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GEORGE VAROTSIS

SCREENPLAY AND NARRATIVE THEORY

THE SCREENPLECTICS MODEL OF COMPLEX NARRATIVE SYSTEMS

The background of the book cover is a light beige color with a complex technical drawing or blueprint pattern. The drawing consists of various lines, including straight lines, curves, and circles, some of which form gear-like shapes. There are also arrows and some numbers scattered throughout the drawing, such as '26' and '22.24'. The drawing is oriented diagonally, matching the tilt of the text.

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Screenplay and Narrative Theory

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The Screenplectics Model of Complex Narrative Systems

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To Boubou Xanel

simply because I cannot describe in words how much I love you

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Chapter 1

Structural Analysis of Narrative Systems

THE NARRATIVE LANDSCAPE OF SCREENPLECTICS

As a professional discipline, screenwriting has come a long way since the first motion picture was projected on April 23, 1896. In the dawn of the cinema era, screenwriters were refused the appropriate credibility almost to the point of violent devaluation of their screenwriting craft mainly because cinema at large was fascinated with the authorship of film directors. This form of neglect resulted in screenwriting to be excluded from theoretical studies in academic disciplines such as narrative theory and film theory. Though Aristotle was the first to investigate the early notions of the narrative form, the advancement of the theoretical aspects of screenwriting, as a form of narrative expression, was limited to the necessary transformations from silent cinema to the present-day motion pictures, and the attempts of popularized “how-to” techniques such as Syd Field’s (Field 2003; 1984a; 1984b), Robert McKee’s (McKee 1999) and Linda Seger’s (Seger 1994) to further investigate the field. Although these approaches derive from professional practice they were based on internalized rules-of-thumb drawn from purely inductive interpretations of existing screenplays but were lacking deeper empirical, but most importantly, theoretical justification.

Such analyses, however successful they may have been in the nurturing of new writers, failed to provide answers on two troubling fundamental questions: first, how or what makes stories emerge in the context of narrative, and second, what are the underlying dynamics and mechanics that allow a screenplay to function as a unified whole? The epithet *whole* implies a network of factors and parameters that are used in conjunction for the formulation of a theoretical landscape of logical and structural principles with universal applicability and functionality. The term *narrative* connotes a wider meaning to dramatic writing that is not only intended for screenwriting but embraces writing for theatre and TV and novelized fiction in general terms. These narrative forms and formats, irrespective of their genre, employ identical or similar underlying structural principles, rules and plotting strategies for the creation of context in similar fashion.

The intricate comprehension of complex narrative dynamics expresses a need, if not a call, for a more comprehensive theory of narrative in whole that will delve deeper into the uncharted waters of present-day storytelling. Therefore, *Screenplay and Narrative Theory: The Screenplectics Model of Complex Narrative Systems*, the semantic narrative system proposed herewith, aids the understanding of structural dynamics and the underlying narrative mechanisms that come into play during the compositional stages. Screenplectics is a neologism that entwines the meaning of the words *complexity*, *screen*, and *symplectics*, a mathematical term deriving from the Greek word *πλεκτός* (*plektos*), and which carries the meaning of “braided together” (Gell-Mann 1995, 2). The contribution of *Screenplectics* lies in the center of its initial foundation. First, by explaining how a work of narrative, that is, novels, screenplays, teleplays or stageplays, functions synergistically, and by appropriating the necessary metaphors, systemically. Second, by explaining the heuristic mechanisms that are employed between compositional interactions in various structural levels that allow the coherent accumulative derivative we call *story* to emerge.

The transition from a purely empirical to a theoretical perspective is achieved through the examination of the underlying narrative dynamics under the prism of *complexity theory*, and by introducing, with the employment of metaphors and analogies, characteristics of *complex systems*. Described from a complexity theory perspective, a narrative work is constituted of a network of narrative components that are arranged hierarchically and are interacting parallel to one another in nonlinear ways. The basis of the generative capacity of *Screenplectics* from the deep and intermediate structures to the surface structures is the *plot-algorithm*; a heuristic tool that has the capacity, through contextual and semantic transformations of narrative information, to generate a multitude of story events from a finite number of story parameters and prepositions. Moreover, the *plot-algorithm* aids the implementation of tighter narrative logic into stories. Thus, a vast variety of new story alternatives and variations can be produced through the combination of a set of finite rules and principles that put the interactions of the narrative components in a process of transformation. Stories, therefore, are generated because a framework of principles define the terms for dramatic engagement and set in motion bidirectional cause-and-effect narrative dynamics.

STRUCTURAL AND SYSTEMIC ANALYSIS OF NARRATIVE SYSTEMS

The aim of the analysis of film or narrative systems is to explain how a system with increased levels of complexity works in whole. The isolation of narrative units and the examination of their relations within a given system is the field of application of *structuralism*. The positioning of units to levels with a hierarchical perspective (Barthes 1975, 242) is regarded as one of the major contributions of structural analysis. The basic idea is that a narrative system must be seen as having a structure within itself. Such structure has certain properties: distinctive units, and mutual interactions and interrelations, all taking place under a structural whole. However, within this intuitive idea of distinct units, and the interrelations governing them, exists a subtle network of interactions that is only understood under the prism of wholeness, or holism, as this is metaphorically advocated by the philosophical perspective of narrative complexity. Therefore, what gives rise to the narrative system's overall semantic meaning is the integration of the mutual interrelations, the constant interactions, the conceptual and contextual differential properties between the components, and the underlying transformations between them in an overall process that encompasses the narrative system itself; an insight that was largely ignored by structuralists and film theorists.

In order to explain the underlying transformations in a film system, film semioticians use the commutation test, a term that was borrowed from structural linguistics, so to assess whether a contextual change has occurred. As a deductive method, the commutation test categorizes and classifies signs and is demonstrated transitionally from one structure to another through the existence of a direct correlation between a change on the deep structure and a change in the surface structure. By utilizing contextual substitutions, film semioticians were able to assess whether a change in the signifier leads to change in the signified. For example, take the following narrative proposition: "the husband pushes the wife." By substituting the term "husband" with each of the following terms "man," "father," "boy," "assailant," etc., or the term "wife" with each of the following terms "woman," "mother," "child," "girl," "victim," etc., different contextual alternatives emerge since there is a distinct change in the intentions of the acting subject. A "father" pushing the "child" could be regarded as a violent act with criminal intent whether a "boy" pushing his "mother" can be a violent act which stems from frustration caused by authoritativeness. Subsequent elaboration of the environment where the act is carried out, that is, office, home, school, etc., could enable further contextualization by demonstrating the relationship between the subjects, and so on.

Several models having deep structures have been proposed so far (Levi-Strauss 1974; Greimas 1971) with the intention to explain and justify a universal grammar of narratives through the establishment of an underlying framework of narrative elements. However, no framework of rules and principles governing the generative contextual transformations has been proposed as of yet, neither has the underlying mechanism that carries these transformations from the deep structure to the surface structure. In addition, none of the proposed theories has been able to encapsulate the true essence of a universal grammar of narrative. This is mainly because the theories failed, first, to describe with precision the narrative units constituting the proposed models. And second, because they failed to describe the relations governing the units' interconnections other than the cause-and-effect logic that links together relevant narrative events. Story events bring about a meaning of change, either positive or negative, to the fictional characters to which other characters must react. Out of this uniform, cause-and-effect and sequential succession of narrative action dramatic conflict is generated, the most fundamental aspect of drama.

Narrative causality is projected onto the surface structure through the step-by-step action and interaction of the story's fictional characters. However, the description of the mechanism, and its functionality, that sets the narrative units in generative and semantic motion in the deeper structures is missing from all the proposed theories. The absence of such mechanism, and the understanding it creates on how narratives are composed in their deep structural levels, is one of the main reasons why such theories appear to be problematic. On the contrary, the proposed structural and systemic approach sets to explain how a work of narrative is created one level below, and what is the semantic meaning the narrative units convey. This dimension seeks to analyze units combined in larger systems out of which they derive their meaning: sequential combinations of various narrative components that have set definitions and functionalities within a given story. Therefore, the interrelationships of narrative components play a fundamental role in our understanding as they are the cornerstones for the creation and subsequent communication of emotions to which the audience relates.

Noam Chomsky set to explain this intricate deeper relationship between narrative units that are clustered into larger systems in his work in generative grammar (Chomsky 1968; Chomsky 1965). It is the same Chomskyan work (Chomskyan Standard Theory) that also helps the divergence from the rigid *a priori* propositions of structuralism. Generative grammar considers *grammar* to be a system of rules and propositions that generate combinations of words that form exact grammatical sentences. Although generative grammar focuses primarily on syntax, it has also addressed structural aspects of grammar such as phonology and morphology. Generative, or transformational, grammar with universal applicability is often referred to as the Chomskyan Standard Theory which comprises of deep, intermediate and surface structures, and a set of base rules that create a finite number of deep structure propositions. The Chomskyan

Standard Theory also describes the mechanism that utilizes the base transformational rules for the generation of infinite surface-structure grammar propositions (Chomsky 1965). However, the principles of generative grammar are not directly applicable to narrative models since the linguistic components are rigidly defined, for example the uses of adjectives, nouns and verbs perform a well-defined function within sentences, which makes their formalization into logical propositions feasible. In works of narrative though this rigid formality breaks down and does not produce any meaningful semantic propositions onto the surface structure that adequately advance the story. The generative base rules and principles pertaining to narrative are approximate and probable, not rigidly true and false (Buckland 2000, 7). Nevertheless, the absence of strictly defined rules and principles creates a fertile playground and leaves authors with plenty of room for experimentation.

The difference between film systems and narrative systems lies in the fact that the former deal with contextual interpretation seeking to reveal the unobserved and the unobvious while the latter deal with the objective empirical propositions. Such propositions have evolved through practice and repetition and have distinct utilization and functionality in the narrative structure. This distinction explains why pure inductivistic interpretive approaches have not provided solid alternatives. Meanings carry a level of subjectivity in them. Although narrative principles have evolved through a series of empirical observations, adjustment and fine tuning, and reapplication into practice, they seem to have a great deal of objectivity and universal applicability. When theoreticians attempt to second-guess the intentions of authors, for example deducing or making up meanings where there are not meant to be, they end up extrapolating their discoveries that were, in turn, based on subjective interpretations, leaving one to wonder whether any apparent objectivity exists in the proposed theories. It seems then that the discovery of hidden truths through interpretation is hazardous since meanings are not found but “primarily made out” of contextual clues (Bordwell 1989, 3). Although audiences are free to interpret films whichever way they wish, they do not habitually engage in the generation of universals from specifics. For this to be achieved, an inductive theory has to be justified empirically by direct evidence even if it does not generate inferences and propositions with absolute certainty. As opposed to this, conclusions must derive from the initial assumptions having a universal explanatory adequacy. This will ensure the universal applicability of the propositions and that the propositions are not limited by narrative form, format or genre, filmic school of thought, or research trends.

STRUCTURALISM ELEVATED: HOLISTIC SYSTEMS

Seen within the context of holistic systems, the narrative units have no intrinsic semantic meaning if are examined individually but they acquire significance due to the synergy their interrelations produce. These semantic interrelations create the matrix for the emergence of consistent works of narrative, elevating individual interactions into a cohesive whole whose product is larger than the sum of its individual parts. Interactions and interrelations of the narrative components must always be examined in relation to the narrative system they relate to and acquire significance from. The narrative units are in a constant flux with their environments, an endless bidirectional process that generates dramatic information within the narrative system. This signifies that the principles governing narrative systems are not only structuring the system itself but are also getting structured by it.

The semantic differential value of the interactions, out of which meaning is produced, is generated by the most important of narrative units that is identified in all narrative works: the character, or the conscious agent that has a function and carries actions relevant to the story’s premise. The coherence of the narrative events and of the story itself exist because of the character and the influence the character exerts on the other narrative components. This proposition seems to hierarchically categorizing the character as the most important of the narrative components. But within a holistic narrative system, individual components are equally contributing aspects of an overall process, all sharing equal importance. Characters are the vehicles the audiences connect to emotionally that allows it to follow a story. However, a story will not be functioning properly without a well-defined structure and the proper strategic arrangement of actions, incidents and events, all being facilitated by the story’s premise. This explains the viewpoint structuralists hold on fictional characters and the reason why characters were excluded from their theories. The exclusion of characters from the structuralist framework reveals the major fallacy in the structuralist logic. A fact that is contradictive to their own theories as structuralists were the first to appraise holism in their studies of wholes (Skyttner 1996, 30). But it is impossible to study *wholes*, and the emergent properties they exhibit, without acknowledging first that all their constituent parts are of equal importance. This presupposes that the units cannot be analyzed independently without an encompassing contextual framework that signifies their functionality in relation to the whole. Without characters there would be no action, without action there would be no reaction, without reaction there would be no dramatic conflict, and without conflict there would be no stories. Moreover, without characters the dramatic through-line of any narrative setup would be incomprehensible to the audience, rendering any storytelling attempt pointless in its infancy.

In spite of this, the structuralist analysis reduced characters to mere carriers of actions by applying principles of reduction, an approach that is problematic in itself. Greimas created the *actantial model*, an extreme structuralistic view

of characters that sees them as ‘*actants*’ (Greimas 1973, 106–20; Greimas 1971). The actantial model, often also referred to as the actantial narrative schema in semiotic analysis, is an analytical tool that examines the narrative action of a story based on the pairing of six character functions, such as the subject, the object, the sender, the receiver, the helper and the opponent—the actants—that work in parallel with archetypal character functions such as the hero and the villain, among other. These six character facets perform a well-defined role in the story and generate obstacles that need to be overcome since archetypal characters can have simultaneously different *actants*. Furthermore, Propp reduced characters to “spheres of action” based on their performance dictated by their function within the story (Propp 1968, 79–80). Although Greimas’s and Propp’s categorizations of characters are not excluded from modern-day narrative works, their propositions are only applicable to a rather specific kind of story which, on the outset, satisfies the story-world’s prerequisites within which only their ideas are meant to work. Therefore, Greimas’s and Propp’s analyses appear to be rather limited while they lack universal applicability as they cannot be applied to the totality of stories. A unification of the above views in the dramatic equation is that no action must succumb to character and no character must succumb to action. Therefore, fictional characters, their functions and actions, and narrative events are bi-directional forces of equal importance and logical necessity in the creation of coherent narratives.

GENERAL PRINCIPLES OF NARRATIVE AND STRUCTURE

In all its expressed forms, that is, myths, legends, tales, fables, novels, screenplays and motion pictures, narrative appears to be as old as humankind, appealing to all cultures, societies, human groups and classes of varied backgrounds globally (White 1980, 5). What makes narrative comprehensible to all is the inherent ability of humans to grasp patterns and structures in various forms, however intuitive or counter intuitive they may appear to be. If inherent structure is missing, humans will attempt to impose some (Mandler 1984, 19) as it seems that meaning only arises when some form of minimal structure is applied almost to all human endeavors and in various levels (Mandler 1984, 20). The intricate connection of different story elements, that is, characters and their actions based on their motivations and dramatic needs, the events caused as a result of such actions, the actions instigated from other characters in reciprocation, temporal and spatial dimensions of the story, and the causality stemming from all the interactions etc., and their strategical arrangement under the umbrella of structure, forms the basis of narrative through an ongoing organizing of data (Branigan 1992, 4).

Therefore, goal-oriented motivation appears to be of fundamental importance in narrative. The inclusion of a *dramatic goal* is a crucial determinant of narrative action since it adds a sense of direction, forward movement and temporal progression to the story, and prevents stagnation in the unfolding of events. However, it is not enough for the events to be interconnected either chronologically or chronically, and subsequently to unfold, so their strategic accumulation to be referred as *story*. Even though temporal succession is a requirement, narrative causality must also be factored into the equation while a change in the state of affairs of the fictional characters must also occur. As integral aspects of an action-centered activity, characters appear throughout a story, adding a layer of continuity into the minimum requirements of narrative. Hence, narrative can be seen as a process of causal transformation of the story’s contextual information measured through sets of relationships between components (Branigan 1992, 4). Out of this differential contextual transformation narrative units acquire meanings and a story emerges semantically.

This causal transformation of narrative information is based on cause-and-effect principles, and according to Todorov it happens in five steps. First, through the acknowledgment that a state of equilibrium exists in the beginning of the story. Second, a disruption of that equilibrium occurs soon after the story begins due to motivated action. Third is the realization from the hero that there has been a disruption. Fourth comes the hero’s attempt to correct that disruption, and finally, through a series of successive actions comes the reinstatement of the initial equilibrium (Todorov 1971, 39). Todorov’s theory has the necessary adequacy when it comes to explaining the dynamics that set stories in motion. However, Todorov has proposed a model that, despite being widely encountered in a great variety of stories, it remains general. His analysis of story dynamics lacks depth and fails to provide answers to the two fundamental questions posed in the opening section. It goes without saying that a lack of analysis of narrative dynamics beyond introductory levels inevitably leads to generalizations about the functions of fictional characters, the nature of narrative events, and their casual and sequential ordering in stories.

The notion of narrative causality is expanded successfully when cause-and-effect principles, such as probability, possibility, impossibility and necessity of actions, occur through the action of characters (Branigan 1992, 4–5). Since character and action are intrinsically linked, no further distinction between “action-centered” or “character-centered” narratives is needed other than mere philological analysis. Characters and their actions are, therefore, unified under an encompassing whole that elevates a goal-driven character to the epicenter of a causal action-centered narrative vigor. Such categorization is only adjusted to proportion so to fit a specific narrative genre where different structural conventions and regularities exist.

PLOT: A STRUCTURAL TOOL

So far, it has been established that *story* is the product of internal cause-and-effect interactions and relationships between the narrative units. Drawing a necessary analogy, *story* is the change in the state of affairs of characters in the three spatial dimensions of a literal structural framework, and *plot* is the encompassing strategic dimension that is elusive during initial scrutinizations of narrative conventions. Dramatic time, on screen or on paper, occurs through the sequencing of narrative information (Simons 2008, 114), and poses as the temporal fourth-dimensional structural tool. Thus, *plot* is the strategic arrangement of narrative events onto the surface structure, which is immediately visible to the reader or the audience, either on paper or on screen. Such strategic arrangement of the *plot* can occur through the use of crafting devices such as *in medias res* structuring, which removes the notion of linearity from the unfolding of events and exposes characters and their actions through flashbacks; through parallel subplots that add another layer of dimensionality to the main story; through ellipsis, the purposeful omission of events in order to create suspense, etc. The primary role of *plot* is to present the story's dramatic information to the audience through the seamless structural complication of four principles: narrative logic, narrative story-world history, narrative time and narrative space. The information that will be conveyed by these four principles will allow the audience to understand the relations between the characters and the narrative events by making logical inferences. It seems then that the *plot* guides the audience to perceive a story through the elicitation of curiosity and the utilization of suspense (Bordwell 1985, 52). Depending on how the *plot* presents the story, a classification of the fiction or cinematic genre is inevitable since different conventions are utilized between various genres. For example, the omission of clues in conjunction with the climaxing of tension is a characteristic of the thriller genre. Thrillers are typical examples of narrative works where the *plot* is of primary concern since the right amount of narrative information must be presented in the right time and in the right way. Optimal structuring allows the right narrative information to reach the audience at the appropriate time without the story to suffer from simplification or over complication. In order to achieve optimal structuring, tools that allow the arrangement of the elements of action and their facilitation into the encompassing structure have evolved. These tools are called *action schemas* and are a subcategory of the narrative schemas, the point of discussion in the following subchapter.

