

On Emotion: Exchanges Between Neurosciences and Literary Studies

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Abstract

Taking into consideration an intellectual atmosphere attentive to the interchanges between embodied cognition and literature, the objective of this paper is to introduce definitions, mechanisms, and functionalities of bodily reactions to human existence and the production of knowledge, based mainly on the investigations of the Portuguese neuroscientist Antonio Damasio. He has published several books and is one of the most influential researchers on the reciprocity among body, brain, mind, and situated experiences. By analyzing his investigations, it becomes possible to develop theoretical and analytical repertoires capable of contemplating emotion resulting from contact with literary fiction as relevant to their understanding.

Keywords: Antonio Damasio; Embodied cognition; Emotion; Literary theory.

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Sobre emoção: intercâmbios entre neurociências e estudos literários

Resumo

Levando em consideração uma atmosfera intelectual atenta aos intercâmbios entre cognição incorporada e literatura, o objetivo deste artigo é introduzir definições, mecanismos e funcionalidades das reações corporais para a existência humana e para a produção de conhecimento através, principalmente, das investigações do neurocientista português Antonio Damasio. Ele publicou inúmeros livros e se tornou um dos mais influentes pesquisadores sobre a relação recíproca entre corpo, cérebro, mente e experiências situadas. Pela análise de sua pesquisa, torna-se possível desenvolver repertórios teóricos e analíticos capazes de contemplar emoções resultantes do contato com ficções literárias como relevantes para o seu entendimento.

Palavras-chave: Antonio Damasio; cognição incorporada; emoção; teoria literária.

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Introduction

The exhibit *Reading Women*, produced by American artist Carrie Schneider, gathers photographs and videos of women—mostly her friends and artists—comfortably leaning on armchairs, chairs, and beds. They are reading books written by women in the familiar environment of their homes or studios. In contrast to the photos, the film installation, displayed on a large screen, allows us to observe readers' losing their initial concentration through slow gestures, visible in the eye's movement across the pages, half-smiles, discreet yawns, uneven breathing, and accelerated heartbeats.

Among the videos, I highlight “Megha reading Edith Wharton (*The House of Mirth*, 1905)”, for capturing her accelerated heartbeat, perceptible in the irregular rhythm of her torso while reading a book written more than a hundred years ago.

Carrie Schneider, graduated in Arts and Psychology, started her project curious to know the intellectual influences of her generation by observing her friends' book choices and the effects of reading on their bodies. By allowing them to read for roughly two hours, she could grasp fleeting moments of immersion, when the concentrated conscience yields to the power of imagination in apparently simple yet powerful unconscious gestures of women holding a book and turning pages.

The art critic Kendra Patrick accentuated the performative facet of Schneider's series because “the photographer's message is, ‘look around you,’ the performer's message is, ‘I am you’” (PATRICK, 2011). Such a characteristic is also present in the exhibit site, a university hall where students with books

and laptops are immersed in their knowledge journeys. The interaction between intellectual activity and bodily experience is striking, not only on the photographs and videos but equally all over the place.

The capturing of the visible impact of reading in the readers' bodies at the film installation reveals the emotional strength of this experience. It brings out into the open what is believed to happen only inside their heads. The preeminent Portuguese neuroscientist Antonio Damasio's investigations shed light on this relationship between intellectual activity and body affection. His proposals lead to the recognition of the influence of the body in activities previously seen as primarily rational and logical. In this sense, he offers guidance for building theoretical and analytical models interested in the performance of these emotions. Literary Studies, in particular, benefits from this orientation because a systematization and elaboration of the relationship between emotion and reason make it possible to expand the bases of the field. According to Heidrun Olinto (2009), although there has been a rising concern with emotional processes within the scope of scientific practice since the 1970s, this theoretical imagination still offers unequal results in overcoming the chasm between rationality and emotivity. There is a need for it to engage in a dialogue with fields dedicated to studying emotions and feelings (Cf. OLINTO, 2009, p. 164).

