

Electronic Literature Translation: Translation as Process, Experience and Mediation

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"[T]ranslation is merely a preliminary way of coming to terms with the foreignness of languages to each other." (Walter Benjamin, "The Task of the Translator" [1921])

1. Introduction

We meet computer-based translation online on a daily basis, and while it often is helpful when trying to read a text on foreign language, we often have to read through errors and misunderstandings caused by the statistical translation algorithms. Increasingly such computer-based translation seeps into software as sloppy machine translation of help text, interface texts and instruction manuals, especially when you get outside of those languages for which there are more automated technologies. Sloppy machine translation often reinforces the experience of navigating a somewhat deserted place without any human intervention, reading texts written by and meant for nobody, which are there only for the sake of finish.

However, if we instead of searching for the perfect machine translation consider what it means to translate software-based texts like electronic literature, we have a different situation. Software texts are not only translated between languages, but also involve translation between versions and layers of software. Sometimes this is mainly a technical discussion – like a new version of Word reinterpreting (translating) old .doc files into the .docx format – other times it might change important aspects of the experience and reading of the text, for example when generative and networked texts or games are translated to run on new software. This process, which is technically referred to under the concepts of conversion, transcodification and emulation, can be described also as a form of translation. Given the way the increasingly rapid changes of software

and hardware prohibits the access to important historical works, this layer of translation becomes an issue for organizations and institutions like the Electronic Literature Organization (e.g. <http://eliterature.org/electronic-literature-archives/>), Rhizome.net (e.g. Artbase, Webrecorder, oldweb.today, <http://rhizome.org/>), research and preservation work (e.g. Pathfinders, <http://dct-wsuv.org/wp/pathfinders/>).

Furthermore, software remediates (translates) old working processes into new infrastructures, e.g. writing on paper is translated into the collaborative and monitored process of writing in a networked infrastructure like Google Docs, while it still mainly emulates writing on paper. In fact, often new functions – like Google's monitoring processes of the writing and the data in e.g. Google Docs and Gmail – are hidden behind the remediation of the writing process, and remediation in such cases is also a process of hiding new functions and processes, especially functions that the user is not meant to see or worry about such as the tracking and monitoring. Ultimately translations of both languages and software change elements of both reading and writing. Whereas these transcoding processes in software are often experienced as technical problems and managed by software engineers, this article will focus on how translating electronic literature can contribute with new perspectives on translation that sheds a more humanistic, cultural and literary perspective on software.

This extended notion of translation – one that includes the modeling and, hence, the remodeling of our activities and social interactions through enabling software – is critically useful for addressing the software layers in works of electronic literature. As procedural practices of writing, dependent upon algorithms and multimedia databases, electronic texts are programmed instantiations of various types of procedural writing processes, many of which have a long tradition (Cramer 2005). Literary programmability remediates former compositional processes whose aim was to produce a reading text according to permutational, generative, interactive and performative principles. Such writing practices are also being remodeled through specific algorithms and conventions of programmability. Translation of this textoniclayer (in Aarseth's terminology) can be described as the translation of processes rather than texts (Cayley 2018). Translation of electronic literature thus seems to require that our focus is placed on the programmed compositional processes as much as on the textual and media instantiations that constitute the more or less transient configurations of the scriptonic layers. Since digital objects further depend upon an interface that structures their presentation and scripts our interactions with them, the interface (understood as the conjunction of presentation and parametrized interaction) is a universal layer of any new media experience. Recreating the experience of the interface is thus one of the additional specificities of e-lit translation which can be illuminating about the software itself as a constraint that has to be mediated across technological and cultural spaces.

