

Mind the Text!  
Neurohermeneutics  
for Suspicious Readers



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By

Renata Gambino & Grazia Pulvirenti

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To Augusta, the Pharaoh, and the budding sprouts, i.e.  
the two ends of the *Ladder of Ages*.  
(To grasp the significance of this dedication, please  
read the whole book. Slowly!)

And as imagination bodies forth  
The forms of things unknown, the poet's pen  
Turns them to shapes and gives to airy nothing  
A local habitation and a name.  
Shakespeare, *A Midsummer Night's Dream*  
Act V, Scene 1, 1844–1846

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## PREFACE

In 2005, the co-authors of this book, both Italian scholars specialised in German Studies, decided to participate in a conference titled “Image and Imagination” organised by Bernd Huppau and Christoph Wulf in New York. What initially captured our attention was the epigraph that prefaced the program: “What happens when one closes the eyes? One does not stop seeing. What one now sees is not related to the eyes”.<sup>1</sup> These lines presented a compelling connection to our expertise and interests, particularly as we were then immersed in exploring the concept of imagination within early German Romanticism.

Furthermore, the program featured an impressive line-up of highly transdisciplinary presentations. It was a novel experience for both of us to witness neuroscientists, psychologists, robotic experts, mathematicians, and computer scientists from various parts of the world engaging in discussions alongside video artists, philosophers, anthropologists, and literary scholars. This gathering proved to be not only inspiring but also instigated a profound shift in our approach to interpreting literary texts and artworks in a broader sense.

What became immediately evident was the endeavour to understand and interpret the human mind and its manifestations. Although this assertion may appear straightforward, the diversity in strategies, tools, epistemic procedures, and terminologies across different disciplines presented a unique challenge. The history associated with each discipline further contributed to the complex nature of this transdisciplinary engagement. It resembled the construction of an epistemic Tower of Babel, where all participants diligently worked towards a common goal but employed distinct tools and diverse terminologies. This simultaneity of excitement and frustration marked the inception of a new era, particularly within the humanities.

The conference was part of a ground-breaking epistemic shift known as the “neuro turn,” which also aligned with the “biocultural turn” introduced by

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<sup>1</sup> See the conference announcement in ArtHist.Net “Image and Imagination. International Conference”. New York University 13-15 October 2005. [https://arthist.net/archive/27609/lang=en\\_US](https://arthist.net/archive/27609/lang=en_US) [Retrieved on 21.2.2024]

anthropologists John Tooby and Irvan De Vore in a 1987 article, thereby shaping a new intellectual history that gained significance over the past two decades (see Wojciehowski/Gallese, 2018, 9-22). The epistemic paradigms of the preceding decades were embedded within a system of “two cultures”, introduced by the scientist and novelist Charles Percy Snow in a 1959 lecture and book, which traditionally separated the sciences from the humanities in a seemingly irreconcilable manner. However, this framework came to be subjected to scrutiny and re-evaluation.

This cultural divide, i.e. the contrast between the “hard” and “soft” sciences, endured for an extended period. It was humorously delineated by Chris Frith in his book *Making up the Mind: How the Brain Creates our Mental World* (2005), which also highlighted the still existing metaphorical difference between the “brain” (referring to the tangible organ, the “wet part”) and the “mind” (referring to the invisible activities of the organ). The distinction inherently suggested a hierarchy and profound variance in epistemological perspectives: the “hard” sciences, relying on quantitative measurements, are objective (adopting a “third person” perspective), while the “soft” sciences, relying on qualitative assessments, are subjective (adopting a “first person” perspective).

Many researchers actively sought meaningful connections and collaboration across literary studies, anthropology, philosophy, linguistics, poetics, art history, psychology, biology, and the most recent cognitive and neuroscientific studies. During the nineties of the past century, art began to be regarded as a highly representative manifestation of the “mindbrain”, a term combining Frith’s distinction between the “brain” and the “mind”, vividly showcasing the cognitive processes that underlie aesthetic experiences. This was particularly evident in the acts of viewing artworks and reading literature, respectively, introduced by neurobiologist Semir Zeki (1999) and cognitive scientist Mark Turner (1998).

Zeki’s “neuroaesthetics” marked a pivotal stride in our transdisciplinary development: we drew inspiration from his theories and the privilege of engaging with him in discussions, through which he has honoured us with guidance and friendship. Through the exploration of his ground-breaking works, *Inner Vision: An Exploration of Art and the Brain* (1999) and *Splendors and Miseries of the Brain: Love, Creativity, and the Quest for Human Happiness* (2009), we gained insights into the processes of perceiving artworks and how comprehending such processes is enhanced by considering the intricate receptive and responsive system of the human being, grounded in neurocognitive activations.

Our research practice underwent further development upon encountering Turner's theory elucidated in *The Literary Mind* (1998) and through numerous meetings we attended and discussions we had with him. Turner claims that human thought is rooted in narration, transcending the traditional distinction between everyday thought, associated with actions in the world, and narrative-literary thought, associated with counterfactual worlds. As he anticipated in 1998, cognitive science was ready to acknowledge the essential role of studying literature for understanding the processes of human cognition. It was evident that understanding the cognitive processes involved in the creation and reception of literature could, in turn, contribute to cognitive science.

Consequently, we became acutely aware that the arts are intricately embedded in biocultural discourse and hold a central position in the scientific exploration of the mindbrain and its processes. It progressively appeared to us inadequate to deal with any specific aesthetic phenomenon without considering the complexity in which it is rooted, namely the connection between the brain and its activity and all that this activity has produced and is nourished by—the body, the emotions, the environment, culture, society, and history.

