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# Modelling and Visualising Critical Reading through an Intertextual Interface

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#### Abstract

The LdoD Archive: Collaborative Digital Archive of the Book of Disquiet was published on the web in December 2017. Since then, several new modules have been added to functionalities of the platform. The latest component is the "LdoD Critical Reading" module, originally conceived and designed as a heuristic tool for representing and analysing critical readings of Fernando Pessoa's Book of Disquiet. Through this "Critical Reading" module, the LdoD Archive will provide a resource for analysing reading protocols of various interpretative communities at different moments in the history of the reception of the work (1977-2018). This article explains our computational model for encoding and processing multiple intertextual relations: those that link critical texts to the Book of Disquiet; those that link critical texts to other texts; and those that link critical texts to each other. We will show how our interface for textual relations by combining multiple visualisations according to user-defined criteria. Designed as a pilot project for analysing the critical readings of the Book of Disquiet, our computational and visualisation model is based on a theory about the textual production of intertextuality that we have tried to translate into the constraints and affordances of the interface.

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Copyright © 2024 The Author(s) The text in this work is licensed under the Creative Commons BY License. https://creativecommons.org/licenses/by/4.0/ Keywords: LdoD Archive; critical reading; intertextuality; computational modelling; visualisation.

L'Archivio LdoD: Archivio Digitale Collaborativo del Libro dell'Inquietudine è stato pubblicato sul web nel dicembre 2017. Da allora, diversi nuovi moduli sono stati aggiunti alle funzionalità della piattaforma. L'ultimo componente è il modulo "LdoD Lettura Critica", originariamente concepito e progettato come uno strumento euristico per rappresentare e analizzare letture critiche del Libro dell'Inquietudine di Fernando Pessoa. Attraverso questo modulo "Lettura Critica", l'Archivio LdoD fornirà una risorsa per analizzare i protocolli di lettura di diverse comunità interpretative in diversi momenti della storia della ricezione dell'opera (1977-2018). Questo articolo spiega il nostro modello computazionale per la codifica e l'elaborazione di molteplici relazioni intertestuali: quelle che collegano i testi critici al Libro dell'Inquietudine; quelle che collegano testi critici ad altri testi; e quelle che collegano tra loro testi critici. Mostreremo come la nostra interfaccia per la rappresentazione testuale consenta agli utenti di spostarsi attraverso il corpus di testi critici el esplorare le relazioni intertestuali combinando più visualizzazioni secondo criteri definiti dall'utente. Progettato come progetto pilota per analizzare le letture critiche del Libro dell'Inquietudine, il nostro modello computazionale e di visualizzazione si basa su una teoria sulla produzione testuale dell'intertestualità che abbiamo cercato di tradurre nei vincoli e nell'affordance dell'interfaccia.

Keywords: Archivio LdoD; lettura critica; intertestualità; modellazione computazionale; visualizzazione.

#### Introduction

Scholarship is founded on the virtual infinity of the readable textual universe, and that is the nature of the game. ([5], 13)

The LdoD Archive: Collaborative Digital Archive of the Book of Disquiet was published on the web in December 2017 ([20]) (Figure 1). Aware of the many affordances of Web 2.0 technologies, the LdoD Archive attempts to explore the social dimensions of textuality at two levels: in terms of representing several editorial forms of the Book of Disquiet, according to a "social text" rationale; and in terms of opening up specific layers of its interpretative space to a community of users contributing their selections, annotations and interpretations of texts from the Book of Disquiet, according to a "social editing" logic. We have tried to avoid the mismatch between rhetoric and actual practice identified by Peter Robinson ([25]), which means that we do not claim that the scholarly authority of the textual environment has been socialised. Textual transcription, encoding and modelling are not open to the community of practitioners, since they depend upon highly complex forms of knowledge that cannot be delegated through crowdsourcing. However, we have defined layers and modes of interaction and collaboration that extend the social affordances of this textual environment – beyond established forms used in digital archives and digital editing – through a set of modular features that are meant to offer a simulation space in which interactors can experiment with role-playing and game-rule constraints ([22]).

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Figure 1. The LdoD Archive: Collaborative Digital Archive of the Book of Disquiet

The dynamic functionalities established by the original software architecture, which was developed between 2013 and 2017, are expressed through the *LdoD Archive*'s five menus: "Reading", "Documents", "Editions", "Search" and "Virtual" (Figure 2). Since its first release, additional web applications, some of which have been integrated into the *LdoD Archive*'s data model, have been developed: "Machines of Disquiet" ([17]; [18]); "Twitter Citations" ([12]) and "Virtual Twitter Edition" ([13]; [15]); "LdoD Classification Game" ([9]; [10]); and "LdoD Visual: A Visual Reader for the *Book of Disquiet*" ([23]; [24]). The "LdoD Critical Reading" module (to be published in 2024) is our latest addition to this textual environment ([7]; [21]; [8]) (Figure 3). Conceived as a heuristic tool for representing and analysing critical readings of Fernando Pessoa's *Book of Disquiet*, the "LdoD Critical Reading" module has a twofold aim: to bring together a representative selection of the critical reception of the *Book of Disquiet*; and to create a computationally processable network of textual relations across those documents, including their relations to each other, and their relations to the *Book of Disquiet* and to other texts. This granular mapping of textual relations provides a diachronic and synchronic perspective on the reception of the *Book of Disquiet* by several scholarly communities.

