

Writing Technologies

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Autoauthor, Autotext, Autoreader: The Poem as Self-assembled Database

Manuel Portela

Writing Technologies, vol. 4 (2012), 43-74
ISSN 1754-9035

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1. The poem as database and algorithm

The 'I' of the author is dissolved in the writing. The so-called personality of the writer exists within the very act of writing: it is the product and the instrument of the writing process. A writing machine that has been fed an instruction appropriate to the case could also devise an exact and unmistakable "personality" of an author, or else it could be adjusted in such a way as to evolve or change "personality" with each work it composes. Writers, as they have always been up to now, are already writing machines; or at least they are when things are going well.

Italo Calvino, 'Cybernetics and Ghosts'

Rui Torres is one of many authors who have been using computer programming to investigate rules and patterns embedded in particular writing processes. In fact, his works seem to prove Calvino's and OuLiPo's conjectures about writing as a material exploration of rules and constraints that are internal to the linguistic code. If the writer already is a literary machine, then using a computer to emulate the writing process means using one literary machine to probe into another literary machine. Most of Rui Torres' computer works may be said to function, at the same time, as a new work and as a critical analysis of his source texts. Considered as metatexts, i.e., as structural and stylistic descriptors of their source texts, they are particularly useful for understanding generative procedures at the level of grammar, discourse, and narrative. His 'poetic engines' – as he calls them – invite readers to recombine textual elements taken from pre-existing literary *corpora*, revealing the potentiality of meaning contained in those textual bodies. Most of his works start from actual texts produced by Portuguese and Brazilian authors – during the last decade he has used poetry and fiction texts written by Clarice Lispector, Sophia de Mello

Breyner, José-Alberto Marques, António Aragão, E.M. de Melo e Castro, Herberto Helder, Raul Brandão, Florbela Espanca, Fernando Pessoa, and Salette Tavares.

His source texts are digitally recoded by means of specific algorithmic operations: a few syntactic structures, collected from his source texts, are used as matrices for iterating permutations of lexical items that have been xml-encoded and fed into the database. This lexical database can start off as the product of statistical analysis of a given author's vocabulary, but it can also be supplemented by new items added by readers for each grammatical class. Lexical items from the various classes (nouns, adjectives, adverbs, and verbs) are then parsed and recombined according to pre-timed sequences or according to readers' interventions in the textual field. These semi-random permutations, which are open to rearrangement determined by readers' choices during their reading acts, make readers experience the productivity of the original structures and of a given author's lexicon. Writing is apprehended as a rule-constrained exercise, dependent upon recursive structures and open-ended permutations, whose creative properties derive in part from automatisms in the grammar of language, which are then overdetermined by discursive constraints, cultural patterns and stylistic preferences that favour certain kinds of association.



Figure 01. Rui Torres, *Mar de Sophia* (2005), opening screen [screenshot].

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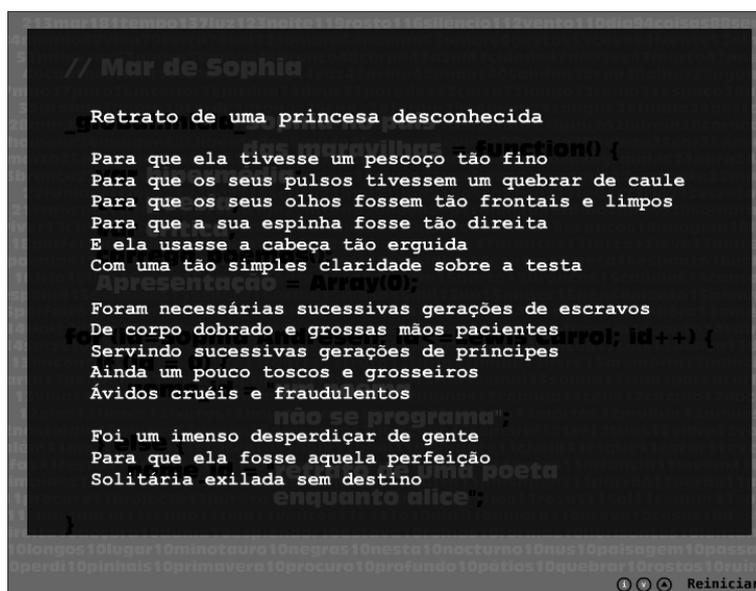


Figure 02. Rui Torres, *Mar de Sophia* (2005), textual matrix for a poetic engine [screenshot].

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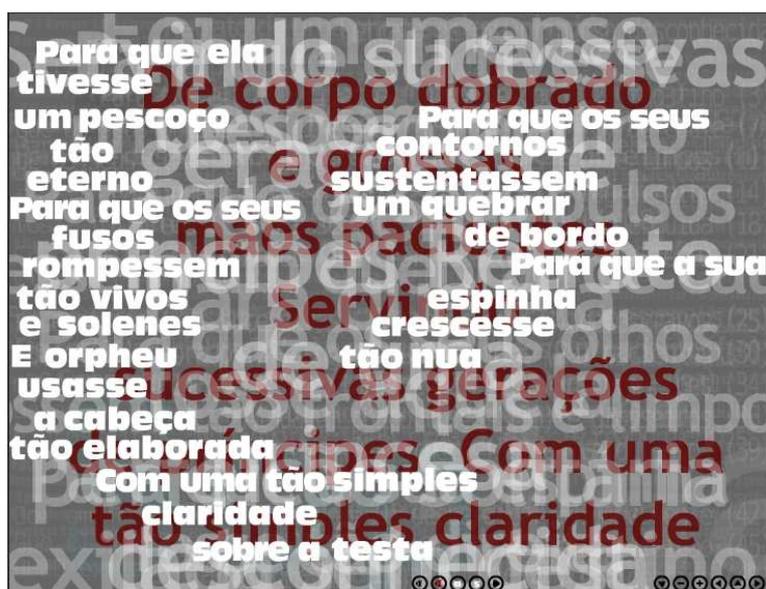
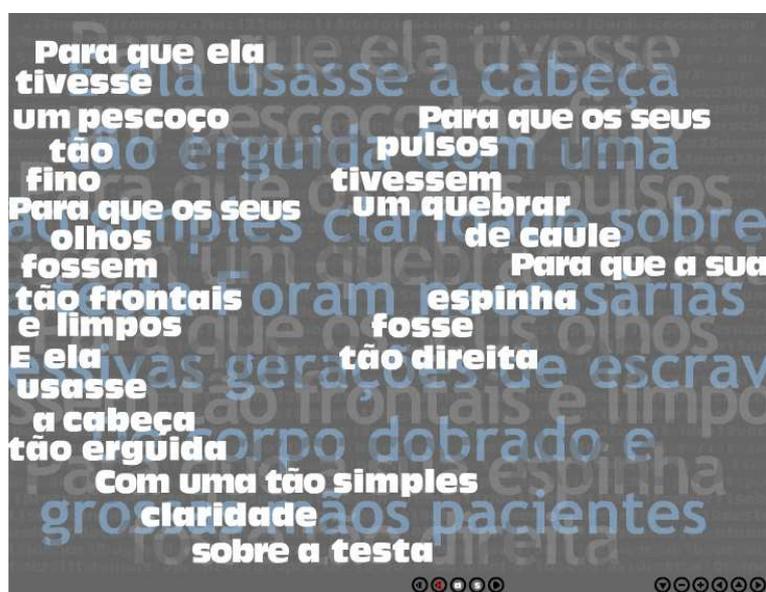


Figure 03. Rui Torres, *Mar de Sophia* (2005), one random iteration of the first stanza [screenshot]. © Rui Torres. Reproduced with permission.

These matrices or templates can be either a single poem or, more frequently, a small set of textual fragments. In *Mar de Sophia* [*Sophia's Sea*],¹ for example, one of the templates used is the poem 'Retrato de uma Princesa Desconhecida' ['Portrait of an Unknown Princess'] by

Sophia de Mello Breyner [Figures 1, 2, 3]. In *Um Corvo Nunca + [One Raven Never +]*,² the matrix is Fernando Pessoa's 1924 translation of 'The Raven' by Edgar Allan Poe. In *Do Peso e da Leveza [On Weight and Lightness]*,³ the matrix is a set of lines collected from poems by Sophia and by Pessoa according to topics of its title. In *Húmus Poema Contínuo [Humus Continuous Poem]*,⁴ his source texts are both *Húmus: Poema-Montagem [Humus: Montage-Poem]* (1967) by Herberto Helder and *Húmus* by Raul Brandão (1917, 1921, 1926). This work is a kind of *mise-en-abîme* of his programming tropes, since he programs a 1960s text that was already a permutational collage of a 1920s text:

Húmus: Poema-Montagem starts from *Húmus* by Herberto Helder (which is based on 'words, phrases, fragments, images, metaphors taken from *Húmus* by Raul Brandão') in order to create a combinatorial poem that is re-fed by the lexicon of Brandão. The combinatorial rule that has been applied to it responds to the dictum of 'freedom, freedoms', as in Helder's text. Readers can trigger the textual combinatorics by interacting with certain words, and they also have the possibility of changing the lexical lists. The sound texture is dynamically generated.⁵

Húmus Poema Contínuo is also typical of his programmed works because reader-generated textual occurrences can be added to author-generated combinations. Texts are transformed into textual instruments for producing further texts, thus distributing authorship between the author of the algorithm, the rules of the grammar of language, and the interventions of the reader. Rui Torres' work is explicitly affiliated to combinatorial and metaphorical processes formalized by Herberto Helder in his early works, such as 'Máquina de Emaranhar Paisagens' ['Machine for Entangling Landscapes'] (1964) and in *Electronicolórica [Electronicolyric]* (1964).⁶ In *Húmus Poema Contínuo*, the work's algorithm expands, through automation, the compositional principle used by Herberto Helder for his printed text. This method is reapplied by Torres to lexicon taken from the work of Raul Brandão in a way that automates the production of unexpected associations through serial permutations. Because Helder's poems are used as matrices we may say that Helder's montage is used as a data structure for organizing Brandão's textual corpus.