Despite staunch resistance from traditionalist thinkers, many humanists cautiously began exploring the vast and intricate realm of transdisciplinarity bridging the humanities and neurocognitive studies, facing criticism primarily related to the potential loss of disciplinary identity and the inevitable lack of expertise in multiple disciplines. Simultaneously, scientists initiated a diverse range of investigations into the production of art, the reception of artistic assets, the brain-body interface in relation to artworks, and the markers for aesthetic experience. This emerging transdisciplinary avenue focused on the relationship between the arts and the neurocognitive processes that underlie the aesthetic and artistic experiences afforded by the arts.

The profound transformation in epistemic paradigms, specifically in understanding the human mindbrain and its cultural manifestations, particularly the arts, was mainly due to technological advancements in brain imaging. This breakthrough allowed a more profound examination of the brain's functioning. The ability to observe increased activity through increased blood flow in specific brain regions presented an exciting challenge, leading researchers to seek “neural correlates”—identifying brain regions corresponding to specific functions or responding to specific tasks.

Furthermore, the discovery of “mirror neurons” in 1992 by Giacomo Rizzolatti and his team in Parma generated immediate interest and sparked considerable debate among scientists and scholars of different disciplines. Through subsequent transdisciplinary efforts spearheaded by neuroscientist Vittorio Gallese, this neuroscientific discovery emerged as a transformative “Copernican revolution”. According to Gallese, this paradigm shift redefined cognition as “motor cognition” based on a shared sensorimotor system that governs both the phenomena of social intersubjectivity and empathy as rooted in the processes of intercorporeality and embodied simulation (2000, 2003, 2004, 2007, 2011, 2014, 2016).

The concept of embodied simulation partially draws back to the concept of the “embodied mind”, which was initially introduced in phenomenological philosophy through pioneering theories by Francisco Varela, Evan Thompson, and Eleanor Rosch in 1992. Paradigms of embodiment presented an entirely novel perspective on the interplay between the mindbrain and the body within cognitive processes. They recognised cognition as co-dependent on bodily perception and enaction in continuous interaction with the environment and others. Action and agency began to be regarded as the very mechanisms for acquiring knowledge and having aesthetic experiences. Indeed, Vittorio Gallese conducted ground-breaking studies on sensorimotor activation, exploring some of the still unsolved questions regarding art reception. This investigation primarily centred on the processes of empathy as based on embodied simulation. It was applied in a study on responses to abstract art conducted by a team of neuroscientists and art historian David Freedberg, published in 2012 in *Frontiers in Neuroscience*. The study supported Gallese and Freedberg’s hypothesis regarding the role of embodied simulation in empathic responses during the observation of works of art, enabling an understanding of the intentional and emotional contents of the works, as they had already argued in the article “Motion, Emotion and Empathy in Aesthetic Experience” (2007).

These discoveries initiated a shift in our approach to literary texts, sparking curiosity and the awareness that we were entering a foreign and intricate domain. Motivated by the desire to delve deeper into transdisciplinary research, we decided to engage directly with scholars involved in this domain. So, in 2010, we undertook a challenging initiative: establishing the network NeuroHumanities Studies ([www.neurohumanitiestudies.eu](http://www.neurohumanitiestudies.eu)). Our primary goal was to create a platform that could unite scientists, humanists, and students with a shared ambition: exploring the arts and literature as intricate expressions of the mindbrain, thus enabling the transmission of meaning to others. Our curiosity was warmly welcomed by the scientists

whom we had the opportunity to collaborate with and involve in our project; however, it was met with disdain and criticism from scholars in our own field of German studies, except for a handful of far-sighted colleagues. Additionally, it faced the challenges associated with the absence of any dedicated terminologies and dedicated journals, which all new transdisciplinary studies must confront.

In response to these challenges, in 2014, we decided to initiate a series of meetings known as the “NeuroHumanities Dialogues”. This involved inviting distinguished scholars from the neurosciences (Anjan Chatterjee, Vittorio Gallese, Semir Zeki) to engage in discussions with cognitive linguists (Gerard Steen, Mark Turner), empirical psychologists (Arthur M. Jacobs, Helmut Leder), and humanists (Michael Burke, Monika Fludernik, Patrick Colm Hogan, Alan Richardson, Pierluigi Sacco). The pandemic finally interrupted in 2019 the annual international conference. Each Dialogue was devoted to a specific theme that engaged both epistemic perspectives, covering topics such as Beauty, Metaphors, Imagination, Space and Time, among others. The initiative was highly successful, allowing all invited scholars and us to start genuine collaborative research.

Beginning in 2014, we took part in a European COST action named E-READ (<https://ereadcost.eu/>), which aimed to explore the differences in response between reading on paper and on digital devices. Within this initiative, we became involved in a working group led by Arthur Jacobs at the D.I.N.E. Lab of the Freie Universität Berlin. Our objective was to gather empirical data to elucidate disparities in perceptual and emotional engagement when reading prose or poetry. What ensued were two years of intensive collaboration and significant enrichment for us, which opened new perspectives on the possibilities of overcoming unresolved questions by exchanging knowledge and engaging in dialogue based on mutual respect across disciplines. Our primary achievement was the potential to effectively connect qualitative and quantitative analyses in order to enhance our comprehension of how particular textual features elicit distinct responses in terms of emotional and imaginative engagement from readers. This collaborative investigation into the reading process unveiled facets of the text that had not been highlighted previously; some outcomes of this collaboration will be elucidated in this book with regard to the Foregrounding Assessment Matrix (FAM).

During our exploration, we have held the underlying conviction that, despite the inherently unpredictable and individual nature of the act of reading—conceived as a unified experience involving the interplay between the

author, the text, and the reader—it is feasible to consider specific textual strategies as triggering creative processes of the imagination and evoking aesthetic emotions.