If translation is a form and if "the laws governing the translation lie within the original" (Benjamin 2002: 254), as Walter Benjamin claims, how do we find this translatability of form in electronic works? Given the asymmetric and incommensurate features of natural languages, translating electronic literature is not essentially different from translating literary forms in other communication media, such as oral and print literature. Once we admit that translation consists of bringing a specific form across a layered verbal and medial literary space, we could say that reinventing sound and meaning correlations (which sustain a given form in the aural medium) or reinventing sound, meaning and visual correlations (which sustain a given form in the print

medium) are theoretically equivalent to reinventing the correlations between those verbal and visual layers, on the one hand, and software layers, on the other, in electronic literature. The theoretical question could perhaps be rephrased as follows: how much is the source code and the interface part of the original form? In other words: when is the translation of code and interface also part of the form of literary translation? This article comes out of the research collaboration "Translating Electronic Literature," which includes Brown University (USA), the University of Paris 8 (France), the University of Coimbra (Portugal), Aarhus University (Denmark), and Kingston University (UK). Its goal is to study translation of digital textuality by focusing on electronic literature in order to provide a conceptual and methodological framework tailored to the current and emerging issues surrounding translation in a digital era. The project focuses on six case studies, which pose challenges and require an innovative methodology to assure accurate and comprehensive translation. An important aspect is our practice-oriented approach, where the project through artistic and designerly approaches to translation will reflect on how software translation continues and diverges from traditional translation. This effort will lead to multiple translations, including: linguistic translations of the works; translation of multi-linguistic texts, self-translation, translation of the digital codes underlying the works and their interfaces, and other paratexts surrounding the works; translation of linguistic materiality, translations of contexts and interpretative frameworks in the respective cultural fields; and finally, consideration of the elements of untranslatability.

2. Dimensions of translation

Translation is usually considered as the process of translating from one language to another, but in programmed literature translation has several dimensions. When software-dependent literature is translated, it can be separated into four interrelated dimensions in the range from the written surface text to the way it is handled, generated and controlled by the layers of the interface and software:

- The *Translinguistic* dimension, which is the translation between languages - i.e. what is usually considered translation;
- The *Transcoding* dimension, which is the translation between machine-readable code and human readable text, and also between codes of different programming languages and systems;
- The *Transmedial* dimension, which is translation between medial and semiotic modalities (e.g. text, sound, visuals);
- The *Transcreational* dimension, which is translation as a creative compositional process and a shared creative practice.

Seen through these four dimensions, translation is happening both between languages, and in software and interfaces as translations between layers of code, layers of text and medial modalities. All these translational dimensions happen as transcreation in collaborative practices between artists, designers and programmers where all the above dimensions have to be negotiated in the production of the work. Furthermore, translation is also happening as transcreation between humans and machines, as when software organizes a collaborative reading/writing process such as in online collaborative texts like wikis, social media or literary interventions in networks like net-

provs, twitter bots and writing that includes search engines. When electronic literature is developed and translated, all of these dimensions are included.

Even though the four dimensions are distinct, there are also connections between them, which can be exemplified by the translation of an electronic literature text from an older software environment (e.g. Flash on a PC) to a newer software environment (e.g. a touch-based interface and software environment of a tablet or a smartphone). In this case changes will have to be made in the transcoding and transmedial dimensions, since the text is moved from a WIMP (Windows, Icons, Menus, Pointers) interface with a point-and-click interaction to a touch-based, mobile interface on a smaller screen. How should a classic hypertext fiction like Michael Joyce's *Afternoon, a story* (Joyce 1987) be translated into for example a French iPhone app? It would require more than translating the text from English to French and would require considerations about translating the pre-web hypertext interface into the post-web app interface. In this case it would actually pose an interesting media archaeological challenge to consider and develop the change and relationship from a piece of work made in the Storyspace software, which was an innovative hypertext system from before hypertext became an everyday phenomenon, to an app made at a time when the open and collaborative ideals of hypertext have turned into more closed and centralized business models of apps and social media. The pace of hardware and software innovation dictates the obsolescence of works of e-lit, so that problems of porting, versioning, and emulating a previous electronic environment so that it runs a specific work can become translation problems. Because works often base their poetic effects on the material constraints of a specific platform or device (such as programming environment, screen resolution, or processor speed), the reconstruction of their technical operating principles – as far as these are part of the signifying rhetoric of the work – has to be addressed as part of its literary translation.

