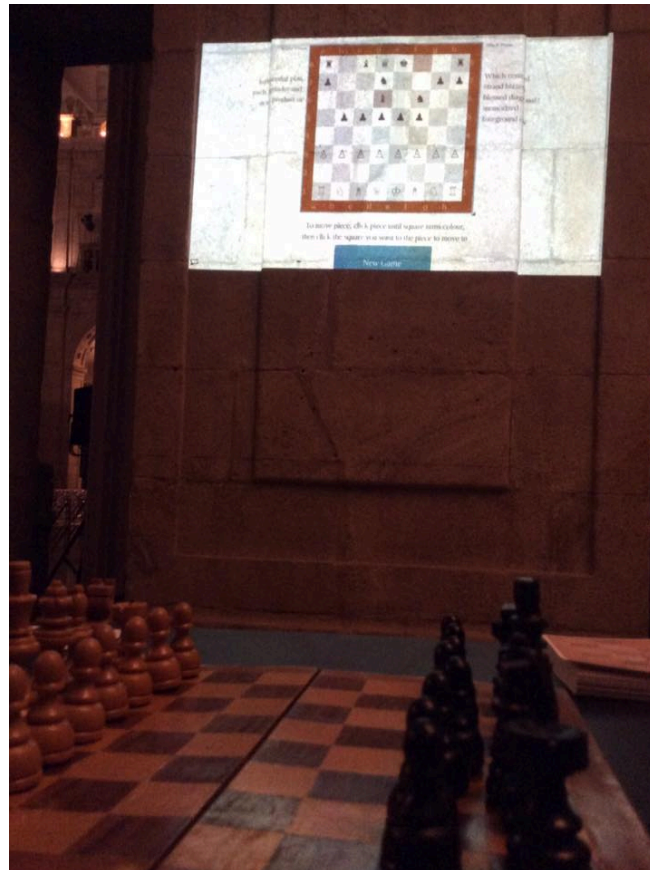


Fig. 5.13: *O Bardo do Xadrez*, a variation of *The ChessBard* in Portuguese language, presented as part of a selection of digital literary artworks for the exhibition “Translations: translating, transducing, transcoding,” curated by Ana Marques da Silva and Diogo Marques, held at ELO 2017, Mosteiro de São Bento da Vitória, Porto. © Diogo Marques. <<http://chesspoetry.com/ChessBard/porto/>>, last accessed January 12, 2018.

Combination: The three specific processes described above pave the way for another process that is intrinsic to each of them, meaning that in *ChessBard*, there is a combination of mechanisms that include a combination of agents and media, as well as a combination of arts. Pertaining to the possible lack of narrative structure or syntactical logic provided by the output poems, Tucker refers to the unconventional style of an almost nonsensical syntax, in Gertrude Stein’s *Tender Buttons* (1914), as well as to the blend of mathematics and literature in the “constraint-based translations” made by the OuLiPo group, stressing the potential infinite probabilities of both chess (combination of movements) and poetry (combination of words). In

addition, Tucker reminds us that chess and poetry share the same vocabulary, the significance of combinations in chess open to being described as “the poetry of the game,” with poetry being to chess “what melody is to music” (Tucker: 2015b). Finally, Tucker mentions “playing *ChessBard* is also a mode of co-operation,” yet another type of combination, by emphasizing the rules and structures that govern “both the playing of chess (the rules of the game itself – i.e. the knight must move in an L shape) and its computations (the algorithm compiling the poem with each of its moves).” Moreover, “the Chessbard operates within the rules of the various hardware, languages, and software of the device it runs on, as well as the constraints of the source poems and language templates inputs.” Consequently, according to Tucker, it is possible to “consider these rules parallel to grammatical rules that guide the poetry writing process as well as any personal advice a writer might receive about poetry” (2015a, para. 10).

Testing the relationship between games and literature, *ChessBard* is an example of an increasing number of digital literary works that make it difficult to establish fixed boundaries between different fields. The aforementioned section titled “Poetics,” opens with the following quotation from Duchamp: “While all artists are not chess players, all chess players are artists.” When Tucker refers to Marcel Duchamp’s role as a “key figure in the imagining and construction of the ChessBard” (para. 2), we must also keep in mind that - apart from the fact that Duchamp became progressively almost exclusively dedicated to chess, in detriment of his art - his art was infused with chess itself. Thus, given such influence, we may ask if *ChessBard* does not suffer from that which may be referred to as a “gamification of poetry.” In fact, one of the underlying problems with these dynamics, and in a work that is half game and half poetry, is that *gamification* often undermines the poetic layer. That is to say, the usual characteristics involved in poetry’s reception, do not peacefully coexist with haptic, instinctive, and multimodal features often required in the world of games. While this sort of combination may be valid for some hybrid examples, is it possible to instead consider a *poetification* of games?¹⁷⁸

Invariably, Borges seems to have a potential answer. Precisely following Duchamp’s aforementioned quotation, Tucker draws on Borges, with a quote taken from “The Garden of Forking Paths”: “Finally Stephen Albert said: ‘In a guessing game to which the answer is chess, which word is the only one prohibited?’ I thought for a moment and then replied: ‘The word is chess’” (Borges, as cited in Tucker: 2015a). According to John T. Irwin (who actually met Borges in 1983), Borges’s father, a chess player, used the chessboard to introduce his son to

¹⁷⁸ In making this statement, I also have in mind the relation between configuration and interpretation that is part of Eskelinen’s cybertextual theory (2012): in games, we interpret in order to configure; in literature, we configure in order to interpret. When configuration takes over interpretation, we move towards the game end of the spectrum, whereas when interpretation takes over configuration, we move towards the literary end of the spectrum.

philosophical issues, such as the Paradoxes of Zeno, and the rudiments of Berkeley and Idealism (Irwin: 1993, 426). Following on from Irwin, it is not difficult to piece together the apparently obvious reason for the allusion in Borges's text to chess. After all, the tale so happens to revolve around a mind game between a detective and a criminal, in which both players try to figure out what the next move will be, so as to always be one step ahead of their opponent (426). Nonetheless, it would not come as a surprise if Borges's acquaintance with the game went well beyond this sole piece of evidence. As one may read in "The Garden of Forking Paths," the previous dialogue then proceeds as follows:

"Exactly", Albert said. "*The Garden of Forking Paths* is a huge riddle, or parable, whose subject is time; that secret purpose forbids Ts'ui Pen the merest mention of its name. To *always* omit one word, to employ awkward metaphors and obvious circumlocutions, is perhaps the most emphatic way of calling attention to that word". (Borges: 1998, 126)

In this manner, not only does Borges point out two types of literary texts that should also be understood as games, but he also makes reference to the significance of using certain "circumlocutions" in order to play these games. It is in this breaking of barriers between games and literature, that the mechanisms pertaining to both mingle with each other. Moreover, like all mechanisms, chess is not exempt from flaws, nor is its circularity intended to mean perfection. Bearing in mind that in French the word *chess* also means "failures," or *les échecs* (Lyotard: 1990, 81), Beckett's famous quote, "Ever tried. Ever failed. No matter. Fail again. Fail better," takes on a new meaning. After all, "No, there are no accidents in *Endgame*. It is all built upon analogies and repetitions" (Beckett, as cited in Gontarski: 2008, 419). Which leads us to James Joyce, for whom "A man of genius makes no mistakes. His errors are volitional and are the portals of discovery" (Joyce: 2008, 182).

It is hard to clearly separate Samuel Beckett from his fellow countryman and his project known as *Work in Progress (WiP)*, retitled *Finnegans Wake (FW)* just before its publishing. Not only did Beckett serve as Joyce's amanuensis (and translator) for *WiP*, but he was also a close friend of the family. Evidence of this liaison is "Dante . . . Bruno . Vico . . Joyce" (the dots between names having been intended by the author, representing the number of centuries between each reference), one of Beckett's early essays, and the opening text in a collection of critical essays and letters by twelve authors, published as an apologia of *Finnegans Wake's (FW)* first title, *Work in Progress (WiP)*.

In *Our Exagmination Round his Factification For Incamination of Work in Progress*, the title of this collection, a young Beckett develops a response to the criticism concerning the apparent nonsensical structure and language of Joyce's final work. By making intertextual references to Giordano Bruno's ideas on the "coincidence of contraries," Giambattista Vico's "cyclicist"

conception of history and poetry, and Dante Alighieri's corrupted use of language by means of the vulgar in order to express the "vicious circle of humanity," Beckett establishes a precursory view of the circularities imbued in *Finnegans Wake* (2001, 33).