Over the past years, we have developed and fine-tuned our theories within the neurohermeneutic approach outlined in this book. It builds on the concept of hermeneutics, which is intended as the practice of interpreting human experience manifesting itself in language and the arts. The term neurohermeneutics joins hermeneutics to neuro-cognitive research with regard to the assumption that literary features derive from and prompt specific mindbrain processes. Its objective is to provide fresh insights into the act of reading literary texts, intended both as a complex mindbrain process and as an interpretative act. Our examination of literary texts, employing both qualitative and quantitative methods, has yielded two significant overall implications. First, literariness necessitates a distinct mode of reading. Second, the aesthetic pleasure derived from reading a literary text is heightened by adopting a “suspicious stance”.

Regarding the first point, we found it useful to bridge traditional research on the reader’s response with empirical studies on the reading act, such as those regarding different reading routes as responding to specific textual features. This premise led us to hypothesise that adopting specific reading strategies may heighten common readers’ emotional and imaginative engagement, leading to a more profound aesthetic appreciation of the text. These strategies include the adoption of a slower route of reading to activate the imagination and the creation of counterfactual worlds. In opposition to the mainstream claim that fast reading is a skilful practice geared towards skimming and processing information, we propose that the distinctive features of a literary text should be seen as affordances that prompt the reader to engage in a slower reading pace. Contrary to a faster route, the slower route intensifies the engagement of the reader’s imaginative and emotional faculties, enhancing the aesthetic response. We advocate for further empirical investigations into the conditions for which and the speed at which our faculties are activated to encourage a complex, embodied, emotional, and imaginative counterfactual experience instead of encouraging the mere acquisition of information. Our main goal is to inspire new ways of appreciating the act of reading literature as a fully engaging, emotional, and imaginative process.

Concerning the second point, we propose that more skilled readers’ cognitive, imaginative, and emotional engagement can be heightened, with a deeper understanding and an innovative interpretation of literary texts, by

adopting what we will introduce as a “suspicious stance”. This stance involves developing an awareness of the stylistic strategies, semantic ambiguities, and emotional triggers embedded within a text. In contrast to traditional literary analysis, we contend that investigating these elements with regard to their cognitive effectiveness plays a crucial role in discerning hidden and latent meanings that may subtly guide the readers’ interpretation of the textual world.

By addressing both of these issues—acquiring more effective reading strategies and adopting a suspicious interpretative stance—this book aims to appeal to both common readers and scholars and to contribute to two main processes: the overarching challenges prevalent in our societies, namely to contrast lexical impoverishment and the escalating issue of functional illiteracy. Furthermore, it endeavours to nurture a fresh cohort of interpreters who approach literary texts as devices reflecting within their multilayered texture cognitive, emotional and imaginative processes and their socio-cultural constraints.

Within the neurohermeneutic approach expounded in this book, the act of reading should be viewed as an emergent process that arises from the circular and dynamic relationship between the author, the text, and the reader. The reader reconfigures specific bodily, cognitive, and conceptual processes and attitudes initially set in motion by the author’s stylistic choices, gaining deeper insights into the act of reading and the underlying processes. This approach challenges traditional divides between the sciences and the humanities, as well as between text-immanent interpretation, reader-response criticism, and discourse analysis. Our neurohermeneutic approach aims to explore the deep interaction between literature and the human mindbrain. It offers fresh insights into how literary texts are created, received, and understood. This effort aims to prompt a heightened awareness of the intricate layers of literary texts, considering how they evoke responses, provoke interpretations, and impact on broader cognitive and cultural contexts. Ultimately, we aim to contribute to transforming the act of reading and comprehending literature into a creative, thrilling, and engaging process that incorporates cues of curiosity, suspense, and surprise.



# INTRODUCTION

The inquiry into the relationship between art and the human mind is ancient in that it has developed over millennia, but it is also modern in that it has not ceased developing. It is central to every investigation in aesthetic, as well as in philosophical, anthropological, and cultural discourse. Above all, art deals with human nature—it is a window and a mirror into the self and its relationship with the world—of what it is, what it was, and what it could be. Indeed, it is by creating stories that humans organise their own biological, emotional, cognitive, and imaginative lives and construct their notions of the self and the world. Sometimes, humans also draw on Beauty, creating artworks, which in turn solicit aesthetic pleasure. The brain processes that usually underlie the interaction of the human being with the world are reflected forcefully and in a condensed manner in literature and the fine arts. Therefore, human engagement with literature and the arts is a fundamental experience for enhancing both pleasure and knowledge.

In recent decades, the study of literature and the arts has benefited from evolving heuristic paradigms concerning the cognitive processes engaged by artistic experiences. With the development of a “brain-based epistemology” (as proposed by Gerald Edelman in 2007), the interplay between the humanities, cognitive studies, and neuroscience has emphasised the importance of investigating arts and literature to gain fresh insights into how our mindbrain fulfils the enigmatic process of envisioning a counterfactual world and deriving new meanings and aesthetic pleasure.

The emerging frontiers in knowledge spurred by the “neuro turn” and the “biocultural turn” have increasingly promoted the linkage of literary studies, anthropology, philosophy, linguistics, poetics, art history, psychology, biology, and the latest advancements in cognitive and neuroscientific research. From this standpoint, we regard the arts and literature as deeply embedded within the framework of a biocultural discourse and as an extension of the human mind, entailing bodily, emotional, and mnemonic implications.