When translating old texts in classical literature, the language is often modernized and updated in order to appeal to a modern audience; in which ways should we modernize older texts in electronic literature so that they keep the laws governing the translation lying within the original (to rephrase Benjamin, quoted above)? In some cases, we might be satisfied with modernizing the software or perhaps even keeping an old interface for the sake of its historical style, in others we also need to consider translating media-specific operations and updating the *technological tropes*. See below for the concept of "technological trope". in order to make the text relevant and readable for newer audiences and on contemporary platforms. Even if old work is rarely translated because of lack of resources, considering how a classic hypertext or a modern work on social media like Twitter or Instagram, design the relations between the four dimensions is relevant in order to reflect on how to design and translate between different languages and systems. See, for example, Judy Malloy,'s iPad edition of *Its name was Penelope* (forthcoming). Its original version was published by Eastgate Systems (Malloy 1993). Here is how to run the BASIC scholars' version of *Its name was Penelope* on DOSBox. [how_to_run_penelope.pdf](#)

3. Translation as a creative methodology

A good example of artistic software translation between different systems and languages could be the many remediations of Olia Lialina's *My Boyfriend Came Back From the War* (Lialina 1996) or Nick Montfort's *Taroko Gorge* (Montfort 2009), where the works, their content and text are constantly reconfigured and rewritten for new platforms and in new versions. See <http://myboyfriendcamebackfromthewar.ru/>, http://nickm.com/taroko_gorge/. Bolter and Grusin's concept of remediation can be useful in this context (Bolter and Grusin 1999). They use remediation to talk about relations between different media, although they also consider remediations within the same medium. The versions of Lialina's narrative and Montfort's poem can be approached also through the traditional concepts of pastiche and parody. Translation could be defined as a specific case of remediation in which the reform of the translated elements is constrained not only by the media (verbal language, software, affordances of the device) but above all by literary form, understood as the ensemble of correlations among all material and semiotic elements of a given work. Often changing the software genre leads to completely new interpretations of the original text, and in this sense the many remediations can be seen as experiments with interpreting the laws governing translation, asking if it still is the same text. Other examples could be the digital remediations of old (pre-digital) computational work like Florian Cramer's *Permutationen/Permutations* (Cramer 1996) or works that are inspired by earlier work like Christophe Bruno's *Iterature* (Bruno 2001), which draws on e.g. James Joyce, Oulipo and Raymond Roussel. <http://www.iterature.com/>. On Christophe Bruno see also (Pold, 2007). These examples offer a range of textual and material interventions in the works that extend from the levels of language to the levels of code and media, and to acts of parodic recreation across cultural and technological space.

One of the meanings of transcreation is that translation is a recreation based on the compositional principles of the original text. This notion, which is indebted to the practice of several modernist translators and writers, including Roman Jakobson and Walter Benjamin, was expressed by Haroldo de Campos through the concept of "transcreation", when he was translating Dante (Campos 1976). Translation should address not only the text's semantic information but also its "aesthetic information," thus providing a creative and critical reading of the original, while engaging its new literary context: "The translation of creative texts will always be recreation, or parallel creation, autonomous, but reciprocal. The more difficult a text is, the more recreatable it is, the more seductive in its openness to recreation" (Campos 1962; quoted in (Flores 2016: 12); *our translation*). In this sense, transcreation includes the added dimension of invention, often with the additional implication that the translated work is a fully autonomous work in which the strangeness of the foreign language and of the alien literary form is used to expand the linguistic and formal repertoire of the target language. The additional dimensions involved in programmed and networked texts offer expanded possibilities for this transcreative practice.

We intend to continue our experiments in the line of these projects, inspired by the thinking of translation as more than 'just' translinguistic representation of verbal entities in another language, as an active, creative process e.g. as what Richard Grusin has described as "radical mediation" which includes material and affective dimensions. If mediation is always a "process of mediating and remediation," whose activities "constitute the ontological character of the world" (Grusin 2015: 142), translation as

mediation partakes of this ontogenetic process of becoming. In our project, we focus on approaching translation as a creative practice-based methodology in order to shed new light on what translation as mediation is or could be. "There are circumstances where the best or only way to shed light on a process is to attempt to construct something, or to enact something, calculated to explore, embody or test it" (Archer, B. 1995). A practice-based research methodology is a hybrid approach that includes the remediation of forms, remixability, human computer interaction, software and code studies, narratology, trans-lingual, intersemiotic approaches, and multimodal studies in conjunction with the creative practice, and with translation as a creative practice.