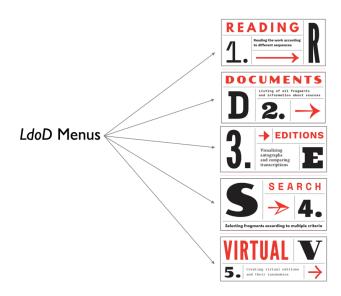


Figure 2. LdoD Archive: Reading, Documents, Editions, Search, Virtual.

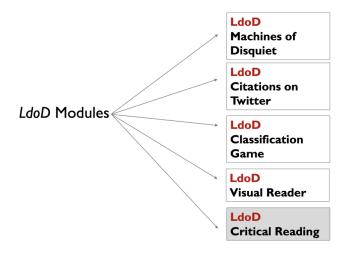


Figure 3. LdoD Archive: additional modules.

Besides new information about specific critical approaches that will emerge from aggregating the documents in this way, the corpus will be analysed with a more general theoretical goal: to establish a model of critical reading protocols and, particularly, of the ways in which interpretative frameworks and embedding of citations reinforce each other in the production of distinct expert readings of the *Book*. Examination of intertextual networks created by expert readers will eventually extend to the rhetorical strategies for embedding quotes within specific arguments. The "LdoD Critical Reading" module thus combines a historical knowledge of the

critical reception with a theoretical hypothesis according to which critical reading protocols can be formally abstracted based on their modes of establishing textual connections. Those two aims will be explored through the visualisation interface for accessing, searching, retrieving, connecting, and analysing the documents and their mosaic of references and quotations.

In this article we will explain how textual encoding, data processing model and visualisation interface come together as a meta-reading environment. Our paper is divided into four major sections: (1) theoretical model, (2) encoding and processing textual relations, (3) interfacing a network of texts, and (4) visualising critical readings. In the conclusion we offer some general observations about the affordances and constraints of our intertextual artefact both as a digital interactive representation of textual relations and as a heuristic tool for analysing the critical reception of the *Book of Disquiet*. We hope that this module will help researchers advance new historical and theoretical hypotheses about the critical reading of the *Book of Disquiet* and about the production of intertextuality in critical reading practices.

#### 1. Theoretical Model

John Guillory discusses the historical development of intensive and extensive reading practices to pinpoint differences and similarities between the repertoires of lay reading and scholarly reading ([5]). Guillory focuses, particularly, on the perverse effects of the current system of academic reward – based on measures of publication productivity – on the practices of scholarly reading and writing. Besides stylistic features at the level of vocabulary and syntax, scholarly reading "is defined by the explicit exhibition of its interpretative reading, as writing and as publication" ([5], 12). Scholarly writing is a manifestation of the reading intensity that defines the modality of scholarly reading. One assumption that lies at the core of the "LdoD Critical Reading" module is precisely the notion that quoted excerpts from other texts are textual expressions of the intensive reading practices that define critical reading. Quotations are part of the "explicit exhibition of its interpretative reading," and they can be analysed as formal and discursive features of the protocols of professional reading. Quotations enable us to see the act of reading as a process of weaving textual connections between a new emerging text and the text that is being appropriated through close reading.

Cognitive approaches to the pragmatics of literary reading emphasize the creation of intertextual connections as a "cognitive modality of perception" ([16], 135). This interplay between the text and the "semantic intertextual frames" ([16], 133) that readers bring to the text sustain their ability to produce intertextual connections. One of the challenges posed by reader-centred approaches to the computational modelling of intertextuality comes from the difficulty in capturing those intertextual frames, since they do not have a textually recorded expression. However, given that critical reading practices tend to be focused on making explicit their intertextual framing by embedding quotations in particular chains of associations and arguments, our theoretical model also assumes that, to a certain extent, this intertextual readerly framing becomes expressed in writing. Although, in the current approach to the critical reception of the Book of Disquiet, we are only processing manually encoded instances of intertextuality, a full implementation of our theoretical model would further require the development of both manual and automated processing that would analyse semantic features of the text that embeds the quotations. This analysis would test the hypothesis that discursive analysis of the textual context of the quotations would provide evidence of the creation of semantic frames of reference that re-signify the quotations in terms of specific acts of reading. If this method of analysis could be

formalized, we would be able to relate the manually marked-up textual strings and textual references from various textual sources with the cognitive framing of those strings and references within specific readings.

Citations and intertextual relations in large corpora have been analysed through various datamining techniques.<sup>1</sup> Trillini *et al.* have proposed a parameter-based model, which they have tested in the *HyperHamlet* corpus ([28]). Romanello has used Named Entity Recognition and a threelevel citation network (with different levels of granularity) to formalize canonical citations of classics in modern publications ([26]). Automated detection of intertextuality for determining textual circulation and transmission has also been applied to ancient and medieval corpora. Scheirer *et al.* apply natural language processing semantic analysis, instead of the more common lexical correspondence or text reuse methods, to detect intertextuality in limited textual fragments from Antiquity ([27]). Okuda *et al.*, in the *Tesserae Project*, have developed their own software techniques for discovering intertexts in ancient Greek and Latin literature based on "comparing two texts for regions of word reuse" ([10]).

