Before or beyond narrative? Towards a complex systems theory of contemporary films
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3. Reflexivity and organization in systems and in complex films

In this chapter I will pursue a revision of the concept of reflexivity through the systems theoretical framework, which illuminates reflexivity’s particular ‘complex’ function. Thinking complex films as systems will allow me to revise the previous accounts of self-reflexivity in narratives and films and place the term in a context that departs from objectivist epistemology, which determines the ‘anti-narrative’ as ‘anti-illusionistic’. The argument I make through this chapter is that (self-)reflexivity leads beyond narrative, not only because it is anti-mimetic, but mainly because it suggests a nonlinear and continuously renewed form of textual organization. The shift of analytic framework to systems theory will also provide me with a useful distinction between the different levels of self-reference and reflexivity. A systemic approach to complex films allows for further insight to be gained in both their “mind-game” aspect, which I associate with systemic self-reference, and their nonlinear temporal structure, which I associate with systemic reflexivity. The way these two aspects are interwoven is what makes the films under question functioning as complex systems.

The systemic genealogy of reflexivity

The genealogy of the concept of reflexivity extends beyond the discourse of art and film theory. Before proceeding to the theorization of reflexivity in the theory of Niklas Luhmann, I will first sketch the background of the concept in systems theory, and particularly in its cybernetic strand. This framework will make it easier to understand how Luhmann conceived reflexivity as an agent of self-organization and complexity.

Cybernetics, one of the most important strands of systems theory, developed as a research field in the years after World War II. Cybernetics is the science of regulatory systems, that can be organic (living) or not. This discipline’s objects are profoundly reflexive, as psychologist and epistemologist Steven Bartlett notes; they are “self-correcting systems, self-regulating systems, systems capable of self-initiated learning, self-organizing systems, self-reproducing systems” (Bartlett 1987: 24). But also according to the definition of Louis Kauffman, mathematician and president of the American Society for Cybernetics between 2005 and 2008, “cybernetics is the study of systems and processes that interact with themselves and produce themselves from themselves” (Kauffman, as cited in Andrew 2008).

Cybernetics considers humans, animals and machines as information processing systems; therefore, in this context, reflexivity is not associated with self-reference in the sense of self-awareness—the latter implies a human consciousness. According to Bartlett, the ‘recruitment’ of reflexivity in cybernetic models of control was anticipated by earlier
developments in different fields. Semantic theory, argumentation, and theory of knowledge used reflexivity to build a “metatheory” in order to elaborate on the previous intuitive and not fully self-conscious reflexive results of mathematics (the “semantical and set-theoretical paradoxes” and the “intellectual misgivings and confusion” that followed their discovery—Bartlett 1992: 17). In analytical philosophy and argumentation, self-reference has been used as a method that controls and prevents inconsistency and helps the construction of ‘strong’ arguments, by taking into account and ‘calculating’ the influence of the observer’s, thinker’s or speaker’s subjectivity upon the observation, thought or utterance s/he makes. Thus, reflexivity gradually turned, from a power corrosive to the foundations of reason—as in the case of logical, mathematical, or later, post-structuralist paradoxes—into one that may bring positive results for epistemology. It was combined with the human ability for successful problem solving, adaptability to the environment, and control of logical inconsistency (Bartlett 1987: 6). As cybernetics has primarily been the study of control systems, reflexivity in this field has been integrated into the workings of all cybernetic and self-controlling organisms. Cybernetic systems are self-referential; they calculate information about their status in relation to their environment at every ‘step’ they take, and thus regulate, plan and anticipate the future outcomes of their actions.

Through the notion of “feedback” between organism and environment, cybernetics attempted to systematize the workings of reflexivity (Bartlett 1992: 17), which is now conceived more in terms of “circularity” and mutual causality between system and environment, rather than in terms of first-degree self-reference (Suber 1987: 259). Because of the inseparability of system and environment and the mutual causality between them, every action an organism performs is already determined by previous feedback from the environment and further continues the feedback chain. In cybernetics reflexivity presupposes that every action or observation is not done in a vacuum; at the moment it takes place it also constitutes a ‘self’ (as system) vis à vis an environment.