The immense amount of work about the human mindbrain and cognition over the last fifty years in the fields of cognitive science, neuroscience, neurology, neurophysiology, neurobiology, neurophenomenology,

neuroaesthetics, and empirical psychology has offered literary studies some valuable ideas regarding narrative processes as properties of both literary language and human thought. Indeed, cognitive acts make use of narrative and creative processes, as reaffirmed in the past decades by several scholars, among them Raymond Gibbs (1994), thus overcoming the classical distinction between everyday thought, associated with the world, and narrative-literary thought, associated with counterfactual worlds (Turner, 1996). This means that some procedures, strategies, and dynamics that we consider as features inherent to literary texts are, in fact, the same that we use to organise and negotiate the world, our experience in it and our thoughts about it (Turner, 1996). Therefore, our mind can be considered structured on a “literary and narrative basis”, and the act of reading literary texts could be investigated as a sort of simulated, embodied, dynamic process of featuring a fictional world using the same shared sensorimotor system that allows us to map the world around us.

Researchers of all disciplines have been interested in learning more about the astonishing human ability to read, i.e. decoding formalised signs, grasping information, and feeling emotions, even to the point of bursting into sobbing or laughing while reading a story. In the last twenty years, psychologists and neurologists have empirically studied this extraordinary process of creating pleasure and meaning out of formalised speech elements. However, despite entire libraries filled with books about the reading process, reading abilities, and reading habits, its archaic origins and its supposed decay in contemporary young readers, we know only little about what really happens in the brain and the body when people read literary texts (see Ferstl, 2010, pp. 61-68; Mar, 2011, pp. 103-134). This starkly contrasts its undeniable importance in the educational process of nearly all literate traditions (Turner & Pöppel, 1983, pp. 277-309).

The neurohermeneutic approach expounded in this book aims to shed light on new perspectives regarding the act of reading literary texts as mirroring both well-understood and still mysterious mindbrain processes. This approach takes into account findings from classical hermeneutics, literary anthropology, cognitive studies (Turner, 1991, 2006), neuroscience—particularly studies on the neural correlates of aesthetic experience (Zeki, 1998, pp. 71-103, 1999, 2004, pp. 173-196, 2008; Zeki *et al.*, 2014, p. 68; Ishizu, Zeki, 2011; Ishizu, Zeki, 2014), and the processes of embodied simulation (Gallese, 2004, pp. 23-48, 2007, pp. 659-669, 2009, pp. 486-498; Gallese & Sinigaglia, 2011, pp. 512-519; Freedberg & Gallese, 2007, pp. 197-202), empathy, emotions (Damasio, 2010; LeDoux, 1996; Winko, 2003, 2020, pp. 397-402).

Building upon these foundations regarding the arts as resulting from complex interactions between the brain and body, as well as environmental and historical contexts (Thelen, 2001, pp. 1-86), we consider literature as a 'stage' where the dynamic processes that orchestrate the construction of multimodal counterfactual worlds are at play. Therefore, we propose to investigate the literary artwork as a complex 'device' in which the mindbrain faculties and functions, that characterise the human being as a sentient, emotional, conscious, and knowing being, become manifest, mirroring themselves within an implicit circular mind's dialogue among the author, the text, and the reader. Although the reading act is highly unpredictable and bound to individual experience, it is possible to shed light on how textual strategies, i.e. the formal features of a literary text—such as style, rhetorical figures and narrative modes—and the dynamic features of a literary text—such as “redundancy”, “entanglement”, “disruption”, “manipulation of rhetorical networks”, “collision between frames and scripts”, and the “creation of situation models”—trigger the human mind's creative processes of the imagination, as well as elicit aesthetic emotions and appreciation.

This book focuses on the relationship between mindbrain processes, mirrored in the formal features of the text and the strategies that creatively involve the reader in imagining, emotionally feeling, and cognitively getting meanings out of literary experiences. By pursuing this approach, we also strive to overcome the dichotomy between culture and nature, emphasising how we can gain a deeper comprehension of the arts and literature by considering the cognitive and bodily processes that shape aesthetic experience, especially in the context of reading literature. This is not an entirely novel heuristic framework. Indeed, when reflecting on the German anthropological and aesthetic discourses of the eighteenth century, literature, anthropology and philosophy primarily explored human nature and the intricate interplay between the cognitive processes of the embodied brain, as we show in Chapter Two. Language—particularly literary language—was considered by philosophers, such as Friedrich Schleiermacher (1838) and Johann Gottfried Herder ([1772] 2000), as the oldest and one of the most sophisticated products of the human mindbrain. It is also worth noting that for Romantic writers, like Novalis, poetry was considered to be endowed with the unique capacity to provide insights into universal aspects of the human mind.

Within the neurohermeneutic approach, we introduce the suspicious stance as a fundamental tool for acknowledging the multifaceted, dynamic, and fluid nature of literary language, which gives rise to manifold, latent, and

hidden meanings. These meanings arise from the embodied, emotional, and imaginative responses evoked by the exquisite complexity of literary experiences. Moreover, this investigation implies an examination of the cultural and historical embedment of literary devices and the social conditions that shape symbolic communication.

Unlike traditional approaches to literature, which tend either to investigate the stylistic features in a text-immanent perspective or its reception in a reader-response perspective, we propose a unitary model of analysis linking traditional hermeneutics with some of the latest cognitive and neuroscientific discoveries about the processes elicited by aesthetic experiences during the reading act. Therefore, investigating the literary text means considering it as a complex device responsive to the functioning system of the human mindbrain.

From this vantage point, the literary text assumes the role of an anthropological cognitive device that engages with the reader's experiential landscape, encompassing their physiological, emotional, and imaginative dimensions. This interaction between the reader and the text leads to novel bodily, emotional, imaginative and cognitive experiences emerging from the pleasure evoked by imagining counterfactual worlds. Indeed, readers play an active and discursive role (Iser, 1976) in completing the circle connecting them, the text, and the author. They craft their unique personal interactions with the text by comprehending and recognising what we can characterise as the author's implicit instructions embedded within the text.