Helder's original montage consisted of freely selecting phrases and words from Brandão's textual fields and linking them in new associations. *Húmus: Poema-Montagem* operates on the basis of juxtaposing elements from *Húmus*, sometimes arranging white spaces

on the page in ways that point to elements that were left out. Most of its vocabulary and some of its syntactic structures come from its source text, as many texts can be thought of as a particular editing and rearrangement of pre-existing linguistic and discursive repertoires. Its lyric energy derives, in part, from bringing into closer proximity words and phrases already contained in its source-text's lexical and semantic fields. Rui Torres' analysis of Helder's rewriting of *Húmus* has uncovered several types of operations on its source-text, including connecting, separating, repeating, restructuring, omitting, adding, and transforming.⁷ Helder and Torres have performed the meanings in their source-texts through acts of reading that become acts of rewriting, and which, in turn, create meta-reading situations, i.e, situations that show the productivity and interactivity of reading. Both works call attention to the iterability of textual artifacts endlessly looping in reading and writing processes which readers and writers have to perform anew each time they encounter the world in language.

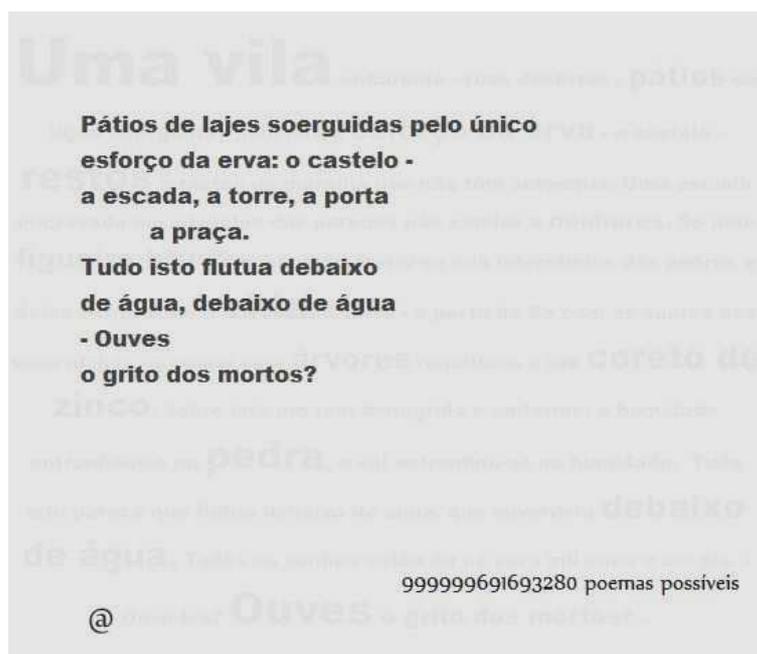


Figure 04. Rui Torres, *Húmus Poema Contínuo* (2008), first textual matrix (lines 1-8 from Herberto Helder's *Húmus*) [screenshot]. © Rui Torres. Reproduced with permission.

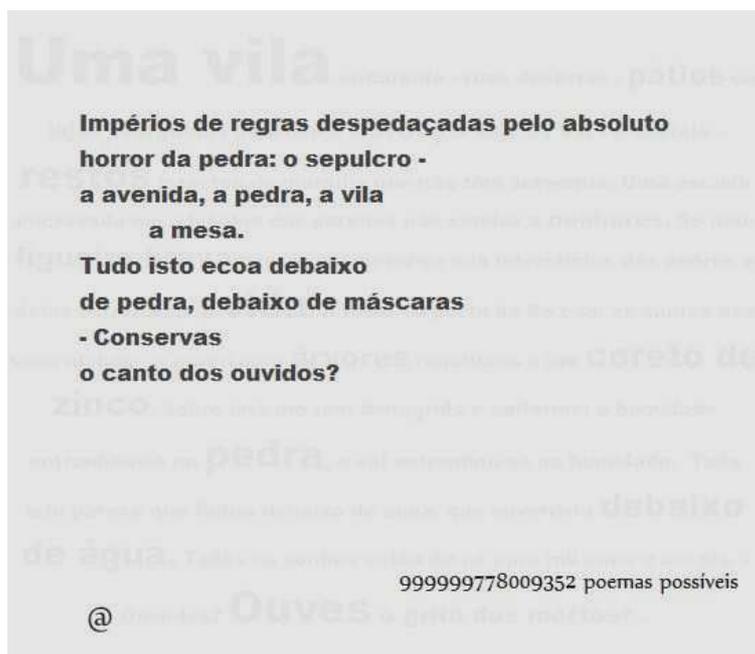


Figure 05. Rui Torres, *Húmus Poema Contínuo* (2008), iteration of one substitution in each of the 17 positions [screenshot]. © Rui Torres. Reproduced with permission.

After identifying the source text used by Helder (extracted from the 1926 version of the novel), Torres' generative work uses eleven excerpts from Helder's poem (ranging from 2 to 15 lines) as syntactic matrices for permutations [Figures 4, 5]. These permutations are fed by lexical lists compiled from Helder's source work. This means that Torres' metatextual return to the 1926 version of Brandão's modernist prose is mediated by Helder's selection and collage of fragments, but it is also an entirely new montage made with many different elements which can be randomly inserted into each of the permutational positions in the eleven matrices. *Húmus Poema Contínuo* rewrites Helder's rewriting of Brandão, while offering itself as a critical reading of both Helder and Brandão, and of Helder reading Brandão. Helder's appropriations and transformations of Brandão's text demonstrate the power of language for telling the world anew. It is a matter of showing language as a genetic event in which telling and generating the world are commensurate. Writing turns into reading which turns into writing as part of the general processes of substitution that make meaning possible.

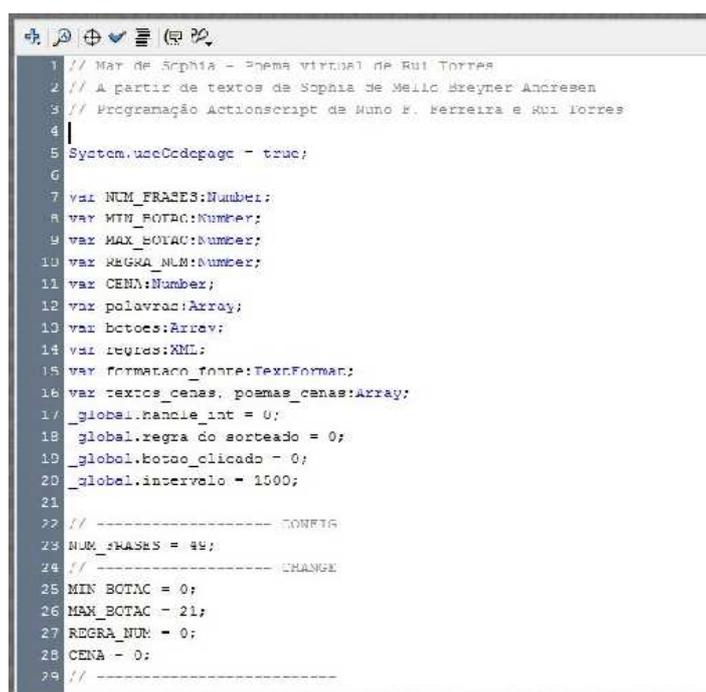
Rui Torres' generative text is a text upon another text which was already a text upon another text, showcasing citation and iteration as

exponential functions in the production of literary meaning. *Húmus Poema Contínuo*, *Húmus: Poema-Montagem* and *Húmus* are placed in a complex intertextual web, suggestive of the endless signifying chains of language, discourses, and genres. 'Humus' – the noun that describes these three individual works – can be read as a metaphor for the continuous deposition of textual layers that give literature its infinite iterability, depth of allusion, and signifying potentiality. Readers of Herberto Helder will know that in 2001 he collected his poetry under the general concept of 'continuous poem', i.e., as if all of his individual poems and books of poetry were part of a continuous and endless process of verbal genesis. Citation of this idea of continuity becomes a way of claiming Herberto Helder's views on the permutational nature of language as a principle of poetic creation and on literary production as a self-conscious palimpsestic process of writing upon writing upon writing.

