Before or beyond narrative? Towards a complex systems theory of contemporary films

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INTRODUCTION

Tracing unlikely connections, such as those between butterflies and typhoons, stockbrokers in Boston and divinity students in Cambridge, ant colonies and human brains, cells and the universe: this is how complexity has been discovered, or better, revealed by current science. Through an analogous process, of tracing connections that at first seem unlikely, I approached my own object of research, which, in very broad terms, is contemporary cinema. ‘Contemporary’ here carries particular significance, as cinema is today at a crucial stage of its development, where it needs to choose between two alternatives: on the one hand, homeostatic preservation of what it already is (which is perhaps harder than ever, partly because of the centripetal forces of media convergence) and, on the other hand, contamination with different, sometimes unlikely, disciplines and discourses, and evolution towards an unpredictable but fascinating future.

Description of research object

While alternative forms of narration have made their appearance in mainstream cinema since the 1970s, when ‘post-classical’ Hollywood made its presence noticeable, in the mid-1990s a bolder tendency of experimentation with the narrative form emerged from the outskirts of popular production. The films of this recent cinematic tendency have often been discussed as “complex narratives”,1 borrowing this already-existing label from literary criticism and narratology.2 Since the commercial success of Quentin Tarantino’s Pulp Fiction (1994), “complex” films have widely expanded, to the point that we can now, more than a decade after their spread, talk about a new ‘norm’ promoted worldwide, both by large Hollywood studio productions and by the so-called world cinema. Complex narrative structure connects films as diverse as Run Lola Run (Tom Tykwer, 1998), The Matrix (Andy and Lana Wachowski, 1999), The Sixth Sense (M. Night Shyamalan 1999), Memento (Christopher Nolan, 2000), or Eternal Sunshine of the Spotless Mind (Michel Gondry, 2004).3 It is not so much the novelty of the alternative narrative means that such films use that makes them worth of investigation;4 what makes them intriguing is rather their quantitative proliferation and popularization, which crosscuts geographical and genre boundaries and manifests an enduring presence—as recent productions indicate, from Enter the Void (Gaspar Noé, 2009, France/Germany/Italy/Canada) or The Sky Above (Sérgio Borges, 2011, Brazil) to Inception (Christopher Nolan, 2010, USA/UK).

Trying to cluster the common characteristics of these complex films, I would say that they tend to contain many protagonists and parallel and interconnected stories, a different, for
some scholars “loose”, form of causality, with chance or coincidence becoming a central force in the plot development, and a nonsequential temporal and spatial structure. As Warren Buckland puts it, complex films “embrace nonlinearity, time loops, and fragmented spatio-temporal reality” (2009: 6). This unconventional structuring of complex films is assumed to have a significant impact upon the viewer and his or her interpretative strategies. David Bordwell, who places these films in a third era of Hollywood narrative experimentation (from the mid-1990s until today),\(^5\) refers to many of them as “puzzle films”, i.e. films that prompt the viewers “to discuss ‘what really happened’, to think back over what’s has been shown, or to rewatch the film in the search for clues to the key revelations” (2006: 80).

Due to their expansion, contemporary complex films form a significant object of research, and many media and cultural critics have been occupied with their various facets since at least 2002.\(^6\) From then on, the umbrella term “complex” has been used in parallel with different other terms that address more particular aspects of these films: “alternative plots” (Ramirez-Berg 2006), “forking path films” (Bordwell 2002), “multiple draft” films (Bordwell 2002; Branigan 2002), “network narratives” (Bordwell 2006), “psychological puzzle films” (Panek 2006), “twist movies” (Lavik 2006), “possible world films” and “trance films” (Perlmutter 2002 and 2005), “psycho-temporal transport” films (Stewart 2006), “modular narratives” (Cubitt 2004; Cameron 2008), “neo-baroque” films (Ndalianis 2005, Cubitt 2004), “puzzle plots” (Buckland 2009;), “mind-game films” (Elsaesser, 2009), “database narratives” (Kinder 2002), “transmedia narratives” (Jenkins 2007). All these terms try to capture different aspects and functions of the contemporary films that I prefer to continue calling complex, for reasons that I will soon explain.

