

# SANDBOX – GRAINS IN MEMORY



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## **Abstract**

*SandBox – Grains in Memory* is an installation where the sea is evoked as a place of identity and memory. Using sonic fragments and oral narratives collected over the last two years in Portugal, the interactors, who are also narrators and producers of different sound sources, have the power to (re)construct their own sound territory from multisensory experiences. The objective is to obtain new sound landscapes from a sound landscape composed by different sonic fragments. Movement in the sand is detected by vibration sensors which trigger the playback of audio files from a library of recordings stored in the device. There is also a "record" feature that enables participants to contribute with their own memories in sound fragments of interaction experiences.

## **Keywords**

Memory  
Interactive Installation  
Sound Expressions  
Sea  
Identity  
Narratives  
Sound Landscapes  
Sonic Fragments

## 1. INTRODUCTION

**1**  
This work is part of the research *Sea grains: place of identities and memories immersed in sensory experiences* and is available on the site: <http://graosdemar.wixsite.com/graosdemar>

**2**  
The swell is one of the most common wave types of the ocean, travelling thousands of kilometers from the place it first emerged. The further they go from their original place, the more they become uniform, with wide wave lengths and short amplitudes; in the open ocean, their period (frequency) is about 13 seconds between each other. (Dias 2005)

**3**  
The concept of *plunging* has been adopted in this project referring to the article *Spilling, Surging, Plunging: The Science Of Breaking Waves* (The Science of, Volume 1 ISSUE 3— May 2014). Three types of waves and their characteristics are described in the article, where the *plunging* is defined as the act of diving into the deepest.

**4**  
Interview with PLEWS, Robert. Interview I. [19.03.2016]. Interviewer: Adriana Moreno Rangel. Lisboa, 2016. 3 arquivo. MOV (11:03 min/sec.). Available by request (adriana.moreno@campus.ul.pt)

The present work, *SandBox – Grains in Memory*,<sup>1</sup> is an interactive installation, part of the project “Sea Grains: place of memory and identity immersed in sensorial interactive experiences”, developed as a PHD research at Faculty of Fine-Arts of Lisbon, multimedia specialization. The aim of this project is to produce interactive digital art experiences through the memories of people who describe the sea as connected to them.

The installation consists of a set of sound expressions defined as emotive *swells*,<sup>2</sup> obtained from memory *Plungings*.<sup>3</sup> In those memories the sea is referred as an identity link. The memory *Plunging and emotive swells* are conceptual elements which are intrinsically linked to the stored set of memories. This set of memories composes a heterogeneous *corpus*. Therefore, the aim is to emphasize the symbolic implications of those memories to point how the (practical) relations with the context, the sea are placed.

Thus, *SandBox* unleashes emotions, visuals and sensations through sound expressions extracted from the memories of people who are intrinsically related to the sea. Those expressions have been (de)composed from overlapped sonic fragments (noises, whistles, onomatopoeias, songs, voices, natural sounds and melodic fragments) referring to emotive *swells*.

### 1.1. In between plungings and swells

*Plunging* arises from oral narratives recorded in Portugal between 2014 and 2016, where the sea is referred to in the memories of people with different experiences and identities. As with plunging waves, the narrated memories show the emotional intensity related to the “sea” as a place. The sea is defined as a recollection of individually lived moments (Bachelard 2007), where each memory marks its emotional arousal (McGaugh 2003). In other words, the process of belonging permeates realities which are produced in different contexts, levels, and relations, regardless of the time factor: (00: 53s)... I was born near the sea (pause), in Hastings. (...) I live in Lisbon because of that. (06: 05s) in Paris, when I was 18, I missed the sea (...) I only realised that when I was far from the sea!” (Plews 2016)<sup>4</sup>

This dive tends to represent more immersive narratives, in other words, narratives from deeper memories of something experienced—the (re)presentation of the personal biographical past, which holds a feeling of belonging and identity with the sea, in an intense way in the emotional aspect.

## 2. SOUND SOURCE: SENSORY

### INTERACTION SCENARIO

*SandBox* is performatively a listening box “which invites others to concentrate the entire body in the voice” (Barthes 2009) or in the different sound sources (conventional and unconventional). When previously manipulated, these sound fragments generate different narrative paths, or an appropriation of the initial context—of *plunging* in memory.

But in order to get the maximum interaction in the box, the listening is essential. Sound (in that context) is “directed and easily infected by other sounds and ma-

terialities it crosses..., sound brings them closer to their source of identity [...]; listening makes the plural singular, the multiple into individual, and the body becomes part of that sound.” (Pinto and Ribeiro 2011).

Accordingly, sound has a central function in the installation. Its ability to evoke emotions, especially through memory, turns *SandBox* into a space of dialogue that involves and integrates the interaction in multiple sensorial scenarios.

**Fig. 1**

Moment of interaction: *SandBox* exhibiton in the lobby of António Rosa Mendes Library—Campus de Gambelas, University of the Algarve (UAlg), in Faro, Portugal (December 2016).



### **3. SPACE AND TIME: (RE)TERRITORIALIZATION**

*SandBox* addresses some situations of interaction between space and time—overlaps of instants (Bachelard 2007)—which mark the path of the (re)territorialization of constructed (personal) experiences through the sound source of the “Sea” as a place.