Generativity of language, metaphorical substitution, and iterability of written signifiers as means of production of literary experience are further contextualized within the domain of machine-generated and machine-read literature. Each historically existent text and each potential virtual text are placed in a continuum, in which every textual occurrence adds to the existing strata of written signifiers. Human-machine intermediation is just another form for the social and historical nature of writing and reading acts. In his latest works (including the online version of *Húmus Poema Contínuo*), Rui Torres has introduced an e-mail tool that enables readers to record and publish textual instances of their own choice in a blog, *Poemário*.⁸ Reader-edited or reader-authored instances of particular machine iterations become part of a continuous process of textual proliferation, with each permutation subtracting one poem from the total number of possible poems. Textual instances, as writings and readings, seem to have been released from any definite authorial origin. They are left to the signifying and resignifying flux of emergent associations produced by the interplay between programmed rules, database structure, machine processing, and reading events. Inscribed and registered as an actual expression of an affective choice of a particular set of signifiers, they become available for future rereading and rewriting iterations: a machine-writing is read by a human and is registered by another machine as a new piece of writing available for further human and machine writings and readings.

But the generative works by Rui Torres do not limit themselves to a syntactical and lexicometric analysis of their source texts. They recode their source printed texts by reinscribing the verbal texture in the

multimodality of digital materiality. Randomized algorithms and permutational procedures are applied to sets of digital objects consisting of verbal text, video, voice, music, and animation. Thus linguistic signifiers are aggregated in a multimedia database consisting of sounds, images, and animations that reinforce the virtuality of sense as a combinatorial instantiation of modular elements. By making the paradigm explicit and the syntagm implicit, digital culture profoundly interferes with narrative modes of producing meaning. In effect, this tension between narrative logic and database logic, described by Lev Manovich as a structural element in digital media,⁹ is the very aesthetic axis of Rui Torres' works. A textual sequence, coincidental either with a poem or with a narrative fragment, is treated as a generative matrix for many other possible textual occurrences, now recontextualized in a three-dimensional audiovisual immersive space. Treated as a particular actualization and single instance of a potential textual state, the source-text is opened up again to the turbulent potentiality of signifiers and signifieds, and to processes of remediation and resignification characteristic of digital literacies.



```
1 // Mar de Sophia - Poema virtual de Rui Torres
2 // A partir de textos de Sophia de Melic Breyner Andersen
3 // Programação Actionscript de Muno F. Ferreira e Rui Torres
4
5 System.useCodepage = true;
6
7 var NUM_FRASES:Number;
8 var MIN_BOTAC:Number;
9 var MAX_BOTAC:Number;
10 var REGRA_NUM:Number;
11 var CENA:Number;
12 var palavras:Array;
13 var botoes:Array;
14 var styles:XML;
15 var formatacao_fonte:TextFormat;
16 var textos_cenas, poemas_cenas:Array;
17 _global.handle_int = 0;
18 _global.regra_do_sorteado = 0;
19 _global.botao_clicado = 0;
20 _global.intervalo = 1000;
21
22 // ----- CONFIG
23 NUM_FRASES = 49;
24 // ----- CHANGE
25 MIN_BOTAC = 0;
26 MAX_BOTAC = 21;
27 REGRA_NUM = 0;
28 CENA = 0;
29 // -----
```

Figure 06. Rui Torres, *Mar de Sophia* (2005), ActionScript coding [screenshot].

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```
- <frases>
  <frase>atenas</frase>
  <frase>ártemis</frase>
  <frase>bagdad</frase>
  <frase>barcelona</frase>
  <frase>beja</frase>
  <frase>brasília</frase>
  <frase>cassiopeia</frase>
  <frase>catarina</frase>
  <frase>cleópatra</frase>
  <frase>compostela</frase>
  <frase>creta</frase>
  <frase>eurydice</frase>
  <frase>europa</frase>
  <frase>helena</frase>
  <frase>hiroshima</frase>
  <frase>hydra</frase>
  <frase>ifigênia</frase>
  <frase>isolda</frase>
  <frase>itaca</frase>
  <frase>lidia</frase>
  <frase>lisboa</frase>
  <frase>garcialorca</frase>
  <frase>medeia</frase>
  <frase>penélope</frase>
```

Figure 07. Rui Torres, *Mar de Sophia* (2005), axis of lexical substitutions [screenshot].

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Figure 08. Rui Torres, *Mar de Sophia* (2005), coding textures and animation in Flash [screenshot].

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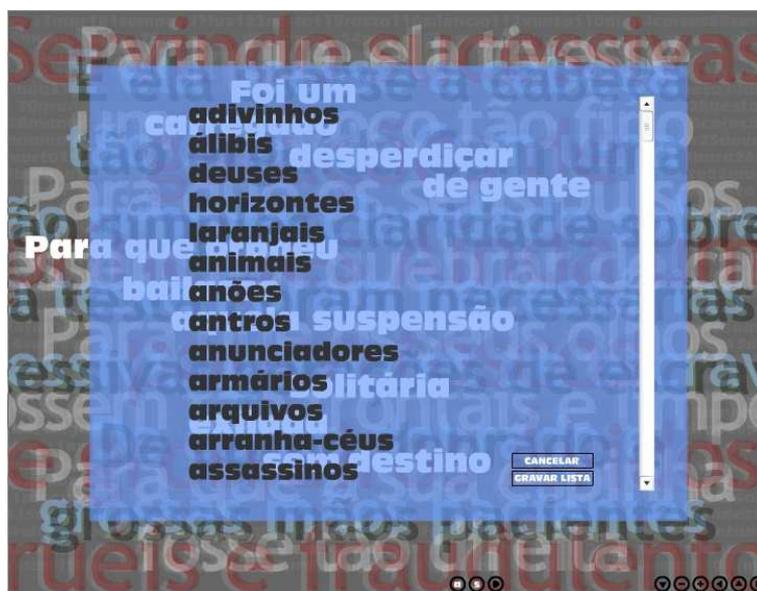


Figure 09. Rui Torres, *Mar de Sophia* (2005), 3rd screen, word list [screenshot].

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*Mar de Sophia*¹⁰ can be described as both a computational analysis of the poetry of Sophia de Mello Breyner and as a digital poem by Rui Torres. In this work, Rui Torres used a set of computational tools for analyzing a corpus of works by Sophia, including automated searches, aggregation of online poems, and statistical analysis of lexical occurrences [Figures 6, 7, 8, 9].¹¹ The 'sea' in this work's title contains an allusion to the most frequent word in the collected corpus of 450 online poems (showing the prominent place of that word in the lexicon of the poet) and also a metaphorical allusion to the sea of online poems by Sophia. These online poems document acts of reading and appropriation by the Portuguese and Brazilian readers who transcribed and published them. His source texts are also the texts of Sophia as mediated by acts of reading reflected in their transcription and sharing. In this sense, 'sea' may be taken to refer to the socialization of meaning production that occurs in literary communication. *Mar de Sophia* demonstrates the disseminative, derivative and intertextual nature of the processes of reading and writing by turning a structured corpus of evidence gathered from other readers into the dictionary and grammar of a new work. *Mar de Sophia* is, at a certain level, an essay on the

poetry of Sophia and on the Internet as a set of reading and writing practices.

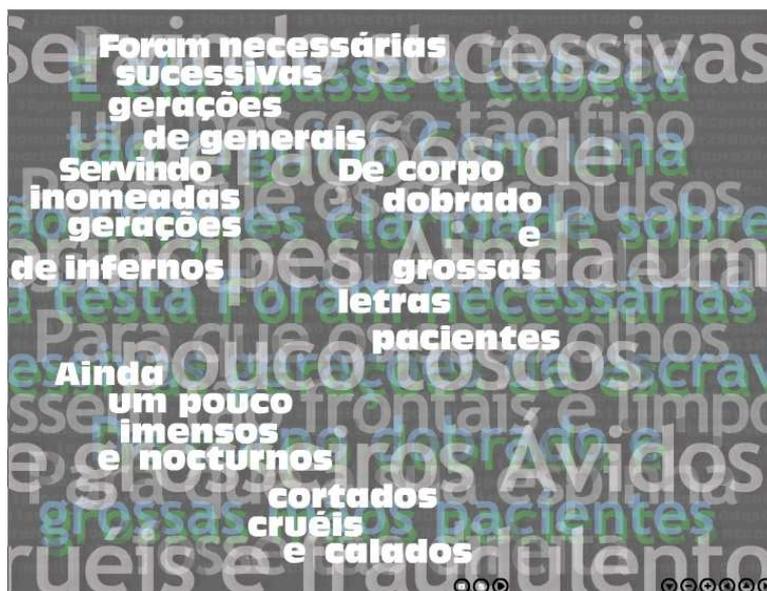
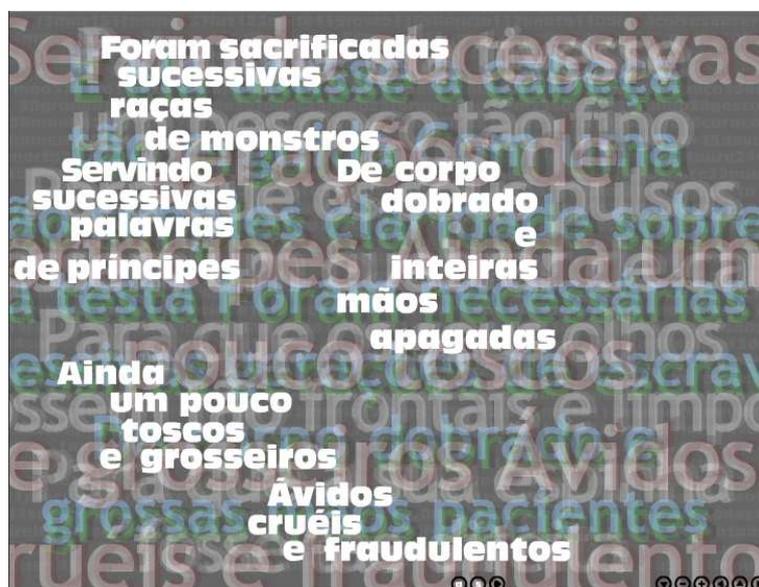


Figure 10. Rui Torres, *Mar de Sophia* (2005), two random iterations of the 2nd stanza [screenshots].

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As a digital work *Mar de Sophia* also contains a digital *ars poetica*, since the work is preceded and accompanied by an explicit description of the method of composition in its various technical stages, exploring what the author defines as the relationship between hypermedia, poetry, and criticism in digital poetics. Rui Torres describes the poem as an algorithm, that is, as a function that associates elements according to a formalized process. Designating the text chosen for syntactical matrix as 'virtual text' emphasizes the signifying potentiality of the substitution process that associates and reassociates signifiers [Figure 10]. This substitution process takes place within a syntactic structure created by the source-author, and uses a dictionary derived from a large sample taken from her work as collected by readers. The automation of the production of new associations has the effect of virtualizing the text, that is, of returning it to the associative chains of language. The modularization that is inherent in digital objects results in the inversion of the relationship between the axis of presence and the axis of absence. It is the presentification of the paradigm (the axis of lexical substitutions) that turns the poem into a database whose mode of presentation highlights potentiality, mobility, and transformation.