The reader is confronted with the ambiguities, contrasts, and polysemy of the highly formalised quality of literary language, expressing idea-contents through form; these features increase the difficulty and duration of the reception, interpretation, and sense-making, transforming the act of reading and understanding literature into a creative, thrilling, and appealing process. This process may be enhanced by consciously adopting a "suspicious stance", which develops in the reader the awareness of multiple meanings inherent to literary texts. To define the concept of "suspicion", we draw back to Ricœur's "hermeneutics of suspicion" (1970), pointing out the crossway between lived experiences and language. The latter is conceived as a locus of complex intertwined significations, where meanings are not only explicit and univocal but hidden and polysemic. The interpretive stance, implied by the principle of suspicion, orients the reader to integrate the literal meaning of the text with prior knowledge of a variety of sorts, since interpretation is a constructive process engaging the body, emotions, imagination, and cognition during the interaction among "reader, text, and

task occurring in a particular sociocultural context” (Goldman, McCarthy & Burkett, 2015, 387). Therefore, we highlight the act of ‘suspicious reading’ as an interpretative stance grounded in embodied simulation processes and the recognition of multiple meanings. Drawing back to Ricœur’s framework (see Ricœur, 1974), these are the multifaceted and latent meanings encompassed by various textual phenomena and dynamics.

The reader, who is driven by the stance of suspicion, can discover the ambiguities, contrasts, and incongruences of the fictional world, focusing on the formal and stylistic features and dynamics, and responding with their embodied engagement to the text, imaginatively simulating through their body and mind the storyworld. These aspects aid in reshaping the delight of unravelling the fictional realms of literature, encouraging the reader to engage with the text as an uncharted territory teeming with countless interpretations (see Eco, 1979).

Literary texts’ multimodal and fluid intricacy requires readers to engage with the ‘cognitive estrangement’ provoked by ambiguities within the text. Ambiguity is a hallmark of great works of art, according to Zeki’s neuroaesthetic theory, “an attribute that heightens substantially the artistic and aesthetic merit of a work” (Zeki, 2004, 173). Ambiguity is also a “general property of the brain which is often confronted with situations or views that are open to more than one, and sometimes to several interpretations” (Zeki, 2004, 174). Therefore, an artist uses this effect to intensively engage the human mindbrain as well as the human imagination since ambiguity relates to transformation, and transformation is the main feature of the imaginative process.

We claim that ambiguity is a characteristic of literature that relies on the coexistence of multiple meanings. It is mainly activated by what we refer to as *Stolpersteine* [stumbling blocks], which manifest a surplus of stylistic features and dynamics clustered within ‘spots’ of the text, herein termed “density fields”. To identify and understand the cognitive dynamics, emotional responses, and imaginative processes triggered in readers by *Stolpersteine*, a thorough examination of the intricacies of language at both microstructural and macrostructural levels is required. This entails discerning the underlying techniques and stylistic strategies authors employ to generate internal dynamics within the text. These dynamics serve to trigger aesthetic responses, stimulate the imagination, and drive the process of meaning construction, and are variously used in literary texts as we will show in the case studies presented in Chapters Seven and Eight.

This volume expounds upon the neurohermeneutics of suspicion, delineating its methodology for literary analysis and systematically illustrating its practical implementation through a series of specific case studies. It involves examining the mechanisms underlying human cognition, perception, behaviour, and cultural practices to understand how these factors influence readers' construction of counterfactual worlds and meaning-making. Essentially, it refers to classical hermeneutics, Ricœur's suspicion-driven interpretive methods, and insights from neurocognitive science to explore how mindbrain processes shape our understanding of literary texts and cultural phenomena.

The opening chapter outlines the theoretical framework within which this approach is situated. It aims to establish a transdisciplinary perspective that can provide insights into the complex nature of human engagement with literature and the arts. The neurohermeneutics of suspicion relies on the epistemic paradigms brought forth by the biocultural turn and the neuro turn, particularly within the field of neuroaesthetics and the 4E cognition framework. This framework has revolutionised our understanding of literary representations and imagery, highlighting the pivotal role played by the sensorimotor engagement of our brains and bodies in aesthetic experience and our linguistic production and reception. More specifically, we will consider studies on embodied simulation, motor cognition, and sensorimotor activation, which play a significant role within the literary framework of cognitive literary studies. This chapter further offers an overview of the wide range of studies conducted over the last few decades exploring the intersections between literary criticism, cognitive studies, and neuroscientific studies, collectively defined as "cognitive literary criticism". The fields of cognitive poetics and cognitive narratology share the view that literature is a unique product of human embodied cognition, reflecting the anthropological significance of the meaning-making processes that occur while reading literature. From our perspective, the text emerges as a culturally and cognitively structured dynamic device characterised by hierarchical organisation and responsiveness to fluid and intercorporeal modes of representing storyworlds (Ryan, 1991), thanks to the conceptual layering and modelling intrinsic to the language of literature.

Chapter Two explores some foundational principles of the contemporary biocultural shift and the emergence of the 4E cognition framework, which holds particular significance for our approach. Moreover, we highlight how these principles find their origins in eighteenth and nineteenth-century German philosophical, anthropological, and aesthetic discussions. The period around 1800 has recently undergone a critical re-evaluation,

shedding fresh insights into the significance of the body in shaping cognition and aesthetic responses (Engler-Coldren, Knapp, Lee, 2017, pp. 413-422). This renewed focus on the interplay between body, mind, and culture, epitomised in the concept of “Ganzer Mensch” [whole man], allows us to illuminate the source of profound transformation in epistemological paradigms still in progress. It gave rise to an embodied perspective on cognition and a holistic understanding of human beings as sensitive, emotional, and imaginative actors of culture and history. More precisely, this chapter delves into the question of how some recent assumptions and hypotheses of the embodied cognition paradigms—and specifically the relationship between language and thought—were already foreshadowed by Friedrich Schleiermacher’s hermeneutics and Johann Gottfried Herder’s ideas of perception, cognition, and the origins of language.