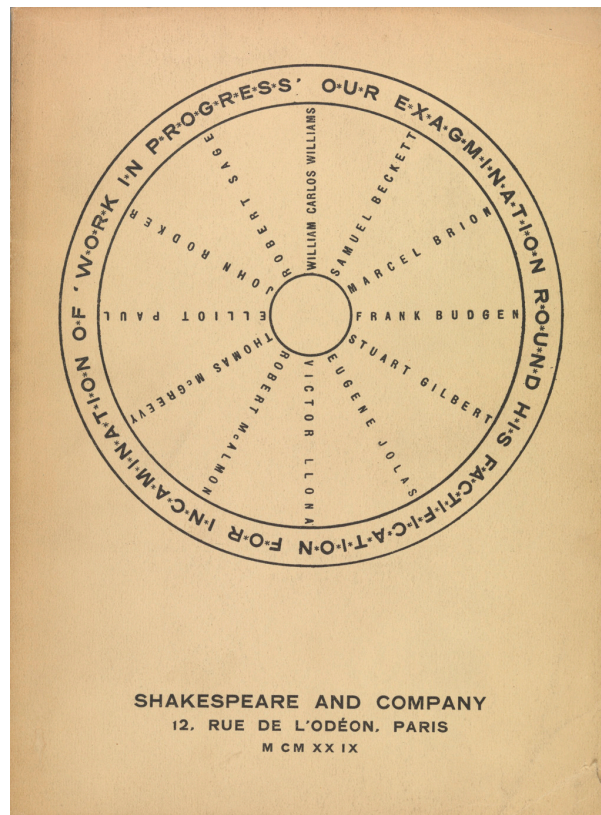


Fig. 5.14: Cover of *Our Exagmination Round His Factification for Incamination of Work in Progress* (1929). Samuel Beckett et al., Paris: Shakespeare and Company. Photo: © Andre Strong Bookseller, Blue Hill Maine USA.

Apart from revealing Beckett's familiarity with the subjects and the authors in question, the essay also denotes a deep understanding of Joyce's plans for *WIP*. Regardless of their differences in style,¹⁷⁹ in examining the structures of both men's work, it becomes possible to glimpse a movement made of simultaneously opposed and contiguous forces, that is, a coincidence of contraries within circular mechanisms, a strategy which Beckett's essay already envisaged. *FW*'s structure consists of countless circles, each circle simultaneously starting and ending another. It is a series of complete revolutions that go to form a spiral, creating a dialectic structure described

¹⁷⁹ Despite his willingness to achieve full emancipation as a writer, young Beckett's efforts to ward off Joyce's immense shadow of influence must not have been an easy process. Thomas Mansell describes Beckett's struggle for complete autonomy from Joyce in the following terms: "As Beckett emerged from Joyce's life-changing influence, he eventually took a different path, telling an interviewer in 1956 that Joyce was 'tending toward omniscience and omnipotence as an artist whereas he was working with impotence, ignorance'" (Mansell: 2007, 7). Additionally, A. Nicholas Fargnoli and Michael P. Gillespie, despite pointing to both authors as two of "the foremost postmodernists," as well as to their "clear determination ... to distinguish their work from the work of earlier writers," identify a clear difference in style, Joyce taking "optimistic advantage (...) of the freedom that such a movement presents," and Beckett, "continually lamenting the loss of coherence in a world now without meaning" (2006, 337).

by Eco as a “cybernetic” and “rhizomatic” process of reading (2000, 121). In addition, for Nico Israel, not only is *FW* “about spirals but is *a kind of spiral (or set of spirals) itself*” (2015, 148, his emphasis). Attesting the pervasiveness of this trope in James Joyce’s writing, is Brancusi’s portrait of James Joyce titled “Symbole de Joyce” (1929), featuring an Archimedean spiral, along with three vertical lines, that seem to confirm Beckett’s line in his article on *WiP*:

Here form *is* content, content *is* form. You complain that this stuff is not written in English. It is not written at all. It is not to be read – or rather it is not only to be read. It is to be looked at and listened to. His writing is not *about* something; *it is that something itself*. (2001, 27, his emphasis)

Being also a series of concentric circles that give way to one another. Some of these circles are comprised of a language of dreams, since just as in dreams, there is an erosion of the categories of time, grammar and narrative, specifically, relative temporality, expressed by the book’s structure and language, as well as through an amalgam of different events in time and space. Others see Joyce’s admitted philosophical influence of Vico’s *Scienza Nuova* (1725) and its “cyclological” (Joyce: 2000, 220) conception of universal history (Ellmann: 1982, 554), in order to justify his use of Brunian and Cusian ideas on the coincidence of contraries (Eco: 2000, 111). Through this “machinery of suggestion,” capable of generating more meanings than those predicted by its author (120–1), a certain sense of a search for unity becomes evident, represented by HCE’s family and central to *FW*’s narrative. Nonetheless, it is a search that is never fulfilled. In a way, much like the hands of a clock, or the waters of a river, which despite moving in the same direction, never intersect, and if they do, they immediately separate. We could also mention, of course, the constant inventiveness and wordplay, the Jabberwocky style (à la Carroll) taken to an extreme, the use of language as a “living organism” (Sage: 1929, para. 49), or the use of the pre-Socratic image of a river in permanent flow and renewal of its waters.

All of these circularities (among many others) seem to provide an answer to the question of how a straight line may be circular at the same time. Language as a system, already contains within itself a process of circular dynamics, with signs attracting other signs, and words attracting other words. Moreover, despite having the codex as its conducive device, its mechanisms do not differ from many literary experiences involving computer-based generative text. This singularity makes *FW* a unique work, able to present its mechanisms at both a microcosmic and macrocosmic level, each word representing the work’s integral structure, with a particular emphasis on words with antagonistic meanings (Eco: 2000, 131). In short, it is a series of movements that can be reduced to a single sentence: “This wake, like all wakes, is both an end and a beginning” (Magalaner and Kain: 1962, 262).

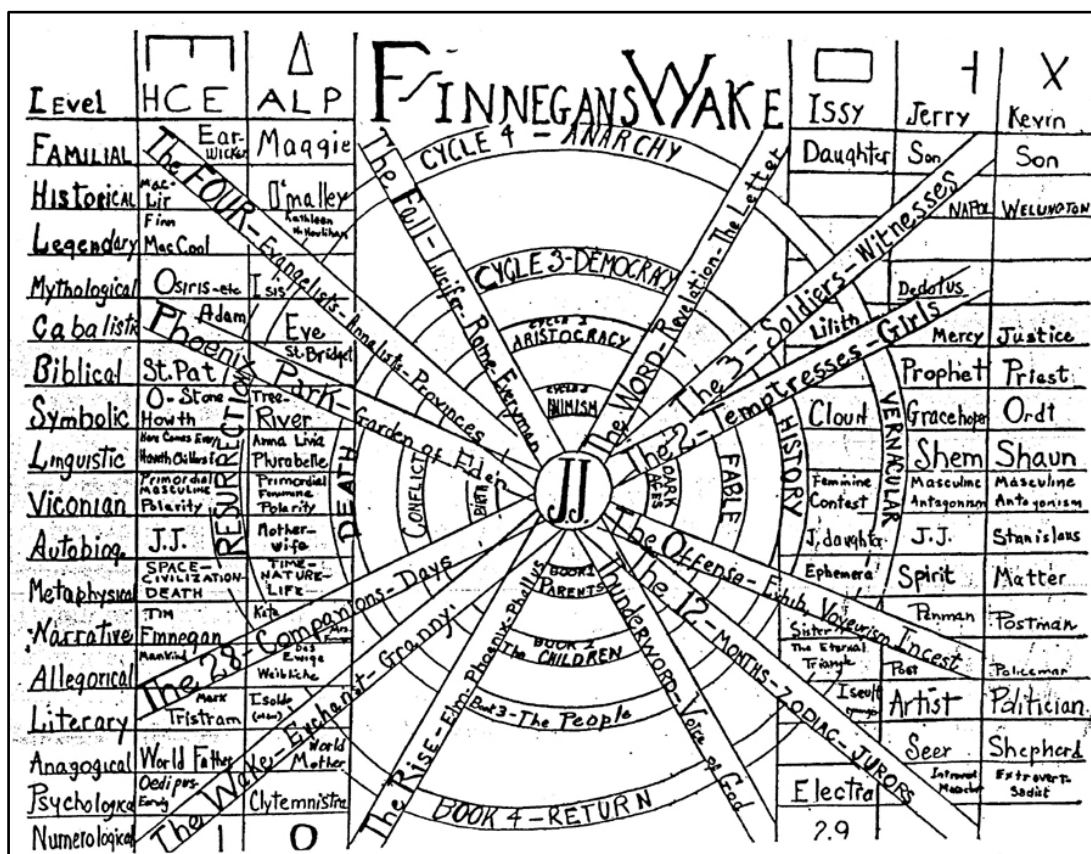


Fig. 5.15: Chart by Leslie L. Lewis disclosing the structure of *FW*. In L. Moholy-Nagy (1947). *Vision in Motion*.

