Chapter 12
The Dilemma of Suspense: Neuronarratology, Cognitive Neurosciences, and Computer Technology

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ABSTRACT

The new generation Narratology shows a renewed heuristic scenario, involving an intense dialogue among Humanities, Cognitive Neuroscience and Computer Technology. The case of suspense is emblematic: the pleasure that suspense exercises on the human mind can be precisely explained by identifying the mechanisms of reward provided by neurological and imaging studies. At the same time, patterns of automatic generation of narrations highlight the profound implications of a heated debate between Narratology and Computer Technology, in order to understand the processes of reception and inference during the narrative immersion in storyworlds. At the end of their overview on of a cross-disciplinary approach to suspense analysis, the authors report a case study considered of interest, by a group of researched, called Liquid Narrative Group, of North Caroline State University.

INTRODUCTION

Todorov called *narratology* or *science of narrative* a new type of theory that could be applied to all domains of narrative (Todorov, 2001). The neologism alludes to social and natural sciences, such as sociology and biology. In the contemporary "narrative turn", the application of narratological tools to extra-narratological research problems has become more and more common, resulting in a multitude of compound or subdomains. The post-structuralism approaches include methodological variations: Natural Narratology, Critical Narratology, Cognitive Narratology, etc, but also the discipline of Cognitive Poetics. Others approaches focus on thematic and ideology-critical concerns, as Post-Colonial Narratology or Feminist Narratology

DOI: 10.4018/978-1-5225-0432-0.ch012

In particular, Cognitive Narratology focuses on the intellectual and emotional processing of narratives as carried out by humans. This approach is not restricted to literary narratives: everyday "natural" and oral narratives are considered to represent an underlying anthropological competence in its original form (Fludernik, 2009). Cognitive approaches also play a crucial role in Artificial Intelligence (AI) research, which aims to model or simulate human narrative intelligence. Cognitive Narratology focuses on the mental states, personal skills, and dispositions that provide grounds for narrative experiences. Research on the link between mind-narrative contains multiple methods of analysis and different corpora, such as textual, fictional and nonfictional, computer-mediated narratives including interactive fictions, games and blogs, comics and graphic novels; cinematic narratives, but also storytelling in face-to-face interaction. Similarly, theorists who have been working in this area have adapted descriptive and explanatory tools from a variety of fields, in part because of the cross-disciplinary nature of research on the mind-brain itself. Source disciplines include linguistics, semiotics, computer science, philosophy, psychology, and other domains, in addition to narratology.

Approaches to narrative and mind continue to emerge, evolve, and cross-pollinate. The latest frontier of post-classical narratology (a subdomain of Cognitive Narratology) is Neuronarratology. Neuronarratology is an emergent perspective which includes the linguistic and cognitive contributions to the Cognitive Poetics and the neurological studies of human mind structure and function. This new approach – recognized and theorized by Stefano Calabrese (2009) – makes use of Neuron mirror theory (Rizzolatti, Fogassi, & Gallese, 2001), thus of biological bases formed by mirror neurons in order to understand the empathic effects deriving from the interaction between author, reader and literary text.

The contribute of Neurosciences is relevant for this new concept of narrativity as anthropological competence and problem solving practice. Neuro-imaging studies point out the principal cerebral areas involved in story production and fruition, such as the medial and prefrontal cortex (m-PFC) where the working memory is sited, and the cingulate cortex, which is implied in connecting the stories to spatial dimensions and in creating mental images. Thanks to these areas it is possible to image the development of the stories in time and space. Moreover the m-PFC is also involved in to TOM jointly with the temporal junction (TPJ) and part of temporal lobe. These areas are activated during social interaction of everyday life, as like in the narratives and in the fruition of narratives, where fictional characters are met. For all this reason, the stories supply tools for social acting, through increasing the empathic and social abilities. For examples, Neurobiology applied to narrative studies reveals as the high emotional stories improve the production of cortisol and oxytocin, hormones that are involved in the social attention and affectionate relations.

Therefore Neuroscience and the new-generation narratology prove that narration is an embodied experience able to involve the deepest dimension of body. The Feeling of Body Theory (FOB) allows the perception of actions, states and emotions of fictional characters recording them in the body of stories' users. The research on human attention and perception provide relevant indications about what is perceived as salient and attractive by the human brain. Recently, suspense seems to have considerably attracted the scientists' effort.

During fMRI studies, areas associated with TOM and predictive inference are activated in the reception of a literary text. In particular, the frontal-medial cortex, the bilateral frontal regions, the premotor lateral cortex and the temporal parietal and posterior temporal areas are activated when the subjects adopt the perspective of the protagonist and influence his mental state (Lehne & Koelsch, 2014, pp. 118 ss.).