3.1 *The Poetry Machine*

One of the platforms we have explored is *The Poetry Machine (PM)*, which is an interactive, participatory, digital literary installation (Woetmann et al. 2012). Peter-Clement Woetmann, Ursula Andkjær Olsen, Martin Campostrini, Jonas Fritsch, Ann Luther Petersen, Søren Bro Pold, Allan Thomsen Volhøj, et al., *The Poetry Machine*, http://www.inkafterprint.dk/?page_id=45, 2012-. CAVI & Roskilde Libraries. PM is designed to make people affectively engage with, and reflect on, the ergodic qualities of electronic literature in public settings such as libraries and events. Ergodic is defined as non-trivial interaction related to exploring electronic literature (Aarseth 1997). Through their engagement with *PM* people can – individually or collaboratively – produce poems by interacting with three books embedded with a custom-made sensor system. The interactive books let people control a floating sentence in an ocean of words toward a sheet of paper to produce a poem, all visualized on a large display. The sentences, written by authors from Romania, Norway and Denmark are retrieved from a database. When the poem reaches a set character limit, it is printed out in a form similar to a library receipt that people can take with them. The poems also appear on blogs updated in real-time where people can read their own and others' poems, and comment on them. All texts are written in their native language (Romanian, Norwegian and Danish), but are also translated, and translated versions in English are made available for all users across the European collaboration, and users will be presented with the fact that it is a European project in several countries and languages. [PM, see also \(Andersen and Pold 2018, 2014; Fritsch et al. 2014\).](#)



Peter-Clement Woetmann, Ursula Andkjær Olsen, Martin Campostrini, Jonas Fritsch, Ann Luther Petersen, Søren Bro Pold, Allan Thomsen Volhøj, et al., *The Poetry Machine*, CAVI & Roskilde Libraries

PM consequently explores *translinguistic* dimensions as a literary experience of playing with language and living with a small language in Europe. It makes a connection, not only between the languages, but also potentially between the linguistic cultures of the different countries as it is probed by the different authors and audiences. An example is that the Norwegian version, written by Morten Langeland, is more direct, and personal in its language than the versions in Danish and Rumanian, since the author wanted to produce an affective and emotional textual experience.

PM also explores *transmedial* dimensions through the ways it combines books, screen, print and online textual media and invites people to operate, play with and interpret the transmedial dimensions that also to a great extent relate to digitization of literature and textuality. Actually, users have responded that using *PM* for them relates to digital textuality as experienced online rather than electronic literature, which few had any prior knowledge of. In most versions, the interface on the screen is kept largely in black, white and grey colors in order not to disturb this transmedial-translational process, but the Norwegian interface is bright orange in order to align with the more affective, emotional text.

Obviously, *PM* also explores *transcreational* collaboration since it is a public installation where users can see other users' interaction and where more users can collaborate simultaneously on creating poems. Finally, it all happens through *transcoding* and after the initial trying out some people develop a "metareading position" where they reflect critically on authorship and control in *PM* and in contemporary textual interfaces in general (Portela 2013). Through trying to write interesting poems in *PM*, users start reflecting on how writing and reading is controlled in other contemporary textual platforms. This transcoding was initially designed in a collaborative, participatory transcreational process between librarians, university researchers, lab technicians and the original author, Peter-Clement Woetmann. This process consisted of a feedback of developing prototypes, writing text and adjusting the prototype and the text as a creative process. One of the first versions even had a software bug that repeated sentences two or more times as a kind of stutter, and Woetmann liked this bug so much, that it was programmed into later versions as a feature. When we started working with a new Danish author, Ursula Andkjær Olsen, she suggested another generative process where chosen lines are organized and repeated in a way inspired by the Malay verseform *pantoum* and this led to new experiments with the code and interface.