```
// Mar de Sophia

_global.inicia Sophia no pais
das maravilhas = function() {
  var hipermédia;
  var poesia;
  var crítica;
  carrega_poemas();
  Apresentação = Array(0);

  for (id=Sophia Andresen; id<=Lewis Carrol; id++) {
    if (id = 0) {
      nome_id = "um poema
                não se programa";
    } else {
      nome_id = "retrato de uma poeta
                enquanto alice";
    }
  }
}
```

⏪ ⏩ Reiniciar

Figure 11. Rui Torres, *Mar de Sophia* (2005), *Sophia in wonderland* [screenshot].

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To the lexicon of Sophia, Rui Torres has added the lexicon of a sample taken from *Alice's Adventures in Wonderland*, by Lewis Carroll, thereby suggesting the connection between his process-poem and the surreal and unexpected associations of Alice's adventures [Figure 11].¹² Those improbable metaphorical links are also a hypermedia simulation of the dynamics of language in its process of continuous differentiation and endless resignification. As a hypermedia poem, its linguistic permutational logic is extended to those other material elements – such as image, sound, and animation –, which run in a constant counterpoint to the merely verbal visuality. Hypnotic recurrence of synthetic sounds, overlapping verbal layers with various degrees of transparency, asynchronous behaviour of the voice, which keeps repeating the verses of the textual matrix independently of the graphic changes that make new words appear on screen – all of these elements contribute to the objectification of the verbal and digital materiality of the work, which turns signs into sensory and sensuous objects. Assimilating the verbivocovisual postmodernist experimentation and the programmed literature of the past two decades, Rui Torres continues, in the context of digital reproducibility, the experimental program of transforming poetry into experience.

2. The poem as semiotic gap between written-text and read-text

To write in order to dialogue with a text: to admit of the possibility that recreating the texts that we read is one of the nodes of literary criticism. It is invested with this strategy that I present a poem that was written with the intention of reading the short story 'Amor' by Clarice Lispector, expanding rather than limiting the signifying energy that potentially exists in the Brazilian author's text. The reading-poem *Amor de Clarice* thus belongs to the devouring and 'plagiotropic' tradition of experimental poetry.¹³

In *Amor de Clarice*¹⁴ – a hypermedia rewriting of Clarice Lispector's short-story 'Amor', originally published in 1960 – the protagonist's dark epiphanies about her inner life are recreated in hypnotic images and rhythms [Figures 12, 13]. The twenty-six sequences that constitute this hypermedia work are made up of fragments of the original story that gradually appear over superimposed textual layers and over inset

images and videos. Each textual sequence/screen is attached to sound files that loop its own musical piece. Each textual element (word or group of words) within a sequence/screen is indexed and linked to a voice file that reads the written fragments as they appear on screen or as readers click on or drag each item, thus interfering in the pre-timed sequence. The text runs according to its own pre-timed sequence, but lines and screens can be clicked on and changed at any given moment. The reader can move strings of words around, altering the internal textual structure for each screen. Permutations within each screen and across the entire network of screens result in numerous possible actual sequences of its hypnotic verbal, visual, and sound layers.

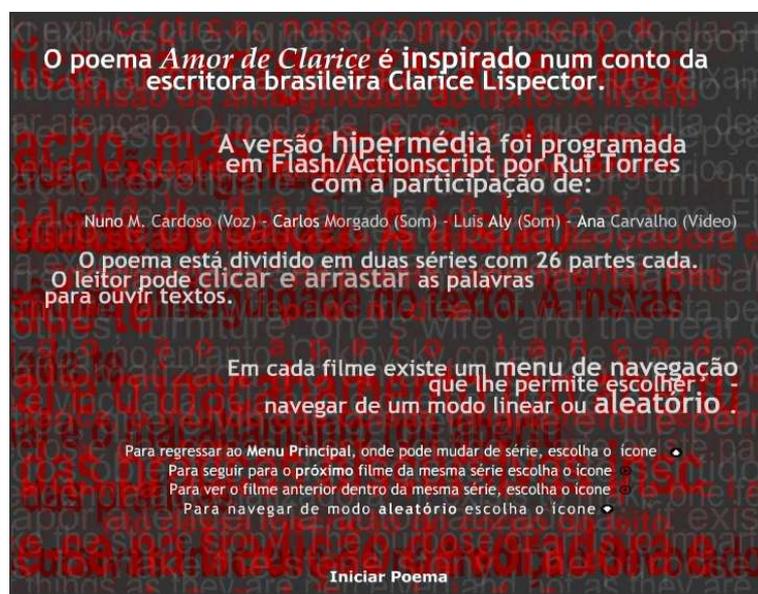


Figure 12. Rui Torres, *Amor de Clarice* (2005), reading instructions [screenshot].

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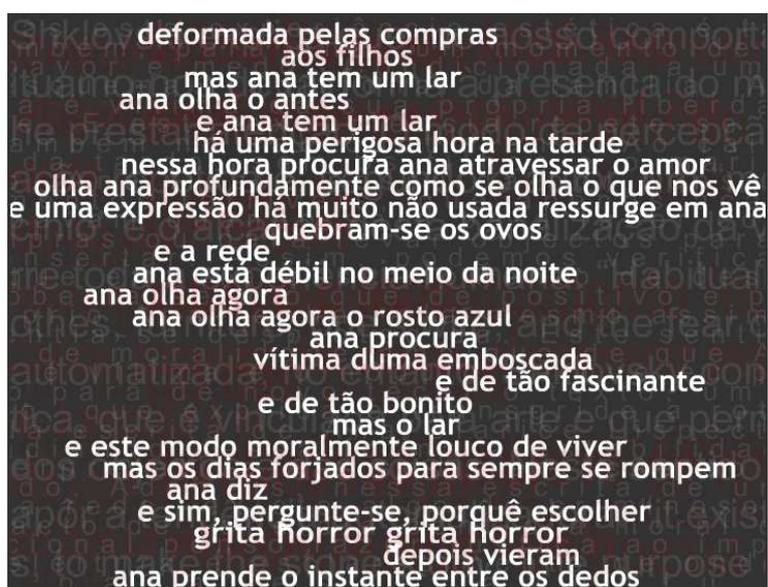


Figure 13. Rui Torres, *Amor de Clarice* (2005), initial menu for the 26 parts [screenshot].

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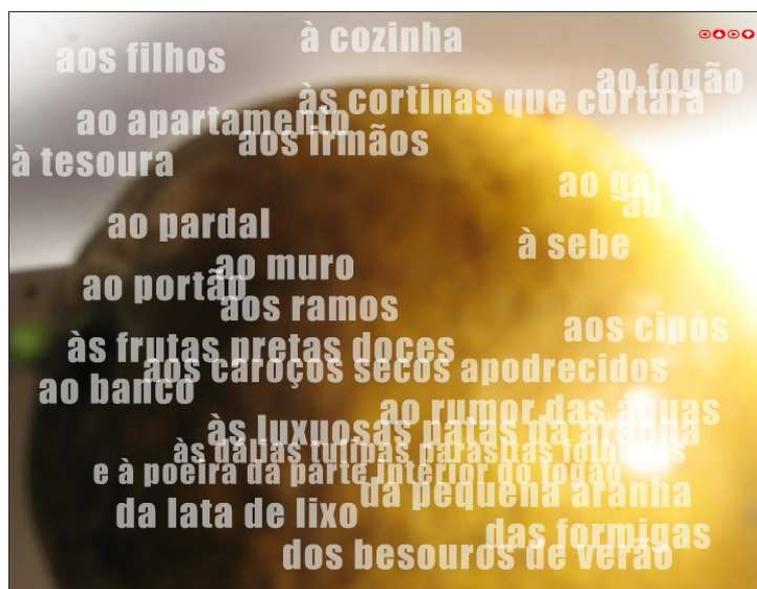


Figure 14. Rui Torres, *Amor de Clarice* (2005), 'aos filhos' ['for the children'] (text over video) [screenshot]. © Rui Torres. Reproduced with permission.

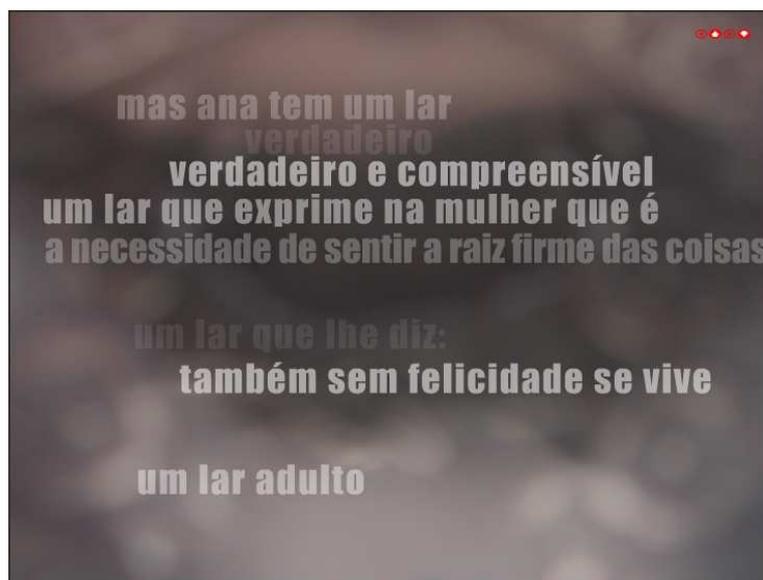


Figure 15. Rui Torres, *Amor de Clarice* (2005), 'mas ana tem um lar' ['but ana has a home'] (text over video) [screenshot]. © Rui Torres. Reproduced with permission.

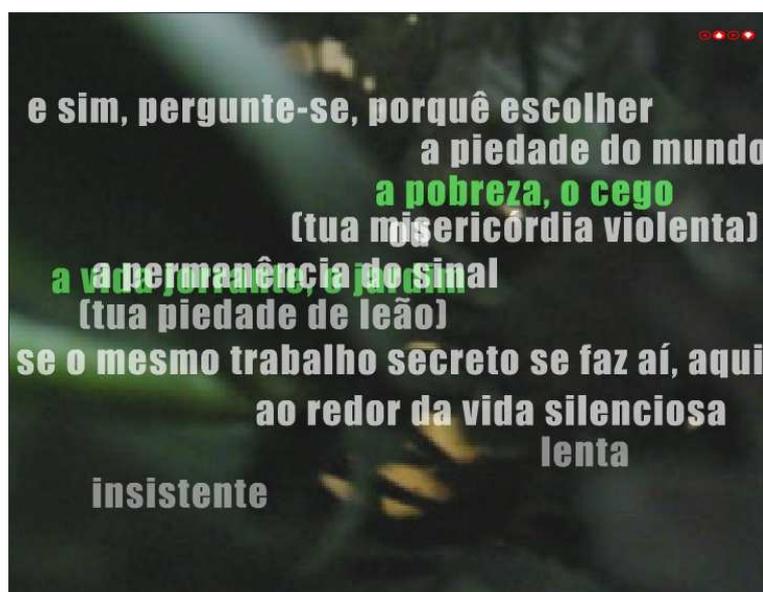


Figure 16. Rui Torres, *Amor de Clarice* (2005), 'e sim, pergunte-se, porquê escolher' ['and yes, ask yourself, why choose'] (text over video) [screenshot]. © Rui Torres. Reproduced with permission.

The inset videos, for instance, contain metonymic representations in which objects and spaces are recognizable, but they appear more like patches of light and colour, blurry or backlit, and not as clear identifiable photo-realistic images [Figures 14, 15, 16]. The objects chosen for video sequences are represented fragmentarily and decontextualized (bus window, lemon, plants, high-heel shoe, lamp, etc.) and they are obliquely linked to the text. Their contribution to suggest a location (home, public transport, street, garden, kitchen, living room, bedroom) is usually obtained by an oblique and strongly metonymic effect. This process allows for an expressive recreation of the disturbed state of mind of the character, through its cyclical repetitions (looping text, video, sound, and voice), suggesting the insidious presence of the real as an arbitrary and unjustifiable order about to disclose itself and overwhelm the female self at any moment.

Each textual element can be clicked and dragged: each click on a textual element immediately activates its corresponding sound file. Layers of sound (background music + human voice) overlap very much like layers of text on text or of text on video. The virtual immersive space created by Rui Torres is the machinic space of automatic processing and pixelated screen display. The palimpsestic fragmentation of meaning is embodied in the textual layers with various shades of colour and transparency, and with different typographical fonts and sizes. Clarice Lispector's source text resurfaces in the form of a collection of scattered fragments, as if the original text had been disjointed and its lexias had reassembled separately into nodes of sense whose association gives consistency to the ideological and discursive web of the story and to Ana's emotions and memories. *Amor de Clarice* is, in a way, a reading of the short story that, like Roland Barthes' experiments with Balzac's *Sarrasine*, shows the productivity of reading through processes of inputting and outputting the multiple nodes of meaning.

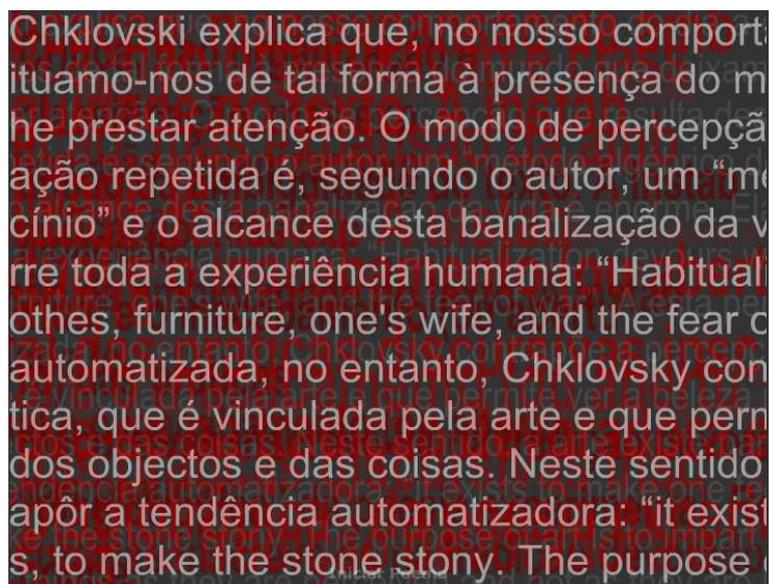


Figure 17. Rui Torres, *Amor de Clarice* (2005), initial screen [screenshot].