In her account of the history of cybernetics through the minutes of the Macy Conferences (1946-1953), Katherine Hayles highlights reflexivity as a turning point for cybernetic (and systems) theory, and names the phase in which cybernetics entered in the 1960s as “the phase of reflexivity”. Hayles mentions that the Austrian physicist Heinz von Foerster suggested the application of the self-reflexive principles to cybernetics as a scientific field. Presenting his essay collection *Observing Systems* at the Macy conferences in the beginning of the 1950s, von Foerster expressed the need, as Hayles notes, to take the scientist-observer into account, as well as the context (or “environment”—in this case the field of cybernetics in which they are positioned) in which s/he operates. Thus, von Foerster attempted to “extend the cybernetic principles to the cyberneticians themselves” (Hayles 1994: 442),
opening the “black box” of the observer and triggering discussion on whether the scientists as observers determine the cybernetic systems they observe. Indeed, von Foerster argued for a “second-order” cybernetics—a “cybernetics of cybernetics” (von Foerster 2003: 289)—which would follow the same recursive principles that guide the conduct of cybernetic organisms. Operating through recursive self-reference, a cybernetic organism “refers each incoming signal to its own self […] to establish self-reference with respect to the outside world” (von Foerster 2003: 110). Thus, von Foerster’s account of self-reflexivity associated the concept with contextual meta-information.56

Hayles sees this call for a second-order cybernetics that von Foerster made losing ground with the subsequent development of the theory of autopoiesis by the Chilean biologist Humberto Maturana and his student at the time Francisco Varela. Autopoiesis, which penetrated the field of cybernetics after 1969, when von Foerster invited Maturana to contribute to the Macy Conferences, transported reflexivity to a different level, from the interplay between a system and its environment to that “between a system and its components” (Hayles 1994: 462). Thus, the epistemology of autopoiesis “displaced the focus of attention from the boundary between a system and the environment, to the feedback loops within the organism” (463).57 This idea of the boundary between an organism and the environment being reproduced within the organism itself, is fundamental in the social systems theory of Luhmann, which is based on the theory of autopoiesis.58 I will parallel this ‘internalization’ of reflexivity in cybernetics and systems theory with the textual form of self-reflexivity such as the one suggested by Frank—as broached at the end of the previous chapter. The systemic framework allows me to think of the two levels of filmic self-reflexivity, the one of self-reference in relation to the viewer (metanarration) and the other of ‘internal’ reflexivity (as loops and resonances within the film), as continuous, the one being generated from the other.

Luhmann’s theory of social systems—which he developed in the 1970s—has been influenced by Maturana’s (and Varela’s) theory of autopoiesis. However, the degree to which the circular process of reflexivity is dependent upon the existence of an observer differentiates the use of the concept between Maturana and Luhmann. While autopoiesis still retained a place for an external observer,59 Luhmann took a step further, maintaining that the observer is the system.60 In contrast to Maturana’s autopoiesis, Luhmann’s social systems theory does not require “an observer as another system in order to produce system/environment relations” (Luhmann 1995a: 37). The environment is part of the system and produced by its inner processes of self-reference. However, the system is only operationally and not structurally closed; its self-reference produces an organization that becomes more complex by trying to render its environment meaningful, and to select from it the necessary resources (in information or energy) that will allow it to survive and evolve. As Luhmann notes:
The concept of the self-referentially closed system does not contradict the system’s openness to the environment. Instead, in the self-referential mode of operation, closure is a form of broadening possible environmental contacts; closure increases, by constituting elements more capable of being determined, the complexity of the environment that is possible for the system. (Luhmann 1995a: 37)

After briefly sketching the theoretical and scientific background in which Luhmann’s contribution to systems theory entered, in the rest of this chapter I will argue for the applicability of Luhmann’s theory, and especially his description of systemic self-referential processes, to films of the complex narrative tendency. As already discussed in the previous chapter, self-reference plays an important role in these films and their modes of narration. In general, self-reference in films is expressive of an agency that belongs to the act of narration and manifests itself through various expressive modes, as discussed in Chapter 2. This act does not necessarily point at an (anthropomorphic) subject of narration, that is, the ‘author’ or ‘director’, but at a ‘unity’ that the text gradually forms. Narrative theory presupposes that this unity is a causal-logical one, pertaining to universal schemata of understanding. My suggestion is instead that this unity is one of emergent complex organization, which creates its coherency from the bottom-up (being internally reflexive and self-referential) and not based on some kind of external ‘common sense’. The presupposition of a causal-logical system implies a whole that pre-exists its elements, and determines the way that the disparate or out-of-order parts will finally fall into place. However, moving before the constitution of such whole, and looking at the process through which a film organizes from its elements, puts the validity of this presupposition into question.

Films and narratives are not social systems in the same way that law, economy, politics or religion are, but they could be considered as products of the social system of art, as Luhmann considered narrative, and also of that of mass media—in which cinema as an institution can be classified. At the same time, cinema, despite its structural similarities with other mass media, is also very different from them, and the specifics of its systemic function are yet to be clarified by research. In the same vein, individual films cannot be reduced to their narrative or ‘artwork’ aspects. Only when this distinction between cinema and other systems is effectuated it becomes possible to study how films contribute to the constitution of the system cinema—which currently, as I pointed out in the Introduction, works as a complex system. The specifics of the workings of films, and, by extension, of cinema, as complex systems, is what I attempt with this dissertation to begin clarifying.