<http://www.antarcticanimation.com/content/wordpress/?m=200708&paged=18>, last accessed January 12, 2018.

At the junction of all these *intercircular* and complexly interrelated aspects, we find *beginEnd* (2017),¹⁸⁰ a digital *recodification* of *FW* by Diogo Marques, João Santa Cruz and Micael Martins. Also a *work in progress*, for the time being, this piece may be described as an Internet-based poem that attempts to stimulate (and simulate) other possible ways of reading *FW*'s circular mechanisms, through a different device, namely that of combinatory poetry. Additionally, it also draws attention to the intermediations between analog and digital mechanisms in literature, specifically through the enhancement of a metamedial and intermedial poetics that often underlies electronic literature.

At its surface, it is composed of three hands of a clock-like object inside a white circumference over a dark background. Both the minute hand and the second hand are receptacles for a permutational/combinatorial text composed of all of *FW*'s vocabulary – words and symbols (without Joyce's original hyphenation). By making use of this linguistic process at the core of its mechanism, *BeginEnd* is constantly creating new combinations of signs and

¹⁸⁰ <http://wreading-digits.com/beginend>, last accessed February 20, 2018.

symbols, the minute hand delivering a new word each time it reaches the fifteen-minute mark, and the second hand producing a new sign second after second.

However, while the aforementioned clock hands are open to a permutational procedure by means of a shared algorithmic principle, the hour-hand, a continuous representation of the word “riverrun,” is not able to be changed by the reader. Considering the Liffey river’s centrality in *FW*, and the intrinsic aural aspects of Joyce’s work (one only need to listen to *Finnegans Wake* read by Patrick Healy in 1992), an audio component is included, representing the sound, in constant loop, of a voluminous river. This aural aspect is also reminiscent of Joyce’s concerns with *FW*’s auralness. As Richard Ellmann affirms: “If anyone doesn’t understand a passage, all he need do is read it aloud” (1982, 591).



Fig. 5.16: *beginEnd*. Screenshot. Source: <www.wreading-digits.com/beginend>, last accessed January 12, 2018. © wreading-digits.com

Another curious aspect of *beginEnd* is its title. Joyce’s choice for his own final title seems to have been a long and laborious task, as shown by Ellmann:

[Joyce] meant that the book ended where it began, like a wheel, that it had four books or parts, like the four sides of a square, and that *Finnegans Wake* contained the *doubles entendres* of wake (funeral) and wake (awakening or resurrection), as well as of *Fin* (end) and again (recurrence). Miss Weaver ... suggested “a wheeling square” or “squaring the wheel”, and while these were wrong Joyce found them useful. (1982, 597)

In the same way that *FW* presents its mechanisms within the articulation of its title, *beginEnd* makes use of the *portmanteau* technique used in *FW*. In order to establish a link with the possible intricate reading suggested by *FW* - having its beginning in the middle of the final sentence that closes the book, and its end in the beginning of the first chapter - *beginEnd* places a special focus on the word “riverrun,” an element of circular fluidity that may allude to both natural and textual elements. From another perspective, the strategic use of this neologism also seems to convey the idea of relative time in dreams, that is, the sense we tend to have during sleep of dreams being never-ending, as well as the impression that dreams tend to last for hours, even when we are simply taking a short nap. Finally, it may function as a mirror of its actual circular structure, carrying out continuous revolutions without any fixed barriers between beginnings and ends (Beckett’s stages and Joyce’s words, to some extent). In its current stage of development, the work also allows the reader to control the rotation of the clock hands, meaning that it is open to the possibility of changing the variable of time. As a result, the user is able to subvert its temporal logic, expressly, by rotating the clock hands, either increasing or decreasing their speed, thus altering the time provided by the user’s device. In this way, the reader can experience circularity by means of haptic touch, which implies a multisensory process of reading (as opposed to a merely visual form of reading). As such, while readers lose control of reading as they try to read by way of touch, they also simultaneously experience the inability to read *FW* without paying close attention to its structure. Which is to say that, in order to fully experience the work, users have to actually read with their fingers, concomitantly losing grasp of a meaningful visual reading of the signs that are being displayed. Given that these haptic reading processes are able to bring another perspective to the ancestral relation between machinations and manipulations, the use of touch and haptics in conflation with visuality inevitably draws attention to the new ways in which multisensory perception can be explored in digital literature and arts.

Consequently, taking into account the increasing artistic experimentation around tactile and haptic actions enhanced by electronic devices in the creation of digital literary works of art, and given the influence of avant-garde movements, *beginEnd* resembles early attempts of “seemingly functional mechanical sculptures” (Manganis: 2010), namely by means of an apparently functional, or dysfunctional, interface. Notwithstanding, bearing in mind the specific materialities of digital devices, and despite a continuity of disruptive operations of estrangement, we may question the differences between previous explorations of loss of grasp and those enabled through the digital (for instance, digital glitch and noise as specific visual and aural ways of provoking a loss of grasp).

While I am aware of the dangers of presenting an argument on tropes of circularity in E-Lit, that is itself dependent on some degree of circularity in structure (in the sense that it may be interpreted as being reminiscent of a mechanistic materialism), I am also aware of the infinite multiplicity and unity that such circularity may paradoxically evoke. Moreover, concerning the arguments put forth in the chapter at hand, I believe it is possible to speak of multisensory perception in confluence with mediality, without necessarily having to choose between technodeterminism and media naturalization. That is to say, despite the apparent material mechanicism that lies behind these literary circularities, ultimately mechanics of this sort do not foster a dichotomy between Human and Machine. The examples provided, regardless of their various medial natures (and literary genres), reveal the same concern regarding language (and literature), that is, both language and sensory perception are systems made up of automatic and human factors. While it is true that new media technologies enhance the combinatorial and generative characteristics of language, such an achievement would not have been made possible without its analogical ancestors. On the other hand, as industries of digital technology continuously attempt to attain immediacy through the increment of intersensory experiences, for now the only achievement made possible is the illusion of certain sensory experiences by means of processes born of the analog universe, namely, interactivity and immersion.

With regard to electronic literature in particular, both digital case studies presented, scilicet *The ChessBard* and *beginEnd*, can be seen as both an endgame and a a(wake)ning, since they do not omit obvious connections to previous literary endeavors with circular mechanisms. On the contrary, both are able to recover and readapt such structures to current media ecology, by means of a recombination that is able to trigger new issues, new reading possibilities, and new ways of questioning concepts, media, and devices. Furthermore, given these different ecologies, it is only reasonable to assume that these works' metamedial poetics and aesthetics are focused on the same issues and processes that concern scientific and industrial research around new media technologies and the ways these devices summon sensory perception. However, such metamediality is also often intermedial, in the sense that it tends to focus less on discourses of control and power associated with interactivity, than on the ways sensory perception affects literary and artistic problematics. In this regard, while we may claim that literature has always been haptic, meaning that haptic processes of reading have always been present alongside words and images, *new* media artworks are able to reinvent such haptic processes, without annulling their former usages by different mechanisms.

5.6 Ex-foliation VI: Haptic Reading is Cybrid

There was an article in Readers Compress just the other week pointing out that, according to some research they've been doing up in the Neuro-LoCo Centre, the brains of many Immobs are already larger and heavier in certain areas than those of non-amps, and that eventually Immo will lead to an entirely new kind of brain, once we get through this transitional period. Of course, I don't remember the technical details very well, all that's pretty much over my head.