**Why (again) complex narratives now**

In this dissertation I am not going to dismiss the adjective “complex” that has been used to describe the narrative structure of many contemporary films, but rather build on it, looking for an adequate theoretical framework to approach this complexity. In literary and narrative theory, complexity has so far been referring to the presence of features that transgress the linear order of the story. This gives complex narratives a somewhat paradoxical nature, also displayed by contemporary complex films, because they rely on ‘anti-narrative’ means in order to tell their stories. Classical narratology has always been coping with numerous cases of complexity, although its tendency to prioritize the ‘linear’ causal-logical and temporal succession of events in its definition of narrative, makes it, in my view, no longer a satisfying framework to accommodate the complex and non-linear structure of complex films, particularly at this point in time when the latter seem to become, as I already indicated, the norm rather than the exception.\(^7\) Therefore I see an ever-more demanding need
to address the nonlinearity of contemporary films as such, as well as its particular modes of
textual and cognitive organization.

Narrative has been defined either as the object of narration, the story in its particular
articulation, or, especially since the 1980s with the influence of cognitive science (see Bruner
1986), as a mode of representation and reasoning as old as humanity itself. Both narratives and
the narrative mode of reasoning create links between events prioritizing the whole over the
parts. Individual events make sense only as long as they are placed into a meaningful whole,
supporting its constitution by being the causes of other events (Polkinghorne 1988). Events
only make sense when the whole is completed, and their placement in the chain of causality
and temporal continuity is made definite. Even more so, this whole is presupposed in the
beginning of every narrative, so that following it as readers, viewers or recipients in general,
we already know that the events will make sense eventually, as they form parts of a larger
system. The above assumptions are interwoven with the notion of narrative, both when the
latter is conceived through the (classical) structuralist perspective and when it is conceived
through the more recent cognitive perspective.

'Classical' literary narratology, extending from the Russian formalists to the French
structuralists (see Herman 2009: 26), does not address only the 'narrative' (story) but also the
process of narration and the complex interplay of the two that every literary text incarnates.
Even though I also consider narrative anything but a one-dimensional concept, I find the
insistence in using the term "narratives" to address contemporary complex films problematic.
On the one hand, I find that narratology, especially at its best moments, cannot be confined to
what is defined by the term narrative and the presumptions it carries and reproduces. In some
of the most influential narratological models, such as the one of Genette, narrative becomes a
collective and complex formation, and a struggle of multiple forces (like those of récit, histoire
and narration). Narratology can be seen as the study of the complex contact between a
text and a recipient, and its insights are of great value in this respect. On the other hand, in my
own study it has been necessary to use narratological models in order to show how the
definition of narrative is not applicable in the films I studied and why it is at the limits of
narrative and beyond them that contemporary complex films find their place.

Contemporary complex narratives contain, from the perspective of narratology, 'non-
narrative' or 'anti-narrative' elements. This brings them in contrast not only to a classical type
of narrative, represented in cinema by the Hollywood tradition but also, as I see it, to the core
element in the definition of narrative, which is to some extent reproduced even in post-
classical and cognitive strands of narratology, and which has to do with narrative’s beginning-
middle-end schema and causal-logical sequence. This sequence is not necessarily supposed to
be constituted through the text itself; the syuzhet might as well appear disordered and out of
sequence; narrative theory of course acknowledges this, but it still presupposes that the reader/spectator cognitively constitutes (or attempts to constitute) a sequence. In cinema, the beginning-middle-end schema of narrative has started being ‘officially’ challenged already since the dawn of the post-classical Hollywood era (see Elsaesser 2009b), and is being more decisively transgressed through the subsequent emergence and prevalence of ‘complex narratives’. These films, although telling stories and appearing as narratives in this respect, they nonetheless point at the inadequacy, futility, or, using Genette’s expression, ‘border’ and limitation of narrative—as a mode of composing a story, as a cognitive process of intelligibility, and as a theoretical approach to these films.

Using the adjective ‘complex’ as a starting point, I will argue for the usefulness of applying and prioritizing an alternative theoretical framework in the analysis of complex films, which will not be that of narratology—especially its classical strand but also the existing postclassical approaches, the usefulness of the latter notwithstanding—but the one of complex systems theory. When detached from the narratological framework, the ‘complex’ can refer to the study of wholes that are created by pieces (which can also be the pieces of the so-called “puzzle” films) and most importantly, determined by them. Such piecemeal structures can be called systems, and are currently at the forefront of research conducted within the expanding domain of complex systems science and theory.

