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The Author

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TRANSCULTURAL STUDIES –
INTERDISCIPLINARY LITERATURE AND
HUMANITIES FOR SUSTAINABLE SOCIETIES

Edited by Rotraud von Kulessa, Costantino Maeder and Dagmar Reichardt

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Stefano Calabrese

Neuro-Narratology
The Neural Secrets of Narration
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Preface

This book is the result of the reflections I have made over the last ten years on a variety of diversified texts, from literature to autobiographical accounts, from advertising to visual storytelling, etc., with a particular focus on transmedia processes and transdisciplinary methodologies (the term inter-disciplinary has in fact become an outdated tool that is not up to the changes taking place today). In so doing, however, I have always been aware that in order to free the studia humanitatis from the confines of “close reading” I would have to draw on the unlimited experimental arsenals of neuro-cognitivism. Always à la recherche of permanent and transcultural elements (the prefix trans-, as you can see, seems indispensable to me), I have discovered scenarios I had never imagined by drawing on the research of social psychologists on the manner in which we construct narrative formats from infancy, on the studies conducted by evolutionary psychologists with “eye-tracking” to understand the crucial role of visual perceptions in childhood and the equally dominant role of visual storytelling; above all, for years I have consulted the results of multiple experiments through neuroimaging carried out in universities all over the world, collecting evidence of what the brain does when it reads War and Peace, savours a spoonful of Nutella, is an eye-witness to a bloody car accident, listens to someone’s account of what happened to them as children, or reacts to a sudden slap in the face… Everything. Today we know not only the operations performed by neural networks, but the circulatory secrets of neurotransmitters and hormones, propellants without which nothing would happen. The study of narratives – from novels to “life-stories”, which relate more to interstitial topics – has thus become more rigorous, as an unparalleled panorama of constants cemented since the Upper Palaeolithic (e.g. the patterns of action in which a predator studies the tracks of prey in order to overpower it: an original “plot”) has been added to an unprecedented awareness of how each cultural habitat shapes the narratives of its inhabitants according to a particular neuro-cognitive style, thus limiting the so-called ‘authorial’ freedom. Narratives – whether they originate from the Muses or from the voice of a completely illiterate individual – are like compressors that can zip together all the most crucial elements in our existence: time, space, intentions, purposes, agents and instrumental actions. For this reason, they represent an inexhaustible object of research.

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Chapter 1  The fundamentals: Adaptivity, predictivity, counterfactuality

1. The neurocognitive grammar of narration

A series of joint phenomena led first to the decline, then to the vigorous rebirth of a second-generation narratology, capable from the outset of overcoming the dichotomy between structure and story, text and context, permanence and variability. It is worth recalling the success of a study on narrativity observed from the point of view of the individual endosphere, *Actual Minds, Possible Worlds* (1986), in which the American psychologist Jerome Bruner formulated a distinction between paradigmatic thinking (characteristic of the scientific sphere, hinged on the definition of abstract concepts) and sequential narrative thinking, in which the logical-temporal correlations between different elements allow us to photograph reality: according to Bruner, narratives only rely on the second cognitive mode, just as the ability to give an account of oneself with life stories would be based on four types of coherence – temporal, biographical, causal (the only one capable of explaining the difference between continuity and change), and thematic (where organised nuclei of arguments attract each other) – which are acquired only in adolescence.

This binary arrangement of thought according to a semantic or sequential structuring – which among other things has the drawback of increasing the distance between humanities and scientific disciplines – would soon be disproved, but Bruner has the undoubted merit of favouring a repositioning of narratology. Moreover, the shift in contextualist focus generated by the decline of structuralism led scholars to take an interest in everything that had remained outside the scientific community prior to the 1990s. At a time when the thresholds of literary narratives were becoming permeable to the context, favouring a free circulation of the contents of those texts, what regained vigour was thematology or *Toposforschung*, which had initially limited its interest to the identification of minimal textual units (known as themes or motifs), to the naming of themes (*étiquetage*), to the distinction between recurring elements (isotopies) and variable components (semantemes) in the certainty that an integrated semantics of literature could be achieved. Once that hope had collapsed, thematology turns its interest more to indexing the guiding ideas and logical-semantic nuclei formed in the *longues durées*, but less on the model indicated by Curtius (for the German Romanist, the *topos* was an indefinable cliché, which
The fundamentals: Adaptivity, predictivity, counterfactuality

could contain micro-narratives, allocutive formulae, figurative relics of the past) and more on the model of Warburg’s *Pathosformeln*, linguistic representations of codified social practices and permanent traces of states of mind revealed by intensified mimicry, in the awareness that literary texts favour the sedimentation of human perceptive models.