Bernard Wolfe, *Limbo*

In human-machine interaction, bodies that touch each other present an equal horizontal disposition, thus eliminating any residues of a hierarchical, parental or even diagonal perspective. Such horizontality may bring to mind Marshall McLuhan's words, in referring to the huge mistake that it would be to treat new media "as humble servants" (2003, 4), or Donna Haraway's, stating a few years after that, "The machine is not an *it* to be animated, worshipped, and dominated. The machine is us, our processes, an aspect of our embodiment" (1991, section "Cyborgs: a myth of political identity," para. 17). These visions of a symbiotic state between human and machine had repercussions on the notion of feedback loops used by N. Katherine Hayles to describe the idea of intermediations that result from a process of "distributed cognition" (2010, 48-51), as well as on other similar notions, namely those of "cybrid cybercommunication" and "cybrid bodies" (a fusion of cyber and hybrid), proposed by Domingues and Venturelli within the context of art that uses mixed reality:

O híbrido soma propriedades do ciber e torna-se cÍbrido. O potencial do digital, levado ao paroxismo, incrusta virtual com virtual no espaço físico, homologando desejos ficcionais de viver em mundos paralelos. Objetos, cenas, visualização sintética, geografias misturadas são espaços e lugares cÍbridos para a existência. A Realidade Aumentada e suas versões tira o foco do virtual como evasão do real e, dialeticamente, acentua a potencialidade do virtual ampliando a realidade. (2007, 109)¹⁸¹

In the context of multisensory processes summoned by digital multimodality, the use of the term *contact* may be more appropriate, as opposed to the use of the words *gesture* or *touch*. Not in the sense of a contact resulting from a gesture made by a hand, or the touch of a finger that grasps or controls. Instead, we may view contact as an interconnection and intercommunication between cybrid bodies. Taking into consideration all of its different acceptions, for instance,

¹⁸¹ "The hybrid takes on properties of the cyber and becomes cybrid. The digital's potential, at its peak, embeds the virtual with the virtual in a physical space, homologating fictional desires for living in parallel worlds. Objects, scenes, synthetic visualization, and mixed geographies, become cybrid spaces and places to exist. Augmented Reality in its several versions takes the focus off the virtual as an evasion from the real and, dialectically, highlights the potential of the virtual through the amplification of reality."

within the fields of aeronautics¹⁸² and electrotechnics,¹⁸³ to mention just a few, ultimately, the word contact, presupposes a connection between two tangents, or two points of contact. Given that this type of connection may be understood as mutual, as well as cyclical, it thus demands renewed ways of thinking our relationship with media.

The concept of prosthesis may be an extremely useful metaphor when it comes to analyzing the relationship between writing and language. However, in what concerns perception in writing and reading processes in digital environments, the sign seems to present itself in a state of present absence, something that is also particularly familiar to individuals who have lost a member of their bodies, having to deal with the proprioception of a phantom limb, often in association with the experience of pain and/or paralysis of that member. In the field of neurology, state-of-the-art research concerning clinical cases of pain in a phantom limb, have put into question some previously held theories, for which the coeval digital context may be held responsible in contributing to a good part of its success (through the use of techniques associated with both Virtual Reality and Augmented Reality, for instance). It is based on these findings, and their transposition to the field of digital media studies, that this section intends to set the basis for a discussion and review of the human-machine relationship, namely when it comes to experiencing digital literary artworks and their representation on screen.

The concept of prosthesis, meaning, in general terms, an artificial extension or substitution of a body part with the aim of amplifying it, has found its greatest repercussion in the field of medicine. Notwithstanding, its increasingly frequent use in fields that tend to rethink its meaning, such as literary studies or media studies, reveals that this concept is liable to being used beyond its clinical denomination. As such, one may think of a pen as prosthesis, or even, when used in writing, as a form of “body touch,” to use Nancy's words, acting as an extension of our own body on a given surface. Nonetheless, does not such a metaphorical recurrence of the term risk being superficial, if everything, including memory, seems capable of being elevated to the category of prosthesis? In other words, to what extent is its recurrence so metaphorically powerful, that it may end up losing its heuristic significance?

By thinking of the prosthesis as an amplification of our natural capabilities, and not just as an artificial replacement of body parts, that which all these modulations in meaning have in common, is the need for adaptation to a body within a world, to the point where it becomes

¹⁸² In aeronautics, the term ‘contact’ is an old expression dating from the time of the first aircrafts, that is still used nowadays in order to express the need to manually propel a helix when starting the engine. Although it is not the appropriate term, its use is still the most recurrent today because of the constant confusion that the terms ‘switch on’ and ‘switch off’ cause (the correct expressions for indication that the engine is either on or off).

¹⁸³ Designating the joining of two electric conductors through which the current passes.

naturalized. This process of adaptation depends on a natural balance that, invariably, demands the loss of something in order to gain something else. For instance, the loss of sensation of a phantom limb, as well as the recognition of physical limits and natural barriers of the body so that a prosthesis may be assimilated, thus enabling the body to take advantage of all its potential. Notwithstanding, as Cavallaro affirms, the body's obsolescence is one of the most recurrent tropes in the world of cyberpunk. On the other hand, metaphors that describe this Cartesian cyberpunk world, such as that of the "brain in a vat," end up reinforcing a specific corporeal dimension that seems to contradict said desire for obsolescence (Cavallaro: 2004, 304).

In the interchanges that occur between Wiener's cybernetic universe, and a cybercultural universe that has its peak in the literary aesthetics of cyberpunk¹⁸⁴ - which birthed several literary works that contributed with valuable post-humanist visions to the technoscientific context, for instance, *Limbo* (1952), *The Cyberiads* (1965), and *Neuromancer* (1984), to name just a few (Hayles: 1999, 21) - the prosthetic metaphor has gained prominence within the cybercultural imaginary, as well as within academic research pertaining to said imaginary, hence contributing to the emergence of a series of theoretical and social concepts, and tropes, used in describing human-machine interaction. An example of this is the liminal idea of the cyborg as an entity, as well as a metaphor, something which is also present at the level of narrative constructions (114-115).

Within this context, Bernard Wolfe's *Limbo*, a literary work largely influenced by the cybernetic proposals of Norbert Wiener, pushes the idea of prosthesis to its limits, in rethinking the configuration of the body in its relationship with the machine (113). According to Hayles, at a certain point in the narrative, the reader is confronted with a world controlled by a governmental agency called Immob, whose initial agenda consists in preventing men's (specifically males) natural impulse towards violence, by means of voluntary amputation of their arms and legs, and their consequent complete immobilization. As the years pass, and after verifying that total immobilization hinders productivity, Immob's agenda undergoes some changes, opening the way for the creation of superprostheses, justified by the assumption that they are able to be removed at any time, thus proving to be a fallacy of the idea of men gaining control over machines. It so happens that, in an ironic twist of fate, due to the hard extraction and location of the metal needed for the production of such prostheses, a fight between East and West ensues,¹⁸⁵ disputing this metal, *columbium*, and the prosthetic industry. Another distinction made in *Limbo* is the

¹⁸⁴ According to Hayles, the recurrent idea that literature is prone to the influence of science, is far from being exact, given that, in her opinion, it is preferable to think in terms of interchanges between different fields of knowledge. As an example, Hayles mentions the impact that the trilogy *Neuromancer* had on the development of tridimensional virtual reality software (Hayles: 1999, 21).

¹⁸⁵ In *Limbo*, East is represented by a state corresponding to the former Soviet Union, *The Union*, and West corresponds to a still habitable portion of the United State's interior, known as *The Strip*.

difference between *anti-pros* e *pro-pros*, a distinction marked by the former's refusal of prostheses, as a demonstration of loyalty to Immo's initial agenda, as well as to their "No Demobilization without Immobilization" slogan.¹⁸⁶

Apart from the misogynistic vision that several critics point out in Wolfe's writing (see Hayles: 1999), and several technoscientific hypotheses that Wolfe's fictional universe seems to anticipate (for instance, the use of technological superprostheses), there are other aspects that are worth mentioning in the context of this section. The first concerns considerations on human-machine interactions proposed by Wolfe, such as the transition that is made from a historical moment in which humans are dominated by machines, to another, in which the roles seem to be reversed; not to mention, speculations on the ways in which biological adaptations and modifications in the human being, are triggered by the use of superprostheses and the domination of humans by machines. Secondly, there is also the analogy between the anti-pros/pro-pros duality and the analog/digital binary pair, through which the latter may be described as a voluntary amputation of specific writing and reading processes that, as with any other type of amputation, leaves its marks. As such, the digital seems to be an ulterior amplification of these mutations, being possible to establish a comparison between anti-pros and digital immigrants, as well as between pro-pros and digital natives. When conjointly considered, these two aspects enable us to extend the notion of prosthesis, as well as the metaphoric use of the phantom limb, as a means to analyze the ways in which we deal with writing and reading processes in digital multimodal environments.

In this hierarchy of prosthesis, subprosthesis and supraprosthesis, there is a general metaphoric idea of the prosthesis as something that seems to sustain a large part of the human-machine interaction paradigm – an interaction that can be more or less symbiotic, but that is also able to take to its limits, the maximal amplification of the body by the machine. If we think of this in terms of writing and reading processes on a screen, as opposed to a manuscript, codex or typescript, that which comes to mind is a phantasmatic process that begins with the digital image. In other words, the latter sets off an antithetical sensation of the present absence of the sign.