The complexity of systems

Complex systems theory is a transdisciplinary field with contributions from very diverse sciences, from physics and biology to sociology. Because of the heterogeneity of these contributions it is difficult to define a unified field of complex systems study, and in this respect it is more accurate to refer to complex systems theories in the plural. There are however certain commonalities that bring these theories together, the most fundamental of which is perhaps their interest in the dynamics of organization that pre-exist structures. This is indeed what the study of systems boils down to, namely the complex interactions between elements that create an organization, either biological, social or technological. Ludwig Von Bertalanffy’s General Systems Theory (GST, 1937), and cybernetics, in its development through the post-World War II era, have been the most representative strands of systems theory as a transdisciplinary domain, and precursors of contemporary complex systems theory. However, there had been even earlier works in the Russian and German world, such as Alexander Bogdanov’s Tektology (1912-1917), that anticipated many systemic ideas. In the recent decades, the development of information science and computing has significantly contributed in providing tools for a more unified science of complex systems; tools that
mainly consist in computer modeling and simulation. Such tools have been in use since World War II and have become very popular especially since the 1970s, but the further development of technology (for instance, of sensors that enable data input and creation of feedback circuits) and software design, as well as the increase of computational power, have made complexity simulations all the more sophisticated.\footnote{11}

Not only the increasing cross-disciplinary research in complex systems but also the publication of several books addressing the lay reader are indications of the popularization of complexity theory, especially since the 1990s. It is no longer cybernetics that prevails in the area of systems research but new domains have emerged such as chaos theory in the 1980s and network theory in the 1990s, helping to draw towards a general science of complexity that encompasses these already interdisciplinary strands (see Mitchell 2009). In the development of systems theories throughout the 20th and the beginning of the 21st century, “complex” seems to have become an indispensible part of the word “system”. This is indicative of a gradual turn, already manifest during the development of cybernetics as Katherine Hayles (1999) shows, from ‘top-down’ control and maintenance of a systemic organization to a ‘bottom-up’ constitution of the system, subject to dynamic transformation and unpredictable perturbations. Ian Bogost distinguishes between two different kinds of systems and maintains that this distinction also characterizes systems theory. Classical systems theory privileges top-down instead of bottom-up approaches, while in the new complex systems theory, the emphasis is placed on units and their decisive role in structuring the system. Units are agents of complexity as long as they interact and form aggregates that are more than the sum of their parts, and by further becoming themselves subsystems of larger organizations, in an ever-expanding chain of growing complexity.

From the aspect of the sciences of complexity, complex systems are considered aggregates and constellations: they are compositions of many individual elements into “constitutive” (and not “summative”) complexes.\footnote{12} Many different systems, biological, technological, social or psychological can be considered as complex: from the human immune system to the brain’s neural network, from cities to commercial firms (see Holland 1995; Johnson 2002; Mitchell 2009), and from the World Wide Web to the Internet Movie Database (IMDb).\footnote{13} Even though complex systems always form ‘wholes’ larger than the sum of their parts, these wholes produce their self-organization only through the aggregation of heterogeneous units.

It has been suggested that the interest in systems complexity that crisscrosses different cultural fields is the expression of a ‘paradigm shift’ in the way we analyze media texts, but also ourselves and the world we inhabit. As Peter Coveney puts it:
over the past 30 years or so, an alternative conceptual picture has emerged for the study of large areas of science which have been found to share many common conceptual features, regardless of the discipline, be it physics, chemistry or biology. Self-organization and complexity are the watchwords for this new way of thinking about the collective behavior of many basic but interacting units. In colloquial terms, we are talking about systems in which “the whole is greater than the sum of parts”. (Coveney 2003: 1057)