While some of these approaches could be adapted to a large-scale analysis of references to the *Book of Disquiet*, our model is quite distinct insofar as we want to develop a computer-assisted textual environment (based on a small set of texts) to examine the use of quotations as an element in the reading protocols of specific communities of scholarly readers. Our goal is to model the complexity of intertextuality as a range of textual relations that may be lexically, syntactically and semantically marked in the texts, but also as an ongoing process of exblishing textual connections through acts of reading. As far as we know, Horstmann *et al.* provide the only computation modelling of intertextuality that bears some theoretical relation to our approach ([6]). Their proposal consists of modelling the multiplicity of intertextual relations through "description logic" using knowledge graphs of the semantic web, particularly the OWL/RDF formalism. Their notion of "mediator for an intertextual relation" is useful for formalizing intertextual relations created by reading acts.

Our approach to critical reading follows from post-structuralist theories that highlight the performative and socialized nature of reading ([4]; [2]; [3]; [1]; [19]). The intensive use of citations in scholarly readings results in the creation of intertextual networks that sustain specific interpretative frameworks. Our hypothesis for modelling the critical reading in the *LdoD Archive* in this way is that interpretative strategies manifest themselves through reading protocols that leave markers in the text and that these markers can be analysed and encoded for automatic processing. This modelling is an attempt at representing and simulating critical reading as a process of intertwining textual relations between the text that I am writing and the text that I am reading, showing intertextuality as an interpretative practice while trying to capture the very motion of meaning in production. An open and continuous action, the production of

<sup>&</sup>lt;sup>1</sup> Designed to gather quotations from the *Book of Disquiet* on social media in real-time, the application "Twitter citations" automatically collected quotes from Twitter. From 2018 to 2023, it collected 9,344 quotations in Portuguese (an average of 5 quotes per day), showing that the *Book of Disquiet* continues to grip the imagination of its many readers (cf. <u>https://ldod.uc.pt/citations</u>). A detailed description of the optimization of the string-matching

A detailed description of the optimization of the string-matching algorithm and its integration into the *LdoD Archive* through the automatic generation of Socially Aware Virtual Editions can be found in Oliveira ([14]). Since April 2023, due to limitations introduced by X, these functionalities are no longer active.

intertextuality simultaneously creates the conditions of interpretability for the text that is being read and the conditions of interpretability for the text that is being written.

In other words: our aim is to show critical texts as intertexts in which the production of intertextuality as an act of writing and the production of intertextuality as an act of reading can be observed in parallel. Insofar as critical reading protocols enable us to follow the production of juxtapositions of selected fragments from a textual source and the textualization of relations between those fragments in the process of construction of a new text, this reading-writing protocol can be used to (1) characterise interpretative strategies for a given source text or group of texts; (2) characterise specific interpretative communities based on their reading protocols; and (3) model intertextuality itself as the general foundation of semiosis, that is, of the processes of production and transformation of meaning through acts of writing and reading. The heuristic value of our theoretical model for encoding and processing a specific critical reception corpus has been demonstrated in this case, but its potential for advancing a more general model of intertextuality as a reading protocol in the critical reception of literary works depends on further conceptual and technical work.

According to our theoretical perspective on intertextuality, the "LdoD Critical Reading" module should contain two main sets of interlinked texts: a set that we describe as "Critical Texts" [set A], i.e., a set made up of the selected critical essays (prefaces, essays, reviews); and a set composed of "Texts from the *Book of Disquiet* cited in the 'Critical Texts"" [set B]. Besides linking passages across those two sets of texts, encoding also marks up all references in set A to other texts, including cross-references linking any two "Critical Texts", and all references in set B to other texts, including references to other texts by Fernando Pessoa. This third set is named "Other Texts" [set C]. The automatic analysis of the information encoded in sets A, B and C then generates a new set of representations that we call "Visualisations of the Critical Readings" [set D]. Navigation across those three sets is multidirectional (A to B; B to A; A to C; C to A; B to C; C to B), which means that (1) we can move from an abstract diagrammatic representation of relations to actual passages in the critical essays or in the *Book of Disquiet*, and vice versa; and (2) we can also move from one quoted passage in the critical essay to the source text in the *Book of Disquiet*, and vice versa (Figure 4).

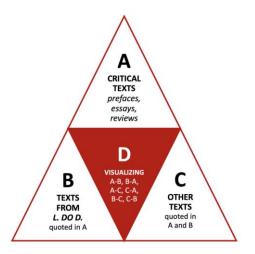


Figure 4. Interlinking texts and visualising connections.

One of the challenges raised by our theoretical perspective on critical reading lies in the distinction between "interpretative framework" as a particular semantic field that readers bring to their reading, on the one hand, and "discursive markers" as features of reading operations that are textually expressed within the text, on the other. Since an "interpretative framework" cannot be annotated in the same way<sup>2</sup> as the elements that are textually marked, such as quotations and references, the encoding model that we defined – using XML-TEI markup – must be limited to the bibliographical metadata of each critical text (author and title, date and place of original publication, etc.) and to explicit networks of relationships linking critical texts to the texts of the *Book of Disquiet* and to other texts. A systematic marking of those discursive markers will contribute to future inferences about the "interpretative framework" that sustains a given critical reading, and which manifests itself through the arguments that enact the interpretation of the quote. While the adopted mark-up brings its own assumptions to bear on the textual corpus, the fact that it turns explicit textual relations into machine-readable strings enhances our analytic awareness about the workings of intertextuality.