Chapter Three is devoted to an in-depth analysis of the pillars of the neurohermeneutic approach, which entails the reader’s exploration of the literary text as both a device and a source of cognition that involves processing many potentially conflicting meanings. We first introduce the main issues of classical hermeneutics, as put forth by Friedrich Schleiermacher (1838). We then present the foundations of Paul Ricœur’s hermeneutics of suspicion (1970), as it is relevant to the contemporary challenges of cognitive studies regarding literature, especially neurohermeneutics. We further tackle the concept of “second-degree language” in Jurij Lotman’s terms (1977), characterised by its multilayered polysemic structure. Drawing back to Lotman’s theory and recent empirical studies about literariness, we reflect on the process of defamiliarisation, here defined in terms of cognitive estrangement, as a trigger for the imagination and a source of intense aesthetic responses. Indeed, what we have defined as *Stolpersteine* determines defamiliarisation and de-automatises reception because of various forms of ambiguity that strongly engage the reader with the text on bodily, cognitive, emotional, and imaginative levels. Further, we explore some aspects of the intricate interactions between author, text, and reader: The latter enacts the text, according to their bodily and emotional responses, in order to construct ever new counterfactual worlds that lead to discovering new meanings and finally to acquiring new senses for their own existence in this world.

In Chapter Four, before introducing the theoretical foundations of Ricœur’s practice of suspicion, we focus on some aspects of the act of reading literature in light of empirical research. We discuss the “Panksepp-Jakobson hypothesis”, suggesting that texts conveying emotional content have the power to intensify the reader’s immersion in the story and empathy with the

characters of the fictional world. Therefore, such texts require the reader to adopt a slower reading route. Further, we present our “Feeling of Action Hypothesis”, which is built upon Gallese’s and Wojcickowski’s “Feeling of Body” (Gallese & Wojcickowski, 2022, p. 157). According to our hypothesis, the strength of embodied simulation driven by the activation of networks in the sensorimotor cortex varies depending on the presence of dynamic situations, actions, and motion within the literary text. Moreover, we claim that bodily engagement in reading literature is not solely a result of actions and motions described but is also influenced by stylistic features implying motion such as rhetorical figures. We note that such features should be viewed as something other than hindrances to imaginative engagement. Instead, we argue that these features become ‘affordances’ for emotional responses and imaginative activations. Indeed, rhetorical figures encapsulate the fundamental dynamics of action within the poetic structure, stemming from the principle of *translatio*. Based on these foundations, we contend that the presence of rhetorical figures in a text amplifies the reader’s aesthetic pleasure by infusing the text with a feeling of action and motion, derived from both the intrinsic properties of language and the author’s stylistic choices.

In Chapter Five, we introduce the concept of ambiguity from a neuroaesthetic perspective. We claim that it is the very nature of literary language that is rooted in ambiguity, intended as the coexistence of a manifold of meanings, some of which are latent or hidden. Therefore, we highlight features that instantiate ambiguity and define them as *Stolpersteine*. Such features induce a phenomenon we define as cognitive estrangement in the reader. *Stolpersteine* arise within the texture of literary works when foregrounded features determine density fields, entangled or recursive dynamics, which require readers to adopt a slower reading route and a “suspicious stance” in order to be able to experience the act of reading literature as a complex emergent phenomenon that affords aesthetic pleasure. The multilayered texture of “poetic language”, where “content idea” and “artistic form” are intricately intertwined (Lotman, 1977, p. 12), compels readers to undergo a multimodal experience that requires focused attention and involves their physical, emotional, imaginative, and cognitive faculties.

Chapter Six presents the suspicious stance as a strategy for reading literary texts. We suggest an analysis of literary texts based on investigating specific phenomena highlighted at the levels of surface code, text-base and discourse content. We start by describing a tool we have developed to map the features and dynamics of a text: the Foregrounding Assessment Matrix (FAM). The



FAM facilitates the mapping of multiple layered foregrounding elements, explicitly pointing out how and where they may overlap and form a series of intensively foregrounded density fields, i.e., spots of the text in which different types of foregrounding (phonological, morpho-syntactic, and rhetorical) unite, agglutinate, and combine. Moreover, we present the dynamics defined as “redundancy” and “entanglement” arising at the surface code and text-base. We report a pilot study conducted on three Shakespeare sonnets relating their qualitative analysis and findings with quantitative eye-tracking data collected by the Lab led by Daniela Giordano in Catania through collaboration with the D.I.N.E. Lab led by Arthur Jacobs in Berlin.

In Chapter Seven, we focus on the discourse content level and present four main dynamics investigated according to the suspicious stance: disruption, metaphorical manipulation, collision between frames and script, and constructing a situation model. In each instance, we elucidate the pragmatic application of the neurohermeneutic framework by examining selected case studies through the lens of a suspicious stance. We investigate the contradictory disruptions within the play *Puss in Boots* [*Der gestiefelte Kater*], written by Ludwig Tieck and published in 1797. In this case, we demonstrate that adopting a suspicious stance leads to gaining awareness of the disruption produced by the hybridisation of the genre and the construction of the main character, uncovering the underlying political discourse concealed by the author.

Furthermore, we investigate the manipulation of ontological metaphors subverting societal biases and norms, as exemplified in Christoph Martin Wieland’s *Jinnistan* (1786-1789) and F. Scott Fitzgerald’s *The Curious Case of Benjamin Button* (1922). The manipulation of these ontological metaphors stimulates readers to engage in critical discourse surrounding prevailing cultural values and prejudices.