In my study I highlight the fact that the complexity discourse has already affected film theory and practice, and therefore I suggest that we can also analyze media texts, such as films, through this lens. Such a complex systemic thinking and analysis of cinema and its individual filmic formations, as I will argue, is not only made possible, but actually necessitated by the highly interconnected and complex function of contemporary societies, where it is impossible for any type of discourse or cultural institution, such as the one of cinema, to stay unaffected by its placement in a network of institutions that overall functions as a complex organism. Being an agent in this network, cinema organizes itself in ways that allow it at once to cope with the complexity of its environment and to further develop its own complexity. By struggling to incorporate practices coming from different media in the production and distribution of films (from ‘cell phone cinema’ to online file sharing) but also in the conditions of spectatorship, which have become more mobile and fragmented and demand more interactivity, cinema achieves higher internal differentiation. Complex films as expressions of this complex cinema are more than just complex narratives; they are the units through which cinema re-invents itself and adopts to the highly volatile conditions of network society.

The framework offered by complex systems theory helps us see the transdisciplinarity of certain phenomena, not only across media but also across other fields of knowledge. As the complex systems framework places the phenomenon of complex films in a wider cultural paradigm shift towards complexity, films themselves can be seen as nodes in larger cultural networks, and expressions of wider changes in knowledge and experience of the world. Complex systemic approaches to contemporary cinema reveal that complexity not only challenges our presumptions about cinematic texts and their reception, but also paves the way to study how films themselves form aggregates out of which new modes of story world production and reception, new practices of filmmaking and new ‘spectatorship contracts’, as Elsaesser would have it, emerge within the media sphere. Complexity science not only offers us a different framework and a different vocabulary to analyze complex films, but also proposes a different epistemological (in terms of ‘how’ we approach our object of study) and ontological (in terms of ‘what’ is this object) approach to cinema altogether.
**Pieces and aggregates**

As with complex systems theory, which flourished partly because of the advances in computing (the “butterfly effect” which marked chaos theory was after all discovered during the process of computer modeling of weather systems), the appearance of “complex” narratives also has informational and technological causes. The possibility to take into account (and compute) the most minimal components of a system (such as the flapping of a butterfly’s wings, in the metaphor of the butterfly effect) revealed how their impact might be tremendous for the shape that a system might take over time. As it happened in chaotic systems research, in the media field too, information technologies now create the possibility to distinguish the individual units/components of the image (e.g. the pixel). There are certain scholars who have argued that contemporary complex films somehow incorporate digitization, introducing a “database aesthetics” in their narrative form (Cameron 2008: 42; see also Cubitt 2004, Kinder 2002, Manovich 2001), and thus, treating their narratives as composed by pieces (of data) that can be individually accessed and reordered. Allan Cameron has stressed that complex films thus display modularity, which is a form of aggregation, and also a characteristic feature of new media (Manovich 2001). These films also highlight and remix their individual components, somehow reproducing at the plot level their ontological transformation.

Modularity also characterizes complex systems approaches—which consider systems dynamic and tentative organizations subject to the different interrelations between the components/subsystems (Varela 1990: 20). A crucial difference between the modularity of systems and that of databases is that in complex systems the components self-organize, and therefore display an agency of their own, instead of that of an external user. By contrast, the components of a database do not have any inherent systemic qualities; they show such qualities only if there is an external agency that enables the aggregation of the components. Yet, as I will maintain throughout this study, the theoretical approach of complex systems is adequate for the analysis of complex films, as it releases the degrees of freedom in the interactions of the components that they contain, and furthermore, their self-organizing potential in creating meaningful wholes. Self-organization is here suggested to take place at the interface between the text’s form and the cognitive activity of the recipient, the area which narratology, especially in its cognitive strands, addresses using the term “narrative”—with the defining characteristics that I have already problematized.