# 2. Encoding And Processing Textual Relations

The manual annotation of the critical essays will be exemplified by four sets of tags: (a) one of them was used in the header of the files to classify texts according to genres; and the other three sets were used in the body of the text (b) to mark up all references to names (persons, places, titles, etc.), (c) to distinguish all references to authors from references to Pessoa's heteronyms, and (d) to mark quoted passages from the *Book of Disquiet* and all references to other sources (Figure 5). The application of those conventions to a paragraph of Robert Bréchon's review of the first edition of the *Book* (published in *Colóquio-Letras* N° 72, 1983, pp.100-102, under the title "*Livro do Desassossego* por Bernardo Soares") gives us a glimpse of the functioning of the different markers within the text (Figure 6). XML encoding makes the protocol for linking the argument to a network of references and citations graphically visible. The intertextual condition of textuality is a consequence of the constant reiteration of pieces of writing within other pieces of writing. The critical reading protocol seems to consist of intensifying this reiteration, suggesting that reading is dependent upon this material intertwining and occurs in this space between texts.

<sup>&</sup>lt;sup>2</sup> In fact, one could claim that any attempt at annotating an "interpretative framework" is the generation of another "interpretative framework" – that of the annotator, who brings her own semantic field to bear on her reading of another reading. In other words, "interpretative frameworks" cannot be made completely explicit for computational processing since they must remain open to the general dynamics of interpretation as an intersubjective field of ongoing semantic associations. The marking of textual elements that embed the quoted passages within a specific argument is one way of trying to capture a particular dimension of the critical reading protocol. The dialectics between selecting passages, including them in a new text, and using this cutting and pasting as a rhetorical tool for sustaining an interpretative argument is described in Portela ([22], 76-77) in terms of the interaction between *excepting, inserting*, and *disserting*.

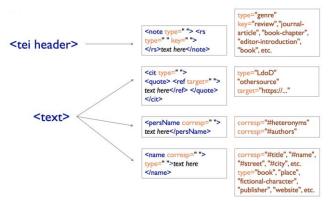


Figure 5. Modelling entities.

O que mais me impressionou na primeira leitura foi, ao mesmo tempo, o cunho de sofrimento que marca estas páginas e o eco de fraternidade que em mim desperta. Recordo as palavras de tristeza durará por toda a vida?"</ref></quote></cit> Porque me empolga assim a tristeza de sou triste? Este ou aquele pensamento, escreveu-os ele <seg rendition ="#i">para</seg> mim: em minha intenção, no meu lugar. A sua experiência singular, monstruosa, tornou-se-me familiar -– porque não define uma personalidade mas uma situação espiritual. <persName corresp="#HT.BS">Bernardo Soares </persName> é, por excelência, o homem sem qualidades, reduzido denominador comum da condição humana: sem caracterização, sem biografia, forma psíquica vazia, cabide das nossas próprias angústias e dos nossos sonhos. Ele próprio diz que a arte se dirige <cit type="LdoD"><quote><ref target="https://ldod.uc.pt/fragments/fragment/Fr232/inter/Fr232\_WIT\_ED\_VIRT\_LdoD-ReCritica I\_I"> "a toda a gente, isto é, àquela pessoa que é comum a todas as pessoas"</ref></quote></cit>. E até acentua a natureza da emoção humana fundamental, imediatamente comunicável porque universalmente compartilhada: <cit type="LdoD"><quote><ref target="https://ldod.uc.pt/fragments/fragment/Fr232/inter/Fr232\_WIT\_ED\_VIRT\_LdoD-ReCritica I\_I"> "a saudade da infância perdida"</ref></quote></cit>.

Figure 6. Marking connections.

This encoding translates our model of textual relations and supports several interfaces for exploring the corpus, as well as macro-visualisations in the form of timelines and networks of different types. The information extracted to represent textual relationships includes all the annotations made in two specific virtual editions<sup>3</sup> of the *Book of Disquiet*, containing all texts mentioned or cited in the corpus. The corpus of the "LdoD Critical Reading" module consists of 58 texts by 38 authors. These texts are divided into three categories: 1) essays on the *Book of* 

<sup>&</sup>lt;sup>3</sup> "Virtual Edition" is a specific concept of the *LdoD Archive*: it refers to any user-defined selections of texts from the corpus of the *Book of Disquiet* that have been aggregated in the platform. Virtual editions can be annotated and made publicly available on the platform. We created two virtual editions of the *Book of Disquiet* composed of all the texts that are mentioned or quoted in the selected critical essays. The reason for two virtual editions (instead of only one) is because we have tried to include in the aggregated selection the *specific edition* of the *Book* that is being quoted. Since virtual editions cannot include two versions of the same text (a restriction programmed into the *LdoD Archive* platform), whenever the same text (in different editions) is quoted, each version must be represented in a separate virtual edition, hence the need for "critical reading virtual edition 1" and "critical reading virtual edition 2".

*Disquiet;* 2) prefaces by editors and translators; and 3) book reviews of the major editions of the *Book.* Altogether, these texts cite almost 500 fragments from the *Book of Disquiet.* The criteria for selecting this corpus privilege texts by well-known experts, frequently cited, and published in academic journals between 1977 and 2018. All selected texts must also have the *Book of Disquiet* as their single focus.<sup>4</sup>

Processing extracts information marked through textual highlights and marginal annotations in the virtual editions associated with specific critical readings. Processed information includes quoted passages from the *Book of Disquiet*; titles of texts from the *Book of Disquiet*; titles of critical reading essays in which those passages or texts are cited; and the virtual edition's taxonomy (i.e., tags with names of essay authors) associated with each critical reading essay. Processing also extracts other metainformation from each critical essay, namely, year of publication.