NARRATIVE SCHEMAS

Universal narrative patterns allow the audience to relate to a story through identification, enabling the cognitive acts of memory encoding, comprehending, storing and remembering a narrative's individual features. This process of identification is referred to as the *narrative schema* (Branigan 1992). The concept of *schema theory* builds on the idea that "the human memory consists of high level structures known as schemas" (Greene, 1986, 34). Memory schemas aid the processing of information, subsequently leading to understanding and comprehension. In general terms, a schema is a mental framework with organizational structure for the classification and categorization of relative information in hierarchical patterns (Branigan 1992, 15). The schema organizes information already existing in the memories of the perceivers, allowing them to classify new data that will, in turn, dictate how the perceivers will process, for example remember or forget, new information when exposed to new informational stimuli. The interaction of schema and preexisting narrative data is complex and bidirectional. While the schema tests new data, the old data that is already stored in one's memory tests the adequacy of the schema's criteria. There is postulation that this bidirectional interaction allows perceivers to recognize global patterns and gives rise to meaning. Inevitably, this meaning has subjective qualities since it includes the assumptions and expectations of the individual perceivers and is not based on rigorous predetermined conditions with sufficient objective representation. The *narrative schema* is constituted of the following seven elements (Branigan 1992, 14):

- i. the setup, that includes an introduction of the characters and the temporal and spatial dimensions of the story,
- ii. explanation of the state of affairs that includes the basic dramatic question of the story, or what the story is about,
- iii. the inciting incident, the first major dramatic event that sets the story in motion and acts as the cause for everything that follows,
- iv. the emotional response of the audience to the protagonist's statement of her dramatic goal or need,
- v. the complicating actions of the protagonist to resolve the dramatic problem and achieve his dramatic goal,
- vi. the outcome of the hero's struggle, and
- vii. the reactions to this outcome.

In other words, a narrative schema describes the relations between sets of relative narrative information, for example the setup, the premise and the historical background etc.; the temporal ordering of the narrative events, the narrative actions, and the roles and semantic functionality of the participants—the characters. The action schema, as a subcategory of the narrative schema, organizes relative information pertaining solely to narrative actions in a similar fashion to the narrative

schema and it will be discussed in detail in another chapter.

STORY GRAMMARS

The first story grammar was proposed by cognitive linguist George Lakoff (Lakoff 1972) as a reformulation of Propp's theories on Russian folktales but using mainly syntactic rewrite rules (Black and Wilensky 1979). Soon after they were first proposed, story grammars proliferated and attempts were presented in varied fields such as anthropology, cognitive psychology and narratology. In contrast to *schemas*, which not only create subjective expectations to the audience as to how stories advance but also help authors with the structuring of their stories, *story grammar* is a formal rule system that specifies how works of narrative, through the use of syntactic rewrite rules—the *narrative syntax*, conform to “regularly occurring forms” (Mandler and Goodman 1982, 507) and how these can be broken down into sets of components. The formal framework of a *story grammar* describes the process during which stories are composed and present the principles that are necessary for the ordering of the narrative components into meaningful sets (Mandler 1984, 18; Mandler and Johnson 1977, 117). Even though there is a massive gap separating story grammars from linguistic sentences and Chomsky's models for generative grammar, the functional similarities between the two rule systems suggest that there are at least some commonalities between them. Stories, as much as sentences, are created by serially linked and hierarchically organized components, each manifesting a meaning and having a function, both having evolved due to the limitations of human working memory (Johnson and Mandler 1980, 55).

However, story grammars deal only with syntactic rewrite rules and the generic and surface-structure bound characteristics of stories and not with deep-rooted narrative dynamics. The story is broken down to its elementary narrative components, for example a story consists of a setup, theme, plot, and resolution among other. The setup is further distinguished as a constitution and accumulation of fictional characters, locations, and the encompassing temporal dimension. Inevitably, story transformational grammarians, like structural linguists, focus only on the formal system of story analysis and story generation but have kept the semantic perspective separate, which appears to be entirely disconnected from the syntactic level. This division appears to be problematic, similar to separating a work of narrative from its context, its structure, and its inner transformational dynamics, without having a theory in place that brings the parts together. The theories of story grammar attempted to explain how a story is generated in its deep structural levels without taking into consideration that each narrative unit has a distinct function and conveys a specific meaning, contributing to the encompassing system more than its predetermined role dictates. As a holistic narrative model, *Screenplectics* acts as a bridging gap in the current knowledge, unifying for the first time deep-rooted narrative dynamics with the emergent semantic dimension of narrative under a common, paradigm-shifting theoretical umbrella.

The first reason story grammars have proven to be inadequate is they only deal with the transformations of narrative information that takes place in the surface structure and ignore the inner dynamics of stories, for example the motivations of the characters and the actions stemming from such motivations. Story grammars are better suited in the analysis of the surface action, which aids the comprehension of the text that is used in the advancement of the story. The second reason is that story grammars do not describe the transformation mechanisms that link together the narrative components' semantic interrelations and interactions. With the exception of Thorndyke's story grammar, in which the conditions that allow the story to progress are described in the setting of the story (Thorndyke 1977, 79), all the other story grammar models lack semantic representations and only describe the generative syntactic aspects of the surface-structure story transformations, similar to the Chomskyan linguistic grammar. The third reason is that no story grammar provides an explanation as to how structure itself imposes semantic constraints into the narrative by way of rewrite rules. For the most part, story grammars tried to establish transformational rules of story computation similar to the reproductive capacities of formal and symbolic logic and linguistics, which cannot be used for the understanding of narrative composition. The fourth reason is that story grammars analyze characters only on a philological level. They do not treat characters as the foundation of *story* but in a similar fashion to the structuralists as mere structural tools for conveying an action. It is evident then that both the syntactic and semantic representation, which is provided by *Screenplectics*, is needed for a deeper comprehension of narrative. Much of the empirical research on formal grammar systems of syntactic rewrite rules (Johnson and Mandler 1977; Rumelhart 1975; Stein and Glenn 1979, Thorndyke 1977) must be put to test whether they provide answers to the following two questions. The first question, which relates to the weak generative capacity of a theory, is whether the story grammars in question are capable of producing meaningful stories within a narrative form or format. The second question, which relates to the strong generative capacity of a theory, is whether story grammars describe and explain the structural descriptions of the story they create. In other words, whether a story grammar has universal applicability through an in-depth explanation of *why* and *how* the inner dynamics of a produced story could hold structurally in every narrative domain.

Story grammars appear to be effective when they are dealing with simple material that often utilize a single character striving for the attainment of a single goal. Examples of this kind of story can be found in children's stories (Mandler and

Johnson 1977), folktales (de Beaugrande 1982; Colby 1973; Todorov 1990, 1977, 1975), fables (Propp 1968), newspaper reports (Van Dijk and Kintsch 1983), even fairy tales (Lakoff 1972). However, story grammars do not function when they deal with more complex narrative material where the protagonist has multiple goals (Black and Wilensky 1979, 220) or with stories where multitude characters, motives, goals, and needs are interconnected under a common theme and an intricate plot. Syntactic rules of the following type (Thorndyke 1977, 79):

$$\text{Story} = \text{Setting} + \text{Theme} + \text{Plot} + \text{Resolution}$$
$$\text{Setting} = \text{Characters} + \text{Location} + \text{Time}$$

reveal the intricate weaknesses not only of Thorndyke's story grammar but of story grammars in general. In particular, the *plot* cannot occur sequentially to *setting* and *theme* when *theme* has an abstract underlying dimension that pervades story. Furthermore, a story is not just an accumulation of its setting, theme, plot and resolution added in sequential order. Stories usually involve characters, their motivations, and their goals, who all act, interact and react in context in a multitude of ways. In addition, no rewrite rules are presented that take the semantic meaning of specific parameters into consideration, that is, topology of locations, locality, time of day and chronic positioning of the story-world, or the relations between the fictional characters. Similar problems can also be found in other models such as Todorov's, who attempted a logico-formal approach that included character in a deeper level in contrast to the attempts of cognitive psychologists and cognitive linguists. Still though, Todorov's approach focuses on the syntactic instead of the semantic aspects of story dynamics and is effective only when single-character stories are facilitated. Like Thorndyke's model, Todorov's theory can be only applied to a very narrow kind of narrative as Todorov's proposed rules only present the surface structure manifestation of the fictional characters' actions. The effort of reducing complex topics down to a few syntactic rewrite rules and principles has caused narrative theory to become stagnant, hindering its progress, and story grammars were eventually abandoned.

With the lack of adequacy of the logico-formal approaches, a more encompassing narrative model is needed, one where the semantic dimension is properly facilitated. Semantic meaning and the functionality and utilization of the narrative components must be the determinant factors of a story (Barthes 1975, 244). This means that each and every narrative unit has a well-defined function and plays a specific role in the grand scheme of things. There must be no loose ends, no unnecessary complications, no undefined or superfluous units of any kind, that is, characters, motivations, psychological needs, that are not properly addressed or justified by the end of the story. In other words, a story and the entirety of its narrative components must function synergistically as a narrative system which will be permeated by tight narrative logic. In order for this to be achieved though, not only the importance of structure and its three semantic levels must be discussed but also the necessity for universal patterns must be presented as well. In addition, a short explanation of what constitutes a narrative system and its underlying dynamics should also be included. All these topics are the subjects of discussion in the following chapter.

Chapter 2

Universality of Structural Patterns

UNIVERSALITY OF STRUCTURE AND THE THREE-ACT PARADIGM

The most widely used structural tool in screenwriting today is the three-act paradigm, which provides the structural definition of a story's beginning, middle and end. A series of cognitive psychology experiments conducted in the 1980s concluded that a story that is only preserved in oral form and not in written text is bound to rely on the limitations of human memory (Mandler and Johnson 1977, 113). The original form of such a story will inevitably suffer since it is only circulated through repetitive oral retellings. It seems obvious to say then that structural representations preserve a story's original form so the story to be communicated the way it was first intended while they aid comprehension in the audience. As a form of structural representation, the three-act paradigm has been evolved empirically through repetition for the processing of narrative information in distinct blocks.

Authors create structural schemas from experience by way of creating the necessary representations about the causal relations and the sequencing of narrative events and actions that have distinct beginnings and ends (Mandler and Johnson 1977, 112), while they exhibit a semantic representation of the psychological dimension. The actions and the reactions of the fictional characters must have a causal and motivational justification in order to acquire a meaningful capacity instead of just being random. A structural schema organizes narrative information by emphasizing specific events in the story's beginning which are relevant to later events, for example this is a convention which is usually employed in mysteries and thrillers. Utilizing structure this way forewarns the audience for what comes next in the story by assisting it to keep track of what has happened so far. If a specific through-line has concluded, the audience stores in its memory the through-line's final proceedings; if it remains incomplete the audience retains the narrative information in its memory and recalls it at a later time. By clearly defining each separate act, the three-act paradigm provides a summary of the narrative situation at hand and informs the audience of the story's current proceedings (Mandler and Johnson 1977, 112). Although stories have an underlying structure that remains relevantly similar in various narrative forms and formats, there are huge differences in content from story to story (Mandler 1984, 22).

Similarly, authors organize and structure narrative information using the three-act paradigm. This process involves the creation of a story-world and the implementation of all the necessary narrative components that populate it: fictional characters, motivations, events, and structural points, etc. Utilizing problem solving for the advancement of the story, authors present the case of a protagonist who has a problem and tries to solve it through the formulation of a dramatic goal (Haberlandt 1980, 100). Usually the dramatic goal is generated by a sequence of specific events and actions that take place in the beginning of the story. This is usually referred to as the catalyst or the inciting incident. The protagonist, therefore, is bound to react to such events or actions and so the story advances sequentially through the various acts based on principles of causality until its final resolution. Structure is closely associated with memory recall and comprehension as empirical cognitive studies have shown (Mandler and Johnson 1977). By tapping into their inherent knowledge of structure, authors categorize narrative information that emerges from a structural part of the story that has concluded and have this information interacting with information that is produced in the local or current structural part of the story, creating this way a narrative continuum. Structural schemas, therefore, enable authors and audiences to form coherent representations of a story as a whole. Once in place, the schema does not have to be created anew unless an unfamiliar type of narrative form or format is attempted (Mandler 1983, 13–14).

There are three important observations that can be drawn from the above statement. The first is that microstructures exist within the macrostructure of a work of narrative. Individual acts, scenes and scene sequences are usually organized in three acts as well. This sequential structuring allows the compartmentalization of the story that leads to easier comprehension (Mandler 1983, 9). The second observation is that structural plot points mark the transitions from one act to the next, informing the audience that a specific segment has been concluded and that the story has progressed. Though this may not be readily detectable to the untrained observer but a closer inspection of most motion pictures reveals that structural plot points are universal standards—a paradigm. Plot points help the audience to mentally organize

hierarchically large quantities of disconnected information in order to follow the macrostructure of the motion picture—the story. Plot points also help authors to organize the story in manageable structural blocks. The third observation explains why the three-act structure has become a paradigm. First, it has been proven time and again that the three-act structure works efficiently. Second, the need for alternative paradigms has become redundant because the audience's comprehension of a story's proceedings is instant through repeat attendance. Third, audiences find it easier to recall specifics from the story as it unfolds sequentially that aids its identification with the fictional characters. The structural conformity stemming from a familiar structure ensures that story specifics will be accurately recalled from memory than if an unfamiliar structure was being utilized. Experiments have shown that when goals, causal connections, and a familiar structure are altered, readers and audiences find it difficult to follow a story in its entirety. When such elements were partially or totally removed, the results were even lower and the ratings of story comprehensibility were lower as a result (Mandler and Johnson 1977, 132–4; Thorndyke 1977, 104).

Do we need structure in the first place and why not create narrative works without any form of hierarchical structural organization at all? It has been shown that works of narrative that have a canonical form, that is, having narrative components in sequential order, are better recalled from memory than stories without structure or when narrative information is convoluted or intermixed (Mandler 1982, 10). This also explains why Hollywood studios, in their corporative quest to minimize risk and maximize profits, abide with religious intensity to screenplays structured with the three-act paradigm. Alienating an audience through structure experimentation, where the narrative information becomes convoluted thus difficult to follow, seems to be a ticket to commercial failure.

The three-act paradigm consists of three distinct dramatic blocks: Act I, Act II and Act III. Act I is the first dramatic unit of a screenplay and acts as the story's setup. This is where the introduction of the fictional characters inhabiting the story-world takes place as well as the introduction of the characters' relationships, the dramatic premise and situation of the story, the protagonist's dramatic goal or need, and the temporal and chronological dimensions acting as the story's historical backdrop (Field 1984a; 1984b). Act II is known as the confrontation, the middle of the story. In the second act, the protagonist has to overcome many an obstacle in order to achieve her dramatic need. This is achieved through a series of sequential actions and reactions that are goal oriented, underlined by principles of deterministic narrative causality. In the third act, known as the resolution, the audience discovers whether the reinstatement of the equilibrium has, or has not been, achieved by the protagonist. The end of the story though comes with the epilogue, a scene just before the end titles (Thompson 2003; 1999) that poses as an assertion that the equilibrium has been or has not been reinstated. The above description constitutes the minimum for a story to be considered as a story with beginning, middle and end (Mandler and Johnson 1977, 119).

The vertical structural events that hold a screenplay's spine together, and push the action into the next act, are the plot points. Several major plot points exist within the structure of a screenplay. The first, the catalyst or inciting incident sets the story in motion and it is situated at about the middle of the first act. The second is situated toward the end of Act I, signifying the story's transition into Act II where the hero will be propelled into a new situation. The third divides Act II into two distinct parts and is referred to as the midpoint. The midpoint usually signifies a change in the hero's approach causing him to intensify his efforts for the attainment of his goal. Finally, the fourth plot point is positioned at the end of Act II and marks the end of the second act and the transition into Act III, informing the audience that the story will soon conclude. Additionally, there are several minor plot points called pinches, which are inserted interstitially between the first plot point, the midpoint and the second plot point. The pinches add a sense of heightening pace and rhythm to the forward thrust and momentum of the story (McKee, 1999) while provide the basis for increased structural functionality for tighter and faster-paced plots. Pinches have a lesser dramatic impact onto the story, still posing as an important structural tool that eases the burden of managing heavy exposition of narrative information in the second act. Although plot points are integral to the progression of the story and to the screenplay's structural organization, the three-act paradigm is not always encountered in the rigid form Field proposes in his seminal work *Screenplay: The Foundations of Screenwriting*. The dramatic acts are not always proportional, with Act III usually being shorter than Act I (Thompson 2003; 1999), a convention of faster-paced genres, that is, action thrillers or action adventures.

Plot points must only be treated as structural tools that unify dramatic blocks thematically, adding continuity and continuum into a story, and not as act dividers, a position which favors a four-act structure argumentation. The fallacy in this line of argument occurs when the midpoint is treated as a structural event that divides the second act in half. At the midpoint, a call to arms takes place—the hero's last chance to react to the disturbance that has been inflicted to her world. However, if structural plot points are treated as acts dividers this should also be extended to the inciting incident, which can be asserted that it divides the first act in two asymmetrical parts, and the pinches, which could be said that they slice the second act into eight distinct parts. This way a screenplay ends up having nearly as much as ten acts and not four. But whatever fragmentation is achieved through argumentation, stories share a common underlying structure of a beginning, a middle and an end that remains invariant from story to story (Mandler 1984, 22).

Plot points are associated with the protagonist and the change in her fortunes and do not defer between them in terms of

importance or dramatic impact. A reason for misinterpreting the three-act structure as a fourth-act one is the confusion of goals with dramatic needs, desires, and the satisfaction of inner conflicts. The protagonist's goal remains the same throughout the story no matter how many subgoals are added to his quest. These subgoals can be either obstacles that keep him from achieving his primary goal or in the form of subplots running parallel to the main story. Subgoals usually remain, however, thematically linked to the primary goal, and so the hero has to achieve them in sequential steps before achieving his main one.

Such flawed contentions as the above are usually based on interpretive observations drawn a priori by analyzing already filmed screenplays. Through such analyses, universal rules are established that, supposedly, apply to all screenplays. Moving from the specific to the general, or universal, where repetition provides the necessary, and only, justification for the attainment of objective propositions, is a common inductivistic fallacy that often leads to unsubstantiated theories that lack verification and empirical application. However, adopting a similar approach to the Popperean method would benefit the field of narrative theory. The Popperean method presupposes an already established theoretical framework of rules and principles upon which researchers can further abstract. When proceeding from the general to the specific, theories with deeper descriptive capacity can be formulated, abstracted and expanded upon without untestable theories that lack empirical dimension proliferating.

Popper's method or process for the evolution of knowledge was expressed in his seminal work *The Logic and Evolution of Scientific Theory* (Popper 2010, 3–22). By establishing a preexisting theoretical framework, the formulation and expansion of new theories morphs into a problem-solving model that is consisted of three steps. First comes the identification that a problem exists or has arisen. The second step distills into the attempted solutions that attempt to solve the problem while the elimination of any unsuccessful solutions is the third step. Thus, a theory that cannot be refuted expands through the identification and subsequent elimination of its problematic statements through the proposition of tentative assertions that also cannot be refuted.

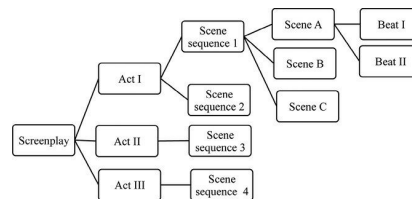


Figure 2.1 Hierarchical organization of acts, scene sequences, individual scenes and beats.