The insertion of the theoretical tools of complex systems theory serves the need to address the dynamic filmic and cognitive formations that emerge through the connection of heterogeneous and spatially distributed elements. These new tools can therefore significantly contribute, conceptually as well as methodologically, to the analysis of complex narrative
films. A complex systems theory for complex films would translate between the two mutually unintelligible levels of the strictly computational properties of the digital, which lends its form to contemporary films, and the human consciousness that still needs to incorporate it into a meaningful system. This process of translation would however not subordinate the one to the other. In current media theory, the dilemma between narrative and database and their different media forms and types of data organization is one of the most controversial topics (see Manovich 2001). This dissertation will move towards transcendence of this dilemma, which is incarnated in the paradoxical form of complex films, as Marsha Kinder among others has indicated in her theorization of database narratives. In my view, the solution is not to use complex films (or “database narratives”) as agents of reconciliation between narrative and database, but to study in what ways these films fail to fully accommodate either of these two different cultural forms. Responsible for this ‘failure’ is that complex films are neither databases nor narratives; they are complex systems. On the one hand, databases are not easily compatible with the idea of a system, because their elements do not form a coherent whole. On the other hand, narrative has always been compatible with the idea of a meaningful and ‘closed’ system. In its theorization, through the interplay between syuzhet and fabula (Russian formalism) or récit, histoire and narration (Genette), narrative is a textual and cognitive organization that tests its elements (events in the text) against a backdrop of a certain order (the one implied by the fabula or histoire), which follows the rules of causality and temporal and spatial continuity. In the light of the recent expansion of the ideas of complexity, many theorists argued that narrative has always been complex, mostly referring to the cognitive processes of the authors and the viewers in their mental structuring of a storyline.14 However, what the contemporary (and highly self-reflexive) movies of the complex film tendency make possible is to trace how they build their complexity through processes of aggregation of individual components. These processes can be described in complex systemic terms, and yet differ from the modes of systemic organization associated with narrative. What I suggest is thus not a simple inversion of the causal sequence, one that, instead of imposing the order of a preexisting narrative structure on the dispersed textual components of films, would start from the latter in order to prove narrative as an ‘emergent’ order. This is, after all, what narratology has always been doing in an often fascinating way. Rather, my approach points at a departure from narrative and a set up towards unpredictable and new directions beyond it.

Remarks on my theoretical approach, structure and methodology

Cinema offers a fertile ground for my research, not only because it is from this medium that the theories of complex narratives have resurfaced, but also because in cinema “narrative
integration” has been playing such a restrictive role in film production. Because of this standardization of the narrative model in cinema, the contemporary play with the narrative form creates more significant perturbations than in other media that have a fragmentary nature, such as television. Moreover, that proportion of cinema theory that is based on narrative cinema, such as Bordwell’s, often tends to over-emphasize the forces that are centripetal in the “experimentations” of contemporary cinema (pointing back to narrative and its modes of organizing meaning),\textsuperscript{15} rather than centrifugal (pointing beyond narrative).

In the history of film theory there have been significant systemic approaches to film, like the structuralist approach of Christian Metz, influenced by Saussurian semiotics. Bordwell’s and Thompson’s approach to films is also systemic in principle, since they define a film’s form as a system: “film form is a system—that is, a unified set of related, interdependent elements” (2008: 65). In the present work I do not follow a semiotic framework for systems, but one that, as already broached, was gradually shaped through the development of systems theories, especially in the second half of the 20\textsuperscript{th} and the beginning of the 21\textsuperscript{st} century, and the rising interest in systems’ complexity. Moreover, I stress the complex and not just the systemic properties of films. It is only through the former, as I will argue, that the connection between films, cinema and other systems can be highlighted.

When it comes to the discussion of contemporary “complex narratives”, and especially “forking-path”, “puzzle” and “network” narratives, Bordwell reaches to the science of complex systems, but stays mostly at the surface of ‘thematic influence’ that these films have received from it. For instance, he sees \textit{Run Lola Run} as indicative of the popularization of chaos theory (in the form of “the butterfly effect”) and various “network” narratives to be influenced by the popularization of network theory, in the form of “six degrees of separation” (Bordwell 2006: 93, 100). Although my own approach, like Bordwell’s, is also influenced by these theories, my goal is to show that complex films do not reflect complex systems, but function themselves as such, in the context of their complex environment, that of the institution cinema and its own embeddedness to more extended systems. Thus, films do not fulfill their purpose when they become coherent wholes of interdependent elements in the mind of the spectator. These wholes rather stay open and function as nodes in the networks that connect films with other films, cinema with other media systems, and media systems with the complex system of global economy and cultural production. Establishing a link between complex films and complex systems and highlighting their structural similarities, is to show that individual films—as textual systems—participate in complex networks of systems that function in a homologous way.\textsuperscript{16} Therefore a change of theoretical and potentially of methodological framework is necessitated to address individual films as constituent units of complex cinema.

