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## **STRESS APPROACH BY MEDIA ART**

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With a background in conceptual art and media art, and the relations between science and art, we tried to approach the concept of stress through art.

Stress is a recent problem of people in several countries, and could be caused by external factors, such as social pressure, or be derived from internal factors, such as the requirement that the subject puts himself. Stress had a negative impact at several organs of the human body, but heart is the main one.

Taking into account all of these aspects, and from photos of two drawings of the heart beating, was simulated the heartbeat, in order to produce a 2'30 media art film, using a setup program EDIUS, that integrate all the images and sounds planned to perform the stress.

Key-words: Media Art; Conceptual Art; Stress.

### **1. INTRODUCTION**

Media Art is a concept that has emerged in the '90s to describe projects that make use of emerging technologies and who care about the aesthetic possibilities of these tools

(Tribe & Jana, 2010), surpassing the movement of Video Art which had begun in the '60s (Martin, 2006).

At first, the art-based computers was a marginal field, but with the potential of new technologies has greatly increased the interest of artists for the use of computers and software in the production of visual art, especially the new generation of artists, allowing the conduct of visual art in a more creative and less expensive.

For a long time that art and science go hand intertwined, with the first great scientists in history also identified as artists such as Leonardo Da Vinci.

However, the increasing specialization of the various areas of knowledge led to the loss of a more holistic view of knowledge and a gradual separation between art and science. In line with Cartesian dualism, Snow (1960) to differentiate between science and art, as different cultures, opposite assumptions, and science and art seen as rational and emotional.

In recent years there have been moves to promote interdisciplinary and integration of scientific knowledge, allowing a broader and more comprehensive the complexity of phenomena and taking advantage of the various specific contributions of the various theories (Jesus & Lens, 2005).

And there are also many cases in modern history of scientists, including Nobel Prize winners in physiology or medicine, as in the case of Roger Guillemin, Salvadore Luria and Robert Holley, all born in the twentieth century, which also developed in the field of art works visual (Araújo-Jorge, 2004), and the creativity needed for scientific and artistic production that allows to bridge the gap between the two domains.

However, it is less common the attempt to transpose the artistic approach, on scientific topics studied.

Conceptual art possible, from the '60s, the expression of ideas or concepts through art, and art the concept and not the material object produced (Marzona, 2006).

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Stress was a concept that has emerged in the seventeenth century, under the engineering, to translate the pressure that the loads exerted on the bridges, which should be designed to withstand the stress caused. In the twentieth century there were several

definitions of stress in Psychology, and accept the perspective that considers the transactional stress situations occur when the subject makes an assessment of the demands it faces are greater than its resources to respond adequately or competent (Lazarus & Folkman, 1984). Thus, the pressure exerted by the requirement of the situation on the subject leads to a proportional voltage.

There are several symptoms that can arise in situations of stress, but increased heart rate is a major one being the heart of the body that reacts more readily to such situations (Serra, 2007).

There is a close relationship in the way of functioning of various body organs, as the result of activation of the sympathetic system that prepares the individual to respond to the situation that is perceived as stressful. In particular, the respiratory rate and heart rate have an almost direct, and somewhat faster heart rate as is the respiratory tract.

Stress can be caused by external factors such as social pressure, that is, the requirement placed by others on the subject, but can also be derived from internal factors, such as the requirement that the subject puts himself (Jesus , 2007).

In any case, stress is a subjective phenomenon, and the same situation cause stress symptoms in a subject and not in another. Moreover, the subject can manage the impact of potentially stressful situations that may or may not have on its own.

## **2. WEB3D GRAPHICS VISUALIZATION**

The 3D graphics technology has been growing to attend the increasing needs of the cinema, gaming industries and art, reaching the web browser through the use of plug-ins or html5.

One of the first solutions was VMRL97 which lately evolved to the standard X3D.

The later X3D is a standard defined through three ISO documents. ISO/IEC-19775 addresses the definition of the architecture and functionality; ISO/IEC-19776 defines the three different encodings; and ISO/IEC-19777 establishes the language-specific API.

X3D is a component based architecture with capability to extend objects individually allowing the composition of subsets with modular blocks. It includes capabilities such as geometric primitives like boxes, cones and spheres or surfaces defined by low-level

triangle definition, extrusion, elevation-grids and Bézier surfaces (NURBS). Another powerful characteristic of X3D is the Scene Access Interface (SAI) which provides scene control from a script embed in the scene it self or from an external application.