The objective of this paper, therefore, is to introduce definitions, mechanisms, and functionalities of bodily reactions to human existence and the production of knowledge, based mainly on the investigations of Antonio Damasio. He has published several books and is one of the most influential researchers on the reciprocity among body, brain, mind, and

situated experiences. By analyzing his investigations, it becomes possible to develop theoretical and analytical repertoires capable of contemplating the emotion resulting from contact with literary fiction as relevant to their understanding.

To achieve this goal, this paper takes into consideration Paul Armstrong's advice in *How Literature Plays with the Brain*. He states that an interchange between literature and neuroscience shouldn't reduce literary reading to a scientific realm. According to him, "each perspective has its uniquely defining strengths (and limitations), and one should no more want to privilege either to the exclusion of the other than one would want to use only one kind of instrument to solve every problem one came across" (ARMSTRONG, 2013, p. ix). This paper seeks to help literary scholars to become more competent interlocutors with neuroscience by recognizing its methods and approaches.

It is worth noticing that instead of exploring conscious feelings in academic research, this paper focuses on automatic body reactions. Reading *Women exhibit*, by capturing the readers' affective reactions in the moment of deep concentration and by revealing the affective potential of this activity, precisely encapsulates the interaction between body and intellectual activity, emotions, and reason, even without the conscious mind being explicit. The in-depth understanding of the importance of this interaction is evident from Damasio's perspective.

Antonio Damasio's Methods

The evaluation of Antonio Damasio's possible contributions to literary studies requires an understanding of neuroscience's main methods so that one can critically read his hypotheses. The

researcher of mental and psychotropic diseases Alain Ehrenberg (2009) defines neuroscience as a grouping of disciplines interested in knowing the brain in action by gathering social, cerebral, and mental knowledge. Rather than focusing on the biological functioning of the brain or mental phenomena, they integrate them to understand the human condition in society (EHRENBERG, 2009, p. 188). According to Ehrenberg, referring to the 2000 Nobel Prize winner in Physiology and Medicine Erik R. Kandel, while biology of the 20th century focused on “gene”, in the 21st century its focus is on “spirit” (p. 187). The technical advances that let us see the “brain in action” helped not only progress treatments of mental pathologies but also heralded the emergence of a biology of consciousness or spirit, which became subject to numerous laboratory experiments instead of metaphysical speculation (p. 188). Among the diverse interests of neurosciences, affective neurosciences have focused on comprehending the physiology of emotions from the analysis of their neural substrate and explaining human attitudes and characteristics (DAVIDSON; SUTTON, 1995, p. 217).

Regarding the neuroscientific research methods, Antonio Damasio (1990) describes the use of the lesion method, which compares the performance in experiments among patients with and without neurological disorders; electrophysiology, dedicated to the study of electrical properties in cells and tissues; and the dynamic image, which produces images of areas of the brain. Among these, Damasio favors the lesion method since it allows analyzing brain structures in vivo on tomography, magnetic resonance, and electroencephalogram images, as well as that method’s integration with data collected in interviews with patients and with the observation of compromised behaviors. It

is a method widely used in neurosciences in studies on vision, language, and memory, with significant advances due to recent technical developments.

In *The Feeling of What Happens* (1999), Damasio highlights the importance of reconstructing three-dimensionally the brains of living patients based on raw data while observing their behaviors. This advance allows the evaluation of changes in the activity of certain brain regions through positron emission tomography (or PET), in which images are created from blood and oxygen perfusion, and functional magnetic resonance imaging (or fMRI), which detects blood flow in mental activities. It is also possible to analyze changes in electrical conductance on the skin, on the scalp, or even on the surface of the brain during surgery. According to Damasio, a novel method alone is not enough to understand complex chains between brain functioning, private mind, and public behavior. However, such advances can come from dialogues with various fields dedicated to comprehending neuroanatomy and the function of the nervous system, as performed by neuroanatomists, neurophysiologists, neuropharmacologists, and experimental neurobiologists, who study molecular events inside nerve cells (DAMASIO, 1999).