# 3. Interfacing A Network Of Texts

Interfaces for the "LdoD Critical Reading" Module have been designed with four main goals: (1) to enable readers to visualise single texts and quotations within each text; (2) to visualise global patterns of relation within the textual corpus; (3) to enable readers to navigate from text to text through bidirectional links; (4) to enable readers to move from large-scale diagrammatic representations to single texts. Readers can thus navigate from text to text within the *Book of Disquiet* and from text to text within the Critical Essays on the *Book of Disquiet*, but their traversal can also move from quotation to quotation within each of those texts. Readers can pay attention both to the context of cutting in the source text, and the context of pasting in the critical essay itself. The textual tapestry of quotations that constructs the discursive specificity of the critical essay becomes graphically visible. In addition, a colour code has been used to mark different types of quotation in the critical essays. The following figures illustrate the interfacing of quotations that can lead us from critical essays to texts from the *Book of Disquiet*, while the second one gives us marked quotations that take us from the *Book of Disquiet* to the critical essays (Figure 7 and Figure 8).

<sup>&</sup>lt;sup>4</sup> Given both our theoretical model and the proof-of-concept nature of the "LdoD Critical Reading" project, we have opted for a limited selection of highly focused essays rather than an extensive coverage of the critical reception, which would include many more references.

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<text><section-header><section-header><text><text>
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Figure 7. From the "Critical essays" to the *Book of Disquiet*. Figure 7 shows the interface for accessing the critical text (A), consisting of the name of the critical text, the author of the text, and the body of the text. In the body of the text, the intertextual links are highlighted with different colours, depending on the type of link, such as other critical texts (A), fragments of *Book of Disquiet* (B) or other texts as references and external links (C).



Figure 8. From the *Book of Disquiet* to the "Critical essays". Figure 8 shows the interface for accessing a fragment of the *Book* (B), consisting of the title of the fragment, the authors of critical texts that cite the respective fragment and the body of the text. In the body of the text, sentences that are quoted in critical texts are highlighted (C), with direct links via a pop-up interface element.

In what concerns the global visualisation of the corpus, the application presents the titles of the fragments from the *Book of Disquiet* and the titles, authors, and dates of the essays as structured lists in a table. These lists provide a dynamic table of contents for accessing the sets of fragments from the *Book* cited in each essay and jump cross-sectionally to both essays and fragments (Figure 9a, 9b, 9c). In this way, the processed information can be viewed independently or in combination: (a) authors of the essays; (b) essay titles; (c) years of publication of the essays; and (d) cited fragments. In what concerns quotations, the following subgroups can also be viewed:

(a) fragments quoted in essays; (b) essays quoted in essays; (c) authors who quote fragments; and (d) quoted editions of the *Book*.

Ldo	oD Critical Reading			Essays Essays by author Fragmen
Ν	The	¥	Year *	Authors
	Title -		Year •	Authors -
1	Livro do Desassossego por Bernardo Soares		1983-03- 01	Robert Bréchon
2	Recensão: LIVRO DO DESASOCEGO, Tomo I e Tomo II — FERNANDO PESSOA/BERNARDO SOARES — JERÓNIMO PIZARRO (ed.)		2012	Maria de Lurdes Sampaio
3	Bernardo Soares: escrever e existir		1985	Alfredo Margarido
4	O Livro do Desassossego - texto suicida?		2008	Eduardo Lourenço
5	Listas do Desassossego		2013	Pedro Sepúlveda
6	Pessoas-livros: O Arquivo Bibliográfico de Fernando Pessoa		2014	Pedro Sepúlveda
7	O desassossego, a poesia lírica e a identidade do poeta		1999	Maria Irene Ramalho
8	Sobre o paisagismo de Bernardo Soares ou do «desassossego» à utopia		1995	Miguel Serras Pereira
9	A ficção da memória e a inscrição do esquecimento no «Livro do Desassossego»		1984	Silvina Rodrigues Lopes
10	Des-figurações (sobre o Livro do Desassossego)		1988	Silvina Rodrigues Lopes
11	Da bruma para a bruma — pela bruma: traduzir "esta espécie de não-livro"		2016	Valeria Tocco
12	Editar Bernardo Soares		2000	Gustavo Rubim
13	Editar Bernardo Soares		2000	Fernando Cabral Martins
14	Um novo «Livro do Desassossego»?		2000	Sidónio de Freitas Branco Paes
15	Prefácio. in: Pessoa, Fernando, Livro do Desassossego. Ed. Jacinto do Prado Coelho		1982	Jacinto do Prado Coelho
16	"Sobre a recolha e transcrição de textos e o registo de variantes". in: Pessoa, Fernando, Livro do Desassossego. Ed. Jacinto do Prado Coelho		1982	Teresa Sobral Cunha e Maria Aliete Galhoz
18	"Prefácio"		2008	Teresa Sobral Cunha

Figure 9a. Critical essays and their authors. Readers can access each of the critical essays about the *Book of Disquiet* by selecting from a list organized by title of the essay, date of publication, and author. On the page of each essay, all the quotations are underlined with two different colours and linked to the source texts. Red quotes are from the BofD, blue quotes are from external sources.