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Victor Shklovsky's fragmented quotation, which appears as a sort of prelude to the poem, recalls the formalist conception of the literary act as an intensification of the experience of the world through verbal operations of defamiliarization that return objects to their intrinsic thingness: 'Habitualization devours works, clothes, furniture, one's wife, and the fear of war. [...] And art exists that one may recover the sensation of life; it exists to make one feel things, to make the stone *stony*. The purpose of art is to impart the sensation of things as they are perceived and not as they are known'¹⁵ [Figure 17]. *Amor de Clarice* digitally recreates the experience of Ana, transferring the character's perception and confrontation with the violence and strangeness of everyday life to the level of signs themselves. The nausea and vertigo experienced by Ana, who feels the arbitrariness of the order of the world and of her own life as a human subject and a female self, are translated into the reader's experience of nausea and vertigo, as s/he confronts the mobility and proliferation of verbal, audio, and visual signifiers.

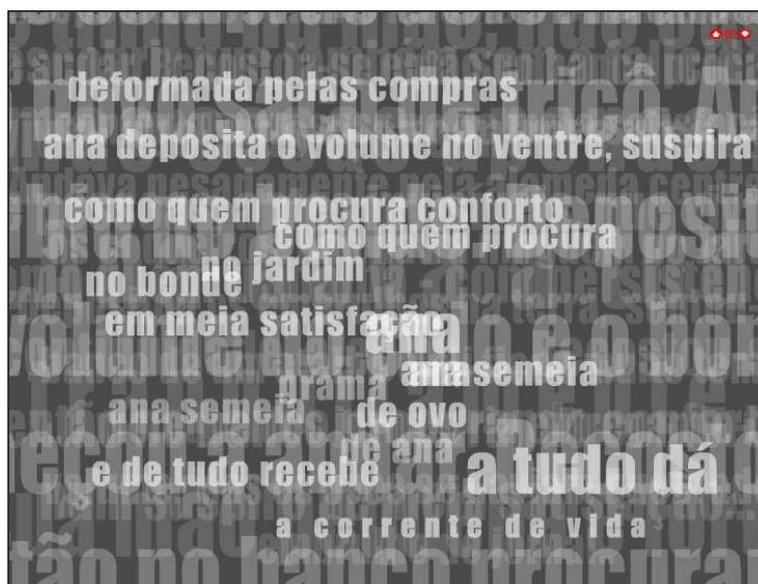


Figure 18. Rui Torres, *Amor de Clarice* (2005), 'deformada pelas compras' ['deformed by shopping items'] (text over text) [screenshot]. © Rui Torres. Reproduced with permission.

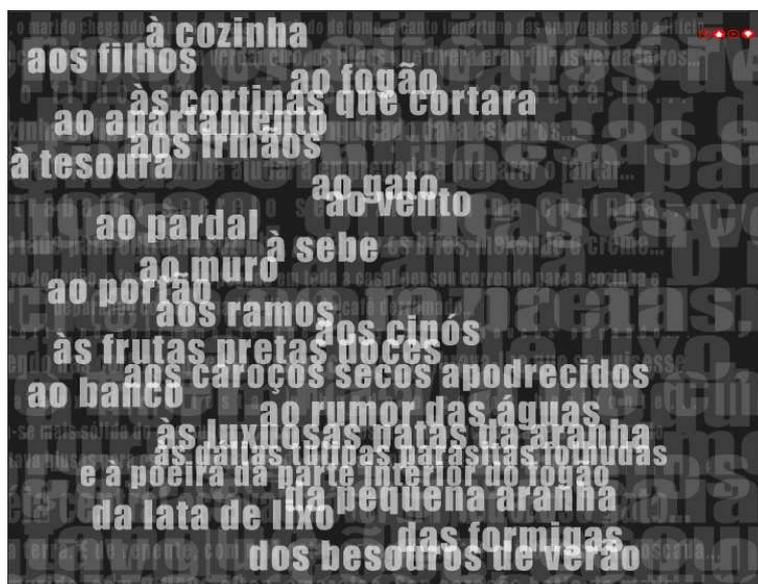


Figure 19. Rui Torres, *Amor de Clarice* (2005), 'aos filhos' ['for the children'] (text over text) [screenshot]. © Rui Torres. Reproduced with permission.

As readers interact with successive screens, the writing field produced by the writing machine is perceived as correlative to their haptic motions of clicking and dragging. Readers feel their own motions being scripted as a specific textual and sound display, a consequence of the dynamic programming of all the work's elements. New reading sequences, based on the rearrangement of individual lines, interfere with pre-timed looping sequences that automatically generate textual layers and which, in turn, are linked to voice files reading those lines and phrases [Figures 18, 19]. This recursive play within the field of signifiers provides a sensory experience of the database as a series of organizable discrete elements. Writing is staged as a programmed kinetic display of written and spoken lines, whose kinetic properties are re-performed by the eye and haptic motions of the reader. Through those material interventions the text is (re)constituted. The spatial and temporal structure of writing as programmed animation (which sequentially fills the screen from top to bottom) is subject to a restructuring in space and time by the cinematics of reading. All of these effects are amplified because the entire hypermedia work already is a reading of a previous print work.

Programming codes are a fundamental resource of digital rhetoric and digital poetics, which appropriate interactive functions in menus and in graphic environments and treat them as tropes with literary, cognitive and affective effects.¹⁶ While the cinematic animation of signifiers is a formal property of digitality, the representation of writing and reading as signifiers in motion points to eventuality and performativity as a general properties of processes of signification and interpretation. Describing his creative process, Rui Torres explains his method for virtualizing texts as an integration of the creative, research, and learning functions.¹⁷ He sees his programmed poems both as hypermedia textual environments, and as tools for analysing literary texts and learning more about them. This interpretational encounter between textual creation and textual analysis shows how computer tools can be used for critical purposes in ways that foster humanities modes of knowledge. His works offer a speculative and aesthetic engagement with computer codes as envisioned by Johanna Drucker:

The event of interpretation in a digital environment includes many steps: creating a model of knowledge, encoding it for representation, embodying it in a material expression, and finally encountering it in a scene of interpretation. Each is part of a performative system governed by basic principles of second-generation systems-theory, in particular, codependence and emergence. These can be used to describe an

aesthetic experience grounded in subjective judgement just as surely as they can be used to describe formal systems.¹⁸

Readers can see how texts are constituted and reconstituted. At a first level, they see them as the result of a set of programmed instructions. At a second level, they see them as the consequence of a particular response to new instructions introduced during the moment by moment interactions between readers and the text's graphical, sound, kinetic, and verbal fields. The set of textual and metatextual operations that we find in Rui Torres' hypermedia poetry can be apprehended by the tripartite conceptualization of textual fields in computer-assisted literature developed by Philippe Bootz.¹⁹ Bootz has attempted to clarify the relationship between what he calls 'the incompleteness of the program, the activity of the reader and the intermedia transitoire observable'²⁰ by proposing a specific performativity for programmable signs. Programmed performativity creates a meta-reading position, i.e., a position of reading that is able to access all aesthetic layers that compose the entire construct of the programmed work, including signs that are not displayable:

There are signs in the "texte-auteur" that don't have any corresponding trace in the "texte-à-voir," no elements of it there are present as an hint of these signs. We can conclude that the reader is not the destined recipient. I don't mean the person who is reading, but the role of the reader in the situation of communication. In other words, reading does not allow one to access all of the aesthetic layers of the programmed work of a digital medium. In order to fully access the work, another position must be maintained: that of the meta-reader. A meta-reader is one who knows the "texte-auteur" or its properties and who observes someone else in the process of reading. He is thus able to interpret what happens during this reading.²¹

In my view, Rui Torres' works may be described as a consistent investigation of this meta-reading position [Figure 20]. As we have seen, source texts in his works are subject to lexicometric, syntactical, and discursive analyses. As acts of reading they make formally explicit their own reading strategies and protocols, establishing a strong critical distance from a merely affective and aesthetic relation to their source texts. As programmed texts, his works function on the basis of a tension between immersion in virtual panoramic textual audiovisual spaces and reader's cognitive awareness of textual algorithms and database structures. Sometimes readers can add items to database content,

access the work's back-office in the form of a text editor, and record and publish online particular instances of their own interventions. Through these interventions, the act of reading is split between reading the signs and reading the reading of the signs as a particular relation between author's program and reader's text.

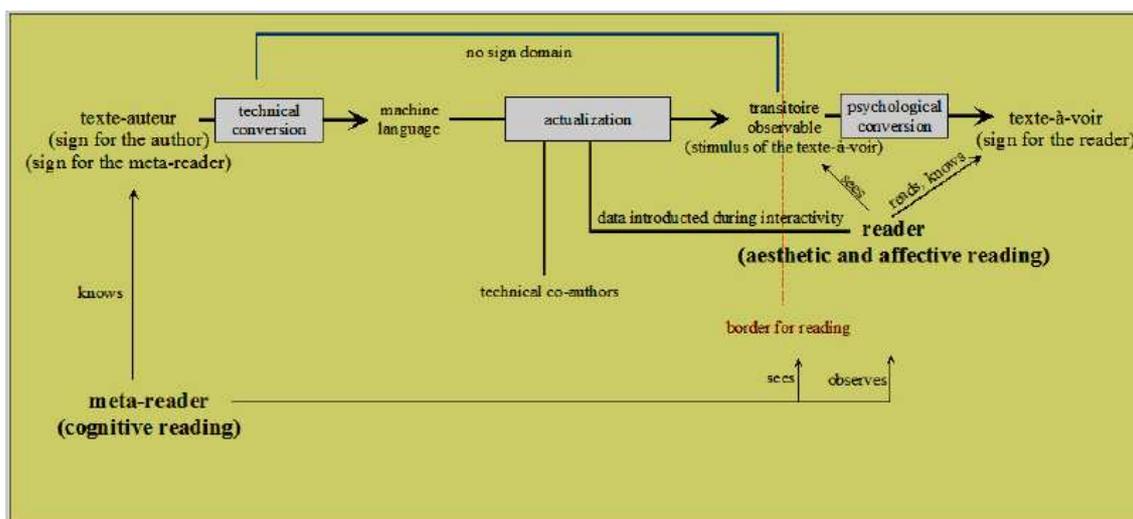


Figure 20. Bootz's diagram: *the status/position of the meta-reader in programmed digital poetry*²²

© Philippe Bootz, 2006. Reproduced with permission.