From this we can see, that the language and translinguistic dimension is definitely part of the law generating the text, which is hardly surprising, but that transmedial, transcoding and transcreational dimensions are also important for the text and its translation. Each dimension signifies and both the creative process of writing and designing and the interpretative process of writing/reading unfolds in networks of connections between these dimensions. These networks can never be fully recreated in a translation, but need to be reinterpreted and recreated in ways that are meaningful to the reader and to the text. Writing and reading ultimately becomes a way of understanding the normally hidden relations between the different languages of code, interface and text. Translation in its different dimensions becomes part of the literary experience - we become readers of translational processes.

3.2. *The Poem that Crossed the Atlantic*

Another e-lit work exploring translation as a creative methodology and where it is difficult to separate the author and the translator because of the entanglement between these two roles in the making of the work, is *The Poem that Crossed the Atlantic*, an e-poetry piece by María Mencía which evolves from her interest in translation as a concept and as a creative methodology in practice-based research.

Already with works like *Birds Singing other Birds' Songs* (Mencía 2001b), an animation of textual birds against a sky background, she was exploring concepts like the linguistic, multi-linguistic, multicultural and translation as creative process using digital technologies. In this process, an English translation (transcription) of birds' songs is interpreted and sung by a group of people. The human voices are recorded and edited by the author using audio software. The sounds that emerged from this study are later attached to the animated 'text birds'. The letters, which create their outlines, correspond to the transcribed sound made by each of the birds, thus making the birds sing their own visual-textual compositions. They sing the sound of their own text while flying in the sky. However, the sound doesn't correspond to the visual representation of the real bird, which explains the title of this work.

Furthermore, her interest in visual, concrete poetry, sound poetics and their remediation from analogue platforms (print, the voice) to the digital with the aim to explore new poetic spaces, questions the 'meaning production' in the poetic '*Visual-Concrete-Material*' space of what the concrete poets Augusto and Haroldo de Campos and Haroldo de Campos together with Décio Pignatari called '*linguistic materiality*' (sound, writing, visual pattern). An interesting example of translation as intersemiotic recreation can be found in the visual translations by Augusto de Campos (Portela 2003). How to translate this visual concrete linguistic space is therefore a pivotal question in the practice-based research of digital poetics.

Birds is also questioning this *linguistic materiality* with a linguistic-visual aspect consisting of animated calligrams shaped as birds using different typography to bring up sound and visual associations between the typographic element and the sounds of the birds. The many remediations of this work – due to fitting it to various contexts (exhibition spaces, the web) – sheds light on the flexibility technology offers to translate and remediate the same work in many forms. The first remediation was bringing the printed calligram into an animated calligram as a video-art installation and projection; then, it developed into an animated interactive piece for the web in Adobe Flash, and with this the birds flew across the world; the third remediation involved creating the birds using Adobe Illustrator software to produce five prints for an art installation mixing print and video platforms. This creative methodology shows the fusion of multilingual, cross-cultural, multimodal and trans-creative dimensions together with the possibilities technology offers to engage translation processes by using different software. This interest in remediation and translation processes carries on in other works like *Gateway to the world: Data Visualisation Poetics* (Mencía 2014), various iterations (2014-17), with translation through visualization of maritime data. Most of her works deal with translation, remediation and remix as creative methodologies in practice-based research.



María Mencía, *Winnipeg: The Poem that Crossed the Atlantic*

The Poem that Crossed the Atlantic (Mencía 2016) is an interdisciplinary practice-based artistic investigation. Its aim was to create an inter-linguistic, networked, interactive online poetic narrative, *The Poem* and an accompanying website, *The Winnipeg*. Mencía worked in collaboration with creative programmer Alex Dupuis, where readers are invited to add stories to the archive which simultaneously become part of *The Poem*. This work is rooted on a personal story interlaced with historical events of the Spanish Civil War and the Spanish and Chilean Historical Memory. The narrative and background to this project is the rescue and evacuation of more than 2000 Spanish civil war exiles – including María Mencía's own grandfather – from French concentration camps in the cargo boat *Winnipeg* from the Port of Trompeloup – Pauillac, France to

