Catarina Lee
catarinaleecastanheira@gmail.com

Lisbon, Portugal

Previous-Next

Abstract:
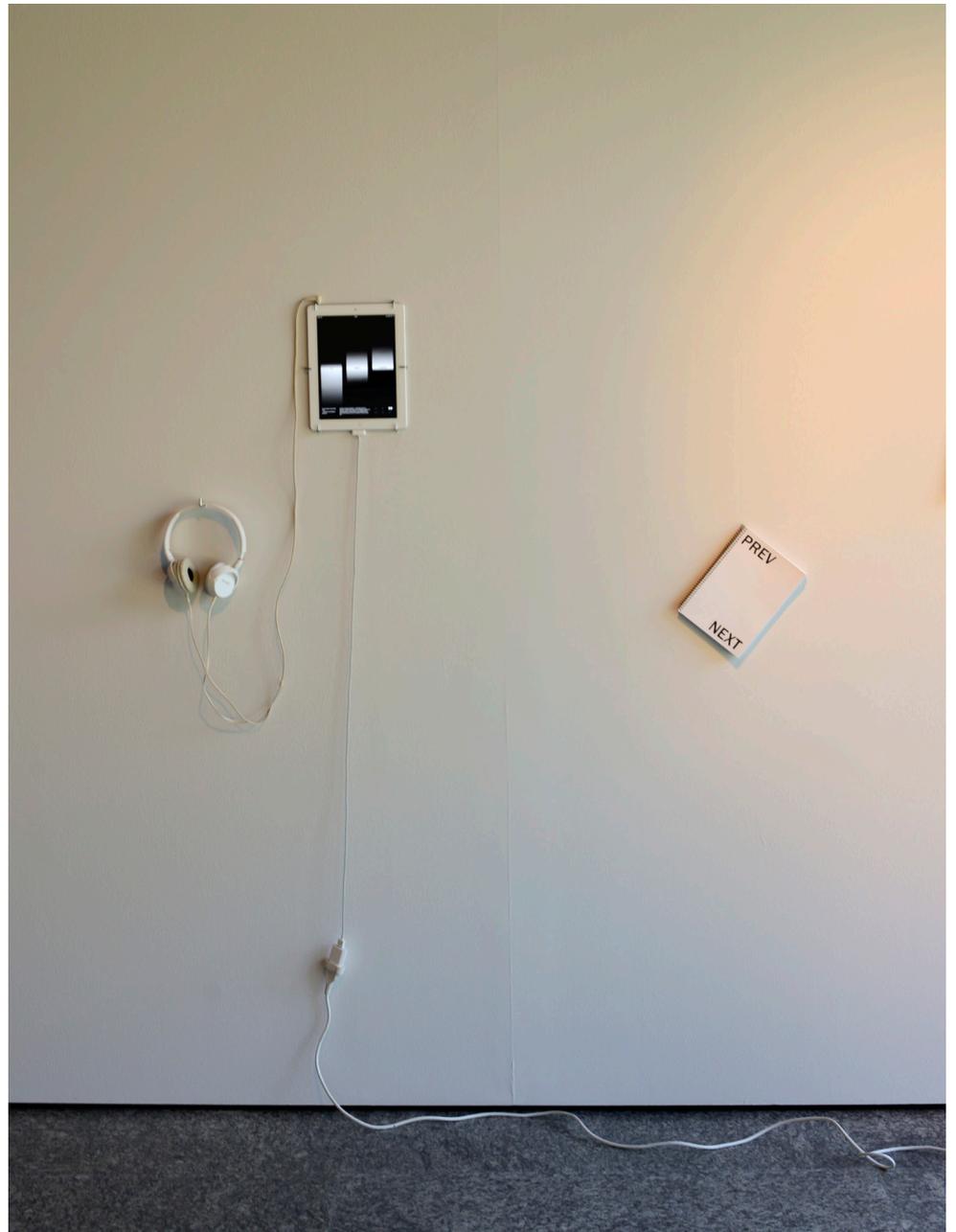
The project *Previous-Next* explores the topics found in the xCoAx conference discourse through an audio-visual installation that translates texts into graphics and sounds. It consists of a program that scans through the most relevant words in the papers, while generating graphics and sound modulations from them. The aim is to explore the potential of software to translate digital textual data into new expressive forms, and eventually propose new perceptions and relations from it. The project follows an on-going research, which focuses on the notion of transmutability of digital data, specifically through the exploration of textual material.

1. EXPLORING TEXTUAL DATA

We live in a time where we generate great amounts of digital data everyday. And a big part of "the richest information we have" is available in text formats (Heer 2010, 7), being either "born" digitally (social networks, emails, etc.), or digitized "from printed paper", to which we easily have full access online (Nualart-Vilaplana 2016, 7). At the same time, text analysis techniques are "increasingly mature and well developed" and "due to new easy-to-use software, their use is spreading" within diverse fields (Nualart-Vilaplana 2016, 2).