Programmability of signs in automatic generation of text sustains the illusion of textual self-assembly. However, the workings of these open-ended databases are also experienced as resulting from interferences between programming algorithms and readers' responses to those algorithms through the mediation of the work's interface. Textual iterations are both instantiations of the writing potential contained in the coded algorithm, and instantiations of specific acts of reading that topicalize a set of elements from the evolving database of the poem. Between the author-text [*texte-auteur*] of the author and text-to-be-seen [*texte-à-voir*] of the reader there is a semiotic gap created by automated processing of data entered during interactivity, and which makes *texte-auteur* and *texte-à-voir* coincident. Ultimately, this algorithmic interactive game serves to simulate the turbulent motions of writing and reading as codependent functions in the production of meaning. The incompleteness of program and the endlessness of text

are material expressions of that writing-reading and reading-writing turbulence.

3. The poem as an immersive virtual hyperspace for reading interventions

Readers' interventions in the work's semiotic field are mediated by the interface, which functions as an organizing and narrative principle that imposes order upon a database made of modular signs or sets of modular signs. This mediating interface creates a privileged reading sequence or calls forth other reading sequences which result in specific instantiations of the work's formal materiality. Computer interfaces may be said to work in similar way to page layout in typographic design: they both codify a series of reading instructions. As reading instructions they define a horizon of expectations for the reader and they establish a specific genre. In this case, however, the experience of reading the work becomes an explicit part of the work because the text is made to exist in several superimposed states and strata that are only partially identical. Because the material form of the text is not entirely immune to the actions that we have to perform for making the text visible/legible, we may say that reading motions have been scripted into the form of the text. The material instantiation of text, and our perceptual consciousness of it, respond to and reflect our own haptic and visual interaction with the interface.

All reading acts deform their objects in the sense that they foreground and background elements of the textual field according to the perceptual attention, intentionality and affectivity of the reader. We may say that reading, as visual perception and semantic representation, always co-produces its object. Except under highly controlled, disciplined, and closed systems and conventions, coding and decoding do not entirely coincide. The symbolic productivity of natural language and other semiotic systems tends to exceed the intentionality embedded or encoded in its form, which has to be remade and re-enacted in every new act of reading. What is particular about ergodic works,²³ i.e., works whose instantiation is only partially determined prior to an actual material intervention by the reader/player, is that readers can experience this instability and multiplicity at the perceptual level as a correlative of the instability and multiplicity at the conceptual level. The reader sees the emergence of meaning as an effect of that semi-

determined game with signifiers in the turbulence of their associations and substitutions.

Of course, such material changes in the text are themselves subject to further acts of interpretation, and these cannot be scripted or simulated in the text itself since they depend upon actual historical and social conditions and practices. Thus the feedback loop between writing and reading breaks down since as a material artefact and historical event, the poem cannot be self-sufficient. As a historical event it partakes of the heterogeneity and alterity of all social practices. However, by reproducing itself in response to the program and to interventions made by readers in their turbulent signifying field, it shows the literary device or poetic engine as a virtualized sensorial and conceptual space. This space is increasingly characterized, in the case of digital hypermedia poetry, by the accumulation of multimodal signifying strata. The programming of writing, text, and reading in combinatoric automated devices intensifies the sensorial experience of indeterminacy and processibility.

The principle of cinematic montage of visual elements echoes the permutational logic observed in verbal elements which become semantically linked by virtue of their temporary syntactic association. The device of metaphor – responsible for the motion of resignification within the semantic layer of language – is given a visual analogue in the actual verbal and multimodal juxtapositions and substitutions. In Rui Torres' generative works, metaphor is visualized as the signifying and resignifying motion that enables the production, reproduction, and transformation of meaning. The poem is turned into a database of written and spoken words and phrases, still images, video clips, and synthesized sounds that exist as a series of potential superimposed states rather than one single actual syntactic instance. This potentiality follows from the act of making explicit the algorithm of the text, i.e., the conceptual mechanics that may produce its material instantiations. Since these instantiations are subject to further material interference by the reader, we can say that the text reveals in its material behaviour the quantum dimension of reading – a dimension that is more often located at the level of interpretation.²⁴ John Cayley and others have emphasised this material fluctuation and the ensuing virtualization of text as a determining factor in the rhetoric of generative electronic literature.²⁵

Through this process of material transformation and virtualization, Rui Torres' hypermedia poems produce a critique of their source texts' belief in the necessary nature of their own unique forms. A text's belief in its own form, i.e., in the possibility of matching form to meaning, is shown as a mere combinatoric instance or snapshot in the verbal flux. The ability to continue to say itself or to say itself in other ways, which the text's program has automated on the basis of the grammar of language, exposes the discursive and ideological limitations of the poem as an utterance that is able to say itself and to say the world. Those operations generated by the machine code question the reification of expression and style. Through this automation of textuality, the reification of the uniqueness of expression is perceived as part of the ideology of poetry and of the ideology of fiction. It is as if the text could no longer coincide with itself and the heterogeneous forces of language and discourse had reopened the tension created by its desire to fix itself in a singular verbal form. The apparent autogenesis of a self-sufficient and self-contained writing is exploded by the alterity created by the programming code which makes the text different from itself, and opens it up again to the force fields of discourse.