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A comprehensive study of the complex workings of complex films would move beyond the textual level, taking into account the ways that the ‘senders’ and ‘receivers’ of these film-texts participate in their complexity. The inclusion of qualitative and quantitative data about film production and distribution conditions, audience reception, or individual film perception (which now flourishes in neuropsychology with the help of sensorimotor data-mining and fMRI representations) would make the study of the complexity of individual films or of groups of films more comprehensive. My theoretical study could be used not to draw definite conclusions but to construct hypotheses about how complex processes found in specific film texts might also be the case at larger scales of cinematic organization. In this study, I take the individual films as units of analysis. Thus, I consider film texts the small units that compose the institution cinema. Since complex systemic approaches favor bottom-up methods and “unit operations”, I believe that the study of these small cinematic units as complex systems in their own right might provide insight into how they influence and determine the current development of cinema.

In the course of my research, I observed how in contemporary complex films the diegesis is internally ‘multiplied’ into several temporal loops, frames, agencies, perspectives and story-threads. It is this textual multiplicity that makes the theoretical and methodological approach of these films as complex systems plausible. The ‘non-linear’ arrangement and composition of heterogeneous units in complex film texts arguably affects and transforms the way their diegetic worlds are organized. In my methodological approach, the organizing principles of time, causality and space are not taken as starting points and pre-existing axes that configure the films’ diegetic organization. Rather, these principles cede their place to processes that emerge from the complex interrelations and aggregations of units into emergent structures that engage the viewer in a different way than narrative does.

The dissertation is divided into three parts and each part opens with a chapter about an individual film. The complexity of the films I analyze is revealed by a method of following the gradual articulation of their elements—the aggregates that their diegetic pieces form. In this way the films function as heterogeneous and expanded surfaces on which complexity builds up. The complex systems framework also informs the structure of the dissertation, in terms of chapter arrangement: within each part, the films are put forth as units of analysis, while bridges to other films of the “complex narrative” tendency and to the relevant theories (narratological and systemic) are gradually built in the chapters that follow.

The second chapter of each part deals with the problem of the paradoxical nature of complex films, highlighting their ‘anti-narrative’ features. Thus, after analysing each film, I problematize the fact that characteristics that have traditionally been considered as antithetical to narrative, such as self-reference, loose causality and description, proliferate in them, as well
as in other contemporary complex films. This paradox calls for a deeper investigation into narrative’s own internally subversive dynamics, and therefore, its limitations.

In the third chapter of each part, the anti-narrative features proliferating in complex films are reinterpreted as organizing forces through the framework of complex systems theory. Thus I derive from selected parts of the theory and philosophy of systems, three fundamental processes of complexity, namely reflexivity, emergence and pattern formation, and show how time, causality and space —traditionally considered the organizing principles of narrative— can now be thought as the products of these complex processes. Reflexivity, emergence and pattern are arguably modes of—distributed and dynamic—organization characterizing both the textual/filmic arrangement of story worlds and their cognitive processing by the viewers. Thus, the complex systems framework provides me with lenses to reflect upon complex processes involved in contemporary films that cannot be confined to the label ‘narrative’, and to suggest a new, alternative model for the analysis of these films.

Chapter outline

Part 1: Reflexivity

Part 1 opens with an analysis of the film *The Final Cut* (Omar Naim 2004). Transforming the fictional device found in the film’s diegesis, namely the ‘implant’, into a theoretical device, I treat the temporal loops of the film as implants of self-reference that gradually compose the film’s organization in a modular, but also non-linear and increasingly complex way.

In Chapter 2 I examine the function of self-reflexivity in contemporary complex films against the backdrop of the traditional theorization of self-reflexivity (or self-reference) in narratology and film theory. These traditions have considered self-reflexivity to be an anti-narrative device. Particularly since the 1970s, self-reflexive means in cinema have been considered to counteract the ‘illusion’ that every fictional story is supposed to create. However, a significant part of the recent literature on complex films seems to be suggesting that their feature of self-reflexivity creates curiosity and care for the story world instead of—or even along with—critical distance. Distinguishing between metanarrational and metafictional reflexivity I suggest that the self-reflexivity found in contemporary complex films is primarily metanarrational, and establishes feedback between the film and the viewer, inviting the latter to participate in the constitution of the diegesis. This function implies that, even when it does not serve the construction of a coherent narrative, self-reflexivity still is an important factor of organization.
Chapter 3 draws on the systems theory of Niklas Luhmann, where “reflexivity” is the process of temporal organization of systems. This organization is effectuated through continuous self-observation (or self-reference) of a system. Connecting this self-observation with metanarration in contemporary complex films, I argue that these films, through multiple instances of self-reference, make events “re-enter” the filmic process (for example, through flashbacks and flash-forwards), and thus constitute their temporality in a non-sequential way.