With the analogy that I draw in this chapter between social systems theory and contemporary complex narrative films, I do not aspire to address or evaluate Luhmann’s vast,
multifaceted and controversial work in its entirety. Rather, I derive from it his description of
the internal processes that constitute a system’s self-reference, which I find illuminating when
it comes to how (self-)reflexivity, a key-feature of contemporary complex films, as already
discussed, functions as an organizing process.

In the following part of this chapter, I will first explain what is self-reference in
Luhmann’s systems theory, and then single out the systemic process of “reflexivity”. I will
proceed by explaining what particular function reflexivity has in the context of systemic self-
reference, and how it is related to the temporal organization of systems.

Self-reference: From complex systems to complex films

Luhmann distinguishes three kinds of systems: biological, “psychic” and social
systems. Self-reference is for him the defining characteristic of all systems. It is an
“operational closure” that constitutes the system by drawing a boundary between its internal
organization and the environment, and by permitting self-observation (and self-reference)
from this boundary. But the boundary is produced by the system’s own operation; by
observing itself as a distinct entity the system also constitutes its own environment. Thus, the
closure that the boundary suggests is operational (serving the system’s operation of self-
organization) rather than ‘real’, suggesting a disconnection of the inside from the outside.

Systemic self-reference produces complexity in a seemingly paradoxical way, by
reducing the complexity of the environment. The reduction of external complexity produces,
at the level of the system, further complexity. This is effectuated by what Maturana called
“structural coupling”. Every “distinction”, or self-observation, is a selection of information
from the environment. The system, according to Luhmann, selects only what is useful and
relevant to its own internal organization; what produces “meaning”. 62 He distinguishes
between organized and unorganized complexity: the environment is characterized by
unorganized complexity, but the system, through the self-referential distinctions or
“selections” it makes, organizes complexity. The reduction of external (unorganized)
complexity increases the system’s internal, organized complexity, and makes it capable to
evolve (Luhmann 1995a: xxxv).63 Every selection constitutes a system vis-à-vis an
environment but also it establishes a relation between elements within the system, vis-à-vis the
sum of the possible relations—the “surplus of possibilities”—that the system contains (39).

Internal complexity is produced when, with every self-observation and distinction from
an environment, the system achieves higher internal differentiation, and, by extension, more
ways to “couple” further with the environment. This is because every time the system has to
select from its environment what is relevant to its own organization, it makes this organization

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more complex in order to accommodate further complexity with each new distinction. But it is not the environment that determines the system’s structure. What happens, according to autopoietic systems theory, is the reverse. Structural coupling implies that the system, through its own organization, shapes its environment: “environments do not determine internal changes of the system. The environment merely selects states from among those determined by the internal structure” (Bailey 1994: 304). This is the way communication is established between system and environment. Every self-referential distinction is an act of communication, increasing the ways a system can couple with the environment, and making them more refined. In Luhmann’s words: “closure increases, by constituting elements more capable of being determined, the complexity of the environment that is possible for the system” (1995a: 37). The structure of a system at any instant of time is a prerequisite for communication, as it gives leeway for coupling with its environment to be achieved.

In this context, complex films can be seen as products of the internal differentiation of cinema vis-à-vis its environment of audiences as well as of other media and social agents. Cinema self-organizes by increasing its internal complexity, which can be observed in (popular) films and filmmaking practices that become more complex. If we think of film viewing in complex systemic terms, then the “psychic system” of the viewer (according to Luhmann’s triad of social, biological and psychic systems) and his or her cognitive organization would be placed in the ‘environment’ of individual films. The structural coupling of these two systems (the viewer and the film, the one being the environment of the other) is their communication, which is different from the communication created by narrative. The latter, as long as it attempts to construct a causal-logical sequence, seems to be standing closer to the common sense of meaning and communication, and not the systemic one.