We also focus on the dynamics of conflicting frames and scripts within a narrative. We present the case of the Romantic author Heinrich von Kleist’s *Penthesilea* (1808), in which we identify a clash between the frame of a duel and the script of a *Parforce* hunting. Adopting a suspicious stance focussing on this clash, readers can unveil the political message engrained within the text by Kleist.

We finally focus on the dynamics of creating situation models while reading literature. By constructing situation models, readers move beyond the surface level of the text, making inferences about characters’ motivations

and the unfolding of events. As an example, we introduce the analysis of a still controversial *ekphrasis* by Heinrich von Kleist about the famous painting by Caspar David Friedrich, *Monk by the Sea* (1808-1810). Kleist's description of the sublime experience depicted in Friedrich's painting stimulates an intense embodied simulation, amplifies readers' imagination and guides them through a sensory and emotional experience. According to our suspicious reading of this text, we demonstrate how the author manipulates the situation model construction, effectively erasing cognitive boundaries and allowing for an embodied encounter of the reader with the sublime.

To conclude our exegetical journey, in the last Chapter, we focus on the process of meta-representation of mindbrain processes within literary texts. We exemplify this particular case, focusing on one of the most complex and controversial concepts in the field of cognitive literary studies: the concept of imagination. We argue that two scenes from *Faust II* by Johann Wolfgang von Goethe—*Gloomy Gallery* and *The Hall of the Knights, Dimly Lit* (act I, scenes V, VII)—meta-represent the imaginative process itself, which develops along ontogenetic and phylogenetic paths. Furthermore, we aim to show how the dynamics presented in these scenes also meta-represent the act of reception. Through our analysis, we emphasise the importance of imagination in creating counterfactual worlds, engaging readers to produce mental images that align with those presented in the text.

In summary, we argue that the neurohermeneutics of suspicion enables readers to newly investigate literary experience as a phenomenological, bodily, emotional, imaginative, and cognitive endeavour, offering new insights into the mindbrain processes that are engaged in imagining stories, as well as in the aesthetic experience derived from the reading act. By adopting a suspicious stance, the reader can uncover and interpret the ambiguities, contradictions, and discrepancies within literary texts through a close examination of their formal, stylistic elements and dynamics, employing their own embodied engagement to simulate the storyworld imaginatively.

This experience triggers aesthetic pleasure and gives rise to ever-new challenges in understanding the unstable external world around us and the internal worlds within us, which we desperately try to stabilise in that inexhaustible process of creating and recreating meaning that is the ultimate sense of our existence. In Goethe's words:

... Formation, Transformation,  
Eternal mind's eternal recreation.  
(*Faust II*, lines 6285-6288)

# CHAPTER ONE

## BORDER-CROSSING RESEARCH: A METHODOLOGICAL FRAMEWORK

### **1. A Bird's Eye View: Literary Criticism meets Cognitive and Neuroscientific Studies**

In the 1950s, the advent of “first-generation” theories marked a significant shift in cognitive science, conceptualizing the mind and its propositional representations through computational models; it has since experienced a new wave with the “second-generation” revolution, which conceives of the mind as embodied, embedded, enactive and extended, thus giving rise to the concept of “4E cognition” and the coupling of brain, body, action and environment (Menary, 2010, pp. 459-463; Rowlands, 2010; Newen *et al.*, 2018). The emergence of embodied and enacted paradigms foregrounds a new vision of the relationship between mindbrain and body, as well as cognitive processes: mental activities are shaped by the body (embodied), constrained by bodily interaction with the environment and others (embedded), influenced by interoceptive, proprioceptive, and exteroceptive patterns (enactive), and interacting with the world and others through technological devices (extended).

Thanks to this exciting and challenging affirmation of the embodied paradigms and thanks to the so-called “neuro turn”, we have witnessed in the last decades a decisive trend towards transdisciplinary research, heuristically overcoming the nature-culture divide and the contraposition between the “two cultures”, according to C.P. Snow’s definition (1964). Transdisciplinarity (Pohl & Hirsch, 2008, pp. 111-121), which has been at the core of the research agenda since 1970 (see Bernstein, 2015), aims to develop normative, descriptive, and practice-oriented knowledge, which is required by effective and promising cutting-edge research. Significant developments and epistemic innovations in neuroscience and second-generation cognitive studies have profoundly influenced studies in the humanities. However, the benefits of transdisciplinary studies extend beyond the humanities, encompassing the hard sciences. This is evident in

the interest shown by neuroscientists in aesthetic issues, such as the dynamics and topics traditionally associated with literature and fine arts (Zeki, 1993, 1998, pp. 71-103, 1999, 2008, 2019, pp. 107-112; Ramachandran, 1999, pp. 15-51; Chatterjee, 2014), emotions (Damasio, 1994), and narrative structures (Lakoff & Johnson, 1980; Fauconnier, 1994; Fauconnier & Turner, 2002; Turner, 1991, 1996, 2006).

Neurobiologist Semir Zeki's groundbreaking work gave rise to a new discipline, neuroaesthetics (Zeki, 1993, 1999, 2008, 2019, pp. 107-112; Ishizu & Zeki, 2011, 2013, pp. 1413-1420; 2014). This discipline investigates how art triggers brain responses, starting from his studies on the visual brain and the neural correlates of affective experiences, such as those of Beauty, love, and desire (Zeki, 2008, 2019, pp. 107-112).