By knowing these methods, one can realize that neuroscience is based on certain paradigms, which are variable in the face of technical developments and the nature of what is being investigated. Lesion analysis, for instance, requires a parameter that defines normal functioning and behavior. Nonetheless, the analysis of objective data on brain functioning, the measurement of chemical levels, and the measurement of electrical signals, in conjunction with the knowledge of bodily sensations obtained through self-observation and interviews, help clarify the

underlying definition of emotion in this field. This disregards the prevailing understanding, which relates them to subjective and personal experiences. When Damasio defines emotions as actions or movements, many of them public, that take place in face, voice, or behavior (DAMASIO, 2003), the focus becomes on changes in the functioning of the body and, subsequently, the mind and how they function for humans, thus making them apt for scientific study.

Emotions, Brain, and Mind in Damasio's research

As part of his research, Damasio has published articles that relate philosophical reflections with results from scientific experiments. He believes that the Humanities pose important questions regarding the role of emotions in human life. It is his first book, *Descartes' Error* (1994), which presents the striking hypothesis, the somatic marker hypothesis, that emotion plays an integral role in reasoning and can assist instead of necessarily disrupting it (DAMASIO, 1994). By replacing Descartes' aphorism "I think, therefore I am" with "I feel, therefore I am", Damasio emphasizes the reciprocity between emotional and rational processes. He not only undoes a hierarchy that places reason at a higher level than emotion but also demonstrates the importance of emotions for human livelihood. Phineas Gage, a survivor of a devastating accident that damaged a significant portion of his brain and caused him to have difficulties making decisions, provides one of the most compelling examples of this hypothesis. The fact that Gage was unable to maintain social commitments and make choices wasn't the result of a compromised area of the brain responsible for logical reasoning

since those areas were intact following the accident. In his case, the damage caused to the prefrontal cortex of the two hemispheres of the brain, on the ventral and internal surfaces, has impaired his ability to feel emotions.

Damasio defines emotion as the direct perception of the body, i.e., when the functioning of the body is perceived as altered in contact with stimuli. Contact with real or imagined events or objects causes uncontrollable changes in the body, and the brain maps these events to assist in quick decision-making. Rather than being subjective, personal, and private, emotion is an automatic response to a stimulus that prepares one to deal effectively with a situation. As a result, our bodies serve as a reference for understanding the world. Damasio viewed Descartes' error as dissociating the mind from the body, treating the body as secondary and unimportant. Correcting this error can enhance our understanding of human conflict, allowing us to examine the relationship between biology and culture more effectively (p. 10).

His book *The Feeling of What Happens: Body and Emotion in the Making of Consciousness* (1999) sets out Damasio's hypothesis about the relationship between body and mind through biological processes. He focuses on the emergence of consciousness and explains how an organism that feels emotion could become aware of that cerebral substrate of feeling.

Damasio aims to explain consciousness via how human brains engender mental patterns, the "images of an object." He defines objects as entities as diverse as a person, a place, a melody, a toothache, or a state of ecstasy, and images as a mental pattern in any sensory modality, such as a sound image, a tactile image, or the image of a state of well-being. According to him,

those images communicate both the characteristics of objects and the affective reactions to them, as well as the perception of the individual's consciousness in the act of producing knowledge. The neurobiology of consciousness, therefore, faces two issues: "how the movie-in-the-brain is generated" and "how the brain also generates the sense that there is an owner and observer for that movie" (DAMASIO, 1999, p. 11). By emphasizing the interaction between object and organism, Damasio recognizes some asymmetry in the biology of consciousness since parts of the brain map the surrounding world while others focus on the very state of the organism that observes the world along with the changes that the world provokes in the organism. To him, consciousness arises precisely through these mechanisms of representation of the organism being itself altered by an object.

Emotions, which are chemical and neural reactions of the body in response to an object, are unconscious, and uncontrollable, although each culture has its own means of inducing a certain emotion. Once they prepare an organism for a specific situation, real or imagined, they become bioregulatory mechanisms, regardless of whether an individual is conscious of their existence. Since not always an organism is aware of its emotions—for instance, a state of anxiety or restlessness can be experienced before this fact is known—Damasio distinguishes three intertwined stages: "a state of emotion, which can be triggered and executed non-consciously; a state of feeling, which can be represented non-consciously, and a state of feeling made conscious, i.e., known to the organism having both emotion and feeling" (DAMASIO, 1999, p. 37).