Therefore, we identify a transformative potential worthy of exploration, which is tied to the manipulation and translation of textual data by computational means. We assume the premise that all information that is "composed of digital code" can be regarded as raw material (Manovich 2001) and "algorithmically sonified or visualized" (Levin 2010). We focus on the nature of text as source data, and the conceptual and aesthetic possibilities of its mapping into new expressive forms. In a previous study we observed that these strategies can be tied to the exploration of the formal specificities of text, to the semantic aspects it conveys, or even to its abstraction, by emphasizing its mutability as digital data (Lee & Ribas 2016).

2. PREVIOUS-NEXT

In line with these ideas, the project *Previous-Next* proposes an illustration of transmutability focused on the expressive potential of the material qualities of text, as well as the abstract nature of its digital encoding. We seek to explore ways of audio-visually translating textual content, in order to provide new perceptions or experiences of it through seeing and hearing. We take as source material the conference proceedings and explore the internal logic of its individual elements, the words. Rather than looking at text as a one-dimensional list of words, this project is an attempt to create an overview of the diverse topics it addresses and create new associations between them.

So, we consider both analytical and expressive concerns. The process implies an intersection between data analysis and its aesthetic exploration through visualization and sonification. On one side, the project seeks to provide a glimpse of what the xCoAx conference is about, by exposing the main topics of its discourse, as well as the relations and convergences between each author's point of view. On the other side, we explore ways of audio-visually translating these contents and propose new expressions abstracted from their referent. This approach seeks to conceptually emphasize the translation process, or the potential of algorithmically transforming any kind of data into a new tangible representation. In this sense, the experiences are oriented towards an aesthetic exploration of the expressive qualities of the visualizations and sonifications.

3. DEVELOPMENT

The source of data for this project is a collection of papers of the xCoAx 2018 conference. Considering that we could apply our approach to other types of text, in this version we focus on academic writing. We begin by searching for the most frequent words in the collection of texts, we sort them them by the number of times they appear in the text, and then extract the sentences that contain these words. We assume that these words reflect the most relevant topics or key-concepts of the conference, and we use them as a basis for the visualizations and sonifications.

The mapping process is inspired by simple textual analysis and audio-visual mapping techniques. It involves a system of correspondences between textual features that are mapped into graphical elements and used to modulate sound parameters. Elements like the number of characters of each word and its recurrence in the whole text are used as parameters to generate graphic features and audio frequencies.

