The Mind Map as Cognitive Prosthesis:

Challenged Comprehension and Regained Viewer Control in Contemporary Complex Cinema

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Introduction

The aim of this thesis will be to discuss ‘control’ as an intrinsic psychological need that is manipulated by the cognitive challenges of contemporary complex films. Within what is known as contemporary complex cinema, scholars tend to refer to filmmakers’ practice in experimenting with narrative forms with consequences to viewers’ meaning making. For example, filmmakers can distort the order in which events are shown, or they can create story-within-story structures. As with every artistic discipline, artists have the tendency to break conventions and experimentation is always at stake, however, when we talk about contemporary complex cinema, we address a trend that can be articulated as a wide spectrum of unconventional narrative structures, used in films since the 1990s. These kinds of narratives break with the characteristics of conventional Classical Narratives (Bordwell 1985, Bordwell et al. 1985). Conventional narratives have plots that are set out according to a ‘three-act’ structure, in which a situation is first presented, after a disruption is introduced, and finally, during the resolution, the problem of the disruption is solved at the end of the movie. These kind of conventional films offer their viewers an aesthetic experience with emphasis (or special attention) on coherence and clarity. This should result in a state that leaves the viewer with almost no unanswered questions regarding the plot. Contemporary complex narratives have are opposite to such Classical aesthetics; complex films may include riddles with gaps, deception, and confusing coincidences. Their structures contain frequently characters that are ‘unreliable’, as the protagonist might suffer from mental infirmities such as schizophrenia, loss of memory, or delusions. (Buckland: 2009: 6)

Numerous scholars in the field of complex storytelling in contemporary cinema argue that confusion and disorientation are common cognitive consequences due to novel modes in which filmmakers present a story. There has been lots of research on this trend, drawing from a cognitive film theoretical approach. The approach of this thesis is also an applied cognitive theoretical one.

As already prompted, this thesis will be part of the latter, thus it concentrates on the cognitive mechanisms involved when one watches a complex narrative, or more specifically: the basics of the psychological experience of ‘control’ will be scrutinized in relation to complex narratives in contemporary cinema. In short, this thesis will discuss how we can understand the feeling that complex narratives evoke with the notion of control, as control is an intrinsic (inherent) psychological need. Moreover, we could assume that when a viewer encounters psychological confusion due to a complex structure, they are experiencing the ‘lack’ or ‘loss’ of control. It will be hypothesized that viewers have ways to ‘regain’ control after (or while) watching a complex film. It is important to mention that this ‘lack’ is just one state, as this thesis will emphasize there is a trade-off between two psychological states. On the one hand, there is the lack of control, and on the other hand there is the act of (re-)gaining control. One could argue that when filmmakers endanger viewers’ possibilities to follow their intricate storylines (thus revoking control) by complexifying their narratives, technological tools (in terms of time-shifting technologies, digitalization) offers viewers the capacity to regain control. However, this thesis will argue for another way to regain control, namely: with the strategy of mind mapping.
Several scholars claim that mapping (especially in complex narratives) can contribute to sense-making regarding what is presented and unfolds on screen. In this thesis it will be claimed that mind maps administer a kind of bird-eye view insight. The mind map as a heuristic tool is not only helpful for the average film viewer, but also for film scholars and critics. One of the sources on mind mapping will inspire the last part of this thesis. For example, media-scholar Marie-Laure Ryan’s experiment on mapping scrutinizes the acts of students inventing their own mind maps of a narrative text. Ryan’s publication has plentiful of graphic (first-hand) material, showing maps of the participants amended with Ryan’s own commentary and findings. The last part of this thesis will have a similar approach, presenting an experiment of conducting mind maps of a film that is considered as a work within the trend of contemporary complex cinema. The statement will be made that different kinds of maps can be helpful, in terms of sense-making needs, for specific types of (complex) plots. This will be demonstrated by commenting on a number of maps that illustrate the structure, and by that untangle the complexity of the film *Inception* (2010) by Christopher Nolan. The maps will be evaluated based on criteria that are discussed in the theoretical parts of the thesis; thus, the maps presented in the final part of the thesis will be accompanied by the theoretical findings discussed in the earlier parts.

The next paragraph will summon the theoretical framework that will be the bias of this thesis. A part by part overview of the literature that will be discussed will be presented and augmented, before heading to the initial context of the thesis, that is: the mind map as a prosthetic device to regain control in contemporary complex cinema.
(Applied) Cognitive Film Theory

As Carl Plantinga states in his ‘Cognitive Film Theory: An Insider’s Appraisal’, the cognitive approach was introduced in the mid- to late 1980s with a spectrum of writings that made a significant alteration in how (film) scholars thought about research on film. In short, this series of books and essays made an authoritative case of the examination of film form and spectator psychology on the specification of mental activities described by cognitive psychology (Plantinga: 2002: 16-17). As Plantinga formulates, cognitive science has generally been seeking for the processes underlying intelligent problem solving, or information processes, where the computer was an implied comparison for the human mind. Cognitive scientists have suggested various principles of perception and narrative comprehension by utilizing patterns of rationality and practical problem solving. Plantinga acknowledges that film scholar David Bordwell is one of the most important scholars within the field of cognitive film theory, as he writes on schemas, inferences, hypotheses, and assumptions applicative in film viewing. Moreover, Bordwell suggests that a spectator engages in goal-oriented mainly non-conscious practices in order to make sense of a film narrative. (Plantinga: 2002: 21)

However, there are certain differences in cognitive film theorist’s methodologies and principal beliefs/assumptions about human psychology. For this thesis, Bordwell’s writings on cognitive film theory will serve as basic approach. Bordwell’s assumptions can be described as a constructivist as he notes that perceptual and cognitive activity goes outside limits of the information given. Bordwell argues that perception is not mere a passive registration of sensory stimulation, rather, sensory information is filtered, altered, and filled in (Bordwell: 1989: 18). Moreover, he asserts that the spectator builds up (thus constructs) the story of the fiction film in the act of viewing. The writings of Bordwell are classifications of neurological, universal (cognitive) and culturally fluctuating (cognitive) processes (Bordwell: 1989: 22).

Plantinga asserts that cognitivists like Bordwell tend to rely on true-life accounts of filmic experience, presuming that we make sense of films in many similar ways we tend to make sense of the real world in our everyday lives (Plantinga: 2002: 22). Contemporary cognitive theory is mainly engrossed in the way viewers make meaning and respond to films, simultaneously with the textual structures and techniques that ascend to viewer activity and response. referring to Bordwell, Plantinga states that he chartered the constructivist approach with an imperative theory of narrative in (fiction) film. This is the reason why Bordwell’s theory will be used on the topic of complex contemporary cinema, as the distinction has to be made between Classical (Hollywood) cinema and contemporary complex cinema. Bordwell’s work offers an apt framework to describe the mental activities of the film spectator (relevant for both types of cinema, as will be explained later), because this method can be characterized by his close reading of the formal workings of film with kinship to his theory of narration (Plantinga: 2002: 24).

It is important to mention that cognitive film theorists believe that humans share elemental characteristics that have significant reactions to our behavior. A number of these primary traits relate in a direct manner to the practice of film viewing, and Bordwell refers to this as “contingent universals” (Bordwell, Carroll: 1996: 91-92): the correlations between
viewer’s everyday states of mind and the usual capacities and qualities that permit the action of making sense and counter to films and the world (Plantinga: 2002: 30). Plantinga argues that the cognitive approach would be the most valuable when broadly applied, since it would then be allowed as more or an engagement to the logic of discourse and human thought instead of a confined interest pursuit within psychology. Therefore, applying the cognitive approach on complex contemporary cinema, control, and mind mapping, would be a valuable addition to the field of cognitive theory.
Theoretical Framework

This thesis will be divided into four parts. In this section, the methodology for each section will be discussed. As already prompted within the introductory paragraph, the subject of this thesis will be the trend in contemporary complex cinema in relation to the notion of control and the practice of mind mapping in relation to our need to be in control. Before getting to this, a basic overview about the understanding of how we make meaning while watching a film is necessary.

In the first part, Bordwell’s ‘Principles of Narration’ will be discussed, looking at it as a theory that deals with a perceptual cognitive approach to the spectator’s work. As prompted earlier in the introduction paragraph, Bordwell considers narration as a process that is not specific to any medium, because narration uses the matters and forms of each medium as a dynamic process, for its ends (Bordwell: 2004: 3). Bordwell uses a form-centered approach in order to demonstrate how narration operates in the whole (of the film). What Bordwell refers as ‘narrational patterning’ is a considerable part of the process by which viewers understand films as somewhat coherent wholes (Bordwell: 2004: 3). As film and television scholar Jason Mittell states on Bordwell’s approach, Bordwell emphasizes that the subject (the viewer of spectator) he discusses is not yet an experimental factual person or an ‘ideal’ reader, correctly positioned to understand a text, but rather a generalized recipient of a film “who processes its formal systems and cues to establish a narrative within his or her mind” (Mittell: 2015: 165). Mittell asserts that Bordwell’s approach summarizes a norm for the way in which films are perceived, and probably this norm is what filmmakers have in mind when constructing their films. In this manner, making it a conformable design to inaugurate with a fundamental standard of viewing cognition (Mittell: 2015: 165).

Having this in mind, Bordwell’s writings on the international expansion of the cinema from 1905-1912 will be taken up. In this period there film viewer found it difficult to follow the narrative, and therefore the Classical (Hollywood) system was introduced. Dominant in this mode of filmmaking was that every aspect of the story on screen should be as clear as possible (Bordwell: 2012: 43).

After considering the Classical (Hollywood) cinema aesthetics, we will continue with introducing the trend of contemporary complex cinema. A number of writings will be discussed in order to discern how the modes of filmmaking are dissimilar to the Classical (Hollywood) style, pointing out how strange formal-structural experiments of filmmakers elicit cognitive consequences, such as confusion and disorientation. Film scholar Warren Buckland’s volume “Puzzle Films: Complex Storytelling in Contemporary Cinema” presents a number of related texts on complex storytelling in film. Parts of this volume will be considered in order to ‘define’ and characterize these complex kinds of films.