Valparaiso, Chile, 4 August 1939. The Chilean poet Pablo Neruda organized this evacuation when he was the Consul Immigration Officer and Pedro Aguirre Cerda was the President. There is still not enough knowledge about this event as there isn't about so many atrocities from the Spanish civil war, they form part of the 'hidden' history that started coming to light in recent years with the study of the country's Historic Memory (Memoria Histórica). Thus, the work brings up to light social and political issues and raise awareness about historical events through hybrid forms of visual art, language and technology. Concurrently, this work reflects on pertinent critical issues of migration, displacement and the search for survival so apparent in current worldwide events. Through translation as a process, archiving historical events and visual research, the gathering of data and personal stories are explored as cultural material and as a way to instigate new poetic forms and online communication.

In the production process of this work a series of research questions were addressed which might be relevant to understanding other works of e-lit from the *transcreation*, *transcoding*, *translinguistic*, and *transmedial* dimensions.

In the conceptualization of the work, visual layers become expressive of the meaning of the text; form and semantic aspects come together in this poetic expression. The '*Visual Concrete Linguistic*' poetic space – referred at the beginning of this section – of abstract and transparent ocean texts has been understood through translation as process and critical enquiry in practice-based research. The dimension of *Transcreation* as a methodology for creative practice and thinking through making has functioned as an umbrella embodying the rest of the dimensions. As a compositional creative process *transcreation* takes part in the concept-realization of the work by interweaving content, methods and technology. It gathers and archives stories, visual research, and design practices. Within this process, in its *transcoding* dimension, there is an ongoing sharing between the creative director and the creative programmer bringing together code, interface design, and interaction aesthetics.

The *translinguistic* dimension is apparent in the translations of the three natural languages in the website (Spanish, English and French). However, this brought up more interesting questions about whether these three languages should be kept separated in their respective webpages to create *The Poem* or whether they should create a cross-fertilization of languages in the hybrid poetic space of the ocean that forms *The Poem*, and if so, whether they should all emanate from the same source (the archive). The second option was more in tune with the author's previous interests in multilingual poetics, and the multi/inter-linguistic text was chosen as a way to bring up multiple translations together to create a global language (Mencía 2001a). The archive of stories serves as the source for the inter-linguistic narratives and, at a programmable level –in collaboration with Dupuis –there were many questions addressed about the creation of the visual aesthetics, the interconnection of stories through word recognition for generation of text and user interaction and immersion in the visual-linguistic ocean.

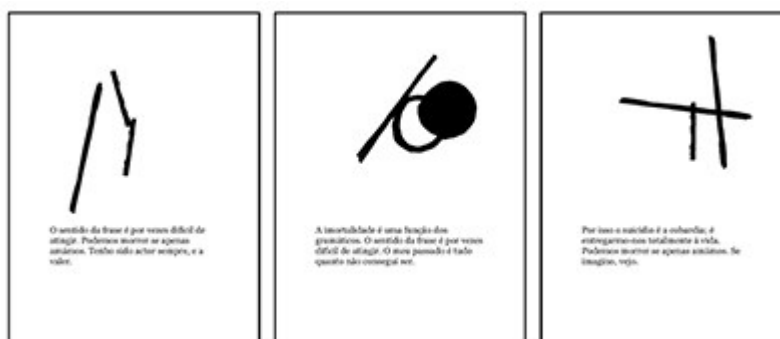
In addition, the translation of natural languages, as mentioned above, engaged the author in the process of 'self-translation' from Spanish, her mother tongue, into English, her professional language and vice-versa. The process of self-translating is used to rethink the text, developing a level of awareness resulting from transferring from one linguistic system into another.

Equally important is the function of the *transmedial* dimension addressing the multimodal relationship between images, animations, text, code and the visual metaphors/literary tropes i.e. the animation of the passengers' geographical move, travelling from one country to another, the interactive indelible poem and the narrative stories found in the water as splashes and waves. And, underneath it all, there is a layer of translation at a cultural level between countries, geographical textual modes and stories from families and historical memories.