The quest to bridge the gap between the hard sciences and the humanities is not a novel pursuit since the various and distinct branches of knowledge aim at the common goal of a more accurate and profound understanding of human nature, as recognised by David Hume:

It is evident that all the sciences have a relation, greater or less, to human nature and that however wide any of them may seem to run from it, they still return back by one passage or another. Even *Mathematics*, *Natural Philosophy*, and *Natural Religion* are in some measure dependent on the science of MAN; since they lie under men's cognisance and are judged by their powers and faculties . . . If, therefore, the sciences of Mathematics, Natural Philosophy, and Natural Religion have such a dependence on the knowledge of man, what may be expected in the other sciences, whose connection with human nature is closer and more intimate? The sole end of logic is to explain the principles and operations of our reasoning faculty and the nature of our ideas: moral and criticism regard our taste and sentiments, and politics consider men united in society and dependent on each other . . . Here then is the only expedient, from which we can hope for success in our philosophical research . . . to march up directly to the capital or centre of these sciences, to human nature itself, which being once master of, we may everywhere else hope for an easy victory. From this station, we may extend our conquests over all those sciences that more intimately concern human life and may afterwards proceed at leisure to discover more fully those that are the objects of pure curiosity. (Hume, 1739, xv-xvi)

Despite looking to the future with a curious and daring innovative attitude, this challenging transdisciplinary venture has been criticised as an expression of reductionism and interference between the hard sciences and the humanities, and has met significant resistance and even animosity (see for first objections Jackson, 2002, pp. 161-179, and Bernaerts *et al.*, 2013,

pp. 1-20). One of the main objections is rooted in a misunderstanding of the idea that to work in this transdisciplinary field, human scholars should become experts in brain processes, and conversely, neuroscientists should become skilled art historians or literary scholars. On the contrary, transdisciplinary research needs a new attitude toward collaboration among scholars, which involves the challenges of losing old axioms and hybridising knowledge to posit new questions or innovatively reflecting on old ones by intertwining knowledge and skills in a global and unifying heuristic perspective.

To establish a link between diverse heuristic paradigms, a shared knowledge base must be established through extensive engagement, study, curiosity, and self-challenge. A significant challenge in this endeavour is the risk of imprecise and indiscriminate appropriation of literary and artistic issues by scientists and, conversely, of scientific concepts and theories by humanists. Successful transdisciplinarity requires the precise selection and application of heuristic tools appropriate for the intended investigation. One common critique of empirical psychological research from the perspective of the humanities is that it often fragments literary texts and tests excerpts without regard for the texts' complex linguistic and semantic unity. Conversely, human scholars may misunderstand and imprecisely apply scientific concepts. For instance, the generalisation and misuse of embodied paradigms have been observed in literary and narrative studies. In some cases, the concept of embodied simulation has been mistakenly characterised as a conscious outcome of another process referred to as "motor resonance". Instead, they are both automatic processes instantiated while observing actions. More specifically, embodied simulation involves predominantly unconscious activation of sensorimotor cortical networks that are somatotopically congruent with the semantic content processed and trigger internal bodily representations associated with the original stimuli. This means that observing another's actions and sensory experiences elicits brain activity similar to that seen when performing the same actions and having similar experiences.

This phenomenon occurs continuously during reading; it is not limited to action verbs but is also solicited by the phono-articulatory and semantic levels of the verbal code, even in the case of metaphorical language (Gallese & Cuccio, 2015, p. 11). Therefore, transdisciplinary research requires a shared vocabulary that is coherent and clear, as many terms and concepts have different meanings in different disciplines. So, for instance, the use of terms like empathy, immersion, and emotion can create heuristic different uses between scholars in the hard sciences and human studies.

This lack of a common language can lead to misunderstandings, confusion, and incomprehension. To address these challenges, some works and studies propose new terms and categories to establish possible frameworks for future research. As Terence Cave has pointed out, this is the case in using the word “cognition”:

It’s symptomatic of the complexity of this broad transdisciplinary field that the sense attributed to the words “cognition” and “cognitive” varies quite widely according to disciplinary context and even within methodologies specific to particular disciplines. In everyday parlance, they are associated above all with understanding and knowledge, in contradistinction not only to perception but also to affect and volition (desire), and this “folk” sense is also common in philosophy and linguistics . . . However, most cognitivists nowadays give the word “cognition” a much broader sense, embracing mental functioning and mental processes as a whole. Those processes include abstract and rational thought, imagination, emotion, and somatic reflexes and responses. (Cave, 2017, pp. 13-14)

As a result, it is crucial to narrow the focus to specific terms, concepts, and categories that are fundamental in bridging different disciplines in the study of art works and literary texts, as well as the mental processes involved in their creative and receptive phases. Jurij Lotman had already tackled this matter:

We ought, therefore, to note, that the language of a given science is unique to that science and connected with the particular subject and aspect inherent to it . . . The recoding of one language into another, which occurs in connection with transdisciplinary problems and in most cases is extraordinarily fruitful, either reveals the objects of the two sciences in what had appeared to be one, or leads to the creation of a new field of knowledge with a new metalanguage inherent to it. (Lotman, 1977, p. 18)

In light of Lotman’s insights and Turner’s pioneering work on the web portal “An Atlas for Research in Cognition and Poetics”, in 2018, an International Conference in the series of the “NeuroHumanities Dialogue” convened in Catania to establish a common vocabulary and conceptual framework for the cognitive discourse on the production and reception of art. The proceedings of the meeting were published in a special issue of *Gestalt Theory* (2019) titled *What is What? Focus on Transdisciplinary Concepts and Terminology in Neuroaesthetics, Cognition and Poetics*, edited by the authors of this book. The volume features contributions from leading researchers on cross-disciplinary concepts such as neuroaesthetics (Semir Zeki), embodied simulation (Vittorio Gallese), cognition and performance (Amy Cook), cognitive linguistics (Alexander Bergs),