In relation to this text, Edward Branigan’s ‘Nearly True: Forking Plots Interpretations: A Response to David Bordwell’s Film Futures’ will be taken up. The work provides a theoretical notion on first impressions, using stereo and prototypes. As Branigan states, spectators make mistakes in making assumptions because they are investigative in drawing suppositions, and filmmakers rely on us doing that. Branigan explains in detail how we tend to rely on short cuts, templates, and schemata (Branigan: 2002: 106).
Finally, David Church’s writings on the (un)pleasures of unreliable narration will be discussed, shifting the focus to the (un)pleasures that complex films elicit. Although the initial scope of Church significantly differs from the one in this thesis (his scope is on complexity and gender), the writing on contemporary complex cinema and especially his remarks on a sense of ‘discomfort’ and satisfaction will be a good overpass between the first part of this thesis and the second namely the one that focuses on the notion of control as an intrinsic psychological need in contemporary complex cinema (Church: 2006).

As already prompted, part two of the thesis will focalize contemporary complex cinema with the notion of control. As control is an intrinsic psychological need, the gathered sources will be from psychological oriented scholars and authors, with (almost) no explicit connection to aesthetics in film. Before we will bring the notion of control to a focus, we will have to discuss one of the key works that is associated with this psychological conception.

Edward L. Deci and Richard M. Ryan wrote in 1985 on goals pursuits, and their article that was published in 2002 called ‘The ‘What’ and Why’ of Goal Pursuits: Human Needs and the Self-Determination of Behavior’ will be one of the most important sources in this part as it offers a relatively concise overview of the Self-Determination Theory (the SDT), that is comprehensible for scholars that are not genuinely schooled in the field of psychology. The SDT claims that recognition of human motivation asks for an examination of intrinsic psychological needs for competence, autonomy, and relatedness. Deci and Ryan distinguish between intrinsic and extrinsic motivation, but as already articulated, intrinsic needs are related to the need to be in control (Deci, Ryan: 2002).

After discussing the basic theoretical underpinnings of Deci and Ryan’s research, the work of Katherine H. Greenaway et. all. will distribute to correlate control and motivation. As the title of the work already suggests, ‘Loss of Control Stimulates Approach Motivation’, the research introduces a framework for understanding motivational responses to control deprivation (thus: taking/keeping away control). Empirical results will show that a short-termed experience of loss of control (opposite to long-term loss of control) increases an individual’s energy, desire, and will to act, thus increasing motivation (Greenaway et. all.: 2015: 235). Approach motivation is said to stimulate an impulse to move toward goals-consistent impetus, disregarding the outward aspect of the stimulus or the expected performance (in terms of Deci and Ryan, intrinsic motivation is not related to a desired external reward). In addition, it is claimed that the loss of control (short-termed) can even alter one’s cognitive style, resulting in one to deal with information in a rather challenging, demanding problem solving manner which can in turn improve their achievements on cognitive tasks (Greenaway et. all.: 2015: 236).

The thesis will attempt to interpret these findings in terms of complex film consumption. When watching a complex film, viewers will presumably not succeed in grasping the story during the screening (without breaks, etc.). This lack of understanding (control) what is presented is only short-termed because a film will only last for one to three hours. As this nature of lacking control is short-lived, one’s loss of control will likely stimulate approach motivation, this means, willing to act in order to (re) gain control. In order
to emphasize this trade-off between lacking control and regaining it (back), Michael Polanyi’s writings on problem solving will be examined. As Polanyi asserts, there is a process of solving a problem and this process can be divided in several stages. The first stage is known as a moment of perplexity or puzzlement. This moment is presently displaced followed by a second phase of doing and perceiving, in order to eliminate/resolve the first moment of puzzlement and confusion. In experiments with animals, researchers discovered that animals (after experiencing the state of perplexity) would try to come up with a solution to the situation that puzzles it. In doing so, the animal will search for obscure aspects in the situation and cues (Polanyi: 1957: 89).

It will be argued that a similar two-folded situation is present in watching a complex narrative. First, the stage of puzzlement, and second the stage of activity, gaining back control over what is presented on screen.

The third part of this thesis will aim attention at this second stage, gaining control. It will be suggested that the act of mind mapping a complex narrative gives viewers the capacity to regain control. First, Jill H. Larkin and Herbert A. Simon’s ‘Why A Diagram Is (Sometimes) Worth Ten Thousand Words’ will be discussed. Larkin and Simon argue that problem solvers in the field of physics and engineering make comprehensive use of diagrams rather than thinking in words, comparing sentential representation versus diagrammatic representation.

After this, Martin J. Eppler’s work will be introduced. His article, ‘A Comparison between Concept Maps, Mind Maps, Conceptual Diagrams, and Visual Metaphors as Complementary Tools for Knowledge Construction and Sharing’, uses Novak’s concept mapping technique in comparison to three other visualization formats, in order to discuss criteria of function, and the particular advantages and disadvantages of each of the formats. Although the claim of Eppler is that the combination of the four methods “(..) Can play to the strength of each other” (Eppler: 2006: 2002) the work is especially relevant for this thesis as its findings support and specifies main indication in terms of how several visualization techniques can have advantage in interdependent manners in order to increase motivation, attention, and remembrance.

In order to take a step toward complex storytelling, the next text on mind mapping in media (and in particular in filmic narratives) that will be taken up is ‘Diagramming Narrative’ by Marie-Laure Ryan. In this text, Ryan discusses the idea of narrative diagrams, delineating a diagram as a symbolic representation of information according to a defined visualization technique. Ryan argues that the act of diagramming (mapping) narratives does not only help a reader of a viewer to understand a story, but it also shows the complexity of processes involved in understand how we make meaning of a narrative text. The findings of Ryan will emphasize that visualizations are not merely illustrations, but heuristic (searching) devices (Ryan: 2007: 36).

At last, this thesis will raise the subject of mapping in relation to contemporary complex cinema. Stephen Mamber’s ‘Narrative Mapping’ offers a remarkable overview of mapping complex film. Mamber defines the act of narrative mapping as an effort of displaying visual events that progress over time. The result is the realization of a visual information space that provides the arrangement of a complex plan. Mapping (especially
complex) narratives offers a visual tool for making sense of what is presented on screen claiming that mind maps can administer a bird-eye-view insight, in contrast to the screening of a film, because when watching a complex film the viewer might have trouble making sense of a “larger picture” (Mamber: 2003: 146). Mamber’s work sums up all the aspects discussed in the earlier parts of this thesis, as it theorizes that complex narratives suggest, due to their strange form and structure (in contrast to Classical Hollywood Narratives), a need for examination (thus: the need to regain control) and mapping provides a way to represent story events in a coherent and compelling manner (Mamber: 2003: 157).

The fourth and final part of the thesis will be moderately empirical, however, the theoretical assumptions of the first three parts will be considered carefully with the fourth. Especially Ryan’s categorization of three dimensions (as will be discussed in part three) in which a narrative’s components can be represented is important, as will delineated in the fourth part of the thesis. Ryan’s writings will therefore inspire the criteria of the last part. The final part of the thesis will present actual mind maps of a complex film in order to demonstrate how visualization techniques can be helpful for grasping a film’s complex structure and form. The selected film is *Inception* (2010), a film with a layered plot as it presents the idea of dreams-within-dreams. Although this may not be the most complex film in terms of structure and form, it is a film that is considered ‘mainstream’ complex as it adopts both Classical and complex storytelling conventions. This makes it a suitable case for mapping techniques. In order to evaluate several maps on their functionality in terms of understanding the plot, a template of values will be maintained for each map. This template encompasses notions of the scholars that are discussed in the former parts of the thesis.

The aim of this final part is to suggest a guide for future research as a way to demonstrate that this kind of research (on mapping and complexity) is worthy to scientific interest. Although this is a self-exploratory study (that is it restricts its empirical investigation to a single viewer – that is to me), the aim is to emphasize that different visualization techniques are beneficial in grasping a complex plot, thus (re) gaining control that was lacked during the first viewing. The last part will result in a concluding chapter where Classical (Hollywood) cinema, complex cinema, control as an intrinsic need, the lack of control and approach motivation, and the act of mind mapping are discussed as a procedure of problem solving.
Part 1:


Narratives by their very nature are created upon folk psychology. Meaning narratives capture everyday life processes of the way in which we make sense of the world around us. (Bordwell: 2002: 90). Edward Branigan explains that filmmakers to make use of everyday life’s psychology to enable their viewers to comprehend the narrative. Human beings are constantly involved in constructing assumptions about the world around them, and films prompt them to construct hypotheses about filmic texts too (Branigan: 2002: 106).

In ‘Narration in the Fiction Film’, Bordwell argues that viewer have so-called schemata that organizes our knowledge. New information can be added in order to extend existing schemata. Schemata offer us expectations on stories and events. In psychology and cognitive science, a schemata is an organized pattern of thought or behavior that arranges groups of information and the relationships among them. They influence attention and the incorporation of new knowledge and help to organize the presented data into a coherent mental representation. Viewers use schemata in order to make sense of narrative events by providing background information for comprehension, thus being essential for the establishing the coherence of a film (Branigan: 2002: 106).

But taken aside the purpose of clarity, filmmakers also utilize the viewers’ dependence on everyday life’s psychology, in a way against the viewers in order to make something ambiguous. In other words, filmmakers calculate on the mistakes that viewers make while constructing (systematic assumptions. Especially complex films prompt viewers to alter existing schemata and create new ones (Rumelhart, Norman: 1978; Cook: 1994: 182-184). We will discuss filmmakers’ use of expectation against the viewer, but first, an introduction on how we make meaning to films is needed.

According to Bordwell a (film) text is anesthetized before a viewer or reader (or in general, a spectator) undertakes it. This means that meaning is not something that can be found in a text, but the viewer creates it. The viewer creates meaning by gathering narrative elements throughout the screening of a film. The obtained audiovisual data of a film provides the machinery out of which certain processes of perception and understanding construct meaning. Thus, according to these assumptions, ‘meanings are not found, but made’, and in particular the idea that the ‘perceiver’ (or viewer, in terms of film) is not an uninvolved apathetic receiver of information, but rather an active driver of constructions and proceedings (Bordwell: 1989: 3). In practice this means (that) when one is watching a film, the viewer singles out narrative hints. Bordwell lists several activities, such as the construction of links between scenes, the changing process of assigning hypothetical meanings to the film, and the act of seeing overt motion. In general, (thus, in most cases of film viewing) the viewer adds
or even creates ‘recognition structures' to hints, which they pinpoint through the film viewing (Bordwell: 1989: 3).

