

## Chapter 5

# Perceptual Processes and Multisensoriality: Understanding Multimodal Art from Neuroscientific Concepts

**Rosangella Leote**

*Universidade Estadual Paulista (UNESP), Brazil*

### ABSTRACT

*Perception seems to be an overly discussed subject in theories of Art, giving us the impression that there is nothing new to add. So much research and so many conceptions have been developed on the subject. Nevertheless, many holes can be perceived in these theories with regard to the mental process that operates in the perception phenomena. We have chosen to look to neuroscience for possible answers to these holes. In this paper, based on the knowledge of Vilayanur S. Ramachandran and António Damásio, among others, we focus on that which we are emphasizing as “perceptual processes”. We will restrict ourselves herein to the perceptual processes of a multisensory nature that take place in the perceivers’ relationship with the artworks, which contain multimodal stimuli, promoted by physical and digital interfaces of an assistive nature. Said perceivers, however, are both people with severe motor and vocal disabilities as well as those without these restrictions.*

### WHY?

In this paper we present the evolution of a part of our research that is being developed within the research group under our coordination - GIIP<sup>1</sup> in one of its lines of research, namely “Physical and digital interfaces for the arts: from diffusion to inclusion”<sup>2</sup>.

The approach assumes the existence of poetic, not merely artistic, produced and/or perceived by people with special needs, but also by those who are “exempt” from this condition.

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We believe that the perceptual experience involves both the enjoyment and the making of Art by any person, despite the diversity of physical, emotional and cognitive qualities that individuals possess. Based on that, we demonstrate that it is the relationship between self-perception, stimulus and sensing that qualifies the “perceptual process”<sup>3</sup>.

Aspects of our perception are clearly important for the construction of our consciousness and hence of our world and understanding of Art.

As artists, our understanding of the perception phenomenon is important in many ways and for different reasons. To understand it, artist-researchers who objectively seek understanding come across and develop several methodologies, generally empirical in nature. Like them, we have followed a similar path based on a variety of fundamentals and reasons. Until now, our strategy has been to develop low-cost assistive interfaces that can be used by disabled and non-disabled people to develop and/or teach Arts.

The poetics, in our study, are those that present multisensoriality and multimodality. However, we seek to analyse and substantiate them through contributions from neuroscience. This contribution does not propose the exclusion of other analysis models. On the contrary, it aims to verify which contributions from neuroscience lead to a deeper understanding of perception, and can be associated with some of the better known theories for this purpose, used by the arts in general, namely, Semiotics and the Theory of Complex Systems. We have added phenomenology and Gestalt psychology to the scope of our work. Nevertheless, the relationship between theories is not discussed in this text, and the reason for this omission will be dealt with in this text.

In this study we favour those works qualifiable as artistic, i.e. aesthetic manifestations, in diverse poetics and produced by a multimodality of stimuli.

It became necessary for us to study neuroscience when we began trying to understand the processes taking place in the individual’s mind when his or her perception is triggered, so that they can be verified through brain mapping technologies such as, for example, magnetic resonance (fMRI) and tomography (PET scan).

Although no scientific field has as yet been able to shed light on the cerebral operation whose occurrence generates these mental processes, is it through neuroscience that we can come closest to the quality of these processes.

It is clear to us that multimodality leads to multisensoriality, but the latter varies according to the acuity of the perceiver’s natural sensors, or in consonance with the physical nature of the multimodal stimuli. We will later deal with the multimodal amplitude<sup>4</sup>.

The myth that external or internal stimulus is only understood, qualitatively, by only one specific meaning according to the nature of the channel, has been weakened. The perceptual process experience is a continuous one. We live because we perceive. By identifying certain events that we give emphasis to during a significant experience in our daily living, we are revealing world events that we were forced or decided to experiment, in varying intensities.

The stimuli provide elements that trigger consciousness of sensations, as explained by Damásio (2000), captured by the various senses in a simultaneous operation, in the construction of the brain map that enables the stimulus that is highlighted by the perceiver to be identified in each perceptual experience.

All perceptual processes occur selectively. But those whose selectivity can be easily tested in humans, through several assessment tests, are hearing, sight, smell and taste.

We are selective up to the limit of our core consciousness (Damásio: 2000, 2004 e 2011). There are many other perceptual states that occur in a manner that is unintelligible to the core consciousness, i.e.

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