A first point of contact between self-reference in systems theory and the self-referential processes involved in complex films can be made through Luhmann’s discussion of self-referential modes in art (2000a: 142). He suggests that through self-reference, artworks, among which he classifies novels, create “doublings of reality copied in the imaginary reality of the world of art”. Thus artworks re-introduce into their own form the basic distinction upon which art operates, namely a distinction of perception between the ordinary and the imaginary, or even, reality and illusion. Such doublings created within the artworks can be those between “reality and dream [...], reality and play, reality and illusion, even reality and art” (ibid, 143). But, as all distinctions, they only point at the unity of the difference they introduce, namely, in the case of art, the absence of a dichotomy between reality and imagination. It is the system of art itself (here considered in its function in society and not through qualitative criteria) that represents this unity: in the realm of art, reality and illusion can coexist, since artworks are real objects that construct imaginary worlds.
Self-reference in narratives has recently been approached from the aspect of systems theory, by scholars Joseph Tabbi and Bruce Clarke. More specifically, Tabbi (2002) refers to self-reference as an act of narration. Especially when self-reference is placed at the end of a “complex” novel, it demonstrates the ability of narrative to overcome the chaotic forces of high complexity. Tabbi especially refers to novels such as Thomas Pynchon’s *The Cry of Lot 49*, Richard Powers’s *Galatea 2.2*, Paul Auster’s *City of Glass* and Kate Markson’s *Wittgenstein’s Mistress*. In these novels, when a high level of complexity is achieved, the author’s self-reference (expressed through phrases that can be characterized as metanarrational comments) enables an exit from narrative’s paradoxical self-closure and its transfer to a meta-level, where it can observe itself. Therefore self-reference re-enters the distinction between system and environment (story and a ‘non-story’ of random information) inside the stories, producing an observer—the narrator—who now intervenes in the story in order to observe it from a different meta-position: “the moment a narrator recognizes the possibility of ‘keeping a journal of the journal’, or of turning one’s isolated inconsequential notations into an ‘absolutely autobiographical novel’, the narrator re-enters the system at another level (and at a later time), and thus keeps things going” (2002: xxii). These self-referential instances are for Tabbi instances in which “the system becomes conscious of itself”, and then uses this self-consciousness as information, re-entering the distinction between itself and its environment into the system, and thus being able to develop (65).

In *Posthuman Metamorphosis: Narratives and Systems* (2008), Bruce Clarke, attempting a convergence of Mieke Bal’s rereading of Genette and Luhmann’s systems theory, argues that the systemic framework is applicable to the narratological study of cultural texts involving “posthuman transformations”. Such texts vary from Stanislaw Lem’s *The Cyberiad* (1965) to Octavia Butler’s *Xenogenesis* trilogy (1987-1989), and from H. G. Wells’ *The Island of Doctor Moreau* (1896) to David Cronenberg’s *The Fly* (1986). Clarke analyses the self-reflexive structures of these texts such as paradoxes, embedded frames, “stories within stories and plays within plays” (9), and their multiple diegetic levels, and he comments on the way the observations of transformation that these novels diegetically perform can be seen as shifts from first to second order observation (not just observing something, but observing oneself observing something). Such second-order observations are, according to Clarke, characteristic not only of stories about metamorphosis but of narrative itself, as they are at the core of narrative’s function as “a form of communication through processes of observation” (78).

Despite these few but significant attempts in literary theory to use systems theory and especially Luhmann’s model and the notion of self-reference to analyze narratives as systems, my own approach of complex films as complex systems differs from them in some substantial
points. Firstly, these attempts do not particularly address the self-referentiality of film, with its own particular modes of expression, let alone the expressions and transformations of cinematic self-reflexivity in contemporary complex films. On the one hand, Tabbi’s approach refers to cases of literary self-reference, expressed by the intervention of the narrator’s self-reflection (in the form of metanarrational comments), that are fundamentally different from the filmic self-referential (and metanarrational) devices. On the other hand, although Clarke makes extensive reference to a film (Cronenberg’s *The Fly*), he does not discuss the devices of cinematic self-referential discourse as instances of systemic observation, when metamorphosis as such is not thematized by the plot, as it happens in the stories of the novels he analyzes. Secondly, as already implied, these attempts insist on seeing the systemic function of texts as “narrative”, without addressing the paradox of the anti-narrative elements—and here particularly self-reference—that these texts show in the first place. As discussed in Chapter 2, according to Genette self-reference (through discours) introduces an inner tension with narrative (particularly with récit), but this tension has not sufficiently been addressed by scholars in texts that show high degrees of self-reference, not so much thematically, such as the stories of metamorphosis Clarke discusses, but also structurally, as in contemporary complex films. Are these texts narratives of a second-degree or, by showing more commonalities with systems than with stories, do they suggest a departure from narrative?

Through the various ‘twists’ that many of them contain, complex films seem to be inviting the viewer to observe their narrative worlds, in a process similar to the one Clarke describes, and to make distinctions between reality and illusion, producing through these distinctions a unity that is the system of narrative, as Luhmann would have it. This level of self-reference would address the metafictional aspect of complex films, which has to do more with the way they undermine the truthfulness of their own narratives. However, as pointed out in the previous chapter, complex films also display a strong metanarrational reflexivity. The play between reality and illusion that can be observed in them is combined with a self-conscious narration that directly invites the viewer to participate in the construction of the diegesis, independently of the unreal impression that their story worlds create.