The viewers’ activities listed by Bordwell can be found in the relation between fabula and syuzhet, terms that debuted in the books of o.a. Viktor Shklovsky, explaining the relation between narrative structures and stories. To begin with the first activity (on Bordwell’s list), namely the construction of links between scenes. When a viewer is given a pair of narrative events, they are likely to study connections in terms of space and temporality. In the tradition of Formalists (in terms of Art History, Formalism refers to the study of art by analyzing and comparing form and style), the construct that a viewer creates was known as the fabula. We can define the fabula as action in a chronological cause-and-effect succession of events, developing internal within a certain duration and spatial range. The activity of constructing the fabula necessitates the viewer to establish the story of the continuing analysis, together with framing and measuring assumptions about former action.

And this leads us to the intertwined second activity, namely assigning hypothetical meanings/assumptions to the film. The viewers of narrative texts construct the fabula through hypotheses and interpretations (Bordwell: 2004: 3-4). Where fabula can be translated as ‘the story’, the syuzhet refers to ‘the plot’. The syuzhet is the composition and semblance of the fabula as film.

Bordwell sums three kinds of conventions in which the syuzhet relates to the fabula. The first principle encompasses the idea of narrative logic. In terms of causality, the viewer interprets some developments as events while creating relations between them. Thus, the viewer will believe that an event is the result of another event. The plot (the syuzhet) can speed up the process of creating relations among event, by orderly motivating the viewer to draw linear causal presumptions. In contrast, a filmmaker could decide to present the syuzhet organizing situations in a way to hinder or to derange the arrangement of causal connections. As will be discussed later, these complications are at hand in complex films. Another convention has to do with time. Bordwell argues that narrative time includes several forms. For example, the syuzhet can lead the viewer to build fabula actions in any order, as an element or order. Moreover, it can imply fabula events as happening in practically any period of time, in terms of duration. Concerning frequency, the syuzhet can indicate a sign to fabula events as happening any amount of time. Bordwell states that these aspects concerning narrative time can either help or hinder the viewers structuring of fabula time. The last convention in which the syuzhet relates to the fabula is in terms of space. Bordwell asserts that fabula events have to be depicted as taking place in a spatial outline of implications. In addition, the syuzhet smoothens arrangement of fabula-space, by hinting the viewer of important backgrounds and the stance and paths given by the story’s actors. Therefore, a filmmaker can decide to hamper the viewer’s understanding by delaying, disorganizing, or destabilizing our process of constructing space. In total, we can assume that there will be distinct aesthetic experiences, relying on the way in which the syuzhet displays the fabula (Bordwell: 2004: 5-8).

Regularly, the syuzhet forms our knowledge of the fabula in three ways: by controlling the amount of fabula information to which the viewer has to get ahold of, the
extent of consistency the viewer can assign to the given information, and the formal coherence between syuzhet display and fabula information (Bordwell: 2004: 11). As Bordwell expounds, an ideal syuzhet would provide just enough knowledge to enable a lucid and solid arrangement of the fabula. In other words, Bordwell argues that we can distinguish a syuzhet with not enough information about the story, and in contrast, a syuzhet that provides too much information. This is what Bordwell refers as a “rarefied” syuzhet against an “overloaded” syuzhet (Bordwell: 2004: 11). In order to explain these two different kinds of syuzhets, we will discuss the practice of Classical (Hollywood) narratives in the next subchapter ‘1.2. Classical (Hollywood) Narratives’.

1.2. Classical (Hollywood) Narratives

In the very beginning of the 20th century, filmmakers from America began noticeably familiarized with storytelling approaches. The filmmakers had to think of ways in which their audiences would find it easy to comprehend the story events. The need for clarity came from a time where the viewer had trouble understanding the causal, spatial, and temporal connections in films. In order to solve the problem of clarity, filmmakers decided to direct the viewer’s attention as much as possible to every facet of the story. By 1912, a sum of basic approaches was settled in order to tell an understandable story, and consequently a new style of filmmaking was introduced; the Classical Hollywood style, characterized by events referring directly to each other, and characters explicitly stating their actions, assumptions and goals. Some notable characteristics will follow (Bordwell: 2012: 42-44).

First and foremost, these kinds of films have a solid form that is referred to as the Three-Act Structure. First, a situation, time period, or character is presented. After this introduction, a conflict or problem occurs. The protagonist will try to solve this conflict, facing several obstacles along the way. When the climax arrives, the problem hits its high point, often resulting in the protagonist reaching his or her goals.

Secondly, the characters play a crucial role in the Three-Act-Structure. As stated earlier, in Classical Hollywood films characters are introduced as clear as possible. Such films have, in all probability, one or two characters that are predominant, and it is easy to understand who they are, what they want, and how they ended up in their current situation. In general, the Classical (Hollywood) plot centers on one or two main characters that have a certain desire. This desire becomes a goal, and the progress of the narrative will generally concern the path of the character achieving their goal. In these Classical plots there is usually a facet present, hindering the character from achieving their goals, known as an opposition in order to create ‘conflict’. As Bordwell asserts, it is common that a character gets confronted with another character with goals or beliefs, causing the main character to conquer the antagonism. Characters overcome their problems by taking risks in their current situations, or alter their stand or sense.

Moreover, in Classical (Hollywood) cinema, filmmakers regularly chose to present an objective story as opposed to perceptual and mental subjectivity. Thus, these Classical
narratives maintain somewhat unrestricted (un-regulated) narration, meaning that the film provides the viewer with information on what a character does, and not of what a character sees, hears, and knows.

Thirdly, an important feature of Classical Hollywood Cinema is the causality of the events. Thus, one event is the result of another event, also known as the continuity system (Bordwell: 2012: 42-44). This causality makes it easy for the viewer to keep track of the events presented. When a flashback occurs, the filmmaker ensures the viewer comprehends that the moment is taking place in the past. One can assume that all the elements within the story are necessary to understand the overall plot.

Fourthly and finally, a rather important aspect is the Classical plot’s need for a sense of ‘closure’ after the film has ended, leaving hardly any unresolved questions and learning the outcome of the characters and their conflicts. As will be explained later when discussing the trend in complex contemporary cinema, filmmakers do not always stick to the Classical plot’s way of answering all questions at the end, and therefore leaving some issues unexplained/ambiguous (Bordwell, Thompson: 2012: 99).

But before continuing to the next sub-chapter, it is important to address the notion of expectation, in order to understand the way in which complex narratives abandon Classical narrative’s conventions. As in all media, expectation strongly affects our experience in artworks. Thus, our preoccupation with a work of art within relies upon our former experiences and expectations. Suspense is an interruption in completing a traditional expectation, leaving an element suspended, together with the viewer’s impulse for completion/fulfillment. When a pattern in a film remains unfinished, it leaves the viewer in a state of suspense. Therefore, filmmakers can anticipate on our expectations, hinting us to come up with explanations and then satisfy them. To the greatest extent, a filmmaker may decide to willingly complicate/unsettle the viewer’s expectation, offering them conflict, discomfort, and even astonishment. Such an artwork may even be described as unpleasant, because of its lack of harmony and inconsistencies. Even though some films force us to revise our expectations, our thrill can rise if we accept unusual experiences presented by formal/orderly challenging and confronting films. (Bordwell, Thompson: 2012: 54-55). In the next paragraph we will discuss films with such strange forms and their cognitive consequences.
1.3 Complex Contemporary Cinema

Since the 90s of the last century, there seems to be a trend in films that abandons the Classical Hollywood plot. Instead, filmmakers within this trend tend to offer films with complex storytelling. Several characteristics include fragmentation and non-linearity, in contrast to the Classical Hollywood plot where every aspect has to be as clear as possible in order for the viewer to understand the story. These types of plots break the conventions of Classical (Hollywood) cinema in a significant manner, pointedly searching for ways in order to confuse their viewer. Films can be complex in terms of abundance, by offering the viewer too little information, or by over-informing. Moreover, by using Gaylyn Studlar’s writings on primary spectator’s pleasures, Church emphasizes the idea of a “frightening loss of control” (Studlar: 1988: 185). In complex narratives (or unreliable narratives, in Church’ respect) the film viewer is not given/granted the control of knowledge, resulting them to endure a laboriously controlled stream of hints within the syuzhet. As we have discussed earlier, these hints or cues aid the viewer to construct the fabula, keeping them entangled in the film. In the way that Church puts it there has to be a balance between telling and hiding, and when this balance is not kept, for example when there are too many cues (over-stimulation), the viewer would feel superior (thus in control), but on the other hand when a filmic text is too obscure (abundance) one might lose interest in the film as they experience too much discomfort (this is the case when too little hints are given) (Church: 2006).

Also, a film can be complex in terms of connectivity and chronology, as causes and effects are not clear. A film can be complex in terms of realness, as for example some films feature multiple/parallel universes (situations that would not occur in real life). As film scholar David Church argues, ever since the early 1990s the style of complex storytelling began to increase quickly. In his text, Church writes about ‘unreliable’ narratives, and the important norm of extreme subjectivity (in contrast to Classical objectivity) through which the syuzhet is introduced. This subjectivity comes often in de form of flashbacks, dreams, and illusions. Thus, in contrast to Classical (Hollywood) narration where the syuzhet seeks endeavors to correspond fabula data to the viewer, in order to leave very little lasting gaps, the syuzhet in complex narration generally hampers information leaving long lasting gaps in the fabula, ensuing endings with no narrative closure. Church cites that these kinds of estranging narrative techniques are a trademark of unreliable narratives (Church: 2006).