Therefore, Damasio states that any subjective experience can be scientifically accessed since it depends on a sufficient

number of variables liable to observation and experimental formulation. In addition, subjective observations, such as introspective perceptions, can inspire objective experimentation and subjective experiences can be explained from the viewpoint of available scientific knowledge. Subjectivity, hence, is the result of complex biological processes, based on the integration of the relationship between the observer and the observed object, self-observation of the subject's changes, implicit memories, and autobiographical memories. To Damasio, there is no sovereign subject, totally aware and rational since its relationship with the world depends on the interaction of affective, rational, and environmental aspects as well as biological and cultural markers. Damasio concludes that "consciousness begins as a feeling" (p. 394) as it is necessary for a body mapping its changes so that it can see itself as present and aware of a given situation.

His book *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain* (2003) explains exclusively the functioning of emotion and feeling. Based on neuroimaging techniques, methods of neurochemistry, and the observation of social behavior, its objective is to create images of the anatomy and activity of the human brain to elucidate the web of mechanisms that allow our thoughts to trigger emotional states and feelings.

He steps up the distinguishing between emotion and feeling by explaining that while the former are actions or movements in the body, which can be visible, like a shiver, or invisible to the naked eye, such as increased blood flow; feelings are mental images necessarily imperceptible. In his definition, "emotions play out in the theater of the body. Feelings play out in the theater of the mind" (DAMASIO, 2003, p. 28). Both emotions and feelings are fundamental mechanisms of assessing the surrounding environment so that an organism can act accordingly.

When it comes to emotions' classification, lassitude and enthusiasm are referred to as background emotions. In addition to subtle body signs, they result from the simultaneous activation of various regulatory processes in the body, such as limb movements and changes in prosody or voice rhythm. Examples of primary or basic emotions are fear, anger, disgust, and surprise, whose fomenters are generally shared by members of a community. Although Damasio differentiates innate from acquired emotions, both of them are related to adaptive corrections of the body's state.

Emotions become feelings by means of a process that spreads laterally and involves parallel chains of brain structures that relate the perception of the state of a body in contact with a stimulus and consonant themes via the memory of related stimuli. These additional stimuli can lead to a change in the emotion, causing the continuation and intensity of the emotional state to go under the development of the cognitive process. Feelings cannot be considered passive perceptions because they recruit the body dynamically and repeatedly, for several seconds or minutes, corresponding to active variations in perception. It is noteworthy that feelings do not necessarily have to be linked to a real state of the body, but rather to brain maps of the state of the body.

According to the neuroscientist, every life experience is accompanied by some degree of emotion, i.e., emotions, whether positive or negative, are mandatory components in our social experiences (p. 157). Moreover, they connect individuals to their surrounding environment, which can lead up to generosity or group collaboration (p. 169). Damasio asserts that body and mind are attributes of the same substance by referring to

Spinoza's affirmation that "the human mind is the idea of the human body" (p. 12). In other words, there is only a mind in the presence of a body, because the mind comes from brain maps of the state of a body.

His book *The Strange Order of Things: Life, Feeling, and the Making of Cultures* (2018) offers an explanatory narrative of how single-celled beings evolved until they were able to develop complex cultures via the centrality of emotions and feelings. The strange order of things is, therefore, to credit emotions and feelings as the spark that motivates, monitors, and negotiates all human cultural efforts. This is contrary to the expectation that such efforts are confined only to intellect, sociability, and language. To Damasio, all these aspects were critical, but "something else was required to jump-start the saga of human cultures. That something else was a motive. I am referring specifically to feelings, from pain and suffering to well-being and pleasure" (DAMASIO, 2018, p. 4).