The moments when the viewer, in the process of watching the film and not *a posteriori*, ‘realizes’ that the narration deceives them—as it often happens in complex films (especially those characterized as “puzzle” films)—can be seen as instances that increase the communication between film-system and viewer-system and make the cognitive organization of the latter, as an effect of the structural coupling with the film, more complex. Along with the twist or “mind-game” moments that happen within the diegesis of complex films, we also have the self-reflexive practices that guide their plots’ structuring, such as the openly restrictive narration or the time-juggling. These practices have been considered anti-narrative,
as already discussed, because they point at the film itself (and not just the narrative) being in some sense the construction of an agency, and therefore having a somewhat factitious or ‘illusory’ status. The function of these self-reflexive devices can be reinterpreted when seen as levers of systemic self-organization. Thus, instead of alienating the viewers, or making them ‘reflect’ upon the film (by means of a subject-object relationship and positivist epistemology), self-reflexive techniques engage them in an increasingly complex communication. Thus, contrary to what has been characterized as a “low level of communicativeness” in puzzle films (based on Meir Sternberg’s taxonomy—see Panek 2006, Bordwell 1985), their unwillingness to “tell everything” that they know and their “openly restrictive narration” that flauntingly omits information from the spectator (at least until a twist moment comes), might suggest a different form of communication, which engages the spectator more deeply and in fundamentally different ways; not those of cognitive reflection but of systemic self-reference. The “id” of the narration, which “flaunts its uncommunicativeness” (Panek 2006: 85), might then be exactly the film’s call for a different, systemic communication.

The “operational reflexivity” of which critics like Mittell talk about in relation to contemporary complex narratives, creates care for the story world instead of critical distance. I would add that self-reference in contemporary complex films achieves not only ‘care’ for the characters and the story, but also for the film as such, the particularity of its experience and its way of constructing a diegesis (in the expanded sense used in Chapter 2). In systems theoretical terms this may be explained as follows: every time there is a self-referential distinction in complex films, this distinction does not have as a consequence the detachment of the film from its environment-viewer, neither a cognitive distancing of the latter, but the further development of internal complexity, which ultimately engages the viewer in more complex ways as well, because of the new possibilities for coupling that emerge (since every system by increasing its internal complexity lends itself to further coupling with its environment). Thus self-referentiality becomes a communicating principle in complex films, as long as it enables the emergence of meaning in each system, the one of the viewer and the other of the film.

Reflexivity and temporality: A separate plane of self-reference

Apart from systemic self-reference, what I believe becomes of particular relevance when it comes to complex films is the inner process of self-reference that Luhmann calls “reflexivity”, which needs to be given separate attention. It is thus of interest to the purpose of this study to somehow isolate the workings of reflexivity from that of systemic self-reference, and see how the latter is produced through the former.

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In Luhmann’s systems theory, reflexivity has been linked to the complexity of systems. According to my hypothesis that complex films can be approached as complex systems, I will suggest that Luhmann’s theory provides insight into the role of reflexivity in them. In his systems theory, reflexivity is the temporal organization of a system through self-reference, and can therefore serve as a useful theoretical tool for the analysis of the complex interplay of self-reference and the (out of sequence) time in complex films. Using Luhmann’s conception of reflexivity and self-reference, I will argue that the textual and cognitive organization of complex films is produced primarily through self-reference. Time is also a product of this self-referential organization.

Luhmann distinguishes between different processes of systemic self-reference, which takes place on multiple levels, such as that of the system as a whole vis-à-vis its environment, and that of the ‘elemental’ (at the level of elements) constitution of the system. “Reflexivity” and “reflection” are two types of the self-reference that produces the system’s organization—the third is “basal self-reference”. All three kinds of self-reference, namely reflection, reflexivity and basal self-reference, and all types of relations corresponding to them, namely “system-environment”, “before-after”, “element-relation”, constitute a system’s self-organization. Observation is itself dispersed in this systemic nexus; it happens at many levels—and across the different levels of self-reference—and constitutes the system’s complexity. The type of self-reference that specifically operates at the level of the system-environment distinction is “reflection”. While reflection refers more directly to the system as a whole, and controls its relation to the environment, reflexivity refers to the relations between the elements of the system, and thus the “interplay between a system and its components”. In particular, reflexivity operates at the intra-systemic level of the temporal organization of the system’s elements. According to Luhmann, every system that can display self-reference (such as a social, conscious or biological entity), is composed by the triad: elements (events and actions) – processes – systems (1995a: 10, 447). Reflexivity is the type of self-reference that refers to the “process” part of this triad.