In the earlier paragraphs we have discussed that the film viewer is not a passive agent, but an active mobilizer as there are active cognitive processes engaged on the account of making sense of images that are presented. As Bordwell declares the film viewer is engrossed in using “schemata and incoming cues to make assumptions, draw inferences about current story events, and frame and test hypotheses about prior and upcoming events.” (Bordwell: 1985: 64). These schemata are based upon prior viewing experiences such as in canonical Classical cinema’s conventions. Bordwell upholds that Classical narratives bring about gratification by satisfying the viewer’s premises; complex narratives spawn pleasure by hindering or exhausting the viewer’s interpretations. Moreover, these complex narratives are said to hinder satisfaction without an ending, through lasting gaps in the fabula, and thus, open endings (Bordwell: 1985: 36). Also, these plots have characters with non-Classical traits
performing unconventional actions, as they tend to be unreliable, often suffering from mental infirmities such as schizophrenia, loss of memory, or delusions (Buckland: 2009: 5-6). As Sorcha Ní Fhlainn notes, complex narratives are referred to as films with an odd ending, such as twist of surprise. This sudden development causes a so called “pulling of the rug” (151) from under a viewer (thus, taking suddenly away important support from one), calling the thrust-worthiness of the story events presented into question (Fhlainn: 2015: 151). What Cornelia Klecker introduces as ‘Mind-Tricking films’, are complex films that attempt to purposely delude the viewer in order to utterly bewilder them. As Klecker notes, her notion of mind-trick films is a subtype of complex narratives, just as other film scholar who pleaded for subtypes within the trend of complex contemporary cinema (Klecker: 2013: 66-67). Bordwell’s writings of ‘Forking-Path narratives’, Allan Cameron’s ‘Modular narratives’, Elsaesser’s ‘Mind-Game film’, and Buckland’s ‘Puzzle Plot’ are all instances that can be divided under the term of complex cinema.
2.1 Control as an Intrinsic Psychological Need

Edward L. Deci and Richard M. Ryan introduced a theory concerning three psychological needs: for competence, relatedness, and autonomy. Their SDT (Self-Determination Theory) offers an understanding of the content and processes of goal pursuits. According to the SDT, there are three kinds of needs that are important for an individual’s well-being: Autonomy, Competence, and Relatedness. In this text, the first, Autonomy, will be discussed. Autonomy refers to the desire to control one’s behavior, driven by one’s own interest. Even though one is not able to change a situation, autonomy refers to the idea that one believes that he or she is still able to do so (Deci and Ryan: 2000: 228). As Deci and Ryan cite, needs establish “innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being” (229). This can be articulated as the idea that needs determine the fundamental circumstances for psychological health or prosperity. Psychological needs relate toward tendencies such as achieving effectiveness, connectedness, and coherence (Deci, Ryan: 2000: 229). The Self-Determination Theory discusses intrinsic needs that include the propensity to achieve inner coherence, stating that human beings have naturally curious and assimilative dispositions. Thus, the human organism strives towards self-cohesion and the restraint of self-fragmentation (Deci, Ryan: 2000: 234-254).

Deci and Ryan distinguish two types of motivation that are related to psychological needs: intrinsic and extrinsic motivation. Intrinsic motivation refers to activities that one performs without “operationally separate consequences” (Deci and Ryan: 2000: 233). The difference between intrinsic and extrinsic motivated behavior can be explained as ‘wanting to do something’ versus ‘having to do something’.

Intrinsic motivation exists in situations where individuals have control over their own behavior and when they believe that they are able to meet a certain outcome. Intrinsic motivation actions are rooted in one’s need to feel both competent and self-determined (this is self-governing/autonomous) but intrinsic motivation is not associated with external consequences such as threads or rewards. When one’s actions are intrinsically motivated, it is performed spontaneously because one feels free to pursue their deep-rooted interests. Activities like these provide novelty, outstanding challenge, and pleasure in the act of doing it. As ‘intrinsic’ (inherent) motivation suggests, it refers to the desire to maintain contact with a goal, and it comes from within the individual, therefore without external consequences or rewards. Deci and Ryan state, “Intrinsic motivation concerns active engagement with tasks that people find interesting and that, in turn, promote growth.” (233). Therefore, intrinsic motivation is said to feature better attention, quality, and gratification. As

In contrast to motivation that comes from within the individual, Deci and Ryan claim external affects such as evaluations, rewards, and choice both influence intrinsic motivation and creativity and cognitive flexibility. Extrinsic motivated factors such as rewards or
judgments were said to downturn creativity, complex problem solving, and deep conceptual management of data (Deci, Ryan: 2000: 234).

On the contradictory, motivation there is the notion of a-motivation. A-motivation is a condition of being in which one lacks the aim to act. Deci and Ryan state that people tend to be a-motivated when they find themselves with loss of efficacy on a sense of control in terms of a wanted outcome, namely when they are not capable of performing self-regulation (Deci, Ryan: 2000: 237).

On the one hand complex narratives allow their viewers to construct meaning, but on the other hand, when watching a complex narrative, one is not able to grasp the events that are taking place, failing to put them into a coherent plot. Thus, we can understand this as a state in which a viewer lacks control over the story. As will be discussed in 2.2. The Lack of Control, it is claimed that the feeling of being in control is associated with positive psychological experience. Logically, people seek to be in control, trying to eliminate or reduce factors that take their control away. In terms of Deci and Ryan’s SDT, control is a fundamental human motivation, and this causes people to strive toward control over even uncontrollable situations (in this case, watching a strange formal and structural narrative). In the next paragraph, this will be further explained, especially the loss of control in context to complex cinema.

2.2 The Lack of Control

Katherine H. Greenaway et. all. narrowed down on specific aspects of control as an intrinsic human need, acknowledging that (being in) control is an important human need. Control can be defined – according to Greenaway et. all. – as the physical or perceived capability to modify events and accomplish certain outcomes. Because control is a fundamental human need, Greenaway et. all. state that the feeling of lacking control deeply affects an individual. This lack of control generally causes one to operate several psychological exercises in order to retain the idea that control is achievable. Thus, the lack of control will alter one’s cognitive habits, causing them to process information more intensively, resulting in an improved act on cognitive tasks (Greenaway et. all.: 2015: 236).

Greenaway et. all. emphasize the differences between a short-termed loss of control versus a long-termed loss of control (235). The loss of control might vitalize approach motivation, as one tries to grapple with this loss by acting to regain it (Greenaway et. all.: 2015: 236). By approach motivation, Greenaway et. all. refer to a state of “Energization by and physical or psychological direction toward an incentive or reward” (236).

Furthermore, Greenaway et. all. distinguish low versus high approach states. High approach feelings refer to excitement when people are inquired in the accomplishment of a goal or reward, but when this chase of a goal is hindered or thwarted, the high approach tendencies will be boosted. In contrast, low approach refers to feelings of completeness and contentment after a goal has been achieved. Greenway et. all propose that the loss of control
will trigger reactions of high approach, as one develops exercise into completing their goals, in order to contest the frustrating feeling of lacking control.

In addition, it is said that instantly after the experience of lacking control, one will be motivated toward goal achievement. In this manner, one seems to become approach motivated in a goal-oriented way (Greenway et. all.: 2015: 237). These findings demonstrate that people testify to confirmation of primary approach motivation forthwith the loss of control. Greenaway et. all. note that it might seem strange because people would become motivated to prevent situations of the ‘un-pleasant’ experience of lacking control. Accordingly, they submit that in some cases approach motivation (after lacking control) may enable to support one to achieve their goals and reestablish anticipated control.

All in all, people’s desire of being in control causes them to react forcefully when they are lacking control. It is, however, necessary to emphasize that the loss of control stimulates approach motivation in order to help one to cope with a short-termed loss of control, but when one constantly fails to regain control (and when the possibility to realize this is not at hand), the primary motivation upgrade will dull causing one to act passive and harrowed. As Greenaway et. all. put it: “Our findings show that after experiencing a loss of control, individuals can become initially energized and ‘pumped up’ to approach opportunities or objects that will aid in control restoration” (Greenway et. all.: 2015: 239).

Active efforts to compensate the loss of control will occur, whereas approach motivation leads one toward goals-related stimuli, as a way to counteract the felt lack of control, however, only if the loss of control is or seems short-termed. At last, Greenaway et. all. conclude with the claim that people who feel in control have a more pleasant and prosperous life, in opposition to the ones who do not feel of being in control (Greenway et. all.: 2015: 240). In order to describe this transition from a state of lacking control to the state of being in control, the next paragraph will consider control and solving problems.

2.3 Control and Problem Solving

In order to explain the steps in which one tries to gain back control over a situation, the act of problem solving has to be considered. As Michael Polanyi asserts, a problem can only exist if a situation bothers one, and if one believes that there is a solution for it. Polanyi notes that nothing can be a problem in itself; this means that a problem can only exist when it puzzles and concerns someone.

The process of solving a problem can be divided into two stages. The first stage of this process is the phase of perplexity, pursued by the second stage, the effort of acting and observing in order to disperse the state of perplexity. Thus, one tries to cope with feeling puzzled, and searches for a way to reduce this state. Psychological studies with showed that
animals did not consider to start to solve a maze except when they were made aware of the fact that there was a track through it, with a reward at its way out (Polanyi: 1957: 89-90).

When we are looking for the solution we are looking for it as if it is pre-existent; there is the assumption that there is an unseen solution, which one may be able to find. This belief is fundamental in conceptualizing and working on a problem that has not been solved yet. As Polanyi describes, “A problem is an intellectual desire […] and like every desire it postulates the existence of something that can satisfy it; in the case of a problem its satisfier is its solution.” (Polanyi: 1957: 97). Moreover, he states the following: “Obsession with one’s problem is in fact the mainspring of all inventive power.” (97). We can even aim our concentration at something we do not know, although we have never ‘met’ the solution, we are under the impression that it is like a forgotten name; able to recall it, at tip of our tongue, by keeping our concentration on a state in which we are informed of a forgotten name, we form an understanding of it. Polanyi claims that our perception has heuristic powers, in a way that enables us to be qualified to recognize novel situations of experience, by adapting themselves in order to hold them (Polanyi: 1957: 98-99).