Given the primary role of emotions and feelings as life regulators, their intensity expresses the deficient or proper functioning of an organism, the so-called homeostasis. Homeostasis is the regulation of life within a range that is compatible with survival as well as conducive to flourishing, which means a projection of life into the future of an organism or species (p. 25). Since homeostatic processes are variable, an organism can consciously and deliberately create ways to regulate life. Human cultures, in this perspective, are understood as manifestations of this creative variety of homeostasis (p. 46). In other words, emotions have assessed the functioning of an organism and motivated intellectual inventions—such as the arts, philosophical topics, religious beliefs, moral rules,

economic institutions, technology, and science—to improve its livelihood. The neural system, therefore, begins as an assistant to the body, i.e., as a coordinator of life in biologically complex beings, which enables humans to generate images that represent the world around them and the internal world of each one. (p. 75).

To Damasio, all images of the outside world are processed in a nearly parallel fashion with the affective responses that these same images produced by acting elsewhere in the brain – in specific nuclei of the brain stem and of the cerebral cortices that are related to body state representation, such as the insular region. This means that our brains are busy not only mapping and integrating varied external sensory sources but simultaneously mapping and integrating internal spaces, a process whose results are none other than feelings (cf.: DAMASIO, 2018, p. 89).

In that case, the human mind records images and relates them to other mental images, and the quality of this “recording” depends on the attention given to the image in the first place as well as how much emotion and feeling were generated transversely in the flow of the mind (p 93). The neuroscientist claims that “most emotions and feelings are essential to power the intellectual and creative process” (p. 101).

Human complexity, Damasio explains, started with emotions because they led humans to focus on certain objectives, which enhanced their intelligence and refined it to result in the human cultural mind. Emotions and reason are inseparable, and their role is to keep human alive (cf.: p. 191). As Damasio concludes, “a life not felt would have needed no cure. A life felt but not examined would not have been curable. Feelings launched and have helped navigate a thousand intellectual ships” (p. 233).

Damasio's definition of emotion corresponds to the affective reactions captured in the Reading Women exhibit since each reader experimented changes in the state of their bodies—without having control or even awareness of them—through contact with the books. Those visible alterations, for instance, in the rhythm of breath and heartbeat as a result of the act of reading, rather than secondary, compose the literary narrative understanding¹. Just as Damasio's model integrates body, mind, and environment for the comprehension of human developments, literary fiction can be understood through this perspective. Along with providing insight into human behavior, Damasio's research also provides insight into how readers decode letters. Nonetheless, in addition to understanding the role of emotion in rationality, it is also necessary to study the factors involved in these affective processes in greater detail.

The Four Aspects of Emotions

Emotional responses are not only related to logical reasoning, but also to the multitude of factors that contribute to these responses to subjective experiences, and it is important to learn what causes them.

As mentioned before, it is a competent stimulus that triggers bodily responses. As was the case in Reading Women's exhibit, which captured how the readers' bodies underwent changes as a result of their books functioning as a competent stimulus. According to Fredrik Tygstrup (2014), emotions emerge from a relationship between a subject and an external event or phenomenon. Because of it, any analysis focused exclusively on

¹ Jenefer Robinson's book *Deeper than reason: emotion and its role in literature, music, and art* (2005) explores this hypothesis by pointing out the importance of affective responses in contact with literary fictions.

the psyche should shift to the situation in which contact was established. In *Affective Spaces* (2014), he also emphasizes the complex composition of material elements, social scripts, and protocols that articulate volitional, imaginary expressions and individualized manifestations of emotions (TYGSTRUP, 2014, p. 169).

According to Damasio, the body and brain are inextricably integrated through neural systems, that link the brain to practically all parts of the body, and through biochemical changes via hormones and peptides, which are carried through the bloodstream (DAMASIO, 2003). For this reason, the experience of emotions is not an illusory mental quality associated with an object, but the direct perception of a specific landscape: the landscape of the body affected by a stimulus. Damasio highlights that the structures necessary for the formation of the “maps of the body” in the brain influence not only the mapping but are caused by signals from the body and other brain structures.