This understanding of the narratives in *SandBox* is also beyond its physical space. Some interactors immerse in the box, but do not record their impressions. Instead, they simply mention what they felt during the experience, or emotionally demonstrate their experience.<sup>5</sup>

**Fig. 2**

Two moments of *SandBox* in Portuguese cities, Guimarães and Faro.



<sup>5</sup>

Some *SandBox* interactors (first prototype) felt intimidated by the use of the microphone when recording their voices. After this observation, the form of listening (before with speakers) as well as recording has been modified. Currently, a headset with built-in microphone is being used, so the interactors can listen and record their memories, impressions and feelings with more privacy.

### **4. BETWEEN TRACE AND MEMORIES — SOUND LANDSCAPES**

The sea smell is evidenced by the movement of the hands through the sand, which connects the tactile experience to the traces of sound expressions (noises, melodic fragments, music, voices, natural sounds). After this first moment, the interactors are invited to record their own memories—new sonic fragments—either by his own voice or by any sound narrative. Thus, fragments are (re)composed and sound landscapes are constituted by the interactors.

Fig. 3

*SandBox* before and after an interaction.



After this first moment, the interactor is invited to record his own memories and/or insert new sonic fragments, either by his own voice or by any other sound narrative (noises, whistles, onomatopoeias, song fragments, music, voices, natural sounds, among other possibilities).

## **4.2. Installation setup and operation In**

### **4.2.1. Setup**

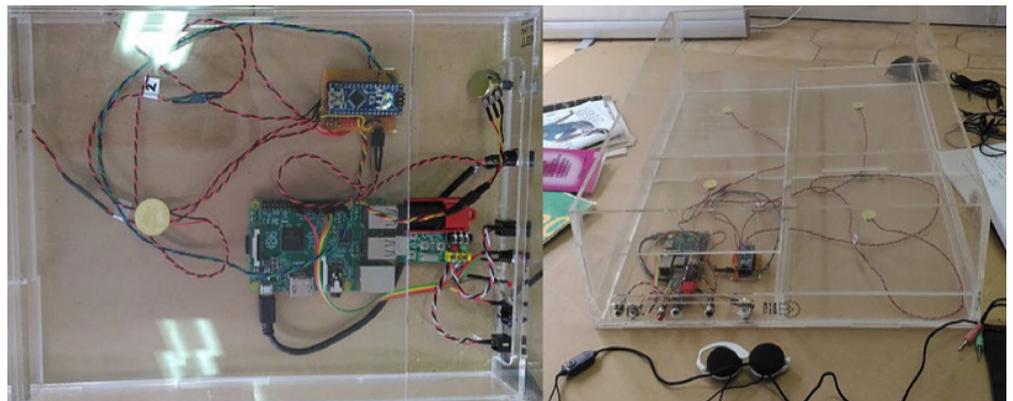
The installation is adaptable and can be assembled either indoors or outdoors. It is a 0.6 mm thick acrylic box, with dimensions of 60 cm length, 45 cm width and 15 cm height, divided into two compartments: at the (internal) base is an Arduino nano microcontroller board, a Raspberry Pi computer and an 8GB USB drive; On the outside of the base there are five I/O devices<sup>6</sup>—audio output, power on/off, recording switch, power supply, and sensors sensitization. In the upper part there is a platform divided in 4 movable trays (each one with one sensor) and a single sensor in the center (stop), which support the sand and the movement of the interactors. To listen, both speakers or headphones can be used, depending on the environment. To accommodate the acrylic box, a table with compatible dimensions is ideal. To connect the power source, one electrical plug is sufficient and, when required, an extension cord with at least 2 power outlets.

6

Input/Output

Fig. 4

*SandBox* Test at MILL—  
Makers In Little Lisbon  
(September 2016).



### **4.2.2. Operation**

All of the hardware that permits interaction with *SandBox*, including audio recording and reproduction, is located in the base of the box. Vibrations created by movement in the sand are detected by four piezoelectric elements that are measured by an Arduino Nano microcontroller. If there is sufficient vibration (as defined by an adjustable threshold) a pulse is sent from the Arduino to a Raspberry Pi Linux computer, which randomly selects and plays an audio recording

stored on a USB flash drive using OMXplayer. During audio playback, no other recordings are played; however, a push-button in the form of a rock lying in the sand permits the participant to stop the playback and continue interacting with the installation. An additional button on the exterior of the box, when pressed, signals to the Raspberry Pi to make a new 30s recording using arecord via the attached microphone, which is then added to the collection of recordings on the flash drive.

## **4. CONCLUSION**

*SandBox – Grains in Memory* is an active and continuous work in progress, always capable of getting new sound landscapes. It also continuously expands forms of experiencing identity relations with the sea as a place. Therefore, some preliminary results and experiences were described in this article, both about the technical production of the installation, and the immersive experiences of the interactors during its exhibitions.

Thus, *SandBox* is fulfilling its objectives as an experimental piece of work, adapting itself to each new experiential context and technical challenge. In the next stages of this project, we intend to expand our experiences with *SandBox* in order to experiment new identity references. Hence, new narratives will be collected from different people.

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