Lde	oD Critical Reading	Essays E	ssays by author <u>Fragments</u>	
Ν	Title *	Authors	Editions *	
	Title -	Authors -		
1	a acuidade dolorosa das minhas sensações	Maria Aliete Galhoz	Coelho	
2	este livro suave	Jave Diego Giménez, Jacinto do Prado Coelho, Maria Augusta Babo, Richard Zenith, Sidónio de Freitas Branco Paes, Teresa Rita Lopes e Teresa Sobral Cunha		
3	reles como os fins da vida	Jerónimo Pizarro e Teresa Rita Lopes	BNP/E3, 1-68r	
4	SPECTOS" Angel Crespo, António Quadros, Arnaldo Saraiva, Georg Rudolf Lind, José Martins Garcia, Leyia Perrone-Moxies, Maria da Giloría Padrão, Pedro Sepúliveda, Sidónio de Freitas Branco Pases a Teresa Sochar Cunha		BNP/E3, 20-70r-71r-72r	
5	"ASPECTOS"	Angel Crespo	Coelho	
6	(Chuva) E por fim, por sobre a escuridão dos telhados Eduardo do Prado Coelho e Silvina Rodrígues Lopes		Coelho	
7	(cop. duma carta para Pretoria) Arnaldo Saraiva, Eduardo Lourenço e Maria Augusta Babo		Coelho	
8	Carta e Adolfo Cesais Monteiro, 13 de Janeiro de 1935 Carta e Adolfo Cesais Monteiro, 13 de Janeiro de 1935 de Pado Cesaio, Jano Marcia, Cartado Sartino, do Pado Cesaio, Janofonio Pizano, José Martino, Seraino de Janeiro, Ferando Caldo Martino, Feraino de Janeiro, do Pado Cesaio, Janofonio Pizano, José Martino Sartino, Judio Bagos Sindes, Judy Perrone-Modés, Munar Derote De Dego Cimilee, Xularia Atexa Seito, Maria Augusta Babo, Pedo Sepúlveda, Richard Zenth, Silvina Rodrigues Lopes e Teres Ris, Lopes		Coelho	
9	Carta a Adolfo Casais Monteiro, 13 de Janeiro de 1935) António M Fejó, António Quadros, Fernando Cabral Martins, Jacinto do Prado Coelho, Jetónimo Pizarro, Joana Matos Frias, Jorge de Sena, Pedro Sepúlveda, Richard Carth, Tressa Rita Lopes Terasa Dóta Curha		BNP/E15, 2719-1r-2r-3r-4r-5r- 6r-7r-8r	
10	[Carta a Alvaro Pinto, 12 de Novembro de 1914]	António Quadros e Teresa Sobral Cunha	BNP/E3, 138-69r	
11	[Carta a Alvaro Pinto, 29 de Julho de 1913]	António Quadros, Maria da Glória Padrão e Teresa Sobral Cunha	JPC-1982 p. 40	
12	[Carta a Armando Côrtes-Rodrigues, 19 de Novembro de 1914]	Angel Crespo, António Quadros, Arnaldo Saraiva, David K Jackson, Jacinto do Prado Coelho, Joana Matos Frias, Jorge de Sena, Leyla Perrone-Moisés, María Iréne Ramalho de Sousa Santos, Pedro Sepúlveda, Richard Zenith, Teresa Sobral Cunha e	Coelho	

Figure 9b. Texts from the *Book*, critical authors who quoted them, and quoted editions of the *Book*. Readers can access different fragments of the *Book of Disquiet* by selecting from a list organized by title of each fragment, authors who quote it, and the respective edition of the quoted fragment. The title of each fragment is linked to a page containing the source text, the names of the authors who quote it, and links to their respective essays.

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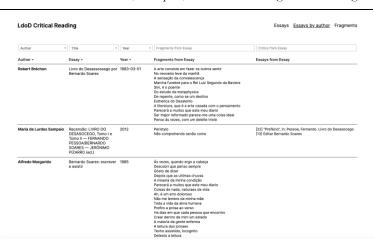


Figure 9c. Critical authors, critical essays, dates, quoted texts from the *Book*, quoted essays. Readers can access the essays about the *Book of Disquiet* by selecting from a list organized by author, essay, date of publication, and titles of the fragments quoted in each essay. The title of each essay is linked to a dedicated page containing the essay, with all quotes highlighted and linked to their sources: blue highlights link to external sources, red highlights link to pages containing the quoted fragments of the *Book*. Readers can also directly access the fragments quoted in each essay by selecting it on the respective list.

Additionally, the global visualisation of the corpus and the relationships between essays and fragments are presented diagrammatically through two graphic structures: a timeline table and a graph in the form of a network. In the timeline table, the x-axis represents the publication dates of the essays (1977 to 2018) while the y-axis contains the titles of the quoted fragments (with a hyperlink to the respective text). In turn, each cell within this coordinate system contains a circle that represents a critical essay (with a link to the respective text). These circles have different colours, each of which represents an author (Figure 10).

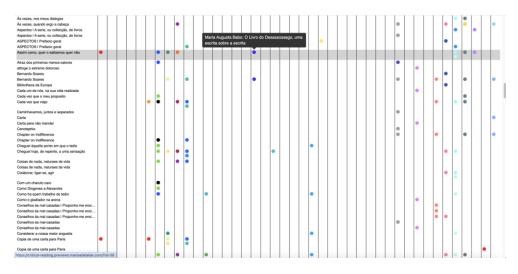


Figure 10. Texts from the *Book* (y), dates (x), and critical essays (coloured circles). 133

As for the graph in the form of a network, visualisations allow the aggregation and separation of different layers of relationships: (1) list of authors (black) of critical essays and their respective texts (green); (2) comparative proportion of the number of critical essays (green) relative to the number of fragments (red) referenced; (3) list of critical texts (green) and fragments (red); (4) connections between critical essays; (5) list of critical essays (green) and external linked sources (blue); (6) list of critical essays (green) and external unlinked sources (pink); (7) attempt to show the four types of quotation in the same image (i.e., quotations from fragments, from essays, from external linked sources without links) (Figure 11-17).