X3D obeys to a node structure, which is grouped into components when functionally related. There are 34 components combined at specific levels defining six profiles with nesting relations (see Figure 1). This structure has mechanisms such as subtree switching and level of detail proximity checks scenes are that are optimized to optimal rendering.

Designed for high compatibility with internet applications, X3D is optimal for interoperability with other XML based standards and formats.

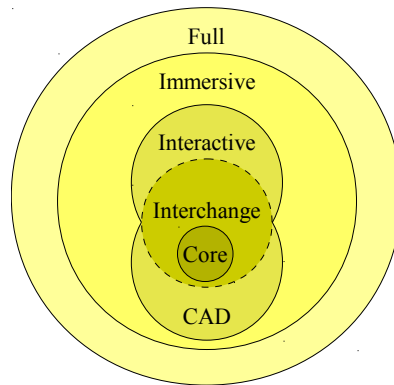


Figure 1: X3D profiles nesting (Daly & Brutzman, 2007).

### 3. FRAMEWORK

In a perspective and integrative conceptual art, the first author of this work has sought to illustrate the concept of stress through a variety of visual arts: photography, painting, photo-painting, sculpture, installation and drawing.

Now, the authors want to work with the concept of stress through the media art. To this end, it is used the design of the first author, entitled "Cardiac stress", with 0.42 x 0, 30m (see Figure 2).

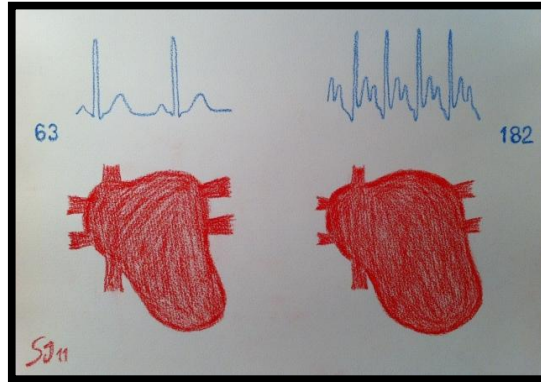


Figure 2: Drawing "Cardiac stress" (Jesus, 2011).

From photos of the two drawings of the heart was performed using the program “EDIUS” in order to simulate the heartbeat (see Figure 3).

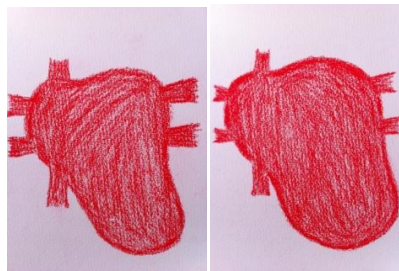


Figure 3: Photos used to mount on the heartbeat.

These images follow one another at a frequency of 63 beats per minute, accompanied by the sound of their heartbeats.

During the first minute is both a sound integrated supposedly slow breathing of the subject, reflecting the relationship between the rhythm of breathing and heartbeat. In the first minute, the same guy who are breathing, said so quiet, "That's being a day!", reflecting the influence that the attitude of the subject itself can have on your stress level. At a minute and fifteen, outside voice that arises concerns in a calm manner, "You've done what I asked you?", reflecting the influence of external factors, particularly other subjects, may have on the level of stress. The subject answer "I'm doing it", and the heart rate remained quiet during this period.

At one minute and forty, the same voice outside say, aggressively, "You've done what I asked you?", greatly increasing the breathing rate of the subject, as well as your heart rate. At two minutes, the subject referred, so puffy and irritated, "That's being a day!" continuing respiratory and cardiac rhythms to increase, reaching the 182 pulses.

At two minutes and fifteen, the subject scream "Ahhhh!", and the heart fails working, going to keep the noise, which reflects the situation of the subject's death, derived from the stress resulting from external pressure and the negative attitude of the subject.

All of this images and sounds planning were fulfil using the program "EDIUS" (see the images and sounds schedule at the Appendix).

In the future we intend to develop a web application, using X3D, that enables users using a computer, a tablet computer or a smart phone, that can deliver the same idea but from a perspective of interactive art, and the sounds made by someone outside of the public attending the presentation and picked up by a microphone. The way the user interacts with the computer in terms of the rate of respiration and how he says the sentences, will be reflected in the speed of heart rate from the projected computer image.

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