Indeed, it was precisely on this terrain that narratology would soon afterwards encounter cognitivism and neuroscience (Bamberg, 2007). When we began to think of “themes” as processes of thematisation, structured and dynamic units of content capable of exerting a structuring action on the spatio-temporal dimensions and grammar of man’s communicative actions, the mind became the leading protagonist and ultimate guarantor of narrativity. The beginning of this new trend can be traced back to the publication of David Herman’s volume *Story Logic* (2002), in which for the first time neurocognitive sciences encountered problems and aspects that until then had been the domain of literary scholars and linguists. Herman marked an epistemological turning point in narratology by replacing Bruner’s erroneous dichotomy between scientific and narrative thinking with a unified vision of the cognitive processes underlying each story, and this thanks to the use of the concepts of *schema* and *script*.

Originally formulated in the context of Gestaltism since the 1920s, the *schema* theory (pl. *schemata*; alternatively, many scholars use the term frame, which has become a synonym for schema in cognitivist theories after Marvin Minsky’s research on Artificial Intelligence) stems from the belief that each of our experiences is understood on the basis of a comparison with a stereotypical model derived from similar experiences recorded in memory: each new experience would thus be assessed on the basis of its conformity or dissimilarity to a previous *schema*. When experiencing an event first-hand or witnessing a situation as a spectator, recourse to a *schema* becomes a cognitive prerequisite for its legibility. An authentic device for the integration and classification of experiential data, and for this very reason of essential interest to scholars of Artificial Intelligence working on the construction of simulated programmes of the human mind, the *schema* refers to *static* objects or relations, i.e. it concerns expectations regarding the way experiential areas are structured/classified in a certain situation (Herman/Jahn/Ryan, 2005, *ad vocem* “Scripts and Schemata”).

Each of our experiences, whether we have lived through it, observed or read it, is classified on the basis of its conformity or dissimilarity with a prior *schema* of *frames* and *scripts* derived from similar experiences recorded in our memory. Autobiographical memory relies on *frames* that allow us to understand what the event we are experiencing is – our *semantic memory* – and *scripts* that allow us to articulate it in an ordered sequence – our *episodic memory*. 
So-called autobiographical memories are a particularly emblematic example of reconstructed memory, as they are not only reliably stored, but are also integrated with the individual Self to preserve a sense of coherence over time. Whereas a schema is a label we attach to portions of our existence and refers to static objects or relations, scripts refer to dynamic processes (literally micro-scripts), i.e. the way in which expectations are produced in relation to the way sequences of events occur. They are generally classified as (i) situational (concerning the waiting horizon of everyday situations, such as going to a restaurant or catching a bus), (ii) personal (concerning roles in the Gofmannian sense, such as the jealous man, the suitor, etc.), (iii) instrumental (concerning the micro-actions necessary to achieve a purpose, such as lighting a cigarette, starting a car, spreading jam on a slice of bread). For example: the frame “shopping in a hypermarket” could correspond to a script such as “park the car, pick up a trolley, put a number of products in it, finally place them on the checkout belt and pay the amount shown” (Calabrese, 2019, pp. 1–13). In brief: a frame denotes the semantic paradigm of an event, while a script represents its syntactic articulation.

Everything – everything – is thus articulated according to an agreed syntax of gestures and actions rooted in the cultural tradition of a social space, and any transgression to this ordinary syntax on which our system of expectations is based is interpreted against the backdrop of an agreed repertoire of scripts. Our destiny, the life stories, however insubstantial, of which we are daily actors or spectators, the literary texts called novels, news reports as well as television dramas are constructed through the abscissae and ordinates represented by schemata and scripts. Cognitivists and neuroscientists have classified the essential core of any narrative into seven components: a. the setting, i.e. the spatial-contextual setting; b. the causal factor, which induces an initial transformation in the setting; c. the internal response, i.e. the actor’s motivation in reacting to the transformation of the setting; d. the goal, which indicates the direction of the individual’s desire to redefine the setting through e. an intention, from which f. a consequential action is generated and finally g. a reaction. It is worth noting that each transgression to a story schema is reset according to pre-cognised schemata, and two certainties follow from this: (i) we remember a text better if it confirms the story schemata; (ii) we understand and remember a text better in direct proportion to the number of causal connections, just as we understand and remember an episode better if it has strong causal connections with what follows.

Every narrative is organised around the desire on the part of an individual actor to promote and pursue a goal, in spite of the obstacles that stand in the way and by virtue of the plans drawn up to remove these obstacles. From the age of