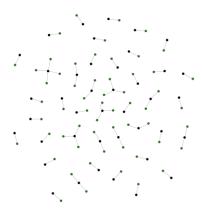


Figure 11. Critical essays and their authors. Figure 11 shows the ratio of critical texts (green) per author (black).

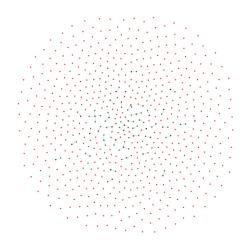


Figure 12. Critical essays, authors, and texts from the *Book*. Figure 12 shows the comparative proportion of the number of essays (green) with the number of quoted fragments (red). It illustrates the ratio between all the fragments from the *Book* and those that are quoted in the selected essays.

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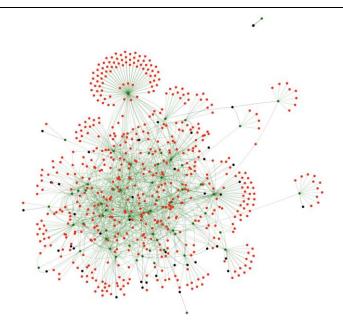


Figure 13. Critical essays quoting texts from the *Book*. Figure 13 shows the relationships between critical texts (green) and fragments (red). Some critical texts quote a low number of fragments, while others quote a large number of different fragments, as well as other essayists.

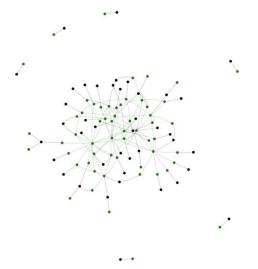


Figure 14. Critical essays quoting from critical essays. By visualizing the relationships established via the quotes between critical texts (green), we can verify the varying density of the networks of connections between authors and readings. We can also verify the peripheral readings of authors (black) whose texts are not quoted by other essayists.

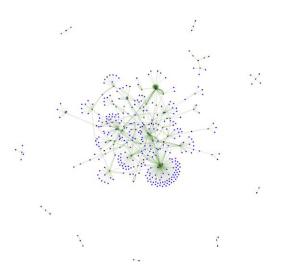


Figure 15. Critical essays quoting from other linked sources. Most critical texts (green) refer to linked external sources, such as other literary works and other critical essays, both represented in blue. Readers can access those sources by clicking on the quoted passage. One of the patterns we can observe is that some external texts are quoted by more than one essayist.

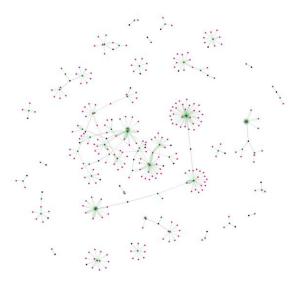


Figure 16. Critical essays quoting from other unlinked sources. Critical texts (green) often refer to unlinked sources (pink). Readers can compare the ratio of quotes from such sources and quotes from the *BofD* (Figure 13).

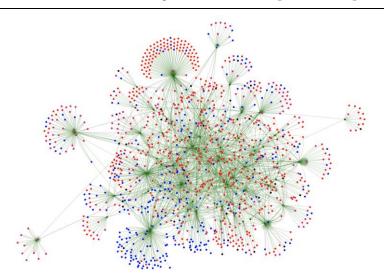


Figure 17. Networks of quotations: texts from the *Book*, critical essays, external linked sources, external unlinked sources. Figure 17 illustrates the ensemble of relationships established through quotations. It shows the bidirectional connections between essayists (black), critical texts (green), fragments from the *Bo/D* (red), external linked sources (blue) and external unlinked sources (pink). A close reading of these clusters of connections shows the relative weight of any given element according to its number of connections.

## 4. Visualising Critical Readings

By marking quotations as bidirectional bridges between texts, the "LdoD Critical Reading" module makes explicit several networks of relationships that occur between the *Book of Disquiet*, the critical corpus, and other texts that critical readers relate to the *Book*, or to which the *Book* itself refers. Using the "LdoD Critical Reading" module as a tool, it is possible to identify, for example, the most cited and least cited excerpts from the *Book of Disquiet*, that is, those excerpts that generate more shared readings, whether convergent or divergent, and those excerpts that sustain unique readings. Furthermore, the identification of these passages, and the thematic and rhetorical contexts in which these passages are cited, allows us, in turn, to identify the most frequent topics of analysis, the different types of approaches to the work, and the way in which they change according to theories and interpretative communities.

The visualisation and analysis of these elements and the textual relationships they weave show how the discursive field of the reception of the *Book of Disquiet* is constituted, but also how it changed over time, particularly regarding topics of analysis and different approaches to the text, that is, the most frequent argumentative contexts and the most common reading strategies. We can identify all the passages cited from the *Book*, including the most frequent ones at different moments of reception. We can also identify, for example, the most cited authors within the *Book* of *Disquiet* itself, and the most cited authors in the critical reception of the *Book*. Starting from the hypothesis that it is possible to model reading patterns in texts from different essayists and interpretative communities, by making explicit the intertextual relationships expressed by

quotations, the "LdoD Critical Reading" module argues that it is possible to trace a computationally assisted history of the reception of the *Book of Disquiet*.