When being confronted to a problem one has to chart the problem’s components into segments. By gradually restructuring these segments, with the outlook to bring out novel signifying aspects of it, when at the same time turning one’s memory inside out in search for any identical problem of which the solution is familiar (Polanyi: 1957: 99). One expects that working on a problem will bring us a solution bit by bit, and Polanyi distinguishes several stages “To start working on a mathematical problem, we reach for pencil and paper, and throughout the stage of preparation we keep trying out ideas on paper, in terms of symbolic operations. If this does not lead straight to success, we may have to think of the whole matter over again, and perhaps see the solution revealed much later unexpectedly in a moment of Illumination.” (101). In this model insights develop in four stages. As one tries to solve a problem, they try a sum of several paths and clarify and redefine their situation.

Polanyi uses Graham Wallas’ theory on the creative process, as Wallas’ model describes four stages that scientists and artists go through in order to find a solution to a certain problem. Interestingly, Wallas refers to this model as the ‘stages of control’ model. First, there is the state of Preparation, with the appreciation of a problem, recognizing a situation as problematical, searching for a solution. In this stage one understands the problem, and tries to scrutinize its components as thorough as possible. The second stage is Incubation/Internalization, known as the act of curious persistence of heuristic tension, through long periods of time during which the problem is not consciously entertained. Third there is Illumination, a state of intelligent action, proceeding to carry out stratagem by which it secures its aim (or at least, that one has grasped a principle by which this can be done). This is an unhesitating manner suggesting that one is guided by a clear conception of its proposed operation. The final and fourth stage is Verification, referring to the manipulations by which one puts their insight to the test of practical realization. In this final stage, the solution is carried out (Polanyi: 1957: 91)(Wallas: 1926).

As already hypothesized, a complex film optimally challenges the viewer, inviting them to freely (thus: without external rewards of threads) engage in making sense of the
events that are presented. As there are no rewards at stake in a person’s drive to operate on this, we can define this urge to make sense of the events of a narrative text as an intrinsic need. This is a form of approach motivation as the viewer performs the tendency to move toward or maintain contact with a desired goal, namely, the goal for a sense of closure that is not permitted by the filmmaker itself (or at least, not explicitly, leaving room for interpretation by the spectator). This lack for closure can be explained as the lack of control. As this lack is only temporary the loss results in approach motivation, in this manner causing the viewer to act actively to seek a solution to the lack of closure. As Polanyi defined, in solving a problem there are two stages: first a stage of perplexity, and secondly a stage of putting effort in ways to eject the first stage, thus reducing perplexity. This can be understood as a way to (re) gain control.

When seeking a solution to a problem, one has to chart the problem’s components into patterns of segments, toying with the arrangement as this might lead to novel insights. In terms of complex cinema, we can argue that the problem is the way in which a film is presented, and the viewer assumes there is a solution to it. In order to get to this solution, one has to find patterns and structures within the whole. One may feel more in control by operating/putting effort in the films components than during the (first) viewing. Even though there may not be an actual solution for the problem, by rearranging the segments, one is likely to feel more competent and autonomous, thus: in control. In the next part it will be suggested that mapping a complex film’s components can be the manifestation of the desire to (re) gain control.
3.1. Mind Mapping as a Way to Regain Control: Visualization Formats and Information

In the previous part we have discussed control as an intrinsic psychological need. Especially the lack of control was said to lead to approach motivation, a state of “Energization by and physical or psychological direction toward an incentive or reward” (Greenaway et. all.: 2015: 236). This approach motivation in relation to loss of control is only relevant when the loss is short-termed. The need to regain control is intrinsic according to Deci and Ryan, assuming there is no external reward after grasping a complex narrative’s intricate plot, but the act of making sense of the presented data is in itself intrinsically rewarding. Still, this loss of control is only favored when one assumes to have the possibility to regain control, after a brief period of lacking it. As Polanyi noted, the need of humans to be in control is related to the act of solving problems. In short, after one has gone through a state of puzzlement/bewildering, one will act in order to find a solution for the problem they are confronted with. In order to get to this solution, one has to perform several strategies. In this part of the thesis, the act of mind mapping will be discussed as a way/strategy to regain control over a complex film. First, the mind map as a knowledge construction tool will be explored scrutinizing several ways of mapping (narrative) data.

Before the act of mind mapping will be related to narratives (and film, in particular) we will discuss the ways in which visualization formats are said to complement motivation, concentration, understanding/comprehension, and memory/remembrance. There is a distinction between different ways of visualization formats, for example; on the one hand there is the mind map, and on the other hand the concept map. When we consider the benefits of maps concerning contemporary complex cinema, we will discuss visualization techniques in general, rather than distinguishing methods separately. A visual map/schema is a model of information, knowledge, and ideas. This way of structuring information enables one to get an overall impression of a subject/topic. Structuring in a visual way can have benefits that linear (textual) notation does not offer.

Jill H. Larkin and Herbert A. Simon argue that problem solvers in the field of physics and engineering make comprehensive use of diagrams rather than thinking in words. Larkin and Simon try to discover a way to understand why the usage of diagrams is beneficial as they state that human beings use (when facing a problem) both internal (mental) and external (physical, blackboard, paper, etc.) representations. In terms of external problem representations, Larkin and Simon distinguish two different kinds: The sentential representation, with expressions that form a sequence corresponding, one-to-one basis in a natural-language description of the problem, and the diagrammic representation, typified expressions correlating on a one-to-one basis to the elements of a diagram representing the problem (Larkin, Simon: 1987: 65-66).
“(...) In addition, a diagrammic representation eliminates the overhead of keeping track of object labels.” (88). All in all, the big difference in diagrammic presentation lies in recognition processes, as formally producing perceptual features do most of the effort when solving a problem. Larkin and Simon agree that human beings have a mechanism, “The eye and the diagrams” (92), that generates perceptual outcomes with little work. They acknowledge that diagrams and the human visual system provide all of the assumptions that are called perceptual and this is a big profit. For example, when a geometry problem is presented verbally (thus without the help of a diagram) all of the elements have to be assembled explicitly, and this is why a diagram generates all the elements for ‘free’, making it useful (Larkin, Simon: 1987: 92).

The text of Larkin and Simon is restricted to the use of diagrams as a way of external memory. “Our only references to psychological processes (other than subject-matter inference rules) have been to rather obvious phenomena of perception: that people can focus attention on part of a diagram, and that they can detect curls there (...) and use them to retrieve problem-relevant inference operations from memory.” (97). As their title of their text indicates “(sometimes)”, it is not the complete matter on representational issues, but they assert that a simple distinction (sentential versus diagrammic representation) shows several reasons why a diagram can be more helpful, compared to verbal description in terms of solving a problem. These reasons include that diagrams can gather all information that is used together; therefore, stepping aside (fending off) large extends of search for the aspects necessary to make a problem solving presumption. In addition, diagrams regularly use situations/locations to bring together data about one aspect, bypassing the need to pair symbolic labels. Also, diagrams naturally support a large amount of perceptual suppositions, which are overtly accessible for human beings (Larkin, Simon: 1987: 98).

Martin J. Eppler argues the large-scale use of concept maps in learning and knowledge sharing situations, and the benefits that can be offered by visual mapping techniques that give care to the graph re-construction of knowledge (Eppler: 2006: 202). Eppler notes that the graphic formats that he discusses are not merely techniques that can be apt in learning contexts (for example classrooms, meetings, group-discussions, etc.) but these formats offer numerous advantages for knowledge construction in order to reduce complexity. Moreover, mind maps could be useful in terms of personal note taking, but a concept map might come in handy to use at home, in order to review, as the concept map takes longer than the mind map to develop (Eppler: 2006: 205).

Although Eppler distinguishes and compares several visualization techniques, the visual methods generally are said to keep people engaged and importantly, they give people ownership of content, as concept maps seem to be improve memory. (Eppler: 2006: 209) In short, maps are graphical tools for organizing, representing, and displaying the relationships between knowledge and concepts (Novak: 2009).

Eppler studies four types of mapping in his text. First, the concept map which is a top-down diagram, depicting the links between concepts, cross-connections and examples. Their main advantage is to display schematic relations among sub-concepts correlating to one basic concept. The employed graphic elements include boxes or bubbles with (textual) summaries,
and marked with connections/attached arrows. When making such a map, one starts with the main idea at the top, and one ends with examples.

The second format is the mind map. Eppler describes the mind map as a multi-color diagram that is image centered. It is a branching map that shows linguistic connections. Its main benefit is to represent sub-topics of a sphere in a creative and logical (smoothly continuous) way. Moreover, this map is, according to Eppler, used for personal note taking and reviewing. Graphic elements that are used are a central topic bubble and colored (sub) extensions with descriptions above the branches. This way of mapping should start with a main-topic in the center. Text should be above the branches and pictograms and colors could be added.

The third format is the conceptual diagram; a type of map that systematically displays a hypothetical concept in pre-defined levels (in boxes) with described relationships. The essential function is to analyze a problem or situation through an analytic framework. It should be used to structure a complex subject matter with the aid of pre-defined classifications. Moreover, conceptual diagrams are marked with boxes and arrows with text inside, sometimes with icons. One should first label all boxes, and fill them with relating content. The larger boxes set aside the most crucial information.

The last format is the visual metaphors. This is a graphic structure using the shape and principles of a well-known artifact or an easy to perceive story/activity to organize/arrange information. It functions to remember decisive/leading components of a concept by dis-positioning them with an apt visual/graphic metaphor that uses features in common with the concept. Thus, textual information is placed within a visual structure that could be linked with arrows (Eppler: 2006: 203).

3.2. Mapping Narratives

Another text on the act of mapping is from Marie-Laure Ryan, as she published an extensive overview on the act of ‘diagramming narrative’. A diagram can be defined as a symbolic representation of information. Therefore, a diagram can be articulated as a sketch of form or plan. In this thesis, the mind map is seen as the same visualization technique that Ryan refers as diagramming. Ryan delineates that graphic maps are not solely an apparatus used to form a representation of narratological knowledge, but the act of doing this is a manner to generate narratological knowledge. This can be related to Polanyi’s writings on problem solving, as he affirms that problem solvers arrange their problems into patterns, causing one to get novel insights on a (problematic) situation (Ryan: 2007: 11).