Jesse Prinz defined emotions in *Gut Reactions: A Perceptual Theory of Emotion* (2004) as inner states that manifest in response to bodily reactions. He has dismissed changes in the body as essential to emotional responses because such emotions can come without real changes in the body as they can in imagined situations (cf.: PRINZ, 2004, p. 242). Nevertheless, these emotions still rely on bodily engagement, since one is simulating body states as if the imagined event occurred. Based on this, Damasio classifies this simulation grounded on imagined situations as an “as-if body loop”, which occurs when bodily reactions are experienced from mental states and not from experience with real events. This as-if body loop, therefore,

emerges when reactions to stimuli start in the mind, changing brain states and informing the body. It differs from the “body-loop”, which begins with changes in the body that alter the brain and the mind.

In the case of the as-if body loop, the simulation of a body state can be beneficial because it provides faster and more effective reactions, allows energy savings, and reduced time in processing a certain state. This mechanism also contributes to the understanding of other people’s actions, since they provide a simulation of their reactions. This mechanism may be of interest to literary studies because reactions to literature start in the mind—in the form of ideas and thoughts during this interaction—yet stimulate bodily reactions. In a nutshell, the so-called body-loop occurs when the brain coordinates the physiological states of the body, creating a map of it. On the other hand, in the case of the as-if body loop, the mind can simulate these maps of body states as if bodily changes had in fact occurred (DAMASIO, 1999). Contrary to Prinz’s criticism, the Portuguese neuroscientist has argued that emotions always end up being felt in the flesh (DAMASIO, 1994 Body reactions from contact with objects or situations, whether they can be simulated or not, are essential because they enable us to react faster when faced with competent stimuli.

The so-called interior constructions are also an influential factor in the rise of emotions. For instance, a prolonged contemplation of a painting provokes several emotions even though the stimulus doesn’t change. Due to a loop activated by the competent stimuli, an observer experiences new perception via previous emotional experiences, including “its object, context, history, personal association, and so on” (HOGAN, 2011, p.

54). In this context, emotions are forms of engagement with a stimulus based on previous experiences that are recollected and influence how it is perceived.

Those previous experiences permit emotion and feeling to be classified into positive and negative valences (PRINZ, 2004). Given the fact that a positive valence reinforces contact with a stimulus while a negative one undermines such contact, this definition is attuned to Damasio's proposals once emotions help to regulate life by helping to direct our actions. Due to this characteristic, Prinz has defined emotions as "embodied appraisals" (p. 116), that is, forms of mental representations that involve the body and evaluate stimulus.

The aforementioned four factors—competent stimuli, body reactions, internal constructions, and valence—have encouraged researchers to reconsider their comprehension of emotions and feelings as well as their importance to Literary Studies. It is worth noticing that, instead of arising spontaneously from an individual, emotions require a competent stimulus that affects a body's functioning. Body reactions, therefore, are a form of assessment that helps one to respond quickly and adequately to that stimulus. There are also cultural and social aspects that influence how one deals with their body. Because emotions provide an assessment of a literary text, they do not undermine literary analyses. It is precisely their complexity that allows literary analyses to benefit from an awareness of body reactions.

Final Remarks

Literary studies have long recognized the role of affections and emotions in the act of reading, whether for the pleasure of

reading (BARTHES, 1987) or their performative (ZUMTHOR, 2000) and cathartic capacity, even claiming the replacement of hermeneutics by an “erotic” of art (cf.: SONTAG, 1987). Since the 1990s, numerous studies in the sciences of cognition and neuroscience have encouraged researchers to explore the cognitive potential of affections, replacing a dichotomous view between emotion and reason, subjectivity and objectivity, and body and mind. Antonio Damasio’s hard-hitting explanation of emotions, however, allows us to legitimize the importance of considering bodily reactions in cognitive processes as well as helps us to take advantage of emotional responses in our field. The book *Literatura e emoções: a função hermenêutica dos afetos*, by Leonor Simas-Almeida is an example of how this study has been fruitful. Simas-Almeida’s objective is to show multiple critical possibilities offered by a theoretical approach centered on the literary construction of emotions² (SIMAS-ALMEIDA, 2019). Although there is this current intellectual atmosphere, as Paul Armstrong (2019) points out, a paradigmatic shift is still urgently necessary in how literature is examined, as basic concepts of narratology cannot account for discoveries about how the brain reads and interprets literature. A deeper understanding of the way emotions are regulated is essential to the contemporary study of literature, and this can be achieved through the intersection of neuroscience and literary studies.