Part 2: Emergence

Chapter 4 is an analysis of the film *Burn After Reading* (Ethan and Joel Coen 2008), testing it against the backdrop of the films theorized as complex, and especially those characterized by Bordwell as “network narratives”. Looking at the different types of causality involved in the diegesis of *Burn After Reading*, I differentiate between an anthropomorphic micro-level of causality and a nonhuman macro-level. I argue that the film requires from its viewer to combine these different causal levels in a nonlinear way in order to construct a ‘network’ of action between multiple characters-nodes, and to follow their heterogeneous trajectories that never form a comprehensive whole.

Chapter 5 is an examination of the workings of causality in the contemporary complex films that contain multiple characters, and which have been characterized as “ensemble”, “hub and spoke” or “network” films. The defining characteristic of classical narrative films, i.e. their cause and effect chains of events, appear in these “complex” films loosened, giving their place to contingency. Criticizing the way Bordwell discusses this “loose causality” of network narratives as ultimately returning to the “customary path” of classic narration, I argue that causal processes taking place in complex networks may also be at work in network films. In the latter, traditional causality (in the form of cause and effect chains) is suspended, while a synergetic causality emerging from the interactions between characters becomes prominent. These interactions are not only narrative but systemic, as long as they increase the informational flow of the diegesis, and create dynamics that connect the micro-level of anthropomorphic agency and the macro-(structural) level of formal transformation, in a nonlinear—and not customary—way.

In Chapter 6 I draw on the science of complex networks in order to explain how the model of causality suggested in Chapter 5 is one conceived in terms of emergence, i.e. the self-organization that spontaneously results from the complex interactions between the various units of a system. Emergence in complex networks is not independent from the micro-agents; it is rather the result of their aggregation, which channels their agency to a different structural level. Such “pattern-based” causality (Goldstein 1996) arguably gives more precision to the
“loose causality” observed in complex films. Moreover, it casts doubt as to whether narrative, as a concept associated—in cognitive terms—with the construction of a causal-logical sequence between events, may be the end-result of the transformative dynamics that complex films release.

Part 3: Pattern

Chapter 7 approaches the film *Gomorrah* (*Gomorra*, Matteo Garrone 2008) as a complex film. I suggest that in terms of cinematography and montage, but also in its narrative construction, *Gomorrah* demands from the viewer effort in order to orient themself in the filmic environment, by shifting between different spatial registers and creating connections between disparate perspectives. These connections gradually produce, textually but also cognitively, a complex space, which seems to extend beyond the closed diegetic universe of the film.

In Chapter 8 I examine the way that space and its ‘complexity’ has been theorized in narratives and films. I argue that the films of the complex narrative tendency tend to have a discontinuous spatial composition, which becomes apparent with regard to multiple units of analysis (frame, shot, scene, episode). To show how this discontinuity produces space, I revisit the narratological concept of description, which has always stayed at the margins of narrative, but now seems to become a form that encompasses the latter. I argue that description responds to the spatial heterogeneity of complex films, and at the same time triggers the viewer’s activity of constituting a diegetic world by making connections between the distributed pieces, and weaving patterns out of them.

The concluding Chapter 9 attempts to clarify some contradicting notions of pattern that have been used in theoretical approaches of complex films. Combining a spatial definition of pattern (drawing on the literary theory of the “spatial form” by Joseph Frank) and an emergent one from complex systems theory, I argue that complex films create patterns both intra-diegetically (through their bottom-up organization by the aggregation of heterogeneous units) and extra-diegetically, by aggregating heterogeneous cinematic traditions of narrative order and contingency. Complex films thus build for cinema an organization that is coherent enough to navigate, orient itself and evolve in a complex environment.