A narrative is commonly described as the depiction of a follow-up of events. Physical actions occur in the space of a story world, and this is, according to Ryan, better represented by images instead of language. Events and actions are stimulated by mental conditions of being, and these modes of being may endure for a while and lay over something else along, instead of succeeding after another, as “beads on the string of the narrative time-line” (11). In addition, causal connections may combine temporally disconnected matter (Ryan: 2007: 11).
As Eppler and Ryan both acknowledge, the visualization of information has proceeded into a considerable cognitive and communicative point in question in all realms of knowledge (Ryan: 2007: 12). In short, diagrams/maps integrate literal principles (pictures of parts) and symbolic ones (such as arrows) in order to depict movement, direction, or associations. Thus, maps are “complex semiotic artifacts” that fuse one-dimensional based data and two-dimensional graphic data (Ryan: 2007: 14).

In order to fully understand this, we will have to discuss three types of signs as Charles Sanders Peirce defined them in 1904. The symbolic sign refers to meanings that are established on a conventional relation/link between sign-mechanism and object. Another sign’s meaning, the icon, is based on relations of similarity. At last there is the indexical sign, which meaning rests on a causal link between sign and object (indexical signs are rare in diagrams, according to Ryan). Ryan asserts that a map may combine symbolic signs, such as abstract shapes, squares, triangles, based on a conventional link between sign and object, and complement the shapes with iconic signs, such as a drawing (square topped with triangle) of a house, and also two lengths of the page to depict time and space (Ryan: 2007: 14). It is because of their diversified qualities of signs that diagrams and maps are semiotically situated between the bars of essentially verbal and essentially visual expression of information. In terms of narratives, the visual bar is depicted by illustrations of scenes, build on icon signs. The verbal par is utilized by plot summaries (Ryan: 2007: 14-15).

Ryan notes that narratives can be mapped on various standards and from numerous angles, and therefore she distinguishes four potential objects of visual description. The first refers to the “deep universal structure”, and this structure is characterized or delineated by an arrangement of a-temporal logical connections between parts of content. Ryan mentions the semiotic square as an example (Ryan: 2007: 16). The second refers to the universal narrative structure temporalizes the deep structure into activities carried out by operators/agents. As Ryan delineates, models/maps of this level are assumed/deemed to describe all the representatives of a certain division, they should depict generative power. An example could be a flowchart capturing narrative dynamics (Ryan: 2007: 16). The third level encompasses the particular narrative structure, which is an arrangement in which the structure of the second level is manifold into a wide range of individual stories. Ryan subdivides the third level into 1) wireframe plots and 2) surface structures, “a particular thematic and spatial-temporal representation of the wireframe plot. The last and fourth level is the discourse level, concerning the various methods of presenting level four through languages of other media. Moreover, alterations on this level are realized by the discourse strategies that are prior matter in Classical narratology, thus, a story can be told in various ways of narration (first person) and through different sorts of focalization (Ryan: 2007: 16).

The third level forms the main interest in Ryan’s research, and in terms of mapping it is also the most challenging one: “[…] Because of the complexity of the cognitive pattern that we call a story, but it is also the most stimulating, because it offers the greatest freedom to the visual imagination.” (18). In addition, Ryan claims that other levels rely on arrows and abstract shapes added by labels, the presentation of the plot has encouraged networks, trees, maps, Venn-diagrams (overlapping circles), iconic images, abstract shapes, and “articulated visual languages” (18). On the third level (and nor on any other levels) there are no maps that
are contingent on quantitative data, for example pie charts and bar-graphs. This is because quantitative maps are non-interpretative, while a graph of a plot is planted on personal reading, thus without an objective manner to draw out plot from a narrative text (Ryan: 2007: 18).

Ryan chooses to rely on an interpretation that categorizes three dimensions. These dimensions will be discussed in the last part of the thesis. The first one is the spatial dimension; as a narrative portrays a world supplied with individuated objects and characters. Secondly, there is the dimension of temporal and event importance, which includes accidents or intentional actions performed by characters. The third dimension is the mental dimension, referring to the idea that characters must be emotionally moved by events, and their activities have to be driven by goals and desires. In addition, Ryan discusses some of the diagrams that have been suggested for each of the three dimensions that she lists. The selected diagrams are chosen considering the manner in which a map offers a general idea of the problems involved in mapping narratives, and the ones that handle/involve what Ryan refers as “the most fundamental feature of narrative” that is, maps that show the main arts of the device of the narrative vehicle/engine (Ryan: 2007: 19).

1. Mental Space = Ryan asserts that the primary obstacle of mind mapping is (in terms of space) the difficulty of reducing multiple dimensions (four dimensions of time and space) on a flat surface (of a page). When creating a map of a story’s space, one can rely on the techniques that are used in real-world cartography, since it is a geographic map of a story world. These kinds of maps do not capture how a narrative works, but they are used/created to deepen understanding of the plot in terms of mental navigation throughout the fictional space. These sorts of maps can be improved by adding textual description and again, the variety of semiotic sources, for example arrows (symbolic signs) to represent the direction of movement (Ryan: 2007: 19-20).

2. Mapping Time = the mapping of time will undertake only one of the two dimensions of a page, as time is linear. This means that one dimension of the page could depict for example verbal description of the occurrences and conditions that are displayed on the timeline. Ryan assumes that the easiest approach to map time is to suggest narrative chronology by selecting/assigning a mark/stain on the timeline to each action/matter. Especially in film, the narrative may include remarkably “free-floating” (23) events, as for example dream sequences. These sequences could be mapped when assigned to a different column that locates them outside the chronology of the story world, but still within the arrangement of information that is given. Moreover, parallel-plotlines tend to show these free-floating events, that mean that they can happen at any time during a specific intermission (Ryan: 2007: 23-24).

3. Mapping Mind = “If the subject matter of narrative had to be captured in one formula, I would describe it as the evolution of a network of interpersonal relations.” (29) Ryan states that the mental conditions of the characters regulate this, and intent-driven actions (goal oriented) make them progress. Thus, the power that stimulates/triggers action (and what drives the narrative onward) is the characters’ motive to solve
problems. Examples are *coded* plot units, interplay of mental/physical events, and mental structure of planning (Ryan: 2007: 31-32).

### 3.3. Mapping in Contemporary Complex Cinema

Having different mapping techniques in mind, one can consider mapping in complex contemporary cinema. Stephen Mamber introduces the term “critical visualization” as a useful different description of the concept of narrative mapping. As already prompted, Mamber emphasizes how especially with complex narratives structures maps can propose a visual understandable advantage to see both the bigger outline of a story as well as more detailed aspects. Mamber clarifies that when one is watching a complex narrative, “while in the midst of a succession of events unfolding over time”, one might not be able to grasp the bigger picture that maps can offer (Mamber: 2003: 145-146).

In part one of this thesis it was mentioned that complex narratives have intricate temporal structures (for example flashbacks or dream sequences) that ask for a need to place in order. When the events of a film are concise or diffuse in terms of space and time, and when a viewer finds it “too much at once”, maps can serve to display events in a lucid fashion (Mamber: 2003: 145-147). The act of mapping a narrative is to form an “information space” or partially to arrange a latent collection of data that is visually depicted. Dividing a narrative into scenes, shots, actions, or segments, can be a method to access/approach it. (Mamber: 2003: 147-148) Thus, by patterning the problem, narrative mapping is a device for handling complexity and information over-supply, providing the practicability to understand and grasp ideas that would be in different circumstances hard to comprehend (Mamber: 2003: 157).

Therefore, the mind map is a help to visualization. A rather apt example that Mamber mentions is the kind of complex film that is arranged around the same events. When watching such a film, the act of mind mapping provides a prosthetic device to blueprint the differences between the retellings of the same events. Thus, the map could support the viewer to bring/connect the differences closer to each other, and even more valuable is the fact that mapping could be constituent when scrutinizing temporal understanding engaged/occupied in complex films (Mamber: 2003: 157).

We can relate these findings to complex narratives. For example, Eppler claims that graphic formats offer lots of benefits for knowledge construction, in terms of reducing complexity. Also concerning ownership, regarding the content of a complex narrative, as visual mapping methods are said to improve memory. Moreover, as Ryan affirms, mapping a narrative causes one to obtain new insights in a situation. She demonstrates this with the help of listing three dimensions that represent information and components of a narrative. Ryan adds that an utmost map that depicts all information about a narrative is fairly impossible. However, by discussing examples of maps and their functionality in the three respective dimensions of space, time/events, and mentality, it is claimed that those maps show the main parts of the narrative vehicle. Getting a grip on the way that the narrative works gives the viewer (back) control, or at least, the assumption that the viewer is in control again.
Larkin and Simon discuss the use of diagrams as a mode of external memory. When watching a film it is hard of even impossible to remember all the important clues. The mind map as an external device enables the viewer to keep track of all the details and the important events. These claims will be demonstrated in the fourth and final part of the thesis, arguing that perceiving information in a schematic manner causes one to see novel inference among the narrative parts, thus enabling the viewer to re-arrange parts and combine narrative elements of space, time, and characters all at once.
Part 4:


This last section of the thesis will reflect on what is mentioned in the earlier parts: the mind map as a way to (re)gain control, as control is an inherent human psychological need. Thus, now that the formal-structural distinction between Classical (Hollywood) cinema and complex cinema is made, and the forthcoming cognitive consequences that complex cinema in particular elicit, the claim could be made that the relocation of control as an intrinsic psychological need could be part of the trend in contemporary complex cinema. In the third part of the thesis several ways of mapping have been introduced, and in particular Stephen Mamber’s text discussed the act of mapping in context of complex films. In the fourth and final part of the thesis some actual examples of mapping techniques will be demonstrated, complimented with the theoretical assumptions that were introduced in the earlier parts. This will be a self-exploratory study as the maps will be created by myself.

The initial aim of this thesis is to offer a pilot as a sort of stepping stone in order for future research to test the claim with groups of people conducting quantitative and qualitative empirical data. I will try to demonstrate with several examples of drawn maps that is could be beneficial for comprehensive empirical research on mind mapping and the notion of control as part of the trend in complex contemporary cinema. Thus, this is not an actual pilot but it could relate to latter devices. This method is inspired by Marie-Laure Ryan’s work on mind mapping, as she complimented her theoretical assumptions with actual maps that were drawn by students of hers. The maps that will be presented in this thesis are evaluated in terms of how the make a complex plot more approachable in terms of understanding, thus, offering the possibility to regain control (back), rather than a consideration based on graphical qualities. Therefore, the aesthetic qualities (e.g. how ‘complicated’ or sophisticated they look) of the maps are not at stake in this thesis, but the focus is on how helpful the maps are in presenting a certain complex (structural-formal) filmic text. It would be interesting to test different kinds of complex films (as each type would likely ask for a specific mapping approach). However, in this thesis the study will be limited to one film.