The hierarchical organization of a narrative work happens over three distinct structures: deep, intermediate, and surface structure. The deep structure is populated by narrative components with universal properties that are fundamental and are present to all stories such as the fictional characters and their psychological goals or needs. The intermediate structure is populated by components that even though are not universally encountered in all stories are still playing an important role. Finally, the surface structure is where the narrative action is depicted in written form through the text. These actions stem from the inner psychological need of the characters to achieve their goals. When it comes to the organization of the surface structure there are three tools that project the values of the deep and intermediate structures onto it. These tools are the beats, the scene, and the scene sequence (McKee, 1999). Within a scene, the beat is the smallest element of surface structure where the instantaneous exchange of information through the characters' action-reaction process takes place. A scene is a spatiotemporal construct where the dramatic conflict is projected through action and dialogue on a continuous time and space strip that serves different functions. A scene builds upon the succession of several beats. A scene sequence builds upon the succession of several scenes that are interlinked under a common theme. However, this common theme may not be evident prior to the scene sequence unfolding in its entirety. Schematically, this organizational hierarchy is shown in Figure 2.1.

COGNITIVE ASPECTS OF SCREENPLECTICS

It is safe to assume that screenplays and their three-act paradigms are mental constructs of human ingenuity. In the dawn of the cinematic era, the costs associated with improvisational filming were soaring so the need for effective organization and planning, along with logistical and economical considerations gave birth to the early screenplays of the silent era. It was only later that screenplays started acquiring structure and canonical form.

Ideas are first designed schematically on paper or computers then are transformed into tangible constructs of the written form. There is no difference between developing a story and the processes encountered in industrial product development. Technique, method, cohesiveness and logical continuity are all required for the production of a narrative work. A technique that is widely used in dramatic writing is *benchmarking*: the order of the appearance of events,

characters and their actions set expectations to the audience by shaping its inferences of what might happen next. In cognitive psychology, the term describing the audience's ability to remember information that is presented early in a story is called the *primacy effect* (Glanzer and Cunitz 1966). Benchmarking allows the audience to perceive everything it experiences about the story-world as granted unless it is told otherwise. The story-world, an accumulation of events and characters, unfolds following predefined rules and principles which are set by the author. These rules and principles consist the temporary and variable framework of laws on which the story-world is based. Temporary principles accommodate the story in question, permitting specific events and actions to happen, but differ from story to story in order to facilitate different events and actions. Based on these temporary principles, the audience creates its own inferences about what is allowed or not in the story-world.

Audiences tend to understand story-worlds by comparing them with knowledge they already have about reality so as to follow their proceedings (Ryan 1991, 51). By creating mental benchmarks, the audience identifies with characters and events while lowering its cognitive defenses in order to accept fantastic setups that would not otherwise be believable. This process is called the *principle of minimal departure* and presupposes that the story-world is complete while its parameters have either true or false values. Good examples of benchmarking and of the application of the principle of minimal departure can be found in cartoons, superhero, or elaborate sci-fi motion pictures and novels where characters and setups have no direct correlation to the real world.

The underlying dynamics in a narrative system deliver the necessary narrative information to the audience for further processing and the creation of inferences. Naturally, any examination of a narrative work as a narrative system is metaphorical. This will allow the comprehension of novel ideas through analogies and aids the understanding of synergetic narrative dynamics in a way that has not encountered before. Thus, a narrative system is a conceptual model rather than a physical one, and it is only used for the description of a condition. The creation of models allows the understanding of a system's dynamics and aids the description of its functional relationships (Hayes and Flower 1980, 390).

Systems are usually autonomous; this mean that once they have been designed and are ready to function they run autonomously without intervention, apart from the necessary handling, adjustment or quality control. For a system to function properly though there must be an underlying procedure which regulates it in its entirety and produces meaningful outcomes. So the analogy of chess that consists of finite number of chess pieces, sixty-four squares and a set of base rules, is very much applicable here. What gives emergence to an infinite number of chess games is a basic algorithm (the system's underlying procedure) that interlinks the utilization of chess pieces, their spatial coordinates on the chess board, and the possible moves permitted by a set of base rules. A similar example can be found in T.S Eliot's (Eliot 1997) *objective correlative* for the elicitation of emotions through the right combination of a set of underlying narrative elements: images, character actions and motivations, scene descriptions, etc. As in chess, where without players no chess game can commence, the author itself is the regulatory entity of the referential narrative system she creates. Authors not only make the strategic decisions but the micromanaging as well. Thus, the inclusion of the author as a part of the narrative system she creates is inevitable.

HEURISTIC ASPECTS OF SCREENPLECTICS

The underlying regulating procedure of a narrative system is the plot algorithm, a heuristic tool with distinct but infinite generative capabilities. Generally, heuristics or heuristic tools are practical problem-solving approaches that offer approximate or probabilistic solutions. This means that the solutions generated by heuristic tools are not optimal or perfect but are satisfactory in solving a specific problem (Pearl 1983). For example, coming up with a solution to advance a story might not end up being the perfect option retrospectively but this solution will be sufficient in advancing the narrative, both spatially and temporally, at the current structural level that it was employed. In cognitive psychology, heuristics explains the process of how humans, through evolution, make decisions and solve problems by employing one or more of these strategies: intuition judgment, educated guesses, rule of thumbs, profiling and common sense. Therefore, heuristic procedures aid the managing of workload that is generated by complex narrative information and present trial-and-error strategies that advance the story adequately, while easing decision-making. Operating in between the deep, intermediate and surface structures, the plot-algorithm transforms narrative information that is relative to the underlying correlating structure. In other words, the plot-algorithm transforms information that is created by the *core* (kernel) narrative components in the deep structure then passes the produced informational outcome to the core components in the immediate structure before presenting their final informational outcome onto the surface structure. This underlying transformational process, which will be explained in chapter 8, requires the configuration of a story-world with values pertaining to the fictional characters. These values include, but are not limited to, information about who the characters are, what do they like, their needs, goals, and conflicts, the spatiotemporal dimensions of their fictional worlds, the theme, and any other information that is required for the story to function on a logical and semantic level. In the

intermediate structure, the narrative information is enriched by the relations between the characters. Taking the story-world's initial parameterization and the characters' interrelations into consideration, the plot-algorithm transforms all relevant information into distinct actions, aiding authors to make informed decisions on how to advance their stories. The process of story-world parameterization belongs to the deep structural level, the interrelations between the characters to the intermediate level, and their actions to the surface level of structural organization.

In each structural level, complex differential processes take place between new information that is added to the narrative system by the author and the acting components, both internally and externally. Internally, the narrative system constantly generates new information that is associated with characters, actions and events, all following the story's inner logic and forward spatiotemporal progression. The characters must behave consistently, their actions must have consequences out of which further actions emerge, and the overall story has to abide to narrative logic, which presupposes causality, a well-defined structure and distinct goal-orientation. Externally, the narrative system generates new information in conjunction with its larger engulfing environment, part of which the author must be regarded. For everything to hold together, each and every narrative component must have a function and a role to play in the unfolding of events. All forms of narrative are produced due to a model that utilizes base rules and principles, hierarchical structure and a mechanism, such as the plot-algorithm. It is this underlying mechanism that infuses life into the system through the production of meaning due to the underlying differential contextual transformations it creates.

Complexity theory has had significant impact on a great variety of scientific fields, that is, chemistry, physics, biology, information theory and chaos theory. In recent years, it has departed from its originating fields and has been applied to other areas of study such as linguistics, sociology, economics, organizational management and strategic studies. The field of cognitive psychology has been inspired by the analogy of the computer metaphor of mind despite its inadequacies (Spivey 2007) between symbolic computing of the mind and the operation of computers especially in their high-level characteristics (Serra and Zanarini 1990, 8). The latter explains holistic behavior utilizing the analogy of the mind as a complex system having high-level characteristics, and which is constituted of a great variety of interrelated components. Approaching a narrative work as a complex system, seeking a symbolical representation for a *complex narrative system*, puts the emphasis on the complex semantic interrelation of its various narrative components, its nonlinear dynamics, and on the dramatic outcome that is produced through the components' semantic interactions. This approach opposes reductionism and seeks to understand the relationships between the narrative parts which connect them to the larger narrative system in whole. Therefore, complexity theory is the best suited theoretical framework for the study of dynamical, complex, nonlinear, and emergent systems that process lots of information.

The concept of nonlinear dynamics was developed by the French mathematician Henri Poincaré in order to examine systems where the output is significantly larger than the sum of their individual input. Narrative information, seen in the context of *informational input*, generates stories, seen as *informational output*, which have a much larger informational capacity than the sum of the information of the individual components acquired during the story-world configuration process. A work of narrative incorporates a vast number of narrative elements that, at first inspection, appear to be disjointed. With the addition of the semantic dimension, complexity theory has the capacity to bring such different narrative elements together, and explain how they function synergistically as part of the *whole*. In our case, the synergetic interrelation of fictional characters, their motivations, goals, needs and actions, narrative causality and goal orientation, setup and historical background, theme, structure and plotting create an interconnected semantic mesh which emerges as a story. But individually, the above narrative units do not produce any contextual result.

Screenplectics breaks away from the narrow approaches of structuralism by taking old ideas and using them in new ways. Understandably, this approach is not without risks (Miller and Page 2007). Some of its contributions might be inadequate, or even fail. But surely, some other will inspire and pervade. Therefore, *Screenplectics* must be judged on whether it expands current knowledge since it offers a deeper insight into the intricate dynamics of narrative, but also explains what narrative theory has been missing all along—the underlying heuristic mechanism that shapes its theoretical foundation.

THE IMPORTANCE OF UNIVERSAL PATTERNS

The application of interpretive inductive theories lacking empirical correlation, and which derive from *ad hoc* phenomena that are only encountered in a very narrow kind of stories, has hindered narrative theory from progressing further. One of the problems arising from this is the creation of conditional theoretical propositions that have no direct correlation to narrative composition and yield propositions without objective capacity. Inductive interpretations, and the conjectures they produce, lack validity because their insights are not based on empirical evidence. Inductivistic approaches are not based on a preexisting theoretical framework from which more in-depth observations and explanations can be derived that will, in turn, further enrich the existing theory (Popper 1994, 7–8). Often, the findings of the interpretive theories do not extend to practical application and persist to exist as incomplete abstract constructs in perpetuity. Contrary to this,

and through a method of trial and the elimination of error, important new insights about a theory with empirical dimension can be derived. But for this to happen, the initial foundations of the theory must be solidly in place.

Such a process involves the identification of universal propositions, the theory's initial foundations, a process which will cause research to detach from notions of behaviorism. Structure, an internal property of narrative systems, aids the classification of information, whether it is generated internally or acquired externally. The internal information classification hints to the narrative system's self-regulatory capacity and it is one of the structuralist principles. The classification process is a result of the complex interactions between the narrative components while taking into consideration the narrative work's past and current historical states (Cilliers 1998, 89). Structure is a universal property of all systems, narrative ones included, without which systems would be highly unstable and difficult to understand or controlled. The existence of structure presupposes the existence of internal structuring elements and spatiotemporal organization which can be modified in order to improve the dramatic efficiency of the whole. In order to achieve understanding of the narrative system as a whole the relations and functions between its units must be understood first. However, the singling out of individual processes will not explain how the whole works, especially without inclusion of the semantic dimension.

The establishing of universal patterns, rules and principles allows canonical form to arise, which will, in turn, permit a tentative theory to break away from purely interpretive procedures. Although inductivism is a powerful and insightful model of abstraction that aids the formulation of new theories, any references to subjective statements, such as beliefs or interpretations, must be replaced by objective propositions that can be justified and tested empirically. This can be achieved through the proposition of explanatory universal theories (Popper 1979, 3). Philosopher and epistemologist Karl Popper notes that the commonsense view that the sun will rise tomorrow because it has done so many times in the past, or regularities that are justified because of the initial observations that are responsible for their genesis, gives rise to the way of justification through repetition we call induction (Popper 1979, 3). Narrative practice in whole, including screenwriting, has evolved through justified repetition. However, the continuous and extensive application of narrative propositions for the creation of stories so far has served as a testing ground and the initial subjective statements have acquired objective dimensions. Often people associate, or confound, the direct experience they derive through their interactions in the physical world with a sense of belief in the accumulation of knowledge or their cognitive understanding. The association of ideas through repetition gives people great confidence in what they think they know because of a custom of habit (Popper 1979, 4).

But an attempt to justify an interpretive statement through the proposition of a universal statement of higher order, a process known as the principle of induction, would allow interpretive inferences to be put into logical forms through generalization. Such attempts lead to a Gödelian meta-system of infinite regresses: for a tentative theory to be justified certain assertions have to be created that will, in turn, allow the proposition of further statements to be made in order for the latter assertions to be justified and so on, ad infinitum. This carries on until the proposed theory ends up being a convoluted mishmash of unsubstantiated statements teetering on the chaos between probability and possibility. This process may invite subjective interpretation of hypotheses and theories but does not lead to objective knowledge in any given discipline (Popper, 2002). The inductive method for the study of narrative has not been successful in producing a universal model of narrative so far. On the contrary, when linguistics failed to establish a similar universal model they turned deductive, achieving great progress in the process (Barthes 1975, 238). However, the danger of a purely structural or deductive analysis may result to the formalism of narrative grammars to reemerge. Though a good starting point, structuralism has run its explanatory course and must be fused into an encompassing deductive theory of narrative that will serve as a fertile ground for further theorization. This is exactly the gap *Screenplay and Narrative Theory* sets out to fill by substituting structuralism with holism, a topic which will be discussed in more detail in chapter 3. However, there is an important differentiation between *Screenplectics* and the deductive process described by Roland Barthes (Barthes 1975).

One of the advantages of *Screenplectics* is the inclusion of differential semantic relationships of the narrative components. What really counts in this form of holistic structuralism is the existence of a whole system of contextual differences (Dreyfus and Rabinow 1982, 53) that operate in all structural levels. However impossible it may be to generate a deductive proof for *Screenplectics*, it is far more possible to confirm it inductively by evidence. Nevertheless, deductive proofs are often associated with mathematic theorems and axioms and convey absolute truths over possible ones, and thus, it would be unreasonable to demand a deductive proof here. Gödel's incompleteness theorem, which establishes the existence of limitations in finding complete proofs in formal logic, mathematics even in basic axiomatic systems capable of doing basic arithmetic, dictates that the generation of absolute truths is almost impossible. Hence, any application of pure deductive approaches in narrative theory is problematic in its genesis. In addition, it would be irrational to disregard inductive reasoning in narrative theory just because it does not produce absolute certainties. As it would be equally irrational to reject a tentative theoretical framework just because it lacks absolute certainty. By attempting to reduce—or deconstruct—a narrative system to its fundamental parts in order to fully comprehend it, one

only succeeds in removing the semantic level from the equation, ending up with parts that convey no meaning, sharing similar values to mathematical variables, that is, numbers. But the secret may be lying at the junction of deduction and induction.

Formulating a theory is more than holding or exerting criticism on existing texts that often seem to be delving into the abstract realm of subjectivity rather than the examination of objective evidence. With the main point of research today being empirical functionality, rather than abstract philosophical speculation, holism is the mind-set that unites fragmented interdisciplinary research attempts that seek to uncover underlying objective statements. Good and valid propositions must be retained and expanded and invalid ones must be discarded. It is up to further scrutiny to compare a proposed model's conclusions in order to find what logical relations exist between them, that is, compatibility or incompatibility, in order to verify or falsify it (Popper 2002, 9–10). If certain conclusions are refuted then the generation of knowledge continues through a process of feedback (Skyttner 1996, 11). Shifting the burden of refutation to the initial assumptions leads to a formulated theory that is objective rather than being believed (Popper 1979, 31).

It is appropriate to state here that there are propositions that apply to the narrative work in whole and others that apply only to the individual narrative units. The assumptions of the initial story-world parameterization, and the limitations imposed by them on internal dramatic logic, apply to the spatiotemporal dimensions that encompass the whole structure. The properties of such assumptions, however, extend to the individual components, affecting them indirectly. The characters do not exist in isolation and the structural groups they form do not share the same properties. The propositions of the encompassing whole transcend to the lower levels of hierarchy either on the vertical or the horizontal dimensions of the story-world. The term vertical dimensions refer to structural limitations such as the plot points, whether horizontal dimensions refer to values such as chronology, historical background, and narrative causality, among other. In a narrative system, information, which is structurally integrated, flows vertically, horizontally and bi-directionally as the narrative components react to the limitations imposed on them by the initial story-world propositions.

AVOIDING PITFALLS OF REDUCTIONISM AND LOGICAL FORMALIZATION

Structuralism seeks to uncover objective knowledge through observational analysis then explain it by mapping out the underlying framework that surrounds it. In disciplines such as formal logic and mathematics this leads to a method of analysis through reduction which is followed by the necessary formalization that describes a system despite the fact that mathematization is not a precondition of formalization. The process of reduction, the foundation of the analytical method, constitutes a formal set of logical rules and principles out of which conclusions can be deduced for the functionality of a system as a whole. In other words, the theoretical framework seeks to explain the structure of relations that govern the system (Scott 1998, 35).

The shortfalls of the analytical method is what deconstruction, or post-structuralism, attempted to exploit by breaking down hierarchies and rejecting rationality. However, in narrative there is nothing to be gained by reducing wholes to mere parts then proceed to their analysis and mathematical formalization in order to explain how the overall narrative system works. The process of stringing combinations of fictional characters and other narrative units together in random sequences will not produce a story unless their interrelations are properly defined in terms of psychological needs, motivations and goals. Similarly, it would have been impossible to understand how computers work simply by knowing how transistors and logical gates function in the micro level of architectural design. In both instances, an encompassing set of directions that guide the system in question toward its end state has to be implemented and utilized. This means that the outcome that is produced is far greater than the sum of the outcome of the individual parts. The reductionist perspective assumes that by explaining, and by mathematically formalizing, fundamental phenomena on one level an a priori ability to deduce explanations for emergent phenomena on all higher levels is also produced (Bak, 2008, 20). Applying principles of reduction to narrative through mathematical or logical formalization a fallacy is created: that the underlying narrative dynamics and mechanics will eventually become crystal clear because everything seems to be part of particle physics (Miller and Page 2007, 41). Taking this flawed logic one step further, one could propose, quite erroneously, that the principles of narrative derive directly from the physical laws and all that is missing to understand narrative dynamics is a set of equations describing the relations and actions of the fictional characters. The term greedy reductionism (Dennett 1995) refers to the zeal researchers sometimes have in order to explain too much too fast. This forces the intricate complexities of a system under investigation to be skipped so the researchers can jump into conclusions without prior making any real revelations. Behind this reductionist fallacy exists a sequence of rationalization that sequential advances from physics to chemistry to biology to psychology to sociology to economics to everything else (Miller and Page 2007, 52). However, our world appears to be a complex system in itself that is constituted of a multitude of smaller complex systems and its overall behavior cannot be explained, at least not yet, by a set of mathematical equations.

In addition, there are currently no equations that describe narrative principles such as interactions between characters,

theme, motivations and causality, among other. Previous attempts to achieve this (Prince 1980) were not very successful at either explaining the inner dynamics and mechanics of narrative or at creating stories through an empirical utilization of the proposed formalization. The construction of narrative propositions that allow only one modification points to a system of principles that is lacking flexibility in dealing with a multitude of narrative components. In addition, the proposal of rewrite rules for the formulation of strings of causal relations that can be applied universally to all narratives, similar to the structure of grammar (Prince 1980, 51–52), has very limited applicability. Propositions such as “Mary was sick, then Mary met Joan, then, as a result, Mary was healthy” (Prince 1980, 54) fail to create a coherent story, even if many such propositions are sequentially added together, because there is a lack of explanation as to why Mary was healthy again after meeting Joan, but also the element of causality is absent. By reducing narrative to such formalized propositions, Prince has succeeded in removing semantics and context from his proposed rewrite rules. Constructing strings of sentences then adding them sequentially neither creates the basis for universal story generation nor answers the fundamental question of “how stories emerge” from the deeper levels of structure. In another reductive approach (Brainerd and Neufeld 1975), the number of scenes, locations and characters have been quantified and analyzed in a quest to discover optimal universal story patterns. Brainerd and Neufeld tried to come up with axiomatic principles for the description of the dramatic efficiency of each scene by looking for optimal levels in the number of characters and locations. Then by adding and dividing quantified figures, they tried to find the average number of narrative components such as scenes, characters, locations, and props in existing plays. Their quantified findings would be used in a comparative statistical analysis so to reveal the optimal levels of such narrative units. This would provide the basis of their argument that plays are only written efficiently when they employ optimal levels of such quantified narrative components. It is, therefore, obvious that not all systems can be functionally reduced to their constituent parts, and that novel ways for addressing complex issues in narrative must be explored.