Reflexivity is a mode of self-reference, but it does not refer to an ‘outside’ of the system (its relationship with an environment and the borders that define it), neither to the system itself from an external perspective, but to the process that constitutes the system through the arrangement of its elements. Reflexivity is the way an element of a system “refers” to other elements of the same kind, and not directly to the system they constitute (see Luhmann 1995: 39). I find the function of reflexivity particularly relevant in the context of the systemic organization of contemporary complex films and the “modular” temporality that they display. Thus, I am going to argue that, by “re-entering” events/distinctions into the temporal
sequence of these films, reflexivity at once spatializes and produces time, making the films’ structure more complex.

Luhmann describes reflexivity as a process that observes the temporal constitution of a system through its selections-events (the elements that compose it). Through reflexivity, a system makes selections from its environment (thus produces new events for itself) based on earlier and later events (previous selections and future expectations). Thus, reflexivity is the process that makes events (elements, singular occurrences) “re-enter” into the process acquiring “predictive value” and forwarding the events that are about to come. Through this procedure, “the unity of the process acquires causal significance for itself”, and also “guides and controls” itself (Luhmann 1995: 450-451). Reflexivity thus becomes a basic process of self-organization; selecting events and composing the system in time, it generates the system’s causality and makes its communication with other systems (such as the one of the viewer, in the case of films) possible: “Therefore an observer can detect movements, follow melodies, and figure out what is going to be said” (Luhmann 1995: 451).

This means that a self-referential observation affects the structure of the system’s elements, selecting also at the level of elements certain relations and not others. Meaning emerges in temporalized systems that are able, through reflexivity, to indicate something as having preceded and something else as about to follow. In the particular case of the art system, Luhmann notes:

Temporal positions in art […] are determined by their own vanishing, and the artwork must define what remains significant and what can follow—a momentarily fixated and vanishing where and whence. It is always the difference, the boundary, that makes a difference and is turned into information by the work of art. (2000a: 115)

It is this difference between before and after that reflexivity observes in systems and thus retains and, more precisely, remakes, the system’s unity in time. Turning it into information, it organizes itself and also, at another level, differentiates itself from the environment.

Since self-reflexive observations continue over time and new selections take place, these selections are treated by the system as events, that is, as singular moments in time; they are thus being “temporalized”. This ‘elemenal constitution’ makes structure (as the constitution of links between elements) and organization possible. Yet these structures need to be flexible and constantly reformulated, because each new event creates new relations between the system’s elements, new ‘befores’ and ‘afters’. Structures have to “glue back” events in the right place and “treat them as if they were expected” (Luhmann 1995: 287). As Luhmann contends, “events present the irreversibility of time within systems. In order to achieve
reversibility, one must form structures” (ibid: 449). By self-organizing, systems not only cope with the complexity of their environment, but also with the irreversibility of time. Their organization exists in time and is irreversible, but their structure enables them to temporarily withhold selectivity, to ‘fake’ a momentary ‘freeze’ of time, so that they can select from its flow those elements that serve their internal organization. Thus, as Michael Schlitz notes, time in Luhmann’s systems theory appears in the shape of a “torus” rather than in that of an arrow (2007).

Looking back – going forward

Through the example of The Final Cut (Chapter 1) but also through the overview of filmic self-reflexivity and its particular function in complex films (Chapter 2), two conclusions can be drawn: self-reference is an important (though traditionally ‘anti-narrative’ or in tension with narrative) feature of contemporary complex films. A way through which self-reference is expressed is the one of non-sequential temporal structure (or ‘time-juggling’), which, is a fundamental form of narrative discourse and at the same time “data of voice”, according to Genette, that is, a narrational marker. Far from a random ordering of events in time, the non-sequentiality of contemporary complex films often consists in revisiting and ‘replaying’ past events through a different perspective, for instance through that of a digital inscriptive device (the zoe-implant) in The Final Cut. Less in The Final Cut and more in other films like The Jacket (John Maybury 2005), it is also flash-forwards that are inserted into the present to—again—offer a different perspective, albeit with not always known subject or source, and that introduce doubt to the now lived experience—of the character, but also of the viewer. The changes of perspective that these analeptic and proleptic moments suggest, and the different glances upon self-experience through another that they introduce (another moment in time but also another agency), seem to me more relevant to self-reference than to time itself. This proliferation of self-reference ‘copes’ with time as a pre-existing force, and re-introduces it as a side-effect of the system’s gradual organization. It also manages to capture the viewer into the text’s own complex organization.