According to Van Dyjk, in her essay on remediations of the manuscript and paper in digital literary artworks, such sensation represents "an expression of a specifically late postmodernist ambivalent stance regarding representation of the 'real'" (Van Dyjk: 2011, 66).

¹⁸⁶ Wolfe does not clarify whether the faction known as 'anti-pros' is formally constituted as an organization. What he does make clear, is that this group, is not only composed of younger generations of voluntary 'amps' that refuse to use prostheses, but also, older generations that refused voluntary amputation, the latter being a much smaller number of people, and seen by others as pariahs. Finally, there is also no mention of individuals that were amputated as a consequence of war, accidents or diseases, a significant factor towards either choosing or being forced to use a prosthesis.

Following on from Van Dyjk, these remediations (which may also be found in a common digital word processor), seem to elicit a generalized idea of a gradual loss of authenticity and identity of writing, for the sake of technological progress, namely in the loss of a form of inscription that is seen as something personal and non-transferable. Nonetheless, this apparent loss does not only apply to the digital, Van Dyjk reminding us of Kittler's observations with regard to certain controversial assumptions in relation to the development of the typewriter, such as Heidegger's idea of a certain loss of the essence of writing, or Nietzsche's sentiment of a loss of agency in the use of this specific technology (68). This apparent loss of an inscription intrinsic to human beings may therefore be viewed as an amputation, that to a certain extent is voluntary, all in the name of progress. With the digital, there is a need to amplify a formerly abandoned status that is present in the remediation example given by Van Dyjk, as well as in the need for tangibility precognizing digital technologies that provide experiences of alternative realities. But like with all amputations, certain consequences at the level of perception may be diminished, but not completely erased by the use of prostheses, leaving behind a trail, something that lingers long after, due to the sensation of a present absence that is experienced, as with the phantom limb phenomenon.

For a better understanding of the idea of spectrum associated with the digital, it might be worth exploring the notion of "phantasmatic machine," used in 1964 by Polish writer, Stanislaw Lem, in his *SUMMA Technologiae*, a work recently translated into English after long-standing resistance by the author. In *SUMMA Technologiae*, the author of *Solaris* (1961) anticipates the phenomenon known today as Virtual Reality (VR), and his idea of "phantomatics" is used to refer to the creation of "situations in which there are no 'exits' from the worlds of created fiction into the real world" (Lem: 2013, "The Fundamentals of Phantomatics," para. 11). This means that, as an active participant, or hero, that finds himself at the center of preprogrammed events, the receiver, in a state of consciousness that should not be confused with the unconscious dream state, is dependent on the machine, in order to obtain information that is only made available through its connection to a fictional world. For Lem, the authenticity of those worlds, despite the fact that they can create dependence, is questionable, either because of our awareness of a preprogrammed event, or ultimately, because the machine is not able to replicate certain biochemical and physiological processes that are unique to each individual. Notwithstanding, Lem puts forth the possibility of a continuous immersion, resembling the universe that is represented in the *Matrix* trilogy (1999) - in which a human being is able to remain connected to a machine in a perpetual state of immersion, while being unconscious of that fact - proceeding to affirm that this sort of condition would be impossible to replicate for more than one generation, whose demise would result in a kind of collective euthanasia (para. 2-17).

That which the idea of a phantasmatic machine can in fact offer, is the possibility of a state of present absence, something akin to what Baudrillard identifies as “hyperreality” (Baudrillard: 1983), “an order of representation able to seduce both the body and the mind because it does not look in the least unreal but, in fact, *more real than real*” (Cavallaro: 2004, 301, his emphasis) Campbell *et al.*, resume it in the following way:

The technologised body is a strange ontological state. It is a “semiotic ghost” (Sterling 1986), a body that does not exist in a physical sense, but one that has been conceived at the cutting edge of a cybernetic vision. From a visual culture perspective, one can argue that there is no difference between a body that exists as a physical reality and a fantastic, fictional body. This is because the vision of the human-machine crucially has an existence in the popular social imagination and has a decisive power in forming and unforming conceptions of the future body, excluding and including possibilities. It therefore has a social and political dimension. (Campbell *et al.*: 2006, 344)

As an integral part of the discussion on human-machine interaction, this social and political dimension is also visible in the (digital) literary context, being largely responsible for the origin and propagation of myths such as the writer-robot, often seen as one of the biggest threats to human creativity, as propelled by “popular social imagination,” namely through the trope of the automatic, immaterial and depersonalized phantasmatic machine.

In James Cameron’s *Avatar* (2009), the idea of a prosthetic machine occupies practically all of its narrative. In addition to the cyborguean technology used by human beings on planet Pandora as a means of survival, as well as in the extraction of a rare metal (reminiscent of *Limbo*), the notion of prosthesis is also present, representing the main character’s (Jake Sully) endeavor to overcome physical impediment. Given the alternative possibility of embodiment in the world of Pandora, Jake uses the body of a Na’vi avatar (a biological body developed from a mix of Na’vi and human DNA) as an organic prosthesis, ending up abandoning his own human body, through a process of mystical transition in which both body and mind are, at last, united, in one single world. While Jake does not exactly suffer from the pathology normally associated with the loss of a member, he does, however, present symptoms very similar to another pathology, expressly, anosognosia, or the refusal to recognize a disorder that is clinically evident. In this case, although suffering from paraplegia resulting from an accident that conditioned his military career, Jake does not recognize his physical impairment, constantly rejecting his inability to walk, especially within social contexts. Said mental pathology, is very similar to the sensation of pain in a phantom limb, the difference being that while anosognosia is “the absence of a fragment of representation which ought to be given, since the corresponding limb is there,” phantom limb pain can be described as “the presence of part of the representation of the body which should not be given, since the corresponding limb is not there” (Merleau-Ponty: 2005, 92-93).

As expected of a Hollywoodesque narrative, the idea of renouncing our own (human) body, and our own world, so as to transition to a new world and into a new body, may be understood beyond its literality, for instance, by looking at current descriptions of transitions between actual and virtual worlds. Such transitions could be described as a quasi-total rejection of a physical and biological body, in favor of a highly personalized virtual body that the virtual world can provide, often in direct contrast with the actual physical body.¹⁸⁷ In Tom Boellstorff's review of Merleau-Ponty's digressions on the phantom limb, and in light of the possibility of embodiment in two different worlds proposed by *Avatar*, the question remains as to whether Merleau-Ponty would or would not be tempted to revise his phenomenological considerations on perception:

It is instructive to consider the prosthetic relationship between artificial hand and severed arm in light of Merleau-Ponty's ruminations on phantom limbs [...]. Merleau-Ponty here emphasized how embodiment involves "action" in a "practical field." The body is constitutive of being-in-the-world, a "definite environment" of projects, of techne, and a changed body can retain a memory of the "definite environment" before the change (for instance, via the phenomenon of a phantom limb). (...) However, it seems possible that his rethinking would include how virtual bodies, limbs and all, make possible human action in the "definite environment" of a virtual world, and how being-in-world thus enables new possibilities for corporeality. (Boellstorff: 2011, 513-514)

What Boellstorff is considering here, is precisely opposite to the perspective of actual phenomenological experience, that is, the feasibility of applying Merleau-Ponty's phenomenological analysis to *Avatar*, with the obvious risk of defrauding the audience's expectations. The significance of Merleau-Ponty's observations on the phantom limb, which can be compared with Lem's considerations on the phantasmatic machine, lies in the impossibility of separating the psychic from the physical, given that it is crucial to have a balance between both.¹⁸⁸ In other words, in light of these observations, it seems extremely difficult to imagine a successful embodiment in an alternative world, without the permeation of "a memory, a positive judgement or a perception" within that same body, inherited from the actual world (with regard to anosognosia, Merleau-Ponty points to "a bit of forgetfulness, a negative judgement or a failure to perceive") (Merleau-Ponty: 2005, 93).

Following on from the existentialist and phenomenological approaches of Merleau-Ponty, Vivian Sobchack develops a courageous argument concerning her own body, so as to present an

¹⁸⁷ In *Second Skin*, a 2008 documentary directed by Piñeiro Escoriaza, the camera accompanies the lives of seven American citizens that spend (or used to spend) most of their adult lives completely immersed in MMORPGs (*Massively Multiplayer Online Role-Playing Games*).

<https://www.youtube.com/watch?v=V_2FycHamfA>, last accessed February 21, 2018.