The properties responsible for rendering reductionism in narrative obsolete are the complex contextual interrelations and interactions of the narrative components. The more narrative components interact with each other the more we move from complication to complexity while reduction seizes offering meaningful insights (Miller and Page 2007, 27). Another reason why reductionism in narrative does not produce tangible results is that mathematical formalization has not attained a level of sophistication yet through which human emotions, motivations, intentions, and therefore, their actions through the emergence of rational thought can be explained by sets of equations. Mathematical models are best applied to closed systems where their propositions can be fully verified. However, attempts for verification in open or complex systems are partial or approximate at best. Complex systems are radically different from one another yet their deep-rooted specifics are alarmingly similar. This is due to different utilization of the same transcendental structural information where small alterations can lead to great differences (Chomsky 1980, 67).

UNDERSTANDING NOVEL APPROACHES

Different forms and formats of narrative, written or filmic, utilize different approaches, conventions and strategies in order to achieve their shared underlying fundamental property: dramatic conflict. Under the holistic perspective of complexity theory, the future states of a narrative system are constrained deterministically, up to a level, by the history of their past state out of which alternative story-paths are created. These alternative story what-ifs, which stem from the initial configuration of the narrative units in variegated story-world setups utilizing different end-goals, are explored in various stages of the composition process. Applied to the narrative system externally, the personal choice of authors is part of the overall process of story emergence from within—through the story’s internal dynamics. In such a process the story what-ifs are created through the differential contextual transformation of the narrative components in the deep structures and are manifested onto the surface structure through the characters’ actions. The initialization of the narrative units in a solid fashion optimizes the story’s dramatization and advances the story to the desired end state. However, a process of story-world configuration has to be initiated, and completed, first.

During the process of story-world parameterization, authors assign real values to the narrative components, defining extensively both the characters and the environments they inhabit, creating fictitious dramatic personas and drawing parallelisms and connections with the real world. The story-world configuration is the most integral step of the plot-algorithmic process for the semantic transformation of the narrative components, the essential building blocks of narrative. Story-world parameterization is the strategic assignment of real-world attributes to the narrative units, while the plot-algorithm is the tool that invokes conflict, generates action and reaction, and progresses the story toward the desired end state. Given enough structure, an effective narrative model can be created where overcomplicating details can be ignored. Ignoring unnecessary details is an important part of modeling or simulation, whichever the field of application is (Miller and Page 2007, 35).

Once the building blocks have been established, stories will emerge in their entirety without strenuous and overcomplicating details hindering their progression. For example, an author can establish the minimum traits and

attributes needed for the fictional characters, and by adding the necessary dramatic conflict, the story will be told effectively without further analysis of the characters' psychological aspects. No explanation has to be provided as to why the characters have become who they are or how they act within the scope of the story. Justifications with psychological validity, that is, disorders in the characters' personalities, can be omitted as well as explanations of the specifics of socioeconomic and political aspects of the story-world acting as the story's backdrop. Nevertheless, much the same happens in all forms of the creative enterprise where microworlds that reflect reality are created. Painters do not have to draw all the possible details of their worlds on the canvas to reach an audience; poets do not have to explain every possible aspect of their verses in order to communicate their themes; thespians do not explain the sources of their motivation or inspiration when acting on stage. The finest of the details are filled by the audience's imagination through *benchmarking* of their existing knowledge with reality in conjunction with the schemas described in the previous chapter.

Drawing a parallelism, screenplays and novels are not the only products of the creative enterprise that can be identified as *complex narrative systems*. Examples can be found not only in symphonic and orchestral music but in all kinds of music—emergence of rhythmical tunes due to deep-level interaction of musical tones. The same is with painting, sculpturing, dancing, even acting or photography where complexity emerges in the form of symmetry due to deep-level interaction of the appropriate fundamentals in each separate field. No matter where we look, emergence, as a property of the physical world we inhabit, from deeper structures is always there. As a measurement of its contribution, complexity theory offers new ways of thinking about old issues in all the fields of the artistic endeavor. Additionally, it has the potential to push them toward radical theoretical change and fundamental rethinking since it elevates context into an intrinsic part of the system under examination. Researching the complex allows the development of narrative tools that aid the organization of narrative information into goal-oriented patterns capable of producing meaningful outcomes—stories. Narrative complexity theory explains why stories with similar story-world parameterization that are portrayed in a great variety of narrative works will never be the same even if they were written by the same author in the first place. Thus, approaching works of narrative as complex narrative systems is more than just a metaphor. Analogies and metaphors are comparative tools useful in abstraction and theorization that allow the explanation, and therefore understanding, of abstract or difficult concepts in simpler terms. The accumulation of enough metaphorical ideas soon starts to function as a model out of which further progress can be achieved in a given domain. Having as a starting basis the metaphor of the brain as a computer, scientists, cognitive psychologists and linguists were able to use concepts from computer science and cognitive psychology in order to develop computational models of the brain for the description of brain functioning (Larsen-Freeman and Cameron 2008, 11–12).

When technical or mathematical terms are used for the description of narrative works in ways that are meaningless, but still sound impressive and misleadingly authoritative, this leads to loss of insight. The reason why story grammar research hit a dead end was that it was impossible to produce further theorization that would explain narrative in more depth. However successful Chomsky has been with his theories on linguistic grammar, it is clear that the same tools are not transferable to the study of narrative and its underlying dynamics. Chomsky built upon solid foundations of grammar rules and he was successful in his attempt to formalize transformation principles for the production of infinite sentences from a finite set of descriptions. When the same ideas were transferred to the study of narrative through the propositions of the story grammars, the produced results were below the expectations. The tools that were used were wrong and not even remotely applicable to narrative problem solving, therefore, they were unable to reveal the deeper dynamics that would provide far-reaching explanations. Mathematical formalization may one day have the sophistication to describe the underlying dynamics of complex narrative systems, however, the generated computations, reduced down to sets of equations, will, most probably, never produce the same results twice. Therefore, pitfalls of interpretive approaches must be avoided so not to reshape the theory in order to fit the facts. And this is where the explanatory and descriptive adequacy of a proposed theory play an important role in the justification or the refutation of the theory's propositions.

EXPLANATORY AND DESCRIPTIVE ADEQUACY

Explanatory adequacy of narrative, the weak principle of generative capacity, aims to identify whether the underlying theoretical framework of a narrative model produces the totality of stories in a given domain. In other words, *narrative explanatory adequacy* investigates whether the same principles can be applied not only to various narrative forms and formats, that is, screenplays, stageplays, teleplays, and novels, etc., but to different genres as well, that is, thrillers, romantic comedies, comedies, etc. Although works of narrative are composed at their fundamental level by the utilization of the same narrative principles, the conventions between their various genres differ significantly. This forms the problem of the initial selection. It is what Chomsky refers to as the rarely attainable level of internal justification of the theory's explanatory adequacy; a rather complex and utopian process because of the massive amount of data that needs to be collected and analyzed. In other words, the totality of genre narrative works has to be analyzed in order to test their internal justification and their conformity to narrative explanatory adequacy.

On the other hand, narrative external justification is only limited to the extent the proposed narrative model describes correctly its immediate object of investigation. However, there is no operational test in place to justify a writer's intuitive procedures as to how which specific work of narrative will learn and practice. A criterion for testing the adequacy of the model is called the constructional homonymy (Chomsky 1968, 86) which refers to how deep structure propositions are represented onto the surface structure. Distinct initial parameterization of the characters causes them to act and react differently in each situation, and the underlying process has the ability to produce infinite variations onto the surface structure.

Descriptive adequacy, the strong principle of generative capacity, sets to explain whether a proposed narrative model fully explains the structure of all the stories it generates in its given domain both in a solid fashion and canonical form of occurrence. One of the major affirmations presented in this book is that all forms of narrative share an underlying theoretical framework that remains relatively invariant in spite of major differences in content and context from story to story, and narrative format. *Screenplectics* is able to correctly anticipate the repetitive occurrence of similar deep structures in works of narrative that suggest the existence of a canonical form and the universal applicability of the theoretical framework (Johnson and Mandler 1980, 77). A model is thought to be descriptively adequate (Chomsky 1965, 60) if it showcases its ability to generate the correct set of structural and contextual descriptions onto the surface structure in a multitude of stories and a variety of genres. Additionally, the model's generative capacity includes the set of structural dynamics and mechanics for all forms of narrative, given enough adaptation to bridge the differences between them. As I will explain in the following chapters, *Screenplectics* describes the semantic differential transformational procedure which includes the theoretical framework of the base generative rules in the deep structures and the plot-algorithm mechanism that transforms these base rules into a multitude of surface structure propositions in a universal fashion. Therefore, the center of attention of narrative inquiry must shift from the interpretation of the actual text to the empirical competence that underlies its transformative behavior.

However, a fully fledged theory of narrative is a gargantuan task to accomplish due to the intuitive processes involved in the evolutionary properties of the mind, which still remain unexplored. In cognitive terms, narrative is an evolutionary miracle of sheer mental processing: the ability of humans not only to think what kind of story to write and how to write it but also how exactly they think when creating such a story—the actual step-by-step problem-solving process. We have mastered the intuitive processes when it comes to create three-dimensional worlds on the one-dimensional space of an A4 paper sheet that play out on a two-dimensional projection screen but we are yet to discover the exact cognitive processes that actually allow us to construct a story. Though I aim to explain in depth the cognitive aspects of dramatic writing in the following chapters I am going to discuss narrative complexity and the characteristics of complex narrative systems in chapter 3.

Chapter 3

Complex Narrative Systems

A HOLISTIC AND SYSTEMIC APPROACH

The universality of the three-act structure paradigm, supported by the existence of stories with similar structure from all parts of the world (Mandler 1983, 14), calls for structural invariants that cut across cultural variations yet exhibit a complex behavior. Naturally, a question that could arise here is where exactly the three-act structure originates from? The origin of a beginning, a middle and an end in narrative was first studied by Aristotle in *Poetics* (Aristotle 1996) although it seems that the paradigm might have evolved through intuition, repetition and empirical practice, much as *memes* do. Dramaturgists prior to Sophocles may have experimented with various forms of story structure but the three-act paradigm was used more broadly as it could have been deemed more efficient over the rest. In the end, it all boils down to the evolution of information in the form of structural description that exists in various versions until successive versions win over imperfect ones (Deutsch 2011, 372).

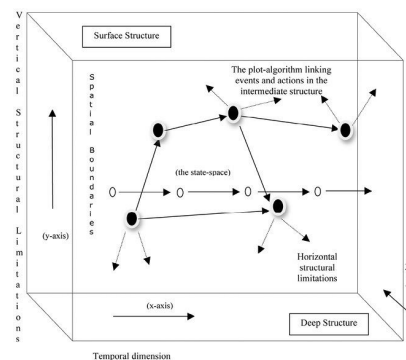


Figure 3.1 Schematic representation of a story-world.

Studies in cognitive psychology have shown that the three-act structure has evolved exactly because it is a precondition for the comprehension of the story by the readers or the audience. Memory recall is a process of story summarization that emphasizes encompassing structural characteristics rather than focusing on fine details and specific content (Thorndyke 1977, 77). Thus, understanding narrative dynamics it is imperative to the understanding of how a complex narrative system functions holistically. Holism is a mind-set that explains systems not by separating and analyzing their individual parts but by rather examining the whole as a sequential composite (Chatman 1980, 21). A holistic perspective entails that the value of each narrative component is determined by a process of equalization since no component has significance by itself. Therefore, narrative is a structural accumulation of vertically and horizontally concatenated functions, where each function has significance (Barthes 1975, 243). Let us assume the configuration of a story-world with two characters, a set location in space and time, and a set of basic parameters that regulate the characters' decisions and the story-world's permissible actions. The story-world regulatory parameters are constituted of characters, their traits, inner and outer psychological conflicts, personality flaws and quirks. They also include a basic sequence of events that represents the plotline, and a set of conflicting goals and dramatic needs that generate the necessary dramatic conflict. Even in this simple assembly, the set of story-world parameters multiply with each dramatic level that is added to the story. The more distinct narrative components a work of narrative has, in quantifiable terms, the more complex interactions will tend to be and, thus, the overall narrative complexity will increase. Complexity arises not only because of the interactions of the fictional characters but also because of the interconnections between other narrative components though not ad infinitum. When an additional character is added to the story then her plotline is connected with the plotline of the existing

characters. This way, the story-world's components and interactions multiply, subsequently increasing the connections between the characters and their state-space, and therefore the overall complexity of the narrative system in question.

A *state-space* is the sum of all the spatiotemporal boundaries and limitations transcending the story-world parameterization, including all the inhabiting fictional characters. Each of the story-world's components is described by a particular set of values, mostly qualitative though quantifiable parameters are also permissible. A *story-world* can be visually represented as a three-dimensional construct having deep, intermediate and surface structures, with the spatial boundary limitations positioned on the horizontal (x-axis), vertical (y-axis) and diagonal axis (z-axis), while the temporal dimension encompasses all three spatial ones. The state-space is the linear actualization of specific narrative events and actions as these are permitted by the story-world configuration, while events, actions and the various components are linked together by the plot-algorithm in the intermediate structure before emerge onto the surface structure. A schematic representation of a story-world is shown in Figure 3.1.

NARRATIVE COMPLEXITY, NON-LINEARITY AND THE EMERGENCE OF STORY

Every action or event that modifies a narrative work's dramatic value, that is, adds another subplot to the story, reveals a plot or character twist, or simply moves the story forward by forcing the characters to react to actions, can be referred to as an attractor. Attractors are structural points along the state-space where several story dynamics sharing relevant underlying information converge and link to with distinct trajectories (Cilliers 1998, 97). These trajectories of the constituent parts have a spatiotemporal dependence and are nonlinear (Marion 1999, 64). Attractors can produce order, and aid the consolidation and organization of narrative information by drawing attention to a small region of the complex narrative system's state-space (Larsen-Freeman and Cameron 2008, 54).

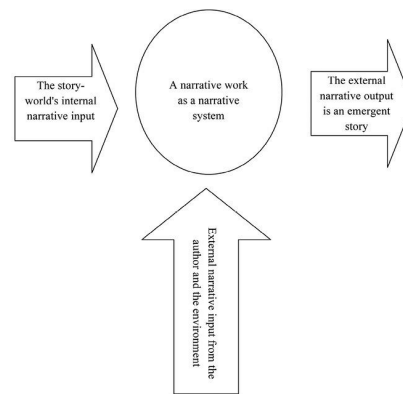


Figure 3.2 Emergence in complex narrative systems.

As I previously explained, the structural arrangement of narrative information allows the audience to follow a story through memory recall. Attractors aid the manipulation of nonlinear narrative content and its subsequent hierarchization, organization and memory recall based on principles of informational relevance. By informational relevance I mean the specific narrative information which is applicable to a problem pertaining to narrative logic at any point along the state-space and which can help solve the problem at hand or contribute to an approximate solution. Examples of major attractors in a screenplay are the plot points. Without attractors, the structure will become unstable and as a consequence its goal-oriented direction and forward momentum will suffer. Non linearity refers to changes in content that are not proportional to the narrative input and can be substantial in scope. The nonlinearity of spatio temporal dependencies in narrative derives from the fact that the connections and interactions between narrative components are dynamic, meaning that they can change. In other words, nonlinearity entails that a simple or small change of the content in the setup of the story can create a chain of events that will result in bigger changes along latter points of the state-space. Examples of spatiotemporal sensitivity to nonlinearity can be found in all works of narrative that are undergoing rigorous development. Developing a story presupposes the infusion of new information in the narrative or the removal of existing either from the setup of the story-world or from its state-space actualization. This dynamic alteration of narrative information creates informational ripples along the state-space that have to be addressed through rewrites.

The overall capacity of a complex narrative system exceeds the summed-up capacities of its individual units, leading to emergent properties and synergetic effects of the written text. A motion picture is an emergent system which exhibits synergetic effects from the combination of all its components such as the screenplay, the input of its director and cast, the budgetary, logistical and organizational limitations, and the personal work of the crew. Another example of emergence from deep structures can be found in music symphonies where the produced music is the emergent property of the

synergetic and combinatorial effect of musical notes and tones. When a system has emergent properties the reference is made to the qualities of the system that are absent in the individual constituents. A complex narrative system's emergent property is the *story* that emerges because its individual contextual elements function synergistically in order to process internal and external narrative information. This is shown schematically in Figure 3.2.

NARRATIVE SYSTEMS AND THE COMPLEXITY OF NARRATIVE INFORMATION

One of the main characteristics of complex narrative systems is that their units affect each other in a multifaceted and multilinear fashion, adding more variation to the system's overall value. What goes contrary to the holistic approach is the holistic paradox which describes that in order to understand and analyze a system as a whole its parts also have to be understood and analyzed individually, thereby losing the wholeness (Skyttner 1996, 42). However, it seems that the wholeness in narrative systems is only lost linguistically since the individual units only acquire significance, functionality, and therefore meaning due to their synergetic properties and nonlinear interaction. If the properties of the narrative constituents in a parameterized story-world are individually analyzed no valid conclusions for the overall holistic functionality of the narrative work in question will be drawn. This happens because narrative systems incorporate a network of components that are intrinsically connected to each other while they act dynamically because of the continual infusion of external narrative information. No narrative component has meaning by itself but acquires meaning in conjunction with the whole and always within an encompassing system of contextual references. Therefore, the complexity of stories is holistic, a direct consequence of the interweaving of the relationships between the narrative components (Rescher 1998, 2).

The distinction between complication and complexity is that complexity is a deep property of a system whereas complication is not (Miller and Page 2007, 8). In a complicated system the components retain a degree of independence from one another. If a component is removed the whole remains functional but with reduced complication and level of efficiency without its overall behavior and output to be affected. In a complex system the interdependencies of its components are fundamental since their interactions in the deep and intermediate structures give emergence to surface structure complexity. The removal of a narrative component affects the overall behavior of the narrative system and the system as a whole ceases to function. Removing the protagonist from a work of narrative will cause the narrative whole to break down. Narrative systems are able to perform in full capacity under different conditions (Cilliers 1998, viii), and each time they produce a different *narrative outcome*, a story, from the same narrative input, a premise or story-world configuration. This property is known as multi-finality. Since complex narrative systems perform a function, structural order, pattern and purpose must be exhibited throughout (Skyttner 1996, 35). For a work of narrative to be categorized as a narrative system it must satisfy the following six conditions (Ackoff 1981; Ackoff and Gharajedaghi 1996, 2). First, the narrative system must be defined by its functions as a whole. Second, the behavior of the narrative components must intrinsically be affecting the behavior of the whole. Third, all the behaviors must be interdependent. Fourth, if subplots are formed they, too, must be affecting the behavior of the whole. Fifth, the narrative components must have a purpose themselves. Sixth, the system has a designer who is dealing with its structure and stability so to maximize overall performance (Churchman 1979). I must also add that narrative systems (Litterer 1969; von Bertalanffy 1955):

- a. Receive *informational inputs* and deliver *informational outputs*. The informational input is either generated internally by the parameterized story-world or externally as the direct influence of the author.
- b. Are *goal-seeking*, where a goal-striving protagonist has to reinstate the disturbed equilibrium, which can end up being different from the original equilibrium that there was before the disturbance.
- c. Have a *transformation process*. This is the outcome of the processes of the plot-algorithm, the deep structure transformation mechanism that uses base rules for the transformation of narrative input to narrative output. The plot-algorithm mechanism will be discussed in more detail in chapter 8.
- d. Are *regulated* as narrativo-logical errors or deviations are corrected through the addition or subtraction of narrative information during rewrites, and under a process of feedback.
- e. Have *hierarchic organization* as they are constituted by smaller subsystems such as relations between the characters, subplots, parallel story levels, etc.
- f. Have *equi-finality* and *multi-finality*. This property explains how narrative systems have the capacity to create different stories from the same initial state of story-world configuration. The same story-world parameterization can be utilized multiple times but the outcome will always be a different story.
- g. Cannot have their end state reversed back to the initial state (Marion, 1999, 68). Once the story ends, and specific story-related decisions have been made in each of the forking paths, it is almost impossible to follow the path of logical thoughts back to the beginning by examining or interpreting the narrative work retrospectively.