In terms of formal representation, we opted for the use of elementary figures and sounds, seeking to minimize aspects that are accessory to the audio-visual reading of the text, and taking advantage of the automatization of the computational mapping process. The text parameters are corresponded to gradients that vary in height. At the same time, they define frequency and amplitude values.
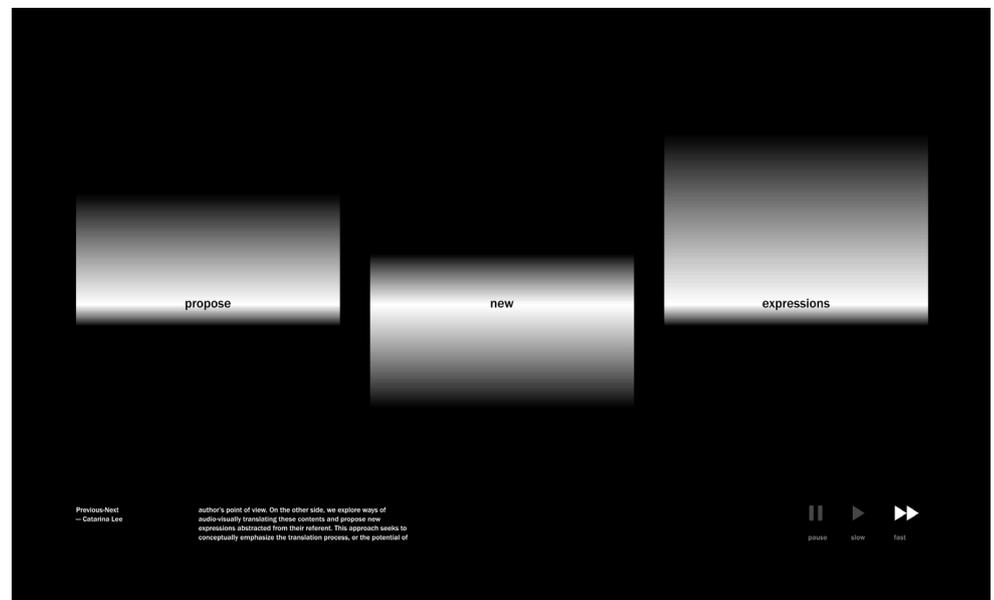
Fig. 1. Mapping process.
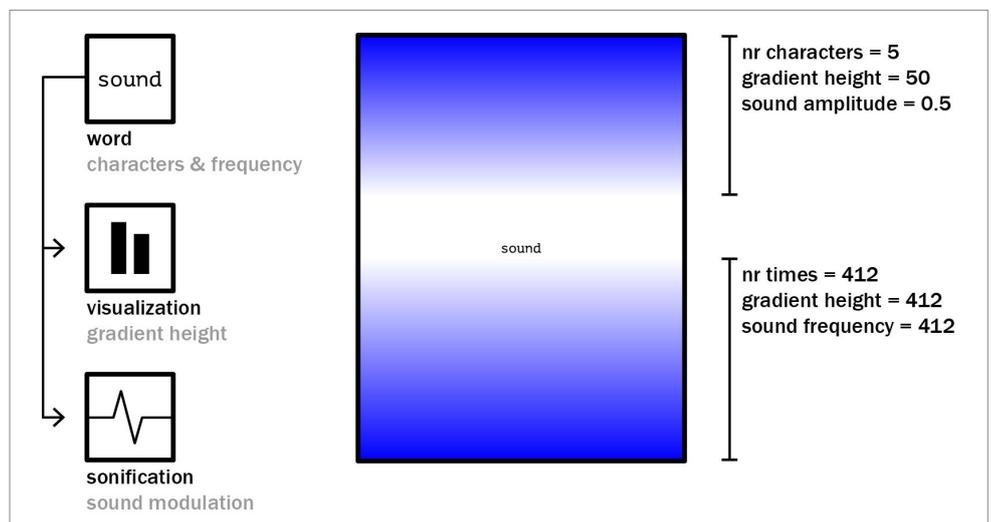
As the program is running the resulting images and sounds are displayed sequentially. Each keyword appears between its previous and next word, as well as the full sentence with some metadata (author and title of the paper). While we are going through the words, the resulting sequence presents an audio-visual reading and expression of the texts, and we can get a sense of how these concepts are approached by each author.

4. OUTCOMES

The presented work results from a closed system of correspondences between text, graphic symbols and sound parameters. The result is an audio-visual sequence where the graphics and sounds are combined. They present the words along with the visualizations and sonifications, ultimately becoming an abstract notation of the texts. In this manner, the work aims to promote a contemplative experience on the patterns and rhythms that emerge from the texts. The program scans through all the words sequentially and presents respectively the *previous*, *main* and *next* keyword. The bottom of the screen displays an extract of the source text.

propose

new

expressions

Previous-Next
— Catarina Lee

author's point of view. On the other side, we explore ways of audio-visually translating these contents and propose new expressions abstracted from their referent. This approach seeks to conceptually emphasize the translation process, or the potential of

pause   slow   fast

In addition, and in spite of the closed non-variable nature of this work, the audience is allowed to control the speed of the screening so they can have a perception of these contents in different ways. When it is slower the audience can read the text within the source and perceive how each author approaches these concepts. On the other hand, when it is faster, visual patterns and rhythms will start to emerge, and it becomes a total abstraction, detached from text semantics and oriented towards an aesthetic exploration of the expressive potential of the visualizations and sonifications.

In this manner, this work seeks to explore the creative and expressive potential of translating text into visual and auditory representations and reveal some of its hidden dimensions. As part of an on-going research, this work can be understood as an open process, where the visualizations and sonifications here described provide a starting point for further developments, namely by exploring different ways of accessing and interacting with textual data.

References:

Heer, Jeff. "A conversation with Jeff Heer, Martin Wattenberg, and Fernanda Viégas". *Queue, March, v. 8, n. 3*. http://doi.acm. org/10.1145/1737923.1744741 [visited: 08-02-2018]. New York: ACM Digital Library, 2010.

Lee, Catarina & Luísa Ribas. "Exploring Textual Data: Transmutability as a Creative Concept and Practice". *xCoAx 2016: Fourth conference on Computation, Communication, Aesthetics and X*. Bergamo, 2016.

Levin, Golan. "Audiovisual Software Art". *Audiovisuology: Compendium*. Daniels, Dieter and Sandra Naumann (eds). Cologne: Verlag der Buchhandlung Walther König, 271–283, 2010.

Manovich, Lev. *The Language of New Media*. Cambridge, MA: MIT Press, 2001.

Nualart-Vilaplana, Jaume. *Text Analysis and Visualisation: creating deep interfaces to read textual document collections*. Canberra: University of Canberra (PhD thesis), 2016.