¹⁸⁸ Concerning the artistic creation of avatars, in her practice-based Ph.D. thesis, Catarina Carneiro de Sousa reflects on how a "shared creative process of construction of virtual corporeality in collaborative virtual environments becomes an aesthetic experience." See Sousa: 2017.

intersubjective notion of “phantom limb, in its visible/invisible duality” (Sobchack: 2004). Using her own body as a laboratory, and having experienced first-hand the sensation of a phantom limb, Sobchack puts forth the subjective idea of a body that does not coincide with its objective barriers, insofar as, and given our need to establish barriers in order to recognize a given object or space, a conflict arises in relation to an idea of absence. However, this absence never comes to equate a complete disappearance, as a result of the dissonant ideas that it in turn produces, consequently altering our awareness of this “not-thereness.” According to Rita Carter, those barriers are able to be negotiated, by being conscious that they cease to exist (Carter, as cited in Sobchack: 2004). As such, the presence of the sensation of pain in a limb that has disappeared, and is thus inexistent as an objective part of a physical body, can remain in the consciousness we have of that same body.

In the field of cognitive neuroscience, it is common to use digital techniques for registering and analyzing patterns of brain activity, in order to question certain paradigms inherited from reputed theories of psychology (such as behaviorism or psychoanalysis). At this point, it might also be useful to think of the ways in which such research exploits VR/AR, thus contributing to a reconceptualization of cognitive processes, as stated by Rose *et al* in their review of research concerning the rehabilitation of cerebral damage using VR techniques (Rose *et al*: 2005, 241). Moreover, these findings suggest a significant interdisciplinarity between different fields of knowledge, an observation corroborated by Susan Broadhurst, who points out the significance of neuroscientific approaches in the field of digital aesthetics. According to Broadhurst, this interdisciplinarity results from at least two things: firstly, from a hybridization of media used in digital artistic practices, in which “imperceptible intensities, together with their ontological status, that give rise to new modes of perception and consciousness” are at play; secondly, from new approaches offered by recent research in the field of cognitive neuroscience and the study of consciousness (Broadhurst: 2007, 5). An example of this is neurocognitive research pertaining to pathologies of pain and paralysis in phantom limbs. Seen as a relatively common condition in amputees, and often pointed as one of the causes for the deterioration of the quality life of amputees (Ortiz-Catalan *et al*: 2014, 1) – whereby suicide is the ultimate extreme consequence – sensations of pain in phantom limbs have been studied by cognitive neuroscience, allowing for a confrontation with former assumptions exclusively based on the study of this pathology from a psychiatric point of view, without taking into account physiological factors. Research such as the famous “mirror therapy,”¹⁸⁹ conducted by V. S. Ramachandran - during

¹⁸⁹ In mirror therapy, Ramachandran and his team used a virtual reality box, made from a regular cardboard box with its top removed, and a vertical mirror placed inside this same box, thus dividing the box into two equal parts. The

which, when faced with the virtual illusion of a lost limb, some patients witnessed their pain diminish, a few patients having inclusively reported the complete disappearance of that pain - despite its lack of consistency in the explanation of cerebral areas involved in those processes, points to practical results that may pave the way for future research¹⁹⁰ (Ramachandran & Hirstein: 1998, 1621).

More recently, as an improvement of Ramachandran's somewhat limited techniques, given the physical constraints imposed by the conventionality of the virtual reality box, a group of researchers from the University of Chalmers, Sweden, successfully applied AR and VR, as well as virtual games, in the creation of a digital emulation of the virtual reality box's basic principles. Testing their methods on a single individual, whose arm had been amputated for more than four decades, and who regularly experienced pain in a phantom limb, these researchers claimed that their methods were efficient in decreasing the sensation of pain (Ortiz-Catalan *et al.*: 2014, 1). According to them, the use of these techniques diverged from previous ones deemed more conventional, not only because they enabled a larger number of movements, not being restricted to mono-amputees, but also, allowed for the evaluation of the effort made by the amputee in their attempt to move the phantom limb. Although being only a hypothesis, up to that moment, limited to a single individual, part of this success may be explained in light of the higher degree of realism provided by AR - using direct volitional control that predicts motion intent via means of myoelectric signals at the stump - as well as the harnessing of the individual's motivation in performing these tests through the use of virtual games (1).

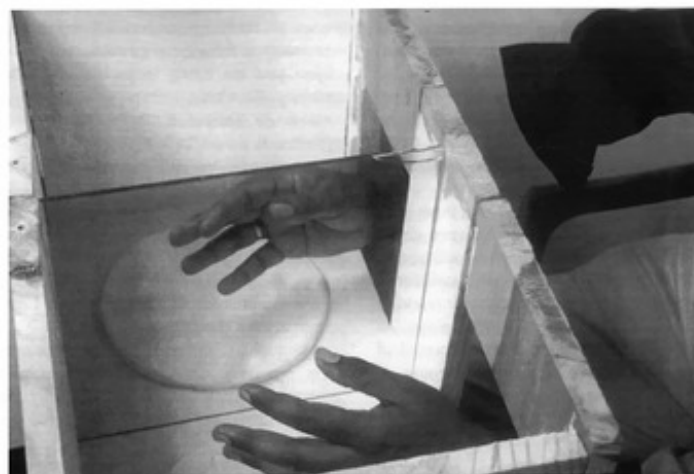


Fig. 5.17: V.S. Ramachandran's mirror box. Ramachandran and Hirstein (1998). "The Perception of Phantom Limbs: The D.O. Hebb Lecture," *Brain*, 121, 1621.

patient was then invited to place both his "good" arm and his "phantom" arm into each of the parts, allowing for the experience of the illusion of movement in his absent arm. In some patients, the results were extremely positive, Ramachandran and his team having ironically reported as having been witness to probably "the first known case of a successful 'amputation' of a phantom limb" (Ramachandran & Hirstein: 1998, 1621).

¹⁹⁰ For more information concerning areas of the brain activated by mirror therapy, see Michielsen *et al.* (2011).

By emphasizing the materialities intrinsic to cerebral activity in the construction of perceptions, these and other neuroscientific studies offer us a whole new field of possibilities to be explored, in order to rethink the way in which we read and write a digital literary artwork, including those in which tactile and haptic perception is of central importance. Admittedly, with regard to digital text, we are now dealing with a multimodality that should be distinguished from alphanumeric reading processes, since it deals with different grammars than the ones required by analog reading (Kress, as cited in Weasenforth: 2006, 1). However, while several researchers successfully attest the possibility of experiential learning through the use of VR and virtual worlds (see Jerry *et al.*: 2014), as well as through the employment of AR (see Bower *et al.*: 2014), the focus has often been placed on traditional approaches that, while of significance, should in fact be revised and reconceptualized in light of a communication technology which for the first time in the history of media, places the apprentice, as opposed to the master, as potentially more capable of using and adapting to mechanisms intrinsic to digital environments. In this sense, metaphorically borrowing from the notion of “learned paralysis” used by Ramachandran and Hirstein to refer to the paralysis of a limb as “a result of a peripheral nerve lesion before amputation” (Ramachandran & Hirstein: 1998, 1619), just as a phantom limb tends to imitate the former paralysis of an actual limb – the phantom limb often occupying the same position of the actual limb prior to its amputation – there is also a sense of “learned paralysis” in the refusal to adapt to digital literacies and different grammars of digital multimodal environments. A phenomenon that may also explain the prevalence of an ocularcentric paradigm in many aspects of society. Which brings us to Ramachandran and Hirstein’s final question: “If the hypothesis of learned paralysis is correct, would it be possible to unlearn the phantom paralysis?” (1620)

To give an example of this *literary learned paralysis* in the field of digital literary artworks we often witness a constant need to interpret digital kinetic lexias in the same manner as print-based texts, often ignoring the apprehension of a “textual whole,” to use Eskelinen’s terms (2012, 69-86). In order for this condition to be diminished, or even, extinguished, the creation of an educational context in which digital media that draw attention to the need to unlearn such *paralysis*, is mandatory, made possible in at least two possible ways: first, by means of agents responsible for teaching and educating; secondly, through the establishment of an environment in which students and trainees can take advantage of a mixed-knowledge environment involving both digital and analog mechanisms (since analog practices can be extremely useful, and even crucial, in order to conceptualize and fully understand digitality). It is precisely this interdisciplinary and intergenerational exchange, that I believe to be useful in cultivating educational systems that embrace a transition to the digital, without disregarding the fact that a

certain use of devices, media and concepts needs to be revised, as well as reconceptualized. As such, what I intend to claim with all of these metaphoric analogies, is that these processes of forced transition between analog and digital, continue to resemble the sensation of a phantom limb by a brain that does not assimilate the loss of that same limb. As we continue to antagonize the idea of human and machine as a cybrid body, and continue to conceptualize machines as tools or prosthetic devices/artificial extensions, we will hardly come close to taking full advantage of digital media's potential. Perhaps the key for these much-needed tools of visual and digital literacy may be found in the recognition of a new paradigm. Otherwise, just like a patient who feels pain and paralysis in a limb that no longer exists, we shall keep trying to adapt to a prosthesis that simply will not fit.