Following from the above, narrative can be parallelized as a *bottom-up* process. In a bottom-up process the behavior of

a narrative system on the surface structure is influenced by the direct interactions and semantic transformations of the fundamental components, rules and principles populating the deep structure. With the inclusion of the author as part of the narrative system at hand narrative also becomes a top-down process as well. A top-down process describes how high-level narrative principles are embedded into the system by the author. The author's monitoring role involves the utilization of plot-algorithms through which the semantic transformation process occurs, controlling how the story will advance to the next stage. Authors first implement then handle the deep-level narrative principles in a problem-solving process that portrays hierarchical and architectural capacities. These embedded narrative principles describe how the characters react to stimuli in various occasions. In such a process, the computations are qualitative, thus intuitive, rather than quantitative, that is computational. Such qualitative decisions are routinely performed by authors at forking path junctions or at the structural points where attractors exist in order to steer the story toward a new direction.

The existence of common structures and base narrative principles in similar but not identical works of narrative is called *isomorphism* (Skyttner 1996, 39–40). This term describes how the same set of deep structure narrative propositions govern the functioning and subsequently give emergence to different surface structure phenomena. Universality of structure can be identified in various forms of narrative generated by different cultures around the world (Mandler 1984; 1983; Johnson and Mandler 1980). A nonnative audience can understand such stories based on inferences made on the stories' structure alone. Undeniably then, the three-act structure is an isomorphism that is identifiable in various formats of the narrative expression. Thus, a narrative theory capable of describing the dynamics of narrative systems in terms of a goal-oriented behavior has historical empirical development, hierarchic structure and organization, and an overall control process. By ignoring fine and trivial details, the same universal patterns can describe identical emergent phenomena in different forms of narrative regardless of the stories' originating country. Therefore, narrative systems are teleological (Skyttner 1996, 26), which means that they were designed in advance to fulfill a goal-oriented purpose, thus, are moving toward self-realization.

COMPLEX NARRATIVE SYSTEMS

A complex narrative system is constituted of a large number of autonomous units and the syntactic production rules and principles of various hierarchical levels that govern the units' interactions. Nonlinear interactions and interrelations underlie the narrative system's emergent behavior that can be understood as the derivative consequence of the holistic sum of its components' interactions (Cilliers 1998, 91; Levy 1992, 7–8). In other words, a complex narrative system has more possibilities (Luhmann 1985, 25) that can be actualized in a single story but only a specific representation materializes each time onto the surface structure. A story is as the emergent phenomenon of the nonlinear, dynamic, forward-thrusting, cause-and-effect interactions between the protagonist, the antagonist and rest of the narrative units. These narrative elements are examined under the spatiotemporal limitations of the story-world's plot, theme and structure, adhering to the story's internal narrative logic before manifesting a meaning onto the surface structure through dialogue and the actions of the characters. A work of narrative is constituted of a multitude of strings of words put together on paper by a regulator—the author—through the utilization of structural conventions and other writing techniques. Individually, these words do not portray a meaning apart from their function in describing objects, subjects, nouns, etc. But if words are put together through the utilization of semantics, purpose, roles, functions and goal-orientation for the attainment of a teleological purpose something more elaborate occurs than mere words strung together. Even though goal-orientation and motivation might not be directly evident there are always notions of them beneath the surface of the characters' psychological mask. For example, the sentence “the boy climbed up a tree to save a wounded bird” makes the motivation and the goal behind the boy's action explicit. The sentence “the boy climbed up a tree” lacks an evident goal and motivation though both might be more subtle and not immediately deduced by the boy's actions. Such will be the case where the boy just wanted to watch the sunset and ponder about certain feelings the spectacle would create in him.

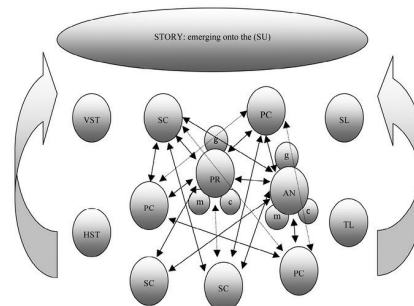


Figure 3.3 The story-world in a complex narrative system.

Two basic properties (Marion 1999, 29) of complex narrative systems are, first, the whole is more functional than its constituents or the sum of the constituents' capabilities, and second, the whole has larger informational capacity than the informational sum of its parts while it maintains its structural integrity throughout. A visual representation of the story-world is shown in Figure 3.3, where (SU) denotes the surface structure, (PR) the protagonist, (AN) the antagonist, (PC) the primary characters, (SC) the secondary characters, (g) their goals, (m) their motives, (c) their internal conflicts, (VST) the vertical structure limitations, (HST) the horizontal structure limitations, (SL) the spatial limitations, (TL) the temporal limitations. The thick lines represent direct interconnections or interrelations and the dashed lines represent indirect relationships, underlay by the forward movement and the theme of the story.

The interaction between the components creates dramatic conflict which can be cognitive, psychological, emotional or physical, depending on the genre. The variance between the protagonist's dramatic goal and the overall agenda and goal of the antagonist, who is not necessarily the villain and could be a force of nature or the protagonist's own self-destructive persona, creates a cause-and-effect forward progression in the story. Depending on the genre, the protagonist may not have a tangible outer dramatic goal that needs to be achieved but an inner conflict instead that will create intrapersonal and interpersonal dynamics. The latter is the typical setup of *character-driven* stories where interpersonal relationships are the primary sources of dramatic conflict. On the contrary, in *plot-driven* stories the protagonist's goal is directly related to the goal and the agenda of the antagonist, usually a villain.

The characteristics of complex systems (Cilliers 1998, 2–4 & 119–23; Serra and Zanarini, 1990) specifically adjusted to describe complex narrative systems are summarized below:

- a. The complex narrative system comprises of a large number of narrative elements. All the characters and their motives, goals, needs, flaws, conflicts, and the variety of story limitations, rules, principles and parameters constitute possible sets of narrative components for the configuration of a story-world.
- b. The components interact dynamically, affecting the overall behavior of the narrative work that evolves, or changes, as a consequence. The interactions and interrelations of the narrative components do not have to be physical but can also be informational. This means that the exchange of information is a dynamic interaction and the interactions are also subject to change. Characters are drawn into a physical, mental or emotional conflict because their needs and goals are conflicting. Narrative information is always exchanged through dialogue, subtle body communication, or even physical activity. The interactions are not static but dynamic as relationships change, goals are renewed or replaced, and needs are met or not over the course of a story.
- c. The interactions are rich. The characters, with their actions or decisions, are constantly affecting and are affected by other characters. Therefore, the plot must be devised in such a way that the characters' interactions and the end purpose of the story are fully facilitated in the most dramatic way. As I have previously explained, the autonomous narrative components do not have individual significance but obtain significance due to their rich synergetic interactions.
- d. The interactions are nonlinear. Small changes, decisions or actions of the characters in the first dramatic act can have large effects in latter parts of the story, and on its structure. Nonlinearity entails that small changes in content or context cause large informational disturbances in the structure and plot as opposed to linearity where small changes only cause small disturbances. An inherent and tight cause-and-effect connection exists between the story's internal narrative logic and its forward progression that causes informational turbulence along the story's historic path and state-space. Removing an element, such as a primary character that has a certain function and serves a purpose, or altering a character's personality or behavior, without further justification, can cause specific parts of the narrative to cease being functional and plot holes to be created. In this case, and through creative problem solving, a set of different narrative propositions and parameters must be implemented into the story-world so to address the flaws that were created.
- e. The interactions also appear to be asymmetrical, meaning that the structural distribution of narrative information is uneven. This usually occurs with introductions and new setups in the first act where large chunks of new information are presented. This implementation aids the identification of the audience with the characters, their fictional surroundings, and the story's historical backdrop and subsequent setup. A complex narrative system poses as a modeled approximation of society where extraneous details have been ignored. Social systems are often regulated by dynamic relations of power (Cilliers 1998, 120) that ensure the asymmetrical distribution of information among relations. Furthermore, the same complex social dynamics that keep societies moving, that is, nonlinearity, asymmetry, competition and power, are encountered within the fictional boundaries of a complex narrative system as well. In order for dramatic conflict to be generated, fictional characters have to exude power in a similar fashion to their real-life counterparts. Nonlinearity and uneven distribution of information are preconditions for complexity and

this is why abrupt structural or contextual changes can result to a catastrophic domino effect (Bak 2008, 33). When the holistic behavior of a complex narrative system is investigated the focus shifts from the individual components to the structure of the narrative work in whole. Narrative schemas, such as plot, action and character schemas, cluster unevenly distributed information based on principles of relevance and functionality. Through the application of heuristic mechanisms information that is available locally is transformed into a symmetric structure encompassing the totality of the narrative work. This even redistribution of narrative information adheres to the vertical and horizontal structural limitations of the story-world. Permissible actions and events, which are based on the story's historical backdrop and setup, form such horizontal limitations while the overall structure denotes the vertical limitations. Through the utilization of the plot-algorithm mechanism, bifurcation story alternatives, which are based on the transformation and redistribution of information in the deep and intermediate structures, are also created.

- f. The interactions have a short range. Usually in a complex narrative system the characters interact between them either directly or indirectly—see Figure 3.3. Direct exchange of information occurs when the interactions take place between characters with immediate spatial presence. Indirect interaction can still happen between characters that never interact physically. This immediacy for the exchange of information does not forbid long-range or indirect interactions nor wide-range influence of the components. Narrative components are grouped together under a common theme, relevant information or just because they share a similar function. For example, a group of widely diversified characters with common goals but different psychological needs temporarily unite against a common enemy.
- g. Even though complex narrative systems operate in a state of equilibrium, the stagnation that sometimes is associated with balanced states might mean the end of the system's functional process. In order to keep a complex narrative system from becoming stagnated, narrative heterogeneity and diversification has to be achieved through the infusion of diverse narrative information, that is, diverse characters with unique backgrounds. This will diversify the narrative work significantly, preventing it from becoming a recycled formulaic story through the use of clichés and stereotypes.
- h. Complex narrative systems have a history as they evolve informationally over rewrites. This informational evolution is tightly associated with the narrative work's past states, which deterministically dictate its present and future ones. The historical path dictates the forking path possibilities for a character to get from story-beat A to story-beat B. This deterministic property is tightly associated with the initial configuration of the story-world parameters and the structural and spatiotemporal limitations narrative principles impose to the narrative. Authors either have to adhere to the initial story-world parameterization or adjust it accordingly through an elaborate problem-solving process. However, the nonlinearity that is associated with narrative logic narrows down the forking-path possibilities for the advancement of the story from infinite to discreetly finite.
- i. Even though the distribution of information throughout the narrative work is asymmetrical, the complex narrative system itself exhibits recursive symmetries between scale levels (Tsoukas and Hatch 2001, 988) as the three-act structure repeats in smaller scales and over several structural levels in the form of scenes and scene sequence three-act structuring.
- j. Finally, complex narrative systems and their authors are regarded as one and the same, making the distinction for clear borders between them difficult, or under certain conditions, dysfunctional. The teleological purpose of a narrative work is always influenced by the author, who acts as a regulator. The characters interact with their immediate environment within the spatiotemporal boundaries of the story-world they inhabit, allowing the audience to create the necessary benchmarks and associations.

Such underlying interactions and semantic interrelations create the matrix for the emergence of coherent narrative works, elevating individual interactions into a cohesive whole whose product is larger than the sum of its individual parts. Understanding, therefore, works of narrative as complex narrative system presupposes the development of a framework of principles and rules that describe the dynamics and syntactic propositions between the narrative components. The structure of complex narrative systems and the parameterization of their story-world must be viewed as flexible instruments which can be modified where necessary if the dramatic efficiency of the narrative system is to be improved. And not as a rigid set of rules and principles which must be applied religiously akin to systems of reductionist nature, that is, the physical laws of the natural world.

FIRST-ORDER NARRATIVE COMPLEXITY

The definitions of complexity theory are vast, the fields of application are varied, the possibilities endless. Informational complexity studies computational problems that arise in the physical sciences, economics and finance, and engineering. Algorithmic or computational complexity deals with computational problems in computing and computer science. Order and thermodynamical complexity (entropy) studies issues pertaining to the dissipation and conservation of energy in physical systems. Stochastic complexity deals with problems of data optimization in probabilistic models such as

algorithms. Effective complexity attempts to understand and measure the behavior of non-random information in a given system. Social complexity aims to describe and analyze social systems and society at large. Hierarchical complexity attempts to explain how complex informational systemic behavior can be through mathematical formalization. Linguistic complexity seeks to understand the intricacies of thinking and the overall complexity of languages. Grammar complexity attempts to define the complex structure and architecture of grammar while grammatical complexity attempts to understand whether languages can differ in grammatical complexity and how such differences can be effectively measured. In our case, narrative complexity deals with the emergent phenomena deep-rooted narrative dynamics create and the intricate heuristic mechanisms that carry out the cognitive workload.

In complexity theory terminology, the three structural levels of a system are the compositional (deep structure), the transitional (intermediate structure) and the functional (surface structure). A narrative system's complexity is directly linked to the quantity of its components and the quality of their interrelational elaborateness (Rescher 1998, 1) and this complexity can be identified over the three structural levels (Larsen-Freeman and Cameron 2008, 1). A narrative work that has six distinct interacting components of fundamental importance, that is, two fictional characters, each having a motive and a goal to attain, is less complicated and has far less complexity than a work of narrative with twenty characters, out of which several have a motive and a goal. These two narrative systems share common underlying universal principles, are isomorphic and behave similarly on the deep (compositional level) and surface structure (functional level). However, their generative complexity in the intermediate structure (transitional level) differs vastly due to the difference in the quantity of their components. Taking into consideration the impact a complicated plot and multilayered plotting can have onto the story, the narrative work with six elements can be generated with fewer narrative informational instructions than the narrative work with twenty. This entails that the configuration of the simpler narrative work's story-world will tend to be smaller (based on the conditions and requirements pertaining to its plot), the interrelations between the narrative components comparatively limited (in terms of quantity and not quality or scope), the logical possibilities for the unfolding of the story restricted (based again on the necessities of its plot), thus the extent of its informational complexity will be bounded.

A complex narrative system takes its narrative input from the configuration of the story-world and its deep structure governing principles, produces a narrative output in the form of an emergent story, and utilizes its author(s) as its regulators throughout. A complex narrative system's hierarchical complexity (Rescher 1998, 199–201) relates to the coherence of the story on the surface structure. Hierarchical organization on the surface structure can be manifested through scenes and scene sequences. Scene sequences are constituted of individual scenes linked together thematically, which in turn have dramatic beats associated with the interaction of characters, and have individual lines of action that serve as a step-by-step procedural for the story's advancement. Hierarchical organization alleviates the impact qualitative processing has on a work's narrative complexity in order for it to be realized onto the surface level. However, small alterations in the inner narrative logic can cause tremendous informational turbulence and impact the surface structure organization in many ways. Internal narrative logic is a very sensitive aspect of information processing that, if it is mishandled, may cause the narrative work to cease functioning. Thus, through utilization of the principle of rational economy (Rescher 1998, 199–201) in the story-world configuration, authors can prevent the forming of unnecessary overcomplications that could convolute the plot. The principle of rational economy, also known as Occam's razor, is a problem-solving thought sequence that describes a selection process where solutions utilizing the fewer assumptions are preferred over more complicated solutions when there is no distinct difference on the quality of the outcome they produce. The more complicated a story is the bigger the possibility for the suspension of disbelief to break down will also be.

The entire history of human enterprise, cognitive or empirical, manifests a progression from homogeneity to heterogeneity, a process that is referred to as Spencer's law of social evolution (Spencer, 2005). Narrative heterogeneity proves to be a key feature of complex narrative systems disputing the traditional approaches that put the emphasis on average behavior as the representative of the whole. The behavior of individuals can be eccentric or erratic when acting on their own but when they act inside a group their behavior tends to follow more predictable patterns. In groups, the differences between individuals average out, making it easier to predict their behavior (Miller and Page 2007, 14–15). Predicting the behavior of an individual by finding emotional connections and similarities to identify with is the reason why stereotypes, or averages, are still being used in motion pictures. This way it will be easier for the audience to predict how the protagonist will react in a given situation. This allows the audience to connect with the hero in an emotional level, bringing a sense of identification. In complex narrative systems, interacting differences often result in a behavior that deviates from the average though this fluctuation in heterogeneity still produces an equilibrium at the end of the story. This phenomenon prompts the redefinition of the traits of fictional characters, parameters and narrative thresholds in a way that will entice more heterogeneity, leading to a full optimization of the narrative components. But in doing so, using a stereotypical profile for the protagonist must still be utilized if the establishment of an emotional connection between the protagonist and the audience is of primary concern. Excessive heterogeneity may lead to the alienation of the

audience and its sense of identification with the fictional characters will suffer. Narrative heterogeneity creates relationships of elevated interconnections between the narrative units, leading inevitably to nonlinearity, a property of complexity where the response is disjointed from the cause.

Despite the fact that scenes can be omitted, characters removed, reworked, even replaced, and motives and goals altered, the story line retains its consistency and coherence for the duration of the fictional setup. This emergent narrative complexity, the story, can be generated from simple base rules that can produce complex patterns of behavior. The story in an entirely homogeneous work of narrative that utilizes only a few and very similar characters with no dramatic needs, motivations or goals, in familiar set ups, can become stagnant and derivative, therefore, unattractive to a sophisticated audience. If more differences are fused into the story, that is, increased variety of psychological conflict, the story will admittedly divert from averages and become more complex. The handling of narrative information generates first-order narrative complexity from simple base rules. This is achieved through approaching context and the individual components as a *coupled dynamic*: the story affects the characters and they, in turn, affect the story. Because of *coupling*, the story can change and evolve in a process of coadaptation between the characters and their story-world (Larsen-Freeman and Cameron 2008, 7).

SECOND-ORDER NARRATIVE COMPLEXITY

The cognitive models that currently attempt to provide explanations how the brain works, and subsequently how humans are able to think and theorize, are not sophisticated enough yet to reflect the entire set of complexities in the emergent process of thinking and consciousness. Our brains have hundreds, but most probably tens of thousands, of different, hierarchically functioning autonomous parts, each having a specific function and task to perform. This makes the mapping of the brain's constituents extremely difficult. Even embryonic brains develop distinct clumps of cells that later are arranged into layers that will create thousands of links (Minsky 2006, 147).