Exploring and creating *The Poem* through these different dimensions as a practice-based methodology has enabled the author to understand the process, experience and medial connections, which subsequently could serve as a model for critical analysis and for bringing knowledge and understanding of translation of works of electronic literature and media art.

3.3. *Machines of Disquiet*

Machines of Disquiet, by Luís Lucas Pereira, is the name chosen for a number of experimental applications for mobile devices (iOS and Android) that aim to provide reading and aesthetic experiences based on the text of the *Book of Disquiet* [*Livro do Desassossego*] by Fernando Pessoa (Pereira 2015). Every application is an attempt to find a new setting for experiencing *LdoD* as sensitive matter (i.e. matter experienced in different sensory and perceptual modalities – text, drawing, sound, image, motion). The *Book of Disquiet* is especially interesting as a basis for experimentation in creating digital objects due to its formal characteristics. As an unfinished book written in fragments, it is consistent both with the modular nature of the digital medium and with the open exploration of its reading possibilities. In the networked mobile expansion of that field of possibilities, this work explores the textual and intermedial generation of new poetic and perceptual spaces, such as when a drawing is situated between an abstraction and a letter, or when an image gets a new reading resulting from a random description, or when a sound becomes concept.



Luís Lucas Pereira, *Machines of Disquiet* (2015-2017)

As an experimental work involving language, typography, photography, sound, motion and interaction, *Machines of Disquiet* can be used to address the problem of translating digital works at three levels: (1) at the intermedial level: considering the relation between its specifically visual, sonic and haptic spaces and their relation to language;

(2) at the interactive level: considering the ways in which interactions are scripted for each section of the work and how the interaction scripts should work with an altered linguistic, visual and sonic dataset; (3) at the interlinguistic level: how the linguistic database of Pessoa's text is to be recreated so that productive textual generation can work in a new language space. More importantly, the work can be seen as a catalogue of electronic tropes, that is, of specific rhetorical strategies for generating symbolic effects through programmed processes involving relations between language and image, language and sound, language and animation, language and gesture. The translation of its rhetorics of interactivity in relation to its intermedial and interlinguistic levels could help us understand the specific function of electronic tropes in digital literary forms.

Equally significant for addressing the remediations involved in this work is the fact that it uses as its textual database the *LdoD Archive: Collaborative Digital Archive of the Book of Disquiet* (Portela and Rito Silva 2017). This dynamic archive contains images of Pessoa's autograph documents, new transcriptions of those documents and also transcriptions of four editions of the work. In addition to reading and comparing transcriptions, the *LdoD Archive* enables users to collaborate in creating virtual editions of the *Book of Disquiet*. The dynamic level also contains a virtual writing functionality which will enable users to write variations based on phrases, sentences or texts from the *Book of Disquiet*. Luís Lucas Pereira's *Machines of Disquiet* is the first instantiation of this virtual writing functionality, and it has been designed as an exploration of electronic writing tools and techniques for reimagining the experience of reading Pessoa's work. Each of the nine machines that have been programmed so far involves a distinct textual form generated through a specific electronic trope, that is, a programmed operation that results in a specific textual expression. A detailed description of each machine can be found in (Pereira, Portela, and Roque 2018). By electronic trope we mean the coupling of programmed instruction with textual configuration, involving particular ways of reading (i.e., of perceiving and interacting with the text). These tropes can be described in terms of their intermedial and interactive features, according to particular combinations of textual output and modes of interaction.

4. Electronic literature translation as a model for understanding software culture

Like electronic literature, other kinds of software are also tools for reading and writing processes that involve translinguistic, transcoding, transmedial and transrecreational dimensions of translation. Software, protocols, infrastructures, etc. are implemented in different countries, cultures and contexts leading to problems of translation with forms of work, habits, cultures and understandings. A translational perspective can help to understand, mediate and translate between these cultures and contexts. It can point to how software implementation is in and of itself translation. Software translates work, user behavior, power-relations, etc. into code, data and interfaces through "grammars of action" and these are further translated into business models, profiling, and interaction (Agre 2003).