5.7 Ex-foliation VII: Haptic Reading is a Migratory Flux

We must get used to being less clever than the artificial brain that we have produced, just as our teeth are less strong than a millstone and our ability to fly negligible compared with that of a jet aircraft.

Andre Leroi-Gouhan, *Gesture and Speech*

It is impossible to speak of circles (cycles) – further on we shall also discuss the question of (e)migration – without mentioning two of its most significant symbols. The first symbol pertains to the most intangible and ethereal of birds, a magical bird, whose life, according to legends, spans five hundred years (at least according to Dante's *Inferno*, Canto XXIV), at the end of which it then burns itself to death, only to come back and rise from the ashes. The second symbol concerns the egg, whose figurative use in visual poems is quite prolific, dating back to Simmias of Rhodes with *Technopaegnia* (circa 300 BC). Both symbols are relevant in the artworks of Portuguese multidisciplinary artist, Silvestre Pestana, not only in his performances dating from the 1970s, using the Portuguese equivalent to the word *egg* – *OVO*, a palindrome, specifically used in a wordplay in Portuguese language between the words *povo* (people) and *novo* (new)¹⁹¹ – but also in a series of performances between 2009 and 2010, where the phoenix figured

¹⁹¹ In addition to the multiple representations of the palindrome 'OVO' carried out by the various experimentalists in the second half of the twentieth century, notably by the Brazilian Noigandres concrete poetry group, it is also worth mentioning its particular use by several artists associated with the Portuguese experimentalists from PO.EX, in a frequent association with the term 'POVO' and / or 'NOVO.' For example, António Aragão, with the artwork "POVO / OVO" (1977) and Silvestre Pestana, with "POEMA / OVO" (1977) and later, in the 1980s, with "Computer Poetry," "a series of poems for ZX81, ZX82 and Spectrum, a work considered by several researchers as a pioneer in the field of electronic literature." See Funkhouser: 2007.

prominently, each performance representing a different incarnation and process of disembodiment. A first moment: *FÉNIX – ação: socialmente reprovado por envelhecimento prematuro* (*Phoenix – Action: socially disapproved by premature aging*), taking place in 2009 in one of several alternative art galleries in the city of Oporto, and simultaneously, performed by his avatar Vito Flores, in Second Life. According to Pestana, this performance was intended to be seen as “uma reflexão artística sobre a construção social dos comportamentos narcísicos, ditados pela mitologia das vivências funcionais.”¹⁹² Drawing attention to the value of 3D, Pestana and his avatar performed inside two different types of enclosed spaces, reinforcing the idea of the impossibility of being another without resorting to an autorendering.¹⁹³ In addition, a second moment also took place, namely: *ACÇÃO FÉNIX 2.0 e Instalação [PHOENIX ACTION 2.0 and Installation]*, this time starting in a physical (actual) space, expressly, that of a gallery, and ending in a virtual environment. Each space shares the common structure of a greenhouse: in the physical space, Silvestre Pestana continuously pedals on a stepper until exhaustion, whereas in the virtual space, his avatar, Vito Flores, performs rather differently than in his first performance, in which both physical artist and avatar were synchronized in their movements, given that in this second performance, Vito Flores continues pedalling on his virtual stepper without ever reaching exhaustion (as a type of permanent installation, one could say).



Fig. 5.18: Silvestre Pestana in his actual performance in the greenhouse built-in the gallery *Uma Certa Falta de Coerência*. © Silvestre Pestana. Reproduced with permission.

¹⁹² “an artistic reflection on the social construction of narcissistic behavior ruled by mythologies of functional life experiences.” Translated from the event’s press release, available at: <<http://acloc-27-silvestrepestana.blogspot.pt/>>, last accessed February 10, 2015.

¹⁹³ Adapted from the event’s press release, available at: <<http://acloc-27-silvestrepestana.blogspot.pt/>>, last accessed February 10, 2015.

The physical differences between both performers and spaces of action should also be evinced: Vito Flores is a young man with a robust body, who pedals in a colorful, luminous, silent environment (characteristic of standard environments designed by and for SL), inside a greenhouse where the rules of space/time do not apply. In turn, Pestana pedals in a dark and urban environment, confined to a cramped structure with four walls, evidencing obvious physical effort through several grimaces of pain.



Fig. 5.19: The avatar Vito Flores performing in the virtual space of the Galeria Alvarez in Second Life (right). © Silvestre Pestana. Reproduced with permission.

These two paths, the actual and the virtual, momentarily crossing in time and space – without taking into consideration a third possible path made by visitors, through their interaction with a joystick – seem to represent different instantiations of contact. Firstly, a contact between potency and act, described by Manaíra Athayde as a “(dis)tensão entre a potência – as possibilidades do ser, aquilo que ainda não é mas pode vir a ser – e o ato, a ação – a manifestação atual do ser, aquilo que já existe –, numa discussão ontológica que é maquinada sob uma perspectiva sociologizada (...). Daí ser tão caro ao artista elementos como o útero, a estufa, o aquário e, claro, o ovo.” (Athayde: 2013, para. 22).¹⁹⁴ The latter being identical in all aspects to an idea of birth, as well as to the problematics of the survival of the species (the desire for an intangible tangibility in the utopic search for immortality, as well as the eagerness for immediate

¹⁹⁴ “(dis)tension between (...) the possibilities of being, that which is not yet but is to be (...) and the actual manifestation of being, that which already exists (...) an ontological discussion machined under a sociological perspective. (...) Hence the significance to the artist of elements such as the uterus, the greenhouse, the aquarium and, of course, the egg.” <<https://matlit.wordpress.com/2013/03/22/do-inicio-dos-meios-e-do-fim-em-silvestre-pestana/>>, last accessed April 19, 2015.

knowledge). Secondly, a contact constituted by a process of transition and transduction,¹⁹⁵ between an actual *I* and a virtual *I* that affect (each other) and are self-affected,¹⁹⁶ in the sense that, when the first reaches the end of his strength (his point of contact), this then gives way to the second, through a gesture that stops being temporary, in order to become continuous (the action of pedalling on a virtual stepper). Nonetheless, this contact is interrupted, contaminated, or if you wish, mediated, by the machine.¹⁹⁷ In short, these are contacts that evoke the notion of haptic, through the interlacing of bodies that this contemporary Dorian Gray-like scenario represents (albeit its clear reversal of roles), even when the body is also an other, an autorendering, to paraphrase Silvestre Pestana.

Another rare bird in this circular and migratory final flight, freed by the hand of Brazilian artist Eduardo Kac, is *Rara Avis* (1996),¹⁹⁸ a performance-installation that used the complex and polemic phenomenon of telepresence,¹⁹⁹ leading to a metareflection on the “problematic notion of ‘exoticism,’ (...) a concept that reveals more about relativity of contexts and the limited

¹⁹⁵ We are following on from Brian Massumi here, in the use of the terms “transition” and “transduction,” specifically within the context of the notion of ‘affect.’ The first being based on Spinoza’s understanding of the body as having transitions between movement and rest, see Massumi, 2002: 15; the latter on the description of a body as a transductor (in the context of one of Stelarc’s performances): “The transducing of the body is extended beyond the skin to propagate through the surrounding space. The transductive physicality of the body extends to the limits of its spatial containment.” See Massumi: 2002, 104.

¹⁹⁶ For Brian Rotman, “[w]ithin the contemporary digitally enabled scene, a network ‘I’ is being heralded. The features of such a third self-enunciating agency, differentiating it from the oral and scriptive ‘I’s, are becoming discernable. Such an ‘I’ is immersive and gesturo-haptic, understanding itself as meaningful from without, an embodied agent increasingly defined by the networks threading through it, and experiencing itself (notwithstanding the ubiquitous computer screen interface) as much through touch as vision, through tactile, gestural, and haptic means as it navigates itself through informational space, traversing a “world of pervasive proximity” whose “dominant sense... is touch” (de Kerckhove 2006, 8)”. See Rotman: 2008, 8.