So far, a preliminary analysis of the corpus has revealed certain patterns. These patterns showed that common reading strategies are shared by essayists who are close to certain theoretical schools and specific cultures of influence that characterize different generations. Essayists who published in the late 1970s and 1980s tended mainly to develop readings focused on authorship, paying special attention to the psycho-biographical aspects of Pessoa's writings. Essayists of the following generations, who published in the 1990s and early 2000s, seem to privilege the subjective dimensions of writing, deconstructing the notion of the writer as a self-contained entity in relation to the literary form of the work. Finally, younger authors, publishing in the 2010s, focus mainly on the materiality of the fragment and the book, paying special attention to writing as an act and as a process, instead of focusing on the text as a finished and stable form.

The theoretical and generational affinities between the selected critical readings thus suggest that they could be divided into three distinct focuses: the initial reception in the 1980s, whose approach to the *Book of Disquiet* was based on the first edition, was informed by an interpretative framework that focused on the heteronymic dimensions of Pessoa's work as an expression of the self; the reception in the 1990s and 2000s, using mainly new editions by Sobral Cunha and Zenith, frequently addressed the relationship between textual organization and textual genre; and the reception of the 2010s, after the publication of Pizarro's critical-genetic edition, evidenced greater awareness of the problem of giving material and conceptual form to the book.

Once the "LdoD Critical Reading" module is published, it will be possible to test those and other hypotheses. Its conceptual and analytical space will enable us, on the one hand, to discover patterns in the entire corpus through its macro-visualisation resources; on the other hand, it will provide a granular comparative analysis of the different interpretative arguments and the explicit and implicit relationships that are established across the critical readers' essays. Intertextual relationships – connecting essayists, fragments from the *Book of Disquiet*, as well as authors and works that Fernando Pessoa read – can be analysed either from a synchronic perspective, revealing formal and thematic patterns in critical reading strategies, or from a diachronic perspective, highlighting patterns in the history of the critical reception of this work. Although the *Collaborative Digital Archive of the Book of Disquiet* has been designed for a fragmented, unfinished literary work without an established final form, we believe that the conceptualization and architecture of the "LdoD Critical Reading" module can be applied to other textual networks, since what is at stake in this tool is the modelling, extraction and representation of data connecting critical texts and source texts according to general principles of intertextuality.

# Conclusion

Our article described a theoretical model of critical reading as a process of weaving intertextual connections to sustain specific interpretations of a given work – in this case, the *Book of Disquiet* by Fernando Pessoa. This model was translated into a machine-readable text encoding schema centred on explicit references and cross-references between the corpus of critical texts and the corpus of the *Book of Disquiet*. This information, in turn, was processed through visualisations that enable us to look for patterns in intertextual connections, with different levels of granularity, across the two sets. On the one hand, the "LdoD Critical Reading" module is a meta-reading of

scholarly reading practices understood as a series of protocols for producing intertextuality. On the other hand, it is a tool for studying the critical reception of the *Book of Disquiet*.

One of the objectives of our intertextual model is to find relationships and patterns that will test both general hypotheses regarding the practice of critical reading, and specific hypotheses regarding the critical reading of this work. Once we publish the "LdoD Critical Reading" module on the web, the aggregate connections will provide a granular perspective on the network of interpretations of this work produced by a group of experts over the last four decades. In addition to the various visualisations of the intertextual and temporal relationships between essays and fragments from the *Book*, researchers will be able to make aggregate readings of the essays and analyse in a granular way the intertextual paths that underlie the interpretations produced about the *Book of Disquiet* over a period. The module will uncover textual reading protocols and the affinities between certain interpretations, thus generating hypotheses about the ways in which the textual field of the *Book of Disquiet* was being explored by expert readers over time. As with the *LdoD Archive* as a whole, this module has a heuristic function, that is, it aims to enhance analysis and findings about literary processes.

The "LdoD Critical Reading" module conceives interfacing as a second-degree critical process through which the programmed functionalities enable meta-readings, that is, readings of previous readings. Furthermore, we can say that the encoding of intertextuality as a general condition of textuality embodies a critical use of digital hypertext as a device that helps us grasp the transit between writing and reading, and between reading and writing, whether in the relationship between essays and fragments from the *Book of Disquiet*, or in the re-reading of the essays themselves and of the fragments from *Book of Disquiet* provided by the lens of the "LoD Critical Reading" module. We could make an analogy with medical imaging: the "LdoD Critical Reading" module is a non-invasive machine for looking at textual bodies as networks of connections that constitute them as fields of meaning that organize the interpretability of the essays themselves and of the texts from the *Book of Disquiet* for a given community.

By making explicit its own interpretative framework in terms of textual selection, encoding, processing and visualisation, the "LdoD Critical Reading" module further draws attention to the constraints embedded in its own intertextual interface. Its heuristic value for users – i.e. the fact that it enables them to make discoveries and inferences based on dynamic visualisations of intertextual relations – also depends on making them self-conscious about its interface as another layer of intertextual production. In other words: the formalization of a relationship so that it becomes computationally processable is yet another instance of the infinite iterability of writing and reading. By citing quotations as quotations, the "LdoD Critical Reading" module recontextualizes them, making them simultaneously present before each other as occurrences in a network of readings. The interface participates in the general process of textuality, linking itself, as a composite metatextual and metamedia experience, to the intertextuality it tries to model.

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