This coupling of self-reference with time in contemporary complex films offers an important connection with complex systems. The organization of complex systems, like the one of complex films, takes place in time as all organizing processes do. But internally, systems create time in the form of relations (based on the before-after difference) between events-selections out of the complexity of their environment. Thus systems refer to (and observe) their own process of self-organization. Reflexivity goes hand in hand with a reproduction of the system’s structure: through it, every event “re-enters” the system’s
existing organization, constituting an observation upon what has preceded (before) and what will follow (after). As Luhmann explains,

Systems based on events need a more complex pattern of time. For them, time cannot be given as an irreversibility alone. Events [the systems’ composite elements] are happenings which make a difference between a “before” and a “thereafter”. They can be identified and observed, anticipated and remembered, only as such a difference. Their presence is a co-presence of the before and the thereafter. They have, therefore, to present time within time and to reconstruct temporality in terms of a shifting presence which has its quality as presence only owing to the double horizons of past and future which accompany the presence on its way into the future. On this basis conscious time-binding can develop. (Luhmann 1986: 181-182)

Time in complex systems emerges as a construction created by the event of a difference, which ‘generates’ a before and an after (through links to prior and expected events). The system accommodates this difference by assimilating it into its structure, and acting ‘as if this difference was expected’. The notion of “re-entry”, fundamental in Luhmann’s systems theory, here becomes particularly relevant. 70 Luhmann ‘borrowed’ this notion from the mathematician George Spencer Brown (who in his work Laws of Form developed a calculus of first distinctions) and adopted it to his social systems theory, in order to explain the way self-referential systems introduce (or “replicate”) in themselves the difference between system and environment. The paradox or contradiction that re-entry suggests in logics, was solved by Spencer-Brown through the insertion of time: two contradictory states of a form are not incompatible as long as they refer to different moments of the same form in time (Schlitz 2007:17). Reflexivity in Luhmann’s theory, differentiating between before and after, creates time in the same way, as a solution to the paradox of self-reference. Reflexivity guides this process of re-entry, as singular events constitute instances of differentiation between past and future, and thus “force” distinctions at the level of the system’s elements. These distinctions are “internal boundaries” of self-reference.

Re-entry makes a system capable of evolving by inserting its output (system-environment difference) back into the system as input (reproduction of the system-environment difference inside the system itself). Luhmann describes this feedback process: “the system nevertheless has to start every operation from a historical state that is its own product (the input of its own output) and needs a memory function to distinguish forgetting from remembering, and it has to face its future as a succession of marked and unmarked states or self-referential and hetero-referential indications” (1995b: 42; emphasis mine). Through
reflexivity, systems create a history for themselves by observing the relation between their input and their internal structure, and they proceed with continuous distinctions between forgetting and remembering, as certain ‘past’ elements are linked to the present event, and some others are ‘forgotten’. A system’s self-observation always implies time as difference: it is only retrospectively that a system is capable of making the cut—the prerequisite for any kind of observation. As long as reflexivity operates at the before-after distinction of every system, regulating its autopoiesis, then I would argue that reflexivity in Luhmann’s systems theory becomes a sort of systemic memory; it is the mnemonic function that the system needs in order to organize itself. Moreover, this memory is implanted, as long as it is an inserted self-observation (inserted because it always comes from something different than the system—when the systems observes itself it is always from a later point in time). And the system constitutes itself through a series of such implants. The creation of the system thus becomes a spatial construction, unfolding in continuous loops.

On the one hand, (self-)reflexivity spatializes time—by giving it the shape of a torus—the space that folds upon itself—but also by juxtaposing past, present and future at the moment of re-entry. On the other hand, reflexivity also produces time. This ‘juggling’ is the way time and meaning are gradually constituted in a complex self-referential process:

The duality of horizons doubles as soon as we think of a future present or a past present, both of which have their own future and their own past. The temporal structure of time repeats itself within itself, and only this reflexivity makes it possible to renounce a stable and enduring presence. (Luhmann 1986, 182)

The process of reflexivity seems to be the missing link in the function of complex films as complex systems. The way re-entry works in them, at the moments when the past is observed from the present (flashback), or the future is observed from the present and vice versa (flash-forward), is reflexive. On the one hand unexpected and twisting, coming from ‘outside’, on the other hand demanding an internal modification of the system and creating links between its elements, such reflexivity is textual in a way reminiscent of Frank’s “reflexive reference”, the way that textual elements relate to other elements in a text, giving it a spatialized form. At the same time, through the re-structuring effectuated by time-juggling, whole segments of complex films, such as scenes, also become temporalized. The present becomes a temporal chunk, a moment or “event” (a point in “a spatiotemporal model”, according to Floyd Allport—as cited by Luhmann 1995: 287), and this is necessary in order for it to be linked to other prior or later events, and be assimilated into the structure of the story.
Here it seems that we have two contradicting tendencies; one that juggles time and one that structures it, one that could be characterized as ‘anti-narrative’ and one as narrative. Luhmann’s systems theory has a counter-intuitive force, in that it shows how time-juggling is the ‘norm’ and not the exceptional state of a system. A system spatializes time and then temporalizes space, so that it can keep its own structure and remain open to the contingency of its environment. Films of the contemporary complex narrative tendency show exactly how this is possible. By withholding temporalization, i.e. the succession of events from other events, they at once demonstrate that contingency always comes before narrative (see Simons 2008), and display the endurance of their organization, which is able to self-reflexively cope with the massive complexity of their environment.