¹⁹⁷ The idea of “natural-born cyborgs” may be particularly useful here, since it aids in the clarification of intermedial processes between human and machine. Brian Rotman is one of the researchers that retrieves this notion, namely in his book, *Becoming Beside Ourselves*: “Reflecting on the relation between the human and the machine, the cognitive theorist Andy Clark urges ‘We shall be cyborgs not in the merely superficial sense of combining flesh and wires, but in the more profound sense of being human-technology symbionts: thinking and reasoning systems whose minds and selves are spread across biological brain and nonbiological circuitry (2006, 1)’. Human beings are ‘natural born cyborgs’; the ‘human’ has from the beginning of the species been a three-way hybrid, a bio-cultural-technological amalgam: the ‘human mind’ – its subjectivities, affects, agency, and forms of consciousness – having been put into form by a succession of physical and cognitive technologies at its disposal.” See Rotman: 2008, 1.

¹⁹⁸ <<http://www.ekac.org/raraavis.html>>, last accessed February 22, 2018.

¹⁹⁹ The origin of discussions around the term ‘telepresence’ dates back to 1980, with the publishing of an article by Marvin Minsky in the field of telerobotics, which is why the term came to be used whenever one wanted to allude to a feeling of being present in a digital virtual environment. However, in 1992, the first number of MIT’s press journal *Presence*, relaunched the discussion, presenting two articles with conflicting opinions on the definition of the term. In one of these articles, Thomas Sheridan appealed to the restriction of the term to the exclusive field of teleoperations, suggesting instead the use of the term ‘virtual presence’ when referring to presence in virtual environments. Contrastingly, in another article, Richard Held and Nathaniel Durlach argued that the term ‘presence’ was suited to both situations pointed out by Sheridan. Perhaps for this reason, and according to Gordon Calleja, the term ‘presence’ has been used more frequently, to the detriment of others, to describe both virtual and physical environments (2014, 224). But this terminological discussion does not end here, and there are several other interesting perspectives that replace the somewhat worn-out terms of immersion and presence, such as ‘mediated presence’ (see Bracken & Skalski, as cited in Waterworth, 2010: 589), ‘copresence’ (Zhao: 2003, 445), as well as ‘distributed embodiment’ (Waterworth & Waterworth: 2014, 589-601).

awareness of the observer than about the cultural status of the object of observation” (Kac: 1996, project statement). In *Rara Avis*, participants were given remote access to the gallery in two possible ways, namely: virtual access via computer, as well as, immediate access to the physical space of the gallery. Each of these modes of access allowed for a different way of experiencing the space of an aviary filled with approximately thirty different bird species, from the perspective of a telerobotic macaw.



Fig. 5.19: *Rara Avis*. Perspective from the exterior of the cage. (left). Webpage presenting interactive conferences and cybercasts, with the help of softwares as CU-SeeMe e MBone. © Eduardo Kac.

This way, while the actual participant (AP) was *teletransported* to the aviary’s interior - giving life to the macaw via means of a visual and aural device able to detect head movements - the virtual participant (VP) shared the mediated vision of the first. In other words, these two types of participants represented two different dimensions of virtuality: one starting from the moment the AP changed his visual perspective of the aviary by incorporating the telerobotic macaw (a movement that goes from without to within - a centripetal force); another generated by the VP, who despite the possibility of also being able to adopt the macaw’s perspective, had the particularity of experiencing it via the Internet, being thus limited by the experience of image dragging and glitch, in addition to other technical impairments typical of hardware and software used in 1996 (not to mention the influence of location).²⁰⁰ Moreover, the latter also had the ability to use a microphone, in order to activate a vocal device inserted inside the macaw, an action that permitted that his voice be heard throughout the gallery, as well as by other VPs. This way, the voices of both humans and birds would propagate and intersect, through a continuous process of feedback loops between the space of the art gallery and each single machine remotely connected to the installation via the Internet, giving way to a crescendoing cacophony, and to a mutual

²⁰⁰ These different experiences in accessing the artwork, dependent on the equipment of each remote participant, are according to Kac, a reflection of the “the highly technological environment in which we live--modulates and defines our perception of reality” (Kac: 1996, project statement).

influence between different ecologies (the actual aviary and the Internet). Paraphrasing Eduardo Kac, the viability of a virtual and physical presence in two places at the same time, gives rise to a metaphor that represents the disappearance of borders, while simultaneously reinforcing them, a paradox suggesting themes of identity and alterity, projecting the participant into the interior of a rare bird's body - rare because it is the only member of its species inside the aviary, and because its species is in turn a rare species – allowing him to embody its color, its size, as well as its behavior (Kac: 1996, project statement).

(E)migratory fluxes and cycles are a central trope in many of Eduardo Kac's artworks. Stephanie Strickland calls our attention to that pattern, in her analysis of *Time Capsule*, an artwork from 1997 involving, once again, digital art and telepresence. Strickland starts by reminding us that Kac's family arrived in Brasil during the migratory movements from Eastern Europe to South America at the end of the 1930s,²⁰¹ comparing it to Eduardo Kac's migration from São Paulo, Brazil, to Chicago, USA (2007, 41). As Strickland proceeds with her close reading, she describes, on the one hand, the complexity of transitions between the analog and the digital,²⁰² highlighted by Kac's performance, and on the other, the "microfluctuations" behind those transitions:

Time Capsule takes place in Chicago, Brazil, Poland, the airwaves, the phone lines, around the world on the Web, and in Kac's flesh wherever he goes, yet is called site-specific. It takes place on 11, 12, 13 November, or now on his webpage devoted to it, or always, in his leg, or in the thirties in Poland. It is a body, a broadcast, a netcast, a database, an identification, a schedule, a sound byte, an implant, a webscan, an X-ray, a gallery show. (...) A man is marking his ankle with an identification number under the photographed eyes of his refugee family, a family in flight from a regime that wrote numbers on skin with needles. Without being bound to any machine he is now always readable by a machine, wearing an electronic anklet that monitors him as much as any prisoner. (42)

Similarly to *Time Capsule* and many of Kac's other artworks, *Rara Avis* shares the same evolutionary principle that intersects technology and arts. Notwithstanding, this does not necessarily mean that technology is just another tool at the service of creativity (and vice-versa). On the contrary, only through technology's assimilation and integration as equal parts of a cyclic

²⁰¹ There are several moments in which Eduardo Kac – in interviews, articles and artworks – refers to the figure of his grandmother, who was forced to travel from Poland to Brazil in 1939, his Jewish origin being another central theme in his creative process, as can be seen for example, in the holopoem *Shema* (1989). See Kac: 1995, 92; 98; 102.

²⁰² Here might be worth recalling this detailed description by Strickland: "On 11 November 1997, in a room in São Paulo with parquet floors and ornate plaster ceiling, he created an inner room of movable white walls on one of which hang seven sepia-toned photographs his grandmother brought from Poland in 1939 – the actual photographs, he says in a talk given a year later, though in the gallery they are not identified in any way. On the facing wall, as of the next day, he hung a diptych combining an X-ray of his ankle with an enlargement of the registration screen for a Web database used to track lost animals; for, on the prior day, broadcast live both to Brazilian TV and to the Web, Kac had injected his leg with a microchip implant that contained a programmed identification number and that, when scanned, emitted a radio signal. He then put his leg in the scanning device, and his ankle was Web-scanned from Chicago, the scanner button being pushed by a telerobotic finger. Kac then registered himself, as both animal and owner, in a North American pet database, the first human to do so." See Strickland: 2007, 41-42.

and open symbiotic process between human being and machine, is it possible to question both, in order to critically examine the historical and ongoing mode of production of the human.

From the observation of birds by Kipling (see chapter one), to the cybernetic migrations of a telerobotic macaw across continents, there is a series of points of contact between all of these circular flights. This (open) circularity, or rather spirality, confirms that gestures and words, have in fact more in common with birds than one would assume at first glance. Is it not the vision of birds (namely, birds of prey), that which enables them to fetch, grasp, attain, control and *touch* a prey at a *short* long-distance range? Is it not their flickering, gliding movements, that are today emulated by technological images, and at another level, by “flickering signifiers”?²⁰³ And what of their guidance system in space, the true motor of their migratory flux? Contemplation of birds in their natural habitat can, in fact, conceal a greater desire for controlling a sensory and locomotive technology characteristic of birds, even while knowing that our *limited* sensory skills will never reach that of birds. Nonetheless, through contacts between human being and machine, this desire can begin to take shape, although this virtual possibility may assail us with permanent fear of a loss of dominion already conquered by speech. And that is why we conclude with the following possible solution, like a spiral iteration, or repercussion, in our minds (and bodies):

We must get used to being less clever than the artificial brain that we have produced, just as our teeth are less strong than a millstone and our ability to fly negligible compared with that of a jet aircraft. (Leroi-Gourhan: 1993, 265)

²⁰³ See Hayles: 1999, 25-49.

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