We find in generative literature a simulacrum of the author-function embedded in the works' code by virtue of its self-assembling and self-organizing properties. The text auto-authorizes itself by being generated automatically. Subjectivity is no longer anterior to particular associations of signs and words – as marks of a self writing him/herself –, but instead it is brought to bear on the signs *a posteriori* by the intentionality of readers – who respond as interpreters to the stream of machine-generated associations. The constitution of self in language is textually experienced as a self constituted in and by the mechanism of language. The author-function, a historically constituted discursive function, is still intact at the level of programming the text: the author is now the author of the metatext (*texton*) that creates a second-degree representation of the original text. However, part of its internal mechanics is shown as a mode of producing new associations of language and signs in general, which derives from modes of formal articulation of the codes themselves. While preferred associations and preferred meanings for those associations establish the stylistic and hermeneutic identity of a given individual's use of language, computer-generated associations break up that identity by making its discursive possibilities – including some of the most improbable – simultaneously present.

The use of lexical databases derived from the actual lexicon of a particular author has a double effect. On the one hand, it means that randomly generated texts bear a certain resemblance to an author's style and use of language. Certain textual occurrences could even be said to be part of the future or potential repertoire of that writer. Poetic and narrative rules have been inferred from a corpus of his/her works, and they have been fed as iterative constraints in the rules of the program. Some combinations may be said to perform a certain mode of writing or, at least, some features of a unique style. At this level, what we have is the beginning of an analysis of the works that makes explicit the expressive singularity of a given use of signs. On the other hand, the multiplication of textual occurrences calls into question the privileged status of a single textual instance. By suggesting a continuum of possible associations, each of which with its own semantic import, generative texts show form as ideology, undermining the reification of meaning, authorial presence and textual and interpretative stability in the production of meaning. Meaning, crystallized by successive repetition of a poem's formal identity and of its dominant readings, is reopened to associations between signifiers that make it possible to think and say other things.

Rui Torres explores the database as a new framework for knowing and experiencing literature. His integration of text generation with hyper and social media creates multilayered intermedia online forms that point to the emergence of new genres. In his programmed networked poetry, aesthetical and critical functions feedback on each other in ways that shed light on writing and reading loops as literary processes. His database poetics also contains a critical investigation of the database as a cultural form and an expressive tool for new media art. *Mar de Sophia*, *Amor de Clarice* and *Húmus Poema Contínuo* instantiate the aesthetic and critical productivity of the database for perceiving the signifying chains that link author, text, and reader as particular functions of semiotic and discursive structures.

Manuel Portela is Assistant Professor in the Department of Languages, Literatures and Cultures, University of Coimbra. He is a member of the research project 'PO.EX '70-'80: A Digital Archive of Portuguese Experimental Literature' (<http://po-ex.net/>, 2010-2013). He is the author of *O Comércio da Literatura: Mercado e Representação* [*The Commerce of Literature: Marketplace and Representation*] (Lisbon:

Antígona, 2003), a study of the English literary market in the 18th century. He has translated many works, including *Songs of Innocence and of Experience* (2007) and *Milton* (2009), by William Blake, and *The Life and Opinions of Tristram Shandy* (1997-98), by Laurence Sterne, for which he received the National Award for Translation. He has published, exhibited, and performed his own sound, visual and digital works. In recent years he has been researching electronic editing and digital literature. He is the author of the website *DigLitWeb: Digital Literature Web* (www.ci.uc.pt/digitlit), and co-founder of a new Doctoral Program at the University of Coimbra, 'Advanced Studies in the Materialities of Literature' (<http://matlit.wordpress.com>).

Notes

- 1 Rui Torres, Mar de Sophia, (2005) <<http://telepoesis.net/mardesophia/index.html>> [Accessed 30 December 2010].
- 2 Rui Torres, *1 Corvo Nunca* + (2009) <<http://telepoesis.net/pessoa/menu.html>> [Accessed 30 December 2010].
- 3 Rui Torres, *Do peso e da leveza* (2009) <<http://telepoesis.net/dopesoedaleveza/index.html>> [Accessed 30 December 2010].
- 4 Rui Torres, *Húmus Poema Contínuo* (2008) <<http://telepoesis.net/humus/humus.html>> [Accessed 30 December 2010].
- 5 Rui Torres, *Húmus Poema Contínuo*, my translation.
- 6 See Manuel Portela, 'flash script poex: a recodificação digital experimental poem', *Cibertextualidades*, 3 (2009), 43-57. Also available online at <https://bdigital.ufp.pt/dspace/bitstream/10284/1357/1/cibertxt_3_p43-57_portela.pdf> (Accessed 30 December 2010).
- 7 Rui Torres, *Herberto Helder Leitor de Raul Brandão: Uma Leitura de Húmus, Poema-Montagem* [*Herberto Helder Reader of Raul Brandão: A Reading of Húmus, Poema Montagem*] (Porto: Edições Universidade Fernando Pessoa, 2010), pp. 24-37.
- 8 Rui Torres, *Poemário*, <<http://telepoesis.net/poemario/>> [Accessed 30 December 2010]. 'Poemário' [poemarium] is a dynamic weblog for recording reader-selected output generated by Rui Torres' various poetic engines. It also contains a text editor which allows readers to enter new items into the database that is feeding the poetic engine. 'Poemário' is thus a socially generated and ongoing collection of textual instances.

- 9 Lev Manovich, 'Database as Symbolic Form', in *Database Aesthetics: Art in the Age of Information Overflow*, ed. by Victoria Vesna (Minneapolis: University of Minnesota Press, 2007), pp. 39-60.
- 10 Rui Torres, *Mar de Sophia* (2005) <<http://telepoesis.net/mardesophia/index.html>> [Accessed 30 December 2010].
- 11 Tapor Tools and Web Frequency Indexer were used for lexical and statistical analysis. For word processing Open Office was used. The lexicon was indexed in XML-tagged lists. Animations and hypermedia effects were obtained by using Flash. Languages used include Actionscript, for text generation, XML, for marking the lists of words and sounds; PHP for sending and recording text on the server; and Python, for creating RSS feeds with the poem. The corpus contains 450 poems collected from 10 Brazilian and Portuguese websites. Rui Torres (in '*Mar de Sophia: Um Poema Não Se Programa*' ['*Mar de Sophia: One Does Not Program a Poem*'], in *Portal da Ciberliteratura: Arqueologia da Ciberliteratura Luso-brasileira* (2006) <<http://po-ex.net/ciberliteratura/index.php?option=comcontent&task=view&id=47&Itemid=39>> [Accessed 30 December 2010]) lists the following applications: 'Macromedia Flash (Actionscript), OpenOffice Tools (for editing text, creating lists and encoding XML), Web Frequency Indexer (for the determination of occurrences), Adobe Audition (for treatment of all audio) QuickTime VR, Vue and Cinema 4D (for 3D and panoramic views); Macromedia Authorware (for final integration of Flash and 3D)'. He also emphasizes the collaborative nature of the final work: 'Rui Torres (design, creation and development; programming in Actionscript, XML, animation, sound design), Nuno Filipe Ferreira, Filipe Valpereiro, and Jared Tarbel (Actionscript), Nuno M. Cardoso (voice); Luis Aly (sound), and Luis Carlos Petry (3D programming and topophilosophical environment)'. A literary analysis of his works implies the consideration of programming languages and commercial applications as elements of their formal and generic description. It also requires a consideration of the division of work and collaboration that often goes into the creation of hypermedia works.