Currently also big data and profiling is a game of translational interpretation. As the monitoring and AI technologies of Google, Facebook and Amazon have demonstrated,

even reading has become a software business model that tries to capitalize on our reading behaviors, clicks, likes and comments and characterize us as profiles through our taste and preferences. Projects such as Silvio Lorusso and Sebastian Schmieg's *Networked Optimisation* (Lorusso and Schmieg 2013) and Benjamin Grosser's *Facebook Demetricator* (Grosser 2012) explore this. Understanding such processes as translation – and not a simple transaction or transmission – is important for both designing and understanding software systems. Ultimately it allows for more aesthetic, creative, innovative and intelligent approaches to software than seeing software as just a tool.

One way of grasping the ways in which the translation of electronic literature can be illuminating about software processes is precisely by drawing attention to the modelling functions of software. For instance, the processing of natural language through software already implies a certain model of language – of its syntactic and semantic structure, of its mode of social action, of its monetary value. It is in this sense that we can say that software models social and symbolic processes into processing routines and interaction interfaces. If the general condition of software culture is to automate symbolic processes according to certain data models, the translation of electronic literature can provide a critical reading of such models including those models that have automated natural language processing as a general condition for digital communication.

5. Conclusion

The range of translating issues involved in the case-studies chosen for this project has enabled us to frame the specifics of e-lit translation in a broader theoretical framework, as signaled in our title through the concepts of *process*, *experience*, and *mediation*. If the specificity of e-lit derives from its networked procedurality – that is, its existence as executable code distributed across a network of platforms, software programs and electronic devices – then translation involves the understanding of the various layers of this procedurality and how they can be recreated and moved across a linguistic, cultural and technological space according to certain programmable principles expressed in source code, interface structure, interaction rhetoric, and textual and media output. Because the translation of literary form – when understood as the translation of a patterned use of verbal language for poetic, narrative, or dramatic effect – already involves a layered set of relations and correlations among heterogeneous elements, digital layers (such as those implied in source code and multimodal instantiations of aesthetic forms) provide an additional constrained and patterned space for testing theories and practices of translation. E-lit translation thus becomes useful for extending theories of translation to programmable media objects that challenge the medium-specificity of language as the medium for literary experience and for literary translation.

As e-lit works also demonstrate, the experience of the literary, both from the point of view of writing and from the point of view of reading, has expanded to fully integrate the digital literacies of programmable media, thus reflecting the ongoing softwarization of culture through the softwarization of our communication media. Analysis of the expressive workings of the software layer in e-lit works as an element to be considered in translation processes can provide critical insights about the rhetoric of automation, interface and interaction as general principles of software culture. The close reading of

software as a functional and expressive element in the aesthetic experience of the work may also contribute new insights to the critical study of code. A systematic survey of the electronic tropes used in the various works – considering how they could be translated into different source codes, platforms and devices – will be useful for developing a literary theory of interaction rhetoric in digital interfaces. Such a theory would, in turn, contribute to understanding the uses of interface design and help develop a critique of software culture.

Finally, the third aspect bears upon mediation and how our experimental and transcreative practice-based approach for recreating these works in altered hardware-software assemblages of linguistic and media materials can help us address the post-media condition brought about by transformation of media into software. The electro-symbolic existence of all digital objects (letters, sounds, images) as machine-processable numerical representations has created the illusion of universal translatability of source code as an iterative and linear process. However, execution and compilation of code also respond dynamically to the hardware-software assemblages in which they take place. Translation must take into account the conditions of performativity that define media as software, and how those material conditions have relocated processes of translation within general processes of remediation. If translation is redefined as remediation between languages, then e-lit translation can be described as a multidimensional process of remediation that involves natural languages, computer codes, and media materialities.

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Riposte to this essay: [Creating New Constraints: Toward a Theory of Writing as Digital Translation](#) by Jan Baetens