In order to draw various maps, a compressed understanding of the chosen film is necessary. In this self-exploratory study, the film *Inception* (2010) by Christopher Nolan is chosen because its plot turns around a way that enables a number of individuals collectively to share dreaming experiences. As the title suggests ‘*Inception*’ refers (in this story) to the practice of inserting an idea into someone’s mind during shared dreaming. The film uses lots of conventional Classical cinema conventions. Bordwell claims that the novel complex movies and techniques test the extends of narrative possibilities of their viewer’s cognitive abilities “Within a tradition, one that demands a balance between innovation and adherence to norms.” (Bordwell: 2006: 103). Kiss explains that Nolan augments the conventions of Classical (Hollywood) cinema, what Bordwell describes as ‘Hyper Classical Storytelling’
Inception is a film about a thief who steals ideas through the use of dream-sharing technologies. The thief (Cobb) has the task to do the opposite of stealing, namely, *implanting* an idea in one’s mind. Cobb gathers a few individuals with several expertises to form a team. In order to accomplish the mission, the team has to deal with a layered problems and rules of logic within the layers. Thus, they decide to layer dreams within dreams. In total, they create three layers, each layer deeper in the subconscious than the prior. Although scholars in the field of complex contemporary cinema may argue Inception’s complexity, for the purpose of this thesis (mapping complex narratives), Inception seems to be an apt example. As discussed in the first part of the thesis, a film can be complex in several ways. In terms of abundance, when there is an over-stimulation of information or when there is not enough information for the viewer to follow the story, in terms of connectivity, when chronology and cause-effect is not clear, and in terms of ‘realness’ as a film can be complex due to unnatural events that would not occur in everyday life as we know it, such as parallel embedded universes and logical contradictions. Inception contains several of these instances. As the following quote shows, Inception’s plot is quite dense: “Following the logic of the film’s created fantasy-world, the protagonists’ physical bodily presence exists only on this upper, diegetic level of the embedded structure, while their dream-state mind alone participates in the chain of action in the deeper and deeper embedded hypo diegetic layers.” (Kiss: 2012: 39)

However, the aim of this thesis is not to analyze Inception’s dense plot structure thoroughly, but rather show how a mind map can simplify the complexities in such films, thus having grip of what is presented on screen. As the authors of ‘Inception and Philosophy’ claim in the series of Popular Culture and Philosophy, “To watch Inception, is to get into endless discussions about what is really going on in the movie.” (VIII)

### 4.2. Examples of Mind Maps

(Figure 4.1) The first map mainly represents the temporal dimension; as it offers a standard to compare different perceptions of time within each layer. In a way it specifies information about space (namely, in which layer time is organized) and especially several spaces (In Inception’s case, in terms of layers) compared to each other. Since the characters relocate from one layer to another, one can imagine that due to the different notions of time within each layer, their motives are driven by time and that they are affected by time and temporal consequences. This map is not too difficult to read since it only presents the temporal dimension explicitly which makes it approachable for the reader. On the other hand, in terms of direction, one has to read both the vertical axis (presenting layers and numbers) and the horizontal axis (presenting duration, time, and frequency).

As there are no events embedded in this map the reader/conductor can handily compare both axes. Verbal/written descriptions (no sentences, but only short words are used
to inform) and in terms of graphical data, the map is limited to only aligned lines. A primary advantage is (according to Eppler’s writings), that the line-construction functions as a visual metaphor because it uses the same format that one can find in a middle-school history book presenting a time-line (in this case without events).

The map’s major function is to depict *Inception*’s relative direction within the layers and to keep track of parallel plotlines, a common used device of filmmakers to complicate their story. In the story world there is no absolute clock that time every event in different locales. This diagram tells us how events happen in relation to each other, as the straight lines represent different layer. A disadvantage of the map is that information about agents/characters that operate in the story is not permitted, and neither is an overview of the most important events and actions. Moreover, there is little information on chronology related to the events. All in all, this map is helpful, but only with additional use of other maps/notes, as it does not offer a complete overview on the three dimensions that Ryan lists.

(Figure 4.2) This map can be described as a ‘plot segmentation’ method. In ‘Film Art: An Introduction’ (2012) Bordwell and Thompson set out all events of films in written language in a chronological order. The films that are set out in this publication are referred as maps. The film plots that are mapped are conventional Classical (Hollywood) narratives. Nonetheless, such an approach can be adapted in a more complex story such as *Inception*. It is a method for understanding a narrative, usually referring to a scene-by-scene outline, whereas each scene is described shortly in a separate line. This method helps to reveal the overall structure (or a thematic pattern) and there is room for smaller details. One can decide to do a segmentation per sequence, scene, or even per shot. It is important that this method depicts the events order in chronological manner, as they appear in the film. Just like the other mapping methods, plot segmentation offers a blueprint of the plot as one can understand the patterns used to retain the progression of the film.

This way of mapping represents the spatial dimension as the left bar shows all different layers, and the one on the other side of the page (right) lists the precise locations of each dream sequence. Individual characters and objects are not mapped in this example, but the main components of each layer could be added, for example I. *The Van:* A), B), etc. One can code events by capitalized letters, and Roman numbers can depict several acts. Moreover, numbers can create a breakdown per scene. Accidents and deliberate actions performed by the characters could be included, as well as information on the direction of each layer. Moreover, the mental dimension could also be added and explained when relevant.

This map is neither hard to make or read, as the first events are presented higher and the later events lower. It is noticeable that this map has very little graphic elements, such as boxes and arrows. A map like this can be created with written language, however, it is important to create space between each event/layer to separate each segment. The method of mapping is beneficial as one can add information to it when re-watching the film, without drastically changing the structure of the map. One could say that this map is rather plain in terms of graphical elements, but I would argue that a map like this could be the outline for a more advanced map later on, as it enables one to insert all important narrative dimensions, and as it offers a way to present information in a hierarchical manner.
(Figure 4.3) This approach is different than the first two maps that were discussed because the diagram visually suggests space, and especially depth is created between the layers. Each layer is numbered and in terms of space the arrows hint that one goes deeper and deeper in (dream) space. Individual characters or objects are not present, but one could choose to add an index that provides this kind of information. One can code, number, or label the segments and add this then into the schematic drawing. The order of each event/space is clear due to the arrows, however, information on durance and important events is missing. Also, emotional reactions and character motivation is not included in the diagram, but again, an index (one that could be found in geographical illustrations) could serve to introduce this.

The map is not hard to read as it contains mainly graphical elements, and the planes and arrows immediately direct one (or at least, for me) so there is no effort needed to interpret verbal language. It draws attention and spires curiosity, but a disadvantage could be that it can be difficult to draw rapidly, and it may trigger wrong association. Text within the visual structure is connected through arrows. The reading direction is top-down, and a schematic drawing like this has a strong and clear main association that is related to the domain (in this case Inception) that is mapped. The graphical elements employed in this map are therefore imperative, but the map could be more advanced in terms of hierarchy (for example; different sizes per plan, or a plan for each layer, so five plans instead of three) The main functionality for me is the fact that this schematic representation of the plot provides an understanding of the basics of Inception, that is, going deeper ‘under’ into layers, and in the end going up again, back to ‘reality’. It provides therefore a prior understanding, but complementary information is needed in order to comprehend the character’s motivations and the major events between the levels. Therefore, this map is in my opinion not ‘complete’, but it offers a first-help grip of the overall structure of Inception.

(Figure 4.4) This map presents the spatial dimension in a clear and concise manner. Each layer has a separate box embedded with the individuals/characters that operate in it. The narrative components of the temporal and evenemental dimension are absent, as no important events are marked. Accordingly, motivational aspects and emotional effects are missing. The horizontal axis represents the characters (numbered, with an index in the lowest box of the chart), and the vertical axis represents the different layers in a hierarchical fashion. For me, this map is not very difficult to read, but I can imagine that it is harder for someone who has seen Inception just one time. In terms of employed graphic elements, the numbers that are linked to the characters are branching down the page. When one line is linked from one box to another, the line in stake is connected to a specific number (thus: character) suggesting that this is the one who’s dream it is. This is not explicitly mentioned within the index of the diagram, but that could be a helpful addition to the map.

The main advantage of this diagram is that it offers an understanding of the different layers of dreams, and how each section is related to one character in particular. Moreover, it provides a clear overview of who is active in which part and when. The main function is therefore to show interpersonal relations. Optionally, one could code the characters by colors and the branch of the character’s dream could be marked with a corresponding color. A disadvantage of the mapping technique is that all the boxes are the same size, suggesting that every layer has the same duration/time span as the former. This could be presented in a more
hierarchical way by presenting boxes in smaller or bigger sizes, when going deeper in the sub consciousness. Moreover, there are no arrows, so a clear understanding of the direction/order is not evident. It looks a bit like a concept map because of its top-down order depicting the (inter) relationships between concepts. The manifestations of the actors are not marked (such as events), but considering structure, the map is branching out as a systematic approach to provide an overview on relationships. Therefore, it is a way to rapidly provide information, thus a device to (re) gain control over the complex plot.

(Figure 4.5) The spaces in this map are represented as circles with each circle overlapping another, resulting in a field between the two to capture the several sleep and the corresponding locations. Information on characters and events is limited, but the temporal differences between the layers are presented on the left side of the map. The reading direction is from left to right and top-down. Components of the mental dimension are missing, but could be added in smaller circles. As Ryan argues, the forces that prompt action (and thus drives the narrative) are the characters’ urges to solve problems. Therefore, when there is action there are minds that experience conflict. (Ryan: 2007: 29) The map itself is not difficult to read, as there are three columns to read in a vertical and horizontal manner. The horizontal axis is divided in three parts: 1) time 2) space 3) sleep. The map is outstanding in terms of graphic elements. The focus of the reader is directed immediately to the circled boxes, and the space between the overlapping layers could optionally be tinted or color-coded. Arrows help to direct the reader to information of time and the different layers of sleep. As Eppler mentions, some of the disadvantages of such a map may be that graphic elements can be misunderstood and trigger (just like Figure 4.3) wrong associations. Also, it is limited in the possibilities to extend it.

An advantage of this map is that it is graphically attractive to get a basic overview of the layered plot, however, it remains unclear what the chronology/order of the story is. Another disadvantage is, in my opinion, that the shape of the layers (round) suggest something in itself prior to the film’s experience. For example, a circle is traditionally used in loop-oriented maps, but in the case of Inception, this loop-structure is not evidently important for a clear understanding of the plot.

(Figure 4.6) Especially in comparing Classical (Hollywood) plots to contemporary complex cinema a map like this is essential. It does not explicitly capture the spatial dimension, as none of the characters or objects are registered. In terms of temporal and evenemental components this map provides a strong overview of the film. The diagram shows that time is linear, even though that might be hard to notice when watching a complex film. Therefore, emphasizing the fact that even a complex film like Inception borrows the conventions of Classical storytelling. The progression of events/order is apparent in this diagram, nonetheless, the emotional effect of the characters and their motivation that leads to action is not embedded, therefore this map lacks components of the narrative’s mental dimension. The map is easy to read as only the temporal and evenemental dimension is represented. It should be read in a linear manner (thus, left to right) and it contains the orthodox storytelling template in the lowest bar.
Almost no graphic elements are employed, in this manner the diagram seems more like a table instead of a map. Only one arrow suggests that in Inception the events are shifting back and forth in time, but not in a precise manner. The major advantage of this map is that lots of people are familiar with the ‘conventional story template’ as is presented in the lower bar, making it easy to understand Inception’s differences compared to the conventional format. Although the map provides a first-hand grip on the plot, it is ‘flat’ in a sense that it presents the different layers. It does not indicate how each layer overlaps with another, and is embedded in the former ones. In Inception this knowledge is crucial for an understanding of the dream-within-dream structure, and this mapping method does not provide this.

(Figure 4.7) This map clearly represents the spatial dimension, as both layers are depicted in a spatial manner under the temporal line of ‘reality’. It provides important information about the characters and objects in each layer, therefore employing both the spatial, temporal, and evenemental dimension of the narrative. As in the earlier discussed mapping approaches, components concerning the mental dimension are absent.

One might find this map hard to read as it offers a relative large amount of information all at once, but for me it is helpful to keep track of multiple dimensions at the same time. The map can be read in several ways; from down to low, or from left to right. The employed graphic elements are lines, numbered verbal description, dots/marks to note events/characters, and arrows connected. A large benefit of this method is that it allows enough room for detailed descriptions, especially in a multi-layered plot like Inception.

When watching Inception, at first it might seem hard to keep track of the different layers and the characters that operate in it. Especially the connection between events in the layers and the consequences are intricate to follow at the first viewing, but a map like this makes the total easier to grasp. Its disadvantage is/or could be the detailed nature of the map, as it includes almost all crucial narrative components that Ryan lists. On the one hand, this provides the viewer a good overview, but a map should help the viewer to simply the plot in a way and not make it look more complex. When explaining Inception’s plot to someone who has never seem the film yet, I would certainly not use this mapping technique, but for someone who is about to watch Inception the second time, I believe this mapping method could be a very functional additional device in making sense of the plot. According to Ryan, the simplest method to represent a narrative’s chronology is to ascribe a mark on the timeline to each event/action. (Ryan: 2007: 23) Although this map is a complex example of Ryan’s statement, if offers a concise hierarchical overview, leaving room to extend the map during multiple viewings. It can become overly complex when too much detail is added, causing one to lack an overview on the plot. Labeled boxes and embedded text with visual struc

As prompted in the third part of the thesis, the mind map can help when the events in the film are too much at once, by offering a latent overview of the data of the complex film. The map as an end result is not necessarily to help the viewer (or gives the viewer the suggestion of) gaining (back) control over the complexity, but the act of restructuring and rearranging the narrative’s components into a coherent whole. Therefore, the functionality of a map differs per individual and the visualization format may vary per film.
Using a map for one’s own clarification of a complex plot can be different from a map that is used to explain the plot to one who has not seen the film (for example, a teacher explaining students the structure of a complex plot). In complex narratives and especially in *Inception*, there are multiple dimensions of time happening all at once, and a visual guide that presents the different storylines at the same time could be beneficial in terms of grasping the temporal and spatial whole.
Conclusion

The initial aim of the thesis was to discuss control as an aspect to consider in contemporary complex cinema. The scope has been on the cognitive mechanisms involved when one watches a complex narrative, and in particular the fundamentals of the psychological experience of control in relation to complex contemporary cinema. In short, it was conjectured that viewers have manners to (re)gain control after lacking it during their viewing of a complex film.

Both (film scholars) Edward Branigan and David Bordwell assume that filmmakers make use of everyday life’s psychology, to permit their viewers to understand a narrative. Accordingly, this knowledge can also be used against viewers’ expectations in order to puzzle and bewilder them. In the first part of the thesis the distinction between Classical (Hollywood) cinema and complex cinema has been exemplified around this double possibility. On the one hand, Classical films have (and are expected to have) the feature of offering closure, thus leaving hardly any questions and outcomes of the characters unresolved. One can say that these types of films offer a harmonized ending. In contrast, on the other hand, a filmmaker may decide to willingly unsettle their viewer, offering conflict and discomfort, crushing the viewers’ expectations. One may even experience this lack of harmony and inconsistence as unpleasurable. Feelings of unpleasure can be manifested in many ways; in terms of over or under stimulations, odd chronology (cause and effect) structures, and in questioning ‘realness’. Although there is a state of perplexity and unpleasure, a permanent experience of these feelings would not be favorable, not even in art. Therefore, the claim was made that a way has to be given to the viewer to compensate the state of unsettlement.

The writings of Edward L. Deci and Richard M. Ryan have been discussed as their Self-Determination Theory concerns three psychological needs: the need for competence, relatedness, and autonomy. This theory offers an understanding of goal pursuits and the distinction between different types of motivation. When one watches a complex film there is a force that drives them to do so (thus: to invest time in it). This force concerns intrinsic motivation, because this kind of motivation refers to activities that one performs without external consequences such as rewards. Moreover, tasks that are related to this type of motivation concern active engagement toward novelty and outstanding challenge. In this manner, we can assume that the urge to be in control is an intrinsic need because the complex form and structure of contemporary complex cinema optimally challenge the viewer by offering a new experience without external consequences. Moreover, the findings of Katharine Greenaway et al. have been scrutinized as it says that the loss of control deeply affects one, and in fact, they argue that people’s desire to be in control causes them to react vigorously when lacking control. Approach motivation was said to lead toward goal-related stimuli, as a way to counterbalance the lack of control. This only happens when the lack of control is short-termed.

Consecutively, Michael Polanyi’s article on problem solving was a valuable addition to the aspect of control in complex contemporary cinema. Polanyi argues that problem
solving has two stages: first, there is the stage of perplexity and puzzlement. Short after this stage, the effort of acting and observing in order to disperse the first stage will appear. This can be considered as a way to (re)gain control over a problematic situation. When facing a problem, Polanyi asserts that one should chart the problematic situation into components, in order to create accessible patterns to restructure the situation. Restructuring a problem’s components cause one to get new insights, possibly leading to a solution (or at least, giving one the idea of getting ‘closer’ to the solution). This strategy can be adopted internal or external, but this thesis discusses the external method, namely as mind mapping.

In order to understand mind mapping as a tool that helps to (re)gaining control, one has to understand how visualization techniques help to memorize and understand new information. Jill. H. Larkin and Herbert A. Simon refer to the usage of diagrams as a way of *external* representation of a problem or situation. They acknowledge that there is a big difference in diagrammic representation in terms of recognition processes as human beings seem to have a mechanism that generates perceptual outcomes with little effort, especially sentential representation compared to diagrammic representation.

As Martin J. Eppler puts it, graphic formats offer numerous benefits for knowledge construction (and deconstruction), especially in order to reduce complexity. The visualization techniques that Eppler discusses are said to keep people engaged as they offer ‘ownership’ of information, mainly because they seem to improve one’s memory. Marie-Laure Ryan discussed mind mapping as diagramming a narrative, stating that graphic maps are not just devices to form representations of a narrative, but the exercise of conducting such a representation is a manner to create narratological knowledge. In order to value different mapping techniques, Ryan chooses to rely on three dimensions in which narrative information can be presented. Although some of the maps succeed in depiction information of the narrative according to the dimensions, Ryan affirms that a ‘perfect’ map cannot be created. Still, by creating maps of a narrative text, one gets to control the information in a relative manner.

Stephen Mamber’s article on mind mapping complex narratives emphasizes the functionality that maps have in terms of providing an overview. Especially when a viewer finds it too much at once, the act of patterning the problem by narrative mapping can be a method to handle complexity and information over-supply. The mind map is therefore an external device that enables the viewer to keep track (thus: (re) gain control) of all details and events when watching a film, especially complex narratives.

In order to reflect upon the theoretical notions that were discussed in this thesis, a self-exploratory study of mind mapping the movie *Inception* (2010) was presented, debating the functionality of various mapping techniques. Although different films ask for different visualization techniques, the claim can be made that mapping a complex film such as *Inception* is especially helpful in terms of dealing with different diegetic layers in which the story is presented. As it was already noted, the initial aim of this self-exploratory study was to offer a stepping stone for future research with groups of people conducting mind maps of different types of films. The aim of this thesis is to suggest that the mind map as a prosthetic (external) device to regain control in contemporary complex cinema is a topic worth more
academic research, not only for film studies, but also for humanities and the way in which human beings deal with artworks and information in general.
The method of studying the visualization formats of narrative information in this thesis varies from Ryan’s. Instead of asking how the narrative components can visually be presented, this thesis will start from various graphs and questions: what aspects of narrative can they represent?

(Figure 4.1)
(Figure 4.2)
(Figure 4.4)
(Figure 4.5)
(Figure 4.7)
Literature