Antonio Damasio’s research has shown, from multiple perspectives, the importance of emotions in logical reasoning, livelihood, and even human culture. As he has argued, our brain knows more than the mind reveals, meaning that the world is not only interpreted by the conscious mind (DAMASIO, 1999).

² A detailed review is available at <https://periodicos.ufmg.br/index.php/aletria/article/view/23634>.

In reality, emotions are integral to the knowledge we produce about the world, they are “the hidden unrecognized presences at the cultural conferences table. Everyone in the room senses their presence, but with few exceptions, no one talks to them. They are not addressed by name” (DAMASIO, 2018, p. 16). Taking this into account, the corporal reactions experienced by the readers in the Reading Women exhibit are evaluative responses to the book they are reading and can be integrated into literary analyses.

References

ARMSTRONG, Paul. **How Literature Plays with the Brain: The Neuroscience of Reading and Art**. Baltimore: John Hopkins Press, 2013.

BARTHES, Roland. **O prazer do texto**. São Paulo: Editora Perspectiva, 1987.

DAMASIO, Antonio. **Looking for Spinoza: Joy, Sorrow, and the Feeling Brain**. Orlando: Harcourt, 2003.

DAMASIO, Antonio. **The Feeling of What Happens: Body and Emotion in the Making of Consciousness**. New York, London: Harcourt Brace & Company, 1999.

DAMASIO, Antonio. **Descartes' Error**. New York: G.P. Putnam's Sons, 1994.

DAMASIO, Antonio. Introduction: Of Minds and Brains. **Seminars in Neuroscience: The Neurobiology of Mind**, n. 4, v. 2, 1990, p. 245-248.

DAVIDSON, Richard; SUTTON, Steven. Affective Neuroscience: The Emergence of a Discipline. **Current Opinion in Neurobiology**, n. 5, 1995, p. 217-224.

EHRENBERG, Alain. **O sujeito cerebral**. Psicologia clínica, n. 21, v. 1, 2009, p. 187-213. HOGAN, Patrick. **Affective Narratology: The Emotional Structure of Stories**. Lincoln, London: University of Nebraska Press, 2011.

OLINTO, Heidrun Krieger. A economia das emoções na crítica e teoria da Literatura. **Literatura e Crítica**. Rio de Janeiro: 7 Letras, 2009, p.148-165.

PATRICK, Kendra. Carrie Schneider's Reading Women. **Turbulence**. February 19th, 2013. Available at <http://turbulenceartproject.com/post/60300842565/from-the-inside-carrie-schneider-there-is-an>.

PRINZ, Jesse. **Gut Reactions: A Perceptual Theory of Emotion**. Oxford: Oxford University Press, 2004.

SCHNEIDER, Carrie. Megha Reading Edith Wharton (The House of Mirth, 1905). (2018). [Video HD] Providence: Granoff Center, 2016.

SIMAS-ALMEIDA, Leonor. **Literatura e emoções: a função hermenêutica dos afetos**. Coimbra: Imprensa Universitária de Coimbra, 2019. DOI: <https://doi.org/10.14195/978-989-26-1618-6>.

SONTAG, Susan. **Contra a interpretação**. Contra a interpretação. Porto Alegre: L&PM, 1987. p. 11-23.

TYGSTRUP, Frederik. Affective Spaces. In: OLINTO, Heidrun; SCHØLLHAMMER, Karl Erik (eds.). **Cenários Contemporâneos de Escrita**. Rio de Janeiro: 7Letras, 2014, p. 166-184.

ZUMTHOR, Paul. **Performance, recepção, leitura**. Tradução de Jerusa Pires Ferreira e Suely Fenerich. São Paulo: EDUC, 2000.