Complexity begets more complexity and this complexification seems to be an inherent property of our world. Social interaction becomes more complex each passing day. New and more complex theoretical models have to be produced in almost every discipline. Such is also the case with models in narrative theory since existing ones have been proven inadequate to describe narrative dynamics. A work of narrative is the product of the processing of its author's characteristics, abilities, skills and qualities of emotional and intellectual predisposition, among many other. Thus the discussion from the first-order narrative complexity complex narrative systems exhibit must be expanded so to include second-order narrative complexity (Tsoukas and Hatch 2001). Second-order narrative complexity defines the ability of humans to think, speculate, understand and create abstractions in complex terms and describes the cognitive process of how complex narrative structures are produced.

The ability of humans to create complex stories has evolved over the course of thousands of years. However, we do not have yet the ability to present a theory about the innate schema that grants us such an ability of story abstraction in the first place (Chomsky 1965, 27). This competence is based on mental structures similar to the ones our linguistic ability is also based, which utilize sets of rules and representations (Chomsky 1980, 49). It seems then that the inclusion of the author as part of the narrative system she creates is not a convenient necessity but rather an imperative step. Without central control and regulation of the narrative information a coherent story will never emerge. For example, the story in an open-source screenplay, where a multitude of authors alter it at will without having an overall goal-oriented direction and regulatory central control, will most certainly lack coherence and consistency. Or even, consider a story-generating software with the raw power to create thousands of narrative propositions and convert them into story-world parameters then linking them sequentially in order to produce stories. But without qualitative central control and the infusion of semantic properties, the generated narrative combinations will clump into coherent stories only by sheer randomness driven by cold probabilities.

For a complex narrative system to function properly there must be central control and regulation. Therefore, to qualify as functional it has to satisfy two criteria: first, it has to be designed, and second, to have a purpose (Sterelny 1990, 6–10). It has been shown that in complex systems found in nature, for example insect colonies or wider economic systems such as the stock market, the use of genetic algorithms can give rise to complex computational patterns, taking the idea of a decentralized information process one step further (Mitchell et al. 1996, 4–6). However, the notion of self-regulation that applies to the whole of the structure in complex narrative systems, as another level of abstraction of the inherent second-order narrative complexity, is measured by the extent of the author's involvement (Tsoukas and Hatch 2001, 990). By using the analogy of functionalism from the contemporary philosophy of mind (Sterelny 1990; Putnam 1988) the human brain (the hardware) can be presented as a computational machine with the ability to run a wide variety of software. In our case the parameters of the story-world can be referred to as the software that is fed into the hardware. After all, it is the author who decides whether the story will have a cognitive or emotional interest and what the plot and its execution will be like. This happens solely because the author has the ability to interweave events, characters and

theme under a fully optimized dramatic umbrella.

However, the inclusion of the author as part of the narrative system gives rise to the problem of hierarchical description. Rule-based systems consist of a number of components that can be combined into patterns by a set of rules which define what is possible or not. In rule-based systems the components conform to the history and the internal logic of the narrative system, thus are historically path dependent. Examples of rule-based systems are chess, computers, and the Chomskyan grammar model. The configuration of the story-world is a rule-based system, out of which the narrative work's state-space will eventually arise. The permissible states of a story-world are defined by assigning narrative values to the characters' personalities and traits, along with tangible definitions for their spatiotemporal and structural relations. Once the deep structure of the story-world has been specified, the narrative rules and principles determine the various combinations that will permit valid syntactic propositions to be formed in the intermediate structure. In rule-based systems, the story-world parameterization is defined by ignoring trivial details. This way the story-world is effectively modeled and managed by the author through a process of centralized control that determines which production rules will activate and when (Cilliers 1998, 15; Serra and Zanarini 1990, 26).

Connectionist systems are primarily based on a network of interconnected nodes. The sum of the inputs is calculated by the nodes in order to produce an output. Due to the extensive interconnection of the system, nodes can simultaneously represent both an input and an output, a property which is also shared by the structural attractors. The values are determined by the synapses between the nodes which carry a certain *weight* (Cilliers 1998, 17). The most prominent example of a connectionist system is the human brain. This is because of the brain's internal complex architecture which allows the brain to abstract about its own first-order complexity and also generate second-order complexity. The inclusion of the author makes complex narrative systems to be hierarchically described as rule-based systems exhibiting characteristics of connectionist systems.

NARRATIVE LOGIC AND PROBLEM SOLVING

Narrative information is predefined as part of the story-world configuration and is distributed over a wide network of narrative components. By using narrative information, authors calculate approximate solutions that satisfy the a priori limitations of the story-world at hand and advance the story to the desired end purpose. In other words, authors process information that has been gathered from external stimuli, external narrative input, and information that has arisen internally due to the synergy of the narrative components, the internal narrative input. The capacity of the authors to generate narrative models of elaborate internal informational capacity allows the transcendence of inherent perceptual limitations over the creation of possible worlds through imagining or daydreaming (Miller and Page 2007, 95). It is inevitable though that the proposed solutions will be the product of both rational and emotional thinking since the minds of the authors are always affected by their assumptions, values and purposes (Minsky 2006, 5).

Problem solving happens through a step-by-step compartmentalization of the narrative issues in question. A useful tool for segmenting relevant narrative information is the attractors, or structural nodes. The attractors' functionality is to aid the fragmentation of the story and offer authors better control. From the perspective of the reader or the audience, relative narrative information is organized in distinct clumps bearing a meaning in a process of story summarization at the end of each dramatic act. This information will be transferred from the working to the long-term memory so to be used in latter parts of the narrative work (Haberlandt 1980, 102). From the perspective of the author, the induced information before and after the attractors occur in structural form is distributed symmetrically. Through narrative logic problem solving, authors organize and compute information so to bring the narrative system in a state of equilibrium without sacrificing its heterogeneity. Diversity, heterogeneity and the dynamic nature of the characters' interactions eliminate the possibility of concentrating observations down to a narrow number of mathematical descriptions (Bak 2008, 29). From a compositional perspective, attractors assist the creation of suspense by allowing effective handling of the plot by way of manipulating the structure. By weaving together plot twists and emotional moments, the shift in the pace of the story and the sequential unfolding of the narrative events engage the audience. The existence of several attractors in sequential order presupposes that the narrative output produced by one attractor will be used as narrative input by the next one. Segmenting narrative information like this allows increased control of the narrative logic and structure through utilization of a hierarchical system, which is then decoded or interpreted by the audience. This is a process of decomposition of a complex narrative into more manageable parts, which have been carefully configured in order to function harmonically and synergistically. Despite this strategic syntactical segmentation in the deep structures, individual low-level components remain parts of the higher-level components that come next in the hierarchy. For example, sub goals are parts of the protagonist's distinct and encompassing goal-path. The compartmentalization of the overall procedure leads to the gradual analysis, and eventual solution, of the narrative problem at hand. Additional narrative information is created as multiple components in different hierarchical levels are engaged. Since the entire narrative system is involved, this newly created information is distributed over various parts of the structure. The semantic emergence of story, or surface structure coherence, is not

generated locally because of the characteristics of a component but holistically (Cilliers 1998, 81) in a process that involves the whole.

Seeing the author as the encompassing hierarchical complex system (Minsky 2006, 2), the problem of self-regulation in complex narrative systems is bypassed. In real life, living entities are self-regulatory, happening aimlessly or out of sheer luck with strong ties to probabilistic notions of cosmic indeterminism. In narrative, however, the invisible hand of the author orchestrates everything, preventing with her regulatory role the whole from becoming a dull, self-repeating loop lacking dramatic conflict. Languages are examples of complex systems that, in order to enable communication, need to have a recognizable structure. Narrative works with distinct structures are also vehicles of communication. Nevertheless, a narrative system does not always get modified in its entirety and only specific parts are subject to modification, especially during rewrites. This compartmentalized modification of the narrative components leads to their interaction in a way that ultimately affects the whole. Pondering then whether the evolution of screenwriting and cinema, both as autonomous but overlapping isomorphic referential systems, is a structural adaptation similar to languages or social systems is valid and necessary.

ORGANIZED NARRATIVE COMPLEXITY

The exploration of the emergent properties of the narrative components onto the surface structure is called organized complexity (Miller and Page 2007, 49). The emphasis here is on those interrelations that allow the components to coexist without canceling each other out. Organization has a function and a purpose when it comes to designing and controlling narrative works. Similar themes that connect the various characters must be explored and effective ways to interconnect the characters' goals, motives and agendas must be created. Such configuration will maximize the overall dramatic conflict without leaving unexplored ends. For an optimized story to emerge, meaningless or random bits of narrative information must be omitted. Even though narrative syntax, that is, deep-structure production rules and principles, differentiates in general terms between narrative works, the way meaning and semantic representation arise remain the same. This implies a causal relationship between the narrative components, the state space, the permissible boundaries of the story-world, the historical goal-path, and the external regulatory entity. It also implies that the past states of the narrative system play a vital role to its future states. For emergence to occur a certain level of hierarchical structure and organization must exist that will render narrative complexity at large into more manageable building blocks. This is shown schematically in Figure 3.4. It is therefore the structure that facilitates stability, allowing complex narrative systems to further evolve (Rescher 1998, 12).

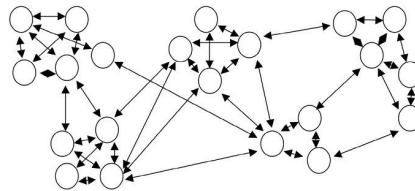


Figure 3.4 An organized narrative system with clustered information.

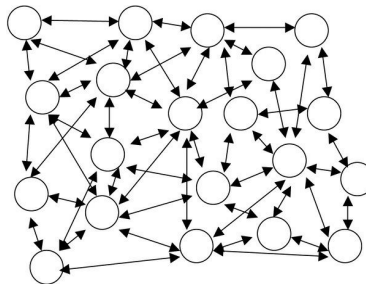


Figure 3.5 A thematically unstructured narrative system.

Narrative complexity cannot arise in an environment that is dominated by the absence of lawful order or where chaotic randomness exists, see Figure 3.5. However, I must mention here that in narrative systems with a high order of stability and a rigid structure nothing novel can emerge (Horga 1995, 76).

A work of narrative is not a bundle of isolated elements put randomly together. A complex narrative system can generate information from a given input of dramatic parameters due to their qualitative semantic differences that arise from the interrelations and interactions of its narrative units. The initial story-world configuration acts as the pool of the

narrative input. As the story progresses new information is created in the form of bifurcating paths and story alternatives, which embellishes the system's history. This new information abides to the same internal narrative logic and principles for the consistent advancement of the story. The current and future states of a story, along with the actions and decisions of the characters, stem from the previous states, actions, or decisions going all the way back to the initial story-world configuration. In other words, the historic path predetermines the future states and structure of the narrative system. Furthermore, the interactions between the components carry information that gets distributed throughout the structure and the interrelations add meaning to their functional existence within the boundaries of the story-world at hand.

So to understand the whole in relation to its parts and the parts in relation to the whole one has to understand first what is the principle of organization that governs the order and arrangement of the parts, unifying them thematically into an intelligible story (Levitt 1971, 19). The need of the hero to achieve his dramatic goal, the principle of differential force, streamlines the action, linking the characters, their goals, needs and motives, the plot and theme under a common roof. So the comprehension of the principles of narrative logic will lead to inferences with increased inferential acuity and minimal inferential error. Narrative logic differs fundamentally from formal or symbolic logic as it relies on heuristic tools that produce approximate solutions as opposed to the latter where the solutions are definitive. There are different strategies and approaches in different narrative genres and formats for blending various events and actions or distributing functions between characters. For example, the character archetypes (Vogler 1998) do not involve the rigid if-then propositions usually encountered in formal logic. Thus, authors make probabilistic inferences and decisions based on the initial parameterization of the story-world that will allow the story to progress without disregarding any of the past states of the narrative system. Such inferences will be consistent and non-contradictory as they derive directly from the initial story-world premises by a way of deduction, and present authors with new bifurcation story alternatives where new approximate solutions for the continuation of the story appear. Bifurcation points show that new structures need to be developed that will facilitate new ideas and push the story to a different direction. By not disregarding the story's historic past, emergence of narrative causality occurs, where causes and effects are integrated to the plans and goals of the characters. (Branigan 1992, 29).

Although by focusing the analysis on the individual parts it is like as if we examine an individual tree but miss the forest, the importance of narrative logic, and the effect it has onto the story-world, will be discussed in chapter 4.

Chapter 4

Narrative Logic and Parameterization

INTERNAL NARRATIVE COMPLEXITY

The narrative components hold locally all the necessary information that will be collectively processed by the narrative system. Narrative units are not simple or simplistic but are complex at their own scale of operation (Atay and Jost 2004, 1). The components will never become completely autonomous and their functional roles are relatively simple compared to the narrative work's collective behavior. This allows coordination between them, eventually leading to coherent structures at higher levels of abstraction. Top-level coherence comes at a cost as some of the properties of the components have to be suppressed. For example, the entire back-story information is not always revealed except for the necessary. In other words, there is visible backstory and invisible backstory. Visible backstory is conveyed through dialogue exposition or flashbacks and its function is to dimensionalize the characters and add depth to the main through-line. It is also a great technique for revealing secrets and was first identified by Aristotle (Aristotle 1996). The function of invisible backstory is philological as it aids authors to build a closer relationship with their characters, motivating and educating the authors' choices. Sometimes the prerequisites of a story impose what kind of information will be revealed or omitted. This top-down informational regulation reduces the degrees of freedom of the individual constituents and creates a predictable pattern for their behavior as disruptive information can be controlled more effectively. The regulation of the narrative resources also allows the components to function more effectively, making top-level coherence and therefore, emergence, possible.

The infusion of narrative information into the system increases both the internal complexity of the components and the external complexity of the narrative system as a whole. The increase in information also constitutes the system's optimization as necessary. By omitting information, the components' internal complexity is reduced but, as a consequence, the external complexity of the narrative system is also reduced. In other words, the less internal information is utilized for the production of a story the less appealing the story line might become to the reader or the audience. So the challenge is to enhance the internal structure and complexity of the components that will allow them to contribute to the story externally in terms of depth and quality, embellishing the story line without overcomplicating it (Jost 2004, 70).

The bidirectional flow and exchange of narrative information constitutes a complex narrative system open to adjustment and adaptation. However, works of narrative must not extrude plasticity to change, and thus, be at the mercy of its story-world configuration, but neither to portray rigidity to change. Although the internal structure must be open to influence from external conditions it must not be defined a priori as this will lead to the loss of adaptivity. Similarly, the internal structure must not be at the mercy of fundamental shifts of content and context as this will lead to narrative instability and informational nonlinearity (Cilliers 1998, 99). An optimized complex narrative system needs to have a flexible enough structure that will allow alternative states to emerge. Thus, the necessary minimum structure must be ensured in order to avoid chaotic states from taking over. This will allow new ideas, possibilities and potentialities of story alternatives to emerge and flourish, increasing the work's diversity and homogeneity. Narrative logic propositions must be precise yet remain flexible and approximate so not to jeopardize the internal logic of the system. On the other hand, the more fragile a work of narrative tends to be on its top-level representation the more fragile its internal logic may appear to be in the low level and vice versa. Finding the right balance between flexibility and rigidity is of primary importance. A flexible structure leads to increased optimization while a rigid structure leads to informational death. This happens because a rigid structure rarely allows additional information to be infused into the system, severing its chances for further enhancement.

NARRATIVE LOGIC AND NARRATIVE DETERMINISM

The deep and intermediate structure interactions between the properties and the values of the configured story-world create a plethora of story alternatives for actions and events to come into effect. Examining a work of narrative

retrospectively, the end-story events appear to be teleological as they inevitably had to happen (Simons 2008, 121). If the premise and story-world configuration of an existing narrative work are turned into a new narrative by another author, different story alternatives will become available at the important bifurcating points. These newly formed alternatives can diverge the story from its original pathway and the outcome can be entirely different.

These alternative story scenarios are made available not only because what the fictional characters can perform in specific action-situations but also what the story-world's configuration permits to happen. From a given story-world parameterization narrative determinism emerges and a historical path is created that will dictate what actions the characters can possibly do in the immediate future states of the state space. This narrative determinism depends heavily on the fictional characters' past actions to specific events within the permissible boundaries. Narrative determinism is only evident retrospectively through backward unthreading of the narrative's events and actions. Prior to the development and configuration of a story-world the options available for the advancement of the story appear to be unlimited. As the story progresses though, actions and events become more probable than possible. Logical decisions made at each bifurcation path narrow down the quantitative width of story possibilities, limiting the totality of possible narrative options until there are only a few alternatives to choose from. It is as though the plot's narrative possibilities narrow down and the available options by the end of the story not only become gradually limited but almost inevitable (Chatman 1980, 46).

Narrative determinism is neither strict nor always valid. Since chance and randomness are ever-present properties and the story evolves over a period of time, rather than structured in immense detail well in advance, the course of future events cannot be foretold, foreseen or predicted (Rescher 1996, 131). In the beginning, every story appears to be indeterministic as the available options are enormous, if not downright infinite, and the same applies to the story's possible states. As the story advances, certain decisions appear to limit the possible states and alternative story options decrease, narrowing down to distinct finite numbers. This creates over time a deterministic narrative pathway that is in direct accordance with the story's historical path. There is a distinct correlation between the emergent story and the history of the state-space, determined by the deep structure transformations, which cannot be foreseen in advance (Cilliers 1998, 110). Although authors know where they want to take their stories, it is almost impossible to predict with accuracy well in advance what and how it will happen along the state-space.

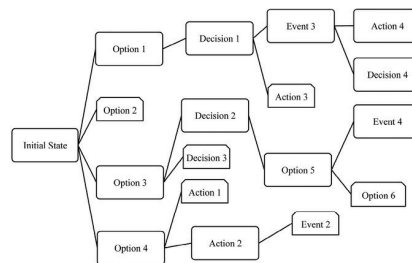


Figure 4.1 Deterministic bifurcation along the historical path and state-space.

The heuristic tool that aids the navigation along the historical path and the effective plotting of the story is called mapping. Mapping of the state-space occurs through the use of attractors and is shown schematically in Figure 4.1. Attractors, apart from their utility in structuring, also link together relevant or similar narrative information, adding a sense of memory to the narrative system (Marion 1999,74). Multiple attractors with interrelated foci, each of which belongs to a different part of the state space, perform different functions. Combined together, the attractors function under a common theme, adding goal-oriented direction to a complex narrative system.

The assignment of parameters to story-world components creates semantically differentiated units, the narrative building blocks of complex narrative systems. Based on a set of finite principles, narrative units can be transformed, organized and managed into infinite combinations, generating unique and infinite story situations (Marion 1999, 94). For complex narrative systems to be fully explored, the story's boundaries, spatial, temporal, conceptual and semantic have to be properly defined. Spatiotemporal boundaries are preconditions for structure (Cilliers 1998, 95) and inherent properties of the story-world.

THE STORY-WORLD OF COMPLEX NARRATIVE SYSTEMS

I refer to this concept as the story-world instead of a *possible world* or *fictional world* simply because possible worlds are mapped in their entirety and in extreme detail. On the contrary, as I have previously explained, a detailed report of all the facts, events and actions in a story-world is not preferred as the fine details must be excluded for effective modeling. Although a story-world shares a lot of details, facts and events with reality its permissible states, the *story-world horizon*,

are clearly defined by its configuration. The aim here is not to simulate reality but fictionalize a spatiotemporal continuum where summarized perceptions about reality and complex human relations are embedded. In this narrative continuum what remains unseen does not necessitate out of reach (Perkins 2005, 22) but indicates a selection of the most important elements (Mar and Oatley 2008, 177). An attempt to include every possible detail will result in a chaotic assemblage of meaningless and disjointed details (Lorand 2001, 432).