Film theorist Edward Branigan has referred to the process of reordering events that narrative films sometimes demand as one of “presentation of time”. He notes that in cases of complicated temporal ordering of shots, “the shots require the spectator to refigure the temporal scheme” or “to reorder story events” (1992: 42), letting, through this association of data, an “experience of time” to emerge: “an experience of time emerges as data is processed and associated, that is, as the spectator reorders fragments on the screen, creating such story relationships as temporal continuity, ellipsis, overlap, etc.” (1992: 116, 169). In the systemic model, it is reflexivity that makes time possible. Time as a sequence of past, present and future does not exist but through self-reference. So it is not a presentation of time, as an overarching principle that lies beyond the grasp of representation, that systems theory suggests, but a creation of time (here, a time meaningful to the system and not the cosmological time), through a principally spatial distinction.

Luhmann saw modern narratives and artworks as systems that secure temporal and spatial continuity in order to achieve variety through redundancy (2000a: 115). Here Luhmann does not refer to a continuity that is presupposed but one that emerges in order to achieve functional closure, self-organization and evolution of inner complexity. The spatial and temporal continuity of narratives that Luhmann refers to, if conceived as a kind of organization, remains a tentative and dynamic configuration. Only after adopting this systemic framework and placing it before the constitution of narrative, narrative could be re-interpreted as a reciprocal and complex constitution of two systems, the one of the text and the other of the cognitive response of the viewer. But at the very moment that it achieves operational closure, narrative transforms into something other than itself. This is because everything that is observed, and closes on itself, is observed by an observer, therefore, there is never an ‘end’ in the beginning-middle-end schema.

Self-reference produces recursive, circular closure, but closure does not serve as an end in itself, not even as the sole mechanism of preservation or as a principle of
security. Instead, it is the condition of possibility for openness. All openness is based on closure, and this is possible because self-referential operations do not absorb the full meaning, do not totalize but merely accompany; because they do not conclude, do not lead to an end, do not fulfil a telos, but rather open out.

(Luhmann 1995a: 447)

In complex systems this loop-like process is never-ending, while narratives are traditionally defined in narratology with regard to a beginning-middle-end schema, which always evokes a sense of closure. In the systems theoretical framework I develop here, this schema becomes itself a moment in time, and being observed it helps the constitution of a larger organization that goes on in and with time. And contemporary complex narratives in my view, more than the endurance of narrative, express the need to open up to what lies beyond it. In contemporary complex films uncertainty becomes their principal communicative condition, like it has been in The Final Cut, and films often end with the introduction of one more uncertainty, thus negating closure. I find that Luhmann’s description of processual reflexivity in systems, on the one hand adequately addresses the self-referential processes involved in complex films, and on the other hand points beyond narrative.

The temporal reflexivity of systems also has a social-communicative dimension. Reflexivity has been described as an “expectational structure” that “implies a mode of self-observation which uses contingent events only as an occasion or stimulus to move from one operation to the next” (Pottage 1998: 13). This expectational self-reproduction makes possible, Alain Pottage notes, a system’s “relating to others” (ibid), since, in each and every decision, a system engulfs an anticipation (expectation) of the environment’s (or other systems’) response. This expectation is fulfilled, in the case of complex films, by the response of the psychic (cognitive) system of the viewer, who is engaged more actively, through metanarrational self-reflexivity, as already stated, in the filmic process, and becomes part of its complex organization.

Luhmann’s theory is a complex systems theory because it shows how complexity is created through singular events-units—since every event causes a restructuring of the system. However, every event and every input is determined by the pre-existing structure, and the re-structuring it causes is to some extent predictable. Luhmann’s theory introduces an interplay between contingency and structure, which however seems to be partially enabled and controlled by structure. This is something that changes in more recent developments in complex systems theory. Although Luhmann stressed the complexity of systems, he insisted on the organization of this complexity in a top-down direction:
Whether the unity of an element should be explained as emergence “from below” or as constitution “from above” seems to be a matter of theoretical dispute. We opt decisively for the latter. Elements are elements only for the system that employs them as units, and they are such only through this system. (1995a: 22)

In the perpetual re-organization of systems through difference, through the unexpected and contingent, as Luhmann himself described them, I see the seeds of the opposite movement: one that has systems being configured and emerging in a nonlinear way through the constellations of elements. It is this direction I will pursue in the following part of this thesis.