- 12 *Mar de Sophia* uses the Brazilian translation of *Alice's Adventures in Wonderland* by Clélia Regina Ramos, Editorial Arara Azul, published online by eBooksBrasil.com <http://virtualbooks.terra.com.br/freebook/infantis/alice_no_pais_das_maravilhas.htm> (Accessed 30 December 2010).

- 13 Rui Torres, 'Ler Clarice Lispector, re-escrevendo *Amor*' ['Reading Clarice Lispector, Rewriting *Amor*'], in *Portal da Ciberliteratura: Arqueologia da Ciberliteratura Luso-brasileira* (2006) <http://po-ex.net/ciberliteratura/index.php?option=com_content&task=view&id=95&Itemid=32> [Accessed 30 December 2010], my translation.
- 14 Rui Torres, *Amor de Clarice* (2005; also CD-ROM and audio-CD) <<http://telepoesis.net/amorclarice/index.html>> [Accessed 30 December 2010].
- 15 Viktor Shklovsky, 'Art as Technique' [1917], in *Russian Formalist Criticism: Four Essays*, ed. by Lee T. Lemon & Marion J. Reis (Lincoln, NE: University of Nebraska Press, 1965), p. 12.
- 16 For a discussion of code as writing, see Loss Pequeño Glazier, *Digital Poetics: The Making of E-Poetries* (Tuscaloosa, AL: University of Alabama Press, 2002), Loss Pequeño Glazier, 'Code as Language', in *Leonardo Electronic Almanac*, 14:5-6 (2006), N. Katherine Hayles, *My Mother Was a Computer: Digital Subjects and Literary Texts* (Chicago: University of Chicago Press, 2005), Philippe Bootz, 'Digital Poetry: From Cybertext to Programmed Forms', *Leonardo Electronic Almanac*, 14:5-6 (2006) <http://www.leoalmanac.org/journal/vol_14/lea_v14_n05-06/pbootz.html> [Accessed 30 December 2010], and John Cayley, 'Time Code Language: New Media Poetics and Programmed Signification', in *Digital Media Revisited: Theoretical and Conceptual Innovation in Digital Domains*, ed. by Gunnar Liestol, Andrew Morrison & Terje Rasmussen (Cambridge, MA: MIT Press, 2006). For critical approaches to the study of networked digital literature, see Susan Schreibman and Ray Siemens (eds), *A Companion to Digital Literary Studies* (Oxford: Blackwell, 2008), Matthew G. Kirschenbaum, *Mechanisms: New Media and the Forensic Imagination* (Cambridge, Mass: MIT Press, 2008), N. Katherine Hayles, *Electronic Literature: New Horizons for the Literary*. Notre Dame, Indiana: University of Notre Dame, 2008), Juan B. Gutierrez et al., 'Electronic Literature as an Information System', *Hyperrhiz: New Media Cultures*, 6 (2009) <<http://www.hyperrhiz.net/hyperrhiz/06/19-essays/74-electronic-literature-as-an-information-system>> [Accessed 30 December 2010], and Roberto Simanowski et al. (eds), *Reading Moving Letters: Digital Literature in Research and Teaching. A Handbook* (Bielefeld: transcript Verlag, 2010). For an introduction to the software studies approach see Lev Manovich, *Software Takes Command* (2008) <<http://lab.softwarestudies.com/2008/11/software-book.html>> [Accessed 30 Dec 2010] and Noah Wardrip-Fruin,

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- Expressive Processing: Digital Fictions, Computer Games, and Software Studies* (Cambridge, MA: MIT Press, 2009).
- 17 Torres, 'Ler Clarice Lispector, re-escrevendo Amor'; Torres, 'Mar de Sophia: Um Poema Não Se Programa'.
 - 18 Johanna Drucker, *SpecLab: Digital Aesthetics and Projects in Speculative Computing* (Chicago: Chicago University Press, 2009), pp. Xiv-xv.
 - 19 Philippe Bootz, 'L'art des formes programmées', *alire* 12 (2004) <http://motsvoir.free.fr/alire_12_edito.htm> [Accessed 30 December 2010]; Philippe Bootz, 'The Problematic Of Form Transitoire Observable: A Laboratory for Emergent Programmed Art', *dichtung-digital*, 1 (2005) <<http://www.brown.edu/Research/dichtung-digital/2005/1/Bootz/index.htm>> [Accessed 30 December 2010]; Bootz, 'Digital Poetry'.
 - 20 Bootz, 'Digital Poetry', 7.
 - 21 Bootz, 'Digital Poetry', 7.
 - 22 Bootz, 'Digital Poetry', 8.
 - 23 See Espen J. Aarseth, *Cybertext: Perspectives on Ergodic Literature* (Baltimore: The Johns Hopkins University Press, 1997).
 - 24 See, for example, Jerome McGann, 'Textonics: Literary and Cultural Studies in a Quantum World' (2002) <http://www.ciberscopio.net/artigos/tema2/clit_01.html> (Accessed 30 December 2010).
 - 25 John Cayley, 'Time Code Language'; Bootz, 'Digital Poetry'; Pedro Barbosa, 'Aspectos Quânticos do Cibertexto' ['Quantic Aspects of Cybertext'], *Cibertextualidades*, 1 (2006), 11-42. Barbosa began exploring automatic text generation in the 1970s and 1980s. He published several books containing the selected output of various textual engines. With E.M. de Melo e Castro, he was also one of the first Portuguese theorists on the use of computers for literary production. His writings were later collected in *Ciberliteratura: Criação Literária e Computador* (1996) [*Cyberliterature: Literary Creation and the Computer*]. His works and theory have close affinities with the programmable poetics of the French group L.A.I.R.E. (Lecture, Art, Innovation, Recherche, Écriture), 1989-2004, which has been extensively studied by Pedro Reis (*Repercussões do Uso Criativo das Tecnologias Digitais da Comunicação no Sistema Literário: O Caso da Poesia Intermediática Electrónica. [Repercussions of the Creative Use of Digital Communication Technology on the Literary System: The Case of Intermedia Electronic Poetry]* (unpublished doctoral thesis,

Universidade de Lisboa, 2005)). One of Pedro Barbosa's textual engines is 'SINTEXT-W', a web version of an earlier synthesizer of sentences ('sintext'). The textual templates of the online version are based on three textual types: a bureaucratic document (an official and institutional request ['requerimento'] filled with formulas and deferential language); a didactic text; and an aphoristic lyrical text. Automated pre-programmed substitution of the original words by items retrieved from the lexical database generates all sorts of unexpected phrases and images. The virtual text works as a literary structure that is activated by an algorithm: default items in the textual engine can also be overwritten or supplemented by new items added by readers. Pedro Barbosa refers to his program as a 'semiotic machine' (PedroBarbosa, 'O Computador como Máquina Semiótica' ['The Computer as Semiotic Machine'], *Revista de Comunicação & Linguagens*, 29 (2001), 303-327), i.e., a signifier-generating structure. Readers/users can intervene in both axes (vertical and horizontal): they can introduce lexical items in the predefined lists, and they can also change the textual matrix that will be used for generating permutations. A web demo version of 'sintext-w' (1999), with limited functionalities, is available online: <<http://www.pedrobarbosa.net/SINTEXTpagpessoal /SINTEXT.HTM>> [Accessed 30 December 2010].