The term story-world horizon refers to the upper level of the state of narrative affairs that are possible (Ronen 1993, 30), and serves as the starting point for the creation of a story. The story-world is constituted of narrative rules and principles as well as characters and their relevant properties. These elements are not defined so to deal with what has happened but with what would happen in accordance with probability or necessity (Aristotle 1996, xiv). Story-worlds are hypothetical states of narrative affairs, that are not necessarily true or pragmatic but are conditionally true to their inhibiting characters, who act in a specific way, at a specific place and time, and whose actions are motivated and are underlined by a teleological goal-oriented purpose (Herman 2002, 5). The story-world affairs may not be truthful to real-life events but for the story-world to retain a degree of referential comparability there must be minimal relevance (Van Dijk 1975, 291–92). Through an efficient suspension of disbelief the audience accepts the story-world as pragmatic. Choosing the right story parameters to fill logical gaps that could expose a story as not plausible, incoherent, inconsistent or simply illogical is paramount then. After all, it is the audience who will ultimately judge the plausibility, or lack thereof, of a story-world based on its cognitive preconditions (Branigan 1992, 29). However, the story-world elements have to be configured effectively so to allow a fictional reality with flexible properties and preconditions to emerge. The process of plotting the narrative creates a pool of possible combinations of story alternatives, and the aim is to maximize their dramatic conflict. This presupposes the stipulation of what story-laws and properties of the characters, places and events will come in effect and when (Jacquette 1989, 168). The state space represents the unification of the landscape of possible affairs, narrative possibilities, assumptions, propositions and contextual definitions in a continuous spatiotemporal arrangement out of which a high-level abstraction will eventually emerge—the story.

Some works of narrative recover from the breakage of rules but some others do not and the existence of logical plot holes can have adverse effects on the audience's willingness to suspend their disbelief. Any violation of the story-world laws or a reversion of the cause-and-effect principles will cause alienation and confusion. Conventional expectations can be violated with a certain degree of freedom before the narrative continuum becomes unacceptable (Jacquette 1989, 169) due to the violation of the story-laws. To avoid occurrence of the non-violation principle, all the propositions, assumptions, definitions and parameters related to the story-world configuration must be intrinsically connected with the state space (Wittgenstein 1996, 69). In other words, the state space proceedings must derive directly from the configuration of the story-world by way of deduction and narrative determinism. Story-worlds have a dynamic nature that is rooted in the behavior, actions and interconnections of the inhibiting fictional characters (Meister 2003, 45) and a well-defined structure. Therefore, a story-world does not differ from an *event schema* since it is a hierarchically organized unit of thematically relevant information that describes what is probable and when it is allowed to happen in a sequential story-situation (Mandler 1984, 14).

PERMISSIBLE BOUNDARIES AND THE STORY-WORLD HORIZON

Sometimes, the process of defining the story-world horizon supersedes the configuration of the story-world itself. The story-world horizon describes the permissible upper and lower boundaries of the spatiotemporal dimensions of the story-world. Within this threshold of permissible actions narrative events and actions can occur in time and space always in accordance with the story-laws and principles that allow them in the first place. Any event or action that belongs above the upper or below the lower boundary of the story-world horizon will activate the non-violation principle and suspend the audience's disbelief. When the non-violation principle is violated, the suspension of disbelief collapses as the story ceases to be coherent, consistent, and subsequently believable. Thus, fictional characters and the historical backdrop they operate in must be parameterized in a way that will allow certain events and actions to happen without the non-violation principle occurring. For example, bestowing, and therefore establishing in the setup of the story, a character with the ability to fly will allow the audience to create the necessary benchmarks so to willingly suspend their disbelief. Sometimes the suspension of disbelief can be deliberately broken by providing enough foreshadowing so to strategically reveal the story's possible outcome; a widely used technique for the creation of suspense.

The temporal dimensions are identified over three levels. Not all of these levels are always encountered in stories while their occurrence greatly varies. The first level denotes the chronological time during which the story takes place and it can be historical, contemporary or futuristic. The second level refers to the fictional present in which the characters act and react, creating this way new events and the necessity for more actions. The change of events in the fictional present are facilitated strategically along the state space and do not necessarily pertain to the logico-temporal order of their occurrence. For example, an event or action becomes known to the characters in the present time but it may have

happened chronologically in the past. This succession of events denotes the plot time, the third temporal level, which is the causal structural alignment of events across the state space. This structural asymmetry adds a dynamic aspect to the temporal dimension of narrative (Tsoukas and Hatch 2001, 1007). The presence of more than one temporal level requires a complex framework that will facilitate their structural alignment onto the surface structure in such a way that no logical gaps will appear. Defining the spatial dimensions, in terms of actual locations, is important since the occurrence of events in the fictional present always takes place in the three spatial dimensions and the temporal one.

A narrative event unfolds onto the surface structure having both vertical and horizontal structural representation. The vertical structural representation denotes the temporal dimension and the horizontal one the spatial dimension. This specific point along the state space denotes a historical path node that signifies how, through the story's adherence to the narrative rules and principles, narrative has advanced to its conclusion. The totality of successive historical path nodes creates in hindsight a detailed representation of the historical path. In order for a narrative work to maintain its coherence in its top-level structural manifestation, story alternatives that create narrativo-logical inconsistencies, thus having a false value, must be avoided or replaced with alternatives having a truth value (Wittgenstein 1996, 73). The justification of the decisions and actions of the characters solidifies the consistency of the narrative logic and provides a logical explanation to the audience. Although the audience often creates its own expectations about the story only to see them overturned by the unfolding of the plot, unjustified issues affect the consistency of the plot-line. The summation of all the story assumptions and propositions that constitute the story-world provide the logical scaffolding under which the story-world itself operates. From this decisions can be made as to what the characters will do next or how the story will progress though certain aspects may have to be revised in subsequent drafts. Since these story assumptions and propositions, and the rest of the story-world parameters, communicate the state of affairs of the story-world to the audience, they must be intrinsically connected to the plot and weaved seamlessly into the narrative. This allows the forming of a logical and consistent landscape of narrative possibilities (Wittgenstein 1996, 69), or of a universalized plot (Aristotle 1996, xiii) as narrative events and actions are interconnected in accordance with preference, necessity and deterministic probability.

Narrative events and actions with truth value advance the story without burdening the audience with unnecessary details. Careful consideration must be given to what story parameters are necessary, and will be utilized, so to maintain the causal narrative continuum. Without events and actions that guarantee a minimal causal narrative continuum, the appearance of logical gaps will jeopardize the coherence of the story. The audience can infer what has happened between scenes even though unimportant or unnecessary events and actions have taken place. Such details that do not affect any of the story lines or do not present unique details about the characters can be omitted. In a similar fashion, the audience fills in the gaps as specific elements, that is assumed to be known to the audience already, need not to be drawn or suggested. This is often the case with cultural or historical elements or details of current affairs that pertain to the real world. However, if characters, events, actions, objects and settings serve a purpose, affect the plot, reveal important character traits, or communicate what the theme or subtext is, their inclusion is paramount so the audience can create the necessary mental benchmarks.

THE FUNCTION OF PLOT

The story is distinctly distinguished from the plot. *Story* is the summation of the narrated events, facts, incidents and actions, either seen or unseen, presented or inferred, put in logical order and presented under temporal, spatial and causal relations. In other words, story is the philological analysis of what happens. On the other hand, *plot* is the strategic arrangement and organization of characters, incidents, facts, events and actions along the state space. In other words, plot describes how the story happens in the manner of a unique execution of the written or filmed text. Any kind of story can be plotted in many ways if the premise and the story-world parameterization are utilized in a different manner during each subsequent execution.

Temporal succession, which implies forward movement and momentum, and narrative causality, which implies motive related to human endeavor for the achievement of goals, are the two essential combinatorial forces of narrative. Structuring the narrative components over the three levels of deep, intermediate and surface structure allows their efficient plotting along the state space, and the utilization of bifurcation and forking path story alternatives for the advancement of the narrative. At each structural node characters make choices based on the characters' permissible story-world configuration, and new sets of story directions become available. Once a story-choice is made, a forking path is created and a historical path begins forming along the state space, as shown in Figure 4.2.

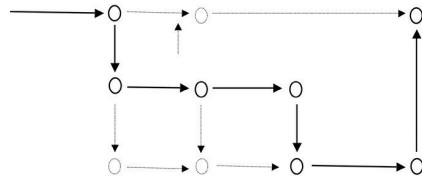


Figure 4.2 Forking path possibilities along the state space in a story-world.

The thick lines and circles in Figure 4.2 represent the story possibilities at each structural node where an option is presented to, and a choice is subsequently made by, the character. The successive accumulation of these story-choices, which I referred to as the historical path nodes, creates the historical path. The dashed lines and circles represent options that were not preferred but could have been if the plot, or the solution to a logical problem, were different. The dashed circles also denote story-options that were not possible or permissible based on the story-world configuration. The actualized thick lines and circles denote the state space. The historical path adheres to principles of causality and the narrative continuum is maintained deterministically because of this. Between each structural node exist beats of action that carry the narrative proceedings from one stage to the next. In other words, action beats are the fundamental minimal associations that carry narrative information. Even though the progression from a structural node to the next one is linear and deterministic, the effects of story-decisions are nonlinear. Decisions that do not abide to the story-world laws and principles of the narrative microcosm can have adverse effects on how the story climaxes and resolves macroscopically.

While characters could be led to the same structural node in a variety of ways, the accumulation of the structural nodes constitutes the totality of the state space. At each bifurcation point the audience creates a mental benchmark based either on narrative information that was received from a previous structural node or on narrative information that is already known and available. Taking wrong turns can create a precedent that will bring the hero to a deterministic dead end which could only be fixed with a thorough revision of the story-laws and the story-world configuration. In order to solve problems pertaining to narrative logic, new assumptions and propositions must be implemented that will allow new possibilities to arise. However, altering the initial story-world configuration inconsistencies and gaps can emerge along the state space that will cause the narrative system to forcibly exit its state of balance. In such a scenario, the story-world configuration will require further revisions and narratological troubleshooting in order to return to a state of equilibrium. This can be a vicious circle of story development that could result in stagnation or a collapse of the narrative's coherence and consistency.

The process of semantic transformation of the causal narrative continuum in the deep structure verifies the presence of *existents*, characters who bear an action or make a decision, and events, orchestrated or random, that create a need for action based on causality and psychological motive. Narrative causality and the effects it create derive from the plans and goals of the characters (Branigan 1992, 29). The multilayered structural interconnectivity of desires, needs, goals, motives and actions reveals the complex nature of narrative systems. Narrative causality emerges from the motivated actions of the fictional agents in their quest to achieve a goal or satisfy their dramatic need (Spirkin 1983). Therefore, narrative causality is intrinsically connected with the probabilistic behavior of the characters. The state of affairs in complex narrative systems deals primarily with what is probable and not necessarily with what is possible. The configuration of the story-world dictates the permissible actions and events, and the narrative probable is the determinant factor for the creation of the desired narrative outcome. Since stories depict complications of human affairs, narrative causality will always be fueled by the motivation of the portrayed characters. After all, narrative causality arises from the past or historical states of the narrative system in a deterministic manner. On the contrary, random actions or events do not constitute *causal modulators* because the aspect of psychological motive is absent. However, random actions and events still create causal incidents along the state space, out of which subsequent story alternatives can emerge. Regardless, the linear occurrence of actions and events might not always affect the basic story line directly because their produced outcome might not be manifested immediately.

The clumping of events and actions at each structural node creates microsequences, which then combine into threads of macrosequences constituted of individual scenes and scene sequences (Rimmon-Kenan 1983, 16). Embodied within the narrative components are notions of change, a qualitative differential state between events, actions, situations and relationships. For this transformational differentiation to occur, temporal ordering of the state space is required. The carriers of action are the characters, who intentionally instigate narrative changes based on their preexisting psychological needs. What differentiates truth value narrative events and causal activities from random ones is the intention of the characters when acting (Elam 1980, 122). The branch of philosophy known as philosophy of action has identified six elements of narrative action: a conscious agent, an intention in acting, the actual act, the manner and means of action, the temporal and spatial setting and the motive behind the action (Rescher 1996; Von Wright 1996; Elam 1980; Van Dijk 1975).

Out of this intentional, purposeful and causal advancement of the plot, meaningful sequences form that generate more action through reciprocal reaction. The successive beats of action on the surface structure are a direct consequence of the differential syntactic transformations that occur in the deep and intermediate structure. The narrative components form the underlying syntactic fabric of the narrative system because their antithetical functioning roles generate events and conflicting motivational agendas. Undeniably then, it is the combination of motivated action and narrative causality that causes a story to emerge in semantic terms.

In general terms, narrative logic also plays an important role in the creation of semantic differences in the characters' syntactic transformation. Dramatic conflict is created by such differences, which utilize the passing of time within the constraints of the story-laws and the setup of the story-world. Narrative causality is always to be found in stories driven by the inner psychological motivations of the characters (Bordwell et al. 1988, 13), who act so to overcome obstacles as the mounting pressure of the external conflict, which stems from the antagonist's inner psychological needs, has them reacting. This is antithetical to the Aristotelian and structuralist perception denoting that plot is the primary armature of the story as opposed to the characters. But as I explained in the previous chapters, each narrative component serves a different function but has a *quid pro quo* exchange of information. Semantically, every interaction links back to the characters' psychological motivations, needs, goals and agendas, which are all unified by the strategic arrangement of events. Narrative causality must be embedded in the narration of events so to generate action in order for it to qualify as plot. Otherwise the narration of events will be just a series of unconnected activity (Bordwell et al. 1988, 13). The change in the state of affairs, facilitated by the plot, has a function that is relative to the structure at hand, the structural framework on which the relationships and interactions of the narrative components unfold.

Apart from motivated action, another plot-serving tool that conveys information or presents the depth of interrelations between the characters is dialogue, which serves a specific and purposeful function. Although dialogue is immediately evident to the audience, its real essence is generated in the deeper levels of structure. Categorized within its functional spectrum, dialogue is used for:

1. The presentation of background information about characters and events,
2. The establishment of intentions, wishes, beliefs, flaws, desires, conflicts and needs for each character,
3. Adding multidimensionality through the manifestation of story possibilities,
4. The revelation of character traits, idiosyncrasies, and quirks, and the exposition of theme,
5. The elicitation of emotion and impressions from the audience through declarative sentences or statements,
6. Foreshadowing and paying off for the creation of suspense, for generating anticipation in the audience, and for presenting unpredictable twists and turns in the plot,
7. For the explanation of the story-world and its properties to the audience, especially when the story-world goes beyond the ordinary, that is, a fantastic world in which the audience has no real or immediate reference for it.

Having discussed here the importance of narrative logic and causality, I will turn my attention in the next chapter to the description of the story-world and the individual components' configuration, and how narrative logic and causality impact this parameterization process through the plotting schema.

Chapter 5

Cognitive Aspects of the Story-World Configuration

STORY-WORLD CONFIGURATION AND ARCHITECTURAL DIFFERENTIATION

Although analyzing a story-world in its entirety is a nearly impossible task, I will put the emphasis here to the description of the landscape of narrative possibilities that conveys a story to the audience. In the previous chapters I explained how a complex narrative system is constituted of sets of fundamental narrative components that have no meaning individually but acquire semantic importance through their functions, relations and synergistic interactions. For example, if examined individually psychological goals convey no meaning themselves. Neither stories can be based solely on narrative goals without deep-level implementation of the antithetical conflicts and needs of characters with oppositional predisposition. But if put within a contextual representation, psychological goals acquire meaning because of the opposing force of the antagonist's goal or agenda. This kind of crosswise interaction, which applies to all the narrative components and I will refer to as narratological architectural differentiation (Bringsjord and Ferrucci 1999, xxiv), creates narrative causality that justifies the actions of the characters in their struggle to achieve their needs, either disrupting or reinstating the balance of the narrative equilibrium in the process.

It is down to the unique individuality of the author what details and in what depth will be utilized in the story-world configuration as this constitutes the subjective aspect of story generation. However, the implementation of narratological architectural differentiation is unavoidable when narrative variability and heterogeneity is the ultimate purpose. The values of narrative components can be architecturally differentiated at will, achieving this way wide variation in stories. This denotes that from a finite set of rules and principles a multitude of stories can be generated. The term narrative variability describes the essential narrative components and principles that need to be configured prior to creating a story. Such elements include plot, characters, settings, themes, imagery, etc., and the process of their architectural definition constitutes the story-world parameterization. An insightful observation coincides with the need for infusion of more narrative heterogeneity to genre works of narrative. Genre books and films are, in general terms, the kind of formulaic narrative works where heterogeneity is narrow because of the wide utilization of stereotypical characters lacking depth and real-life complications, while linear plots appears to be another normality.

Having as a starting point the structural scaffolding of the story-world parameterization that only includes essential details, further complications and events can be created in a deterministic process that adheres to the historical path. In other words, the latter parts of the story derive directly from the initial assumptions and propositions of the story-world configuration much like a deductive operation of sequential logical thoughts. The economical approach dictates that secondary characters, events, actions and subplots that overcomplicate the through-line must be omitted. As the story progresses however, additional characters or events may have to be implemented so to troubleshoot a logical plotting dead end. These additional elements will be assigned a truth value since their presence affects the primary through-line. Such elements must either be introduced early in the story or justified shortly after their introduction so not to violate the narrative logic that will negate the audience's suspension of disbelief. A logical problem that has arisen due to the adherence to the historical path has now a tentative solution. However, presenting characters or events by sheer coincidence and without prior introduction is the makeshift of an easy and unjustified solution to a logical problem that creates more problems than it sets to solve. It will be nothing but obvious that such a solution was contrived solely for the purposes of bypassing a particularly challenging plotting issue. When enough similar solutions appear, the audience's suspension of disbelief will inevitably collapse and the ramifications on the story's coherence will not be ameliorated easily thereafter.

The laying out of the initial narrative assumptions, story-laws, propositions and principles, possibilities, and what-if hypotheses, links the dramatic scenarios arising in a crosswise fashion with the characters' motives, conflicts, needs, desires and goals. This combinatorial effort facilitates the discovery of new story possibilities and alternatives. However, character traits, parameters and the story-world permissible thresholds might have to be revised, redefined and tweaked in order to achieve an optimal dramatic effect. Rooted in the deep structure is a system of narrative laws, rules and

principles that form the generative and syntactical basis of story-assumptions and propositions with a structural function. These are the elementary properties of storytelling as there cannot be narrative causality without the incorporation of dramatic conflict between characters in at least one of the following levels: personal, intrapersonal or extrapersonal. A complex narrative system with increased structural stability and optimal dramatic efficiency is created when the semantic differences between the narrative components derive from each other. Even though fine details and characteristics are ignored, especially in the intermediate and surface structure where the changes do not have adverse effects, the complex narrative system will maintain its level of consistency throughout. However, if the revisions affect components and parameters situated in the deep structure then this can have a nonlinear domino effect on the intermediate and surface structures.

The narrative components are positioned over the three distinct structural structures: deep, intermediate and surface structure. Due to the universality of structure, main characters and their psychological motives, needs and goals always populate the deep structure. If any of these parameters is altered or new concepts are introduced in midcourse then the effects on the forthcoming parts of the story will be substantial. For example, if the hero's goal is altered because the antagonist's agenda is altered in the first place, without this revision to be introduced or justified in a timely fashion, this change will impact the setup, the historical path, the state space and eventually the story's progression. New locations, events, actions, complications, characters and story hypotheses will then have to be introduced in order to bridge the disjointed narrative causality. On the contrary, if the incorporated alterations are relative to parameters populating the intermediate or surface structure, that is, introduction of secondary characters with false values, the impact will be milder, if not minimal. For example, the introduction of a minor character for the communication of additional back-story details through dialogue will not have major or adverse effects on the plot or the main through-line though it may even dimensionalize them further.

THE PLOTTING SCHEMA

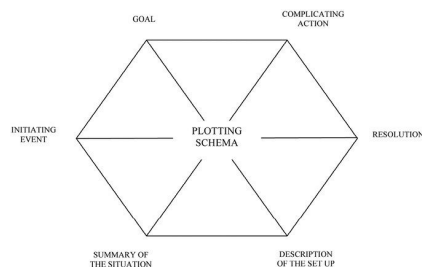


Figure 5.1 The six elements of the plotting schema.

The description of the elementary narrative components and their function is the first step in attempting to define the underlying dynamics of narrative. Understandably then, what comes next is the identification of the very principles governing the formation of relationships between narrative components. For example, for dramatic conflict to arise the relationship between the protagonist and the antagonist must always be antithetical, governed by opposing forces. The next step is the description of the *plotting schema*, shown in Figure 5.1, which describes how a plotting situation is resolved through a sequence of steps at each structural node, progressing the story to the next level. The plotting schema is a heuristic problem-solving tool that assists qualitative decisions on narrative plotting to be made through a summarization and description of the narrative situation and the current state of affairs. This narrative output will be used as narrative input, another summarization of the state of affairs, in a subsequent plotting schema, and so on, until the story has advanced to its end purpose.

The plotting schema utilizes narrative information that is generated at the various levels of structure, and a multitude of plotting schemas can be instigated in any given narrative work. It has its roots in Branigan's narrative schema (Branigan 1992), which contains eight elements instead of the six elements presented here. Each of the six elements of the plotting schema share a universal value for narrative. The additional two elements of Branigan's narrative schema, the moral lesson learned by the character and the actual narration do not have a universal value as they are not widely applicable. Not all characters learn a moral lesson by the end of the story and actual narration is part of an abstract and philological analysis of narrative that is irrelevant here.

The plotting schema's first element is a summary of the situation and what is about to follow. The second element is a description of the setup and the current state of affairs, that is, spatiotemporal dimensions of the story, characters involved, backstory information, location, theme, subtext, etc. The third element is the inciting incident, the structural event that alters the state of affairs, the equilibrium, and sets the story in motion. The fourth element is the goal, which

serves as the emotional response of the hero to the change of the state of affairs. The fifth element is the complicating action, which stands as the opposing force that stems from the antagonist's actions and presents an obstacle to the hero. Finally, the sixth element is the resolution, a declaration that the local equilibrium that is examined by the plotting schema has been reinstated and the situation resolved. It is only then that the story can advance to the next structural node.

INDIVIDUAL CONFIGURATION OF THE NARRATIVE COMPONENTS

I have explained so far how from the configuration of a limited number of narrative components infinite story-worlds, and therefore stories, can be generated. This process of infinite transformations of a finite number of narrative units is in fact a process of combination of narrative data that generates a multitude of stories (Kinder 2002, 6). The hero, the antagonist and their psychological goals, conflicts and motivations are six components that perform different functions while populating different levels of structures. The more components are parameterized and implemented into the story the more complex the story-world becomes. However, actions must be taken that will prevent the story-world from becoming complicated.

As the framework serving as the initial point for structural reference, the story-world configuration allows the story's subsequent direction to be deduced through a process of evaluation of the assumptions and propositions that were put forth in the beginning. However, this is not a process that helps authors to decide which initial assumptions ought to choose in the first place (Minsky 2006, 52). As a heuristic tool, the story-world configuration provides the platform for the generation of story alternatives based on inferences pertaining to narrative logic, and its tentative solutions remain probable at best. Some of the story assumptions and propositions will be wrong and some will be approximate, making the necessity for revisions and tweaks imperative. Story-world rules and principles will always have exceptions in the way they are expressed (Minsky 2006, 142). This is exactly where the differentiation between inferential narrative logic and formal logic exists as in the latter the initial propositions and subsequent outcome are based on rigid hierarchies. In formal, mathematical or symbolic logic, given that the initial propositions are correct each and every subsequent step will also be correct. In contrast, a weak story-world configuration demands the implementation of additional propositions in order for the consistency of the story-laws and assumptions at hand to be achieved through justification. Logical gaps in narrative must be addressed for the suspension of disbelief to be established and maintained. The more story assumptions are implemented the more complex the story-world becomes. This creates a chain of events that add to the overall complexification of the story.

When creating a story-world careful consideration should be given to the principle of economical approach when it comes to the implementation of story assumptions, and to which ones will be revised or removed during problem solving. If an important story proposition is removed, the structure and state space will be thrown off balance. It seems authors use a cognitive method for the construction of synthetic perceptions which eventually translates into the story-world parameterization—the simulacrum (Minsky 2006, 157). The simulacrum refers to a process during which narrative units are assigned values until the story-world resembles a real association. This can be either a basic construct lacking dramatic elements or a detailed one that further dimensionalizes to the story.

AN EXAMPLE OF STORY-WORLD CONFIGURATION

We assume the story-world to be consisted of two towns, each of which has three citizens. This are the initial propositions about the setup and its inhibiting characters. In order to keep this example simple, it is also assumed that the story-world resembles the real world in great detail. For the same reason, additional temporal dimensions apart from present time will not be added and the progression of the plot will be linear without flashbacks. This way story-assumptions relating to special abilities of the characters, which are only encountered in fantasy worlds, will not be necessitated at any point.

Another assumption that defines the story's initial premise is that the citizens are in constant conflict over a brawl of land ownership in the empty space stretching between the two towns. This is how the psychological needs, goals and motivations for each of the three citizens are made explicit. To further maintain the simplicity of the example, equal roles for each fictional character is preferred. The end purpose of the story is defined by the fact that each town council has to come to a decision over the desired policy of how to resolve the issue. After a lot of heated sessions, both town councils come up with the same three suggestions: the land to be divided equally between the two towns, the land to be divided with a ratio of 3/5 in favor of their town, and the land to be divided with a ratio of 3/5 in favor of the other town. For the purpose of adding more dramatic conflict, two hot-headed citizens, one from each town, who oppose to the equal division of land, will also be implemented. The hot-headed citizens prefer a more gung-ho approach, each favoring the 3/5 solution pertaining to their respective towns. For narrative complication to work efficiently, the implementation of a story law is needed. This law will dictate that decisions on public policy need a unanimous vote.

What makes things interesting from a dramatic perspective is that the implementation of this limitation creates a situation for the characters that will not defuse easily. The story-world will then have to be complimented by the addition of character traits, quirks, backgrounds, physical descriptions, and any other detail that is needed for the fictional agents to be consistent and coherent with the story's initial setup. Although in this example the above will not be facilitated for the sake of brevity, preference must be given to those character qualities that maximize dramatic conflict and maintain narrative heterogeneity while are in accordance with the story's premise and setup. The six characters will have to behave differently to the policies and decisions of their respective town councils. Some will be deeply emotionally affected, others moderately or none. Utilizing the agents' individual characterization that allow enough complications to arise, the story can be structured and plotted through the arrangement of those narrative events and actions that create forward momentum along the state space.

DESCRIBING THE NARRATIVE COMPONENTS

The story-world's narrative components can be broken down as follows:

- i. Characters, and their direct or indirect effect onto their narrative environment of the story-world, including other characters.
- ii. The characterization in the form of traits, quirks and background information that add uniqueness to the characters' existence.
- iii. The characters' psychological goals, needs and motivations. The characters' motivation can further be categorized into inner motivation and outer motivation, and sometimes both forms are utilized. Inner motivation describes the psychological desire of a character to achieve something for herself, that is, to feel important, gain respect, increase her self-esteem or prove herself. Whether outer motivation describes the external causes, or motivating factors, that force such a character to act, that is, save her family, find a lost love, reconcile with her brother, take revenge, etc.
- iv. The spatiotemporal boundaries that describe the setup of the story in terms of locations and the chronological passing of time.
- v. Properties of the story-world such as narrative laws, rules and principles: what is permissible, what is not, and the assumptions needed for the elimination of logical inconsistencies.
- vi. The relations between the characters based on their function and role in the story.
- vii. The dramatic conflict that is generated from the characters' interactions and interrelations, and the crosswise clash of the psychological motivation between the hero and the antagonistic force.
- viii. The inner or external conflict of a character, usually the protagonist's without ruling out the antagonist's either. Inner conflict describes the psychological state which causes the hero to act in a specific way and in a given situation. It also affects the way the character reacts due to lack of self-confidence, inability to handle pressure, extremely shyness, etc. External conflict describes the opposing forces standing as obstacles to the protagonist's attempt to achieve her goal. Inner conflicts intensify the struggle of characters in overcoming their external conflict and achieving their dramatic goal or need. Furthermore, characters can equally be crippled by inner conflicts inasmuch their real-life counterparts as the characters' wishes or interests must be antithetical. These emotional clashes between ourselves and our environments are not only commonplace but an integral part of our lives. Contrary to the characters populating a story-world, who often portray a desire to change and grow as part of their emotional journey, real-life individuals may not be aware of their inner conflicts, therefore not always attempting to resolve them, or are being swayed by them by accident (Horney 1949, 24–5). However, when fictional characters demonstrate the desire and capacity to grow while assuming the responsibility that comes with such change, their actions include risk and the willingness to bear the consequences of wrong decisions. This presupposes inner strength and independence (Horney 1949, 26), resulting in the characters being likeable and admired, the real reason why hero-type characters are commonplace. Being in tune with their inabilities and having such an emotional capacity to embrace change, conscious agents of the hero type show strength of character, which gains them the audience's instant allegiance.
- ix. The narrative events that beget action and reaction. These events can be random, that is, a natural disaster, a stock market crash, financial recession, etc., or causal consequences of a premeditated plan, that is, a kidnapping, a divorce, an act of violence, a bank heist.
 - x. The narrative history and the historical affairs that serve as background information.
 - xi. The dialogue, which projects the characters' feelings, inner conflicts, motivations, flaws, opinions, and ideas to the audience, but also conveys necessary information that cannot be communicated in any other way.
 - xii. The structural framework that organizes the story into distinct acts with beginning, middle and end.
 - xiii. The theme and the moral lesson the protagonist has to learn.

- xiv. The subplots that serve the main plot by exploring the story's main theme.
- xv. The action beats in a scene, the scenes and scene sequences that serve as the structural organizing tools in the surface structure.
- xvi. The page count, more often in screenplays and teleplays rather than novels and stageplays, can impose an important limitation but it can also serve as a great disciplinary motivator or challenge for the most economical but concise presentation of the story affairs to the audience.

The process of assigning tangible values to the fictional agents and the rest of the narrative components comes with difficulties that are not dissimilar with the ones encountered in the parameterization of the story-world itself. There is a distinction between the two types of attributes to characters. Structural attributes are encountered in all kinds of characters in all forms of narratives while nonstructural attributes are only encountered in specific characters and genre narrative works (Garvey 1978, 63). However, the process of value attribution differs in nature from the rigid method of formal, mathematical or symbolic logic. Since emotions are portrayed in narratives through dialogue, the investigation of the intentions of the characters, and their motivations that define their actions, creates the necessary conditions that allow the study of subjective topics such as intuition, judgment, emotions and opinions. A fictional story-world obtains objective status through attribution of its past and future chronological dimensions that lead to the creation of the state of affairs where cause-and-effect interaction is the main driving force.

Authors, as much as readers and audiences, internalize empirical rules, principles and techniques, and perceive narrative input or output according to their own cognitive abilities and idiosyncrasies. This cognitive process allows the production, perception and understanding of an objective whole, a narrative work, created from subjective input, that is, knowledge, emotions, intuition. Out of this process of internalization, emotions, structures and themes are communicated, from grief and laughter to excitement, fear or suspense. It seems though that authors are not in complete control for the responses to their choices. Sometimes what they are attempting to set up may not lead to empathy for the characters they create from the audience or the readers (Keen 2006, 214–15).

The interaction between authors and the audience happens through the one-way deliverance of emotional signals allowing *structures of sympathy* (Smith 1995, 75) to form. The vehicles that facilitate this exchange are the characters. Similar to what happens in real life, where individuals judge others on appearances or first impressions, very much so readers and the audience perceive characters based on their parameterization. The rules of narrative perception is asserted to be similar to the rules and methods invoked in actual person perception. The identification process occurs through characters the audience has identified with as a recompense for the achievement of a goal or the satisfaction of a need (Bower 1978, 211). This creates the necessary cognitive benchmarks that allow emotional association or recognition and eventually facilitates the alignment of the audience with the characters. Once the initial character perception has taken place, the cognitive organizational framework the audience has created is utilized for interpreting narrative actions and events under a specific prism of personal reference (Bower 1978, 220). In other words, when the audience identifies with a given character, actions and events are seen through the character's point of view, with the audience reflecting on the thoughts and feelings of the character they have identified with (Bower 1978, 227). Eventually, a process of evaluation, judgment and questioning of the characters' backgrounds, traits, quirks, moral predisposition, psychological capacities and needs allows the audience to build the necessary sympathetic or antipathetic *allegiances* toward the characters (Smith 1995, 75). Character identification often sparks spontaneous empathy but there are situations that the emotional response results in negative emotions as experiences differ between members of the audience.

The personas of the characters are summations of traits, quirks, backstory information, psychological inclinations, desires, motivations and needs, with certain physical, gender and ethnic descriptions, and emotional, moral and intellectual qualities of various levels. All these parameters are attributed according to the function each character has to perform so to generate antithetical dramatic forces. For example, it is more likely for a protagonist to have traits that will make her likeable to the audience while, depending on the genre, the antagonist must have traits that will elicit a different emotional response. There are many variations to the overall attribution process as a whole spectrum of character roles and functions are available. The issue is not whether a character is likable or not, a stereotype or a truly multidimensional interpretation of a real-life persona, but whether that character has a function which necessitates her presence in the story. Special attention must be given to the attribution of the characters' goals, motives and needs as these call up plans that precede causal actions for the satisfaction of the characters' dramatic motivations. Mainstream works of narrative need to reach mass readerships and audiences thus the inclination for the utilization of stereotypes and the facilitation of unambiguity. The process of attributing fictional agents starts with the creation of simplified versions of real, lifelike individuals. Further adjustment of the character traits as the story progresses may be necessary so for a logical inconsistency to be addressed or for more story possibilities to be actualized.

In terms of dramatic conflict, emotions would almost be entirely absent if the narrative conditions were in a state of equilibrium. In a balanced state, no meaning would be created from the system of semantic differences in the deep

structures. An efficient dramatic level is obtained through the implementation of those character traits and spatiotemporal conditions that optimize dramatic effect. The traits of the characters, especially the psychological dimensions, must be consistent since persons with well-defined goals usually perform better than persons with incoherent ones (Minsky 2006, 62). As I have previously discussed, audiences respond better to stories which demonstrate a clearly defined structure, and a goal-oriented and causal trajectory for the characters. The fundamental narrative components for the understanding of complex narrative systems are the fictional agents. The narrative events to which the characters respond to and the causal activity in which they engage to are direct consequences of the characters' unique story-world configuration. Where plot and characters intersect dramatic conflict is created, which is facilitated by what the characters value and struggle for (Kress 1998, 159). Characters create plot and plot forms characters, both intermingling to create a story.

Below is a list of possible characterization categories, that is, physiological, psychological, intellectual, sociological and intrapersonal qualities, that can be configured in a story-world. The attribution possibilities are endless, and the list is only indicative and not exhaustive.

Physiological

- Sex, age, date and place of birth,
- Marital and family status,
- Height, weight, race, physical appearance and body posture,
- Mannerisms, gestures, habits and vices: smoking, drinking, drug abuse, gambling, etc.,
- Color of eyes, hair and skin, hairstyle or makeup,
- Physical defects, abnormalities, diseases,
- External features, that is, rings, watches, earrings, etc.,

Psychological

- Motivations, goals, needs, aspirations, ambitions,
- Conflicts, ideals, dreams, temperament, complexes, compulsive disorders,
- Moral standards, deontology and approach to work ethics,
- Amusements, hobbies, pursuits, cultural activities, dress code,
- Fears, anxieties, personality predisposition, that is, introverted or extroverted,
- External impressions perceived by others, for example good natured, punctual, pleasant, etc.,

Intellectual

- Personal identification, nationality and place of residence,
- Mental defects, qualities and abilities, and level of intelligence, etc.,
- Level of education and academic achievements, intellectual pursuits,
- Imagination, reasoning, judgment, biases, taste, etc.,
- Political affiliations, secular, humanitarian or religious beliefs,
- Philosophical attitude to life, economic and political systems, etc.,

Sociological

- Social class based on income level, that is, lower, middle or upper,
- Current and past jobs and positions,
- Police record and criminal activity,
- Activism or social interaction,
- Leisure activities,

Intrapersonal

- Profession and living status of parents and relatives,
- Position and social status of employer,
- Profession, living and social status of spouse,
- Type of vehicle, home, pets, etc.
- Attitude toward spouses, children, neighbors, employers or employees, strangers, siblings, friends, competitors, minorities, etc.

The process of defining characters dramatically is more than a summation of their personalities and the unique

accumulation of traits that add psychological edge. Character traits are those humanized psychological qualities that are stable, recurring in frequency, or abiding (Chatman 1980, 126). Traits must be consistent to the character they are attributed to, and can unfold, emerge, removed or replaced by other traits throughout the story while they differ from feelings, moods, thoughts, attitudes and motives. A study on psychological traits has identified two important properties: interrelatedness and interconnectivity of traits that are linked to an overall system of habits, adding psychological consistency to the actions of a person through repetition (Allport 1966). For example, if one of the character traits is *aggression* then the character attributed with it must be shown to be aggressive in more than one instance (consistency) and in more than one scene (repetition). Establishing consistency and repetition sets up a certain quality as a character trait or habit. Traits and habits must remain consistent to the character throughout the story. However, specific acts do not always have to abide to a similar consistency (Chatman 1980, 123) although they can be repeated more than once.

The principles of trait cohesion are *repetition*, *similarity*, *contrast* and *implication* (Rimmon-Kenan 1983, 39–40). Repetition marks a pattern of behavior while similarity is the encounter of the same behavior pattern on different occasions. Contrast is the conflict which arises between characters due to actions their traits spark, and implication is the way these actions are manifested to the audience through the surface structure projection. Fully rounded characters are a combination of a variety of traits, habits, psychological beliefs, motives, needs, goals, etc. Such characters can grow and change, portraying depth of character and an unpredictable behavior that is facilitated by the contradictory nature of their actions. Contrary to this, flat or one-dimensional characters are distinguished by a total lack of traits or habits thereof. Imagine Joe, a character who likes soft ice cream, a description that summarizes the totality of his fictional existence. Joe's function in a story, based on the initial parameterization of his fictional persona, can only be the consumption of ice cream. By not establishing Joe to be acting or reacting to anything else, his behavior will come across as highly predictable and monotonous. Although the audience will interpret Joe's behavior and subsequently will draw conclusions, Joe's character will be overall forgotten unless his function and role are paramount to the story at hand. However, the existence of three-dimensional characters creates a tighter sense of intimacy and establishes emotional links with the audience. It is through elicitation of recognition, alignment and allegiance that such characters force the audience to remember them.

THE CHARACTER ATTRIBUTION PROCESS

Inevitably, the actions of a character will have an intricate effect on the plot. An attribute proposition consists of a character, a predicate and a modalizer (Garvey 1978, 74–75). The attribution process is as follows:

- A set of physical attributes implies a psychological attribute proposition—(AP):
Joe [character] taps his leg [modalizer] Joe is anxious [predicate].
- A set of psychological attributes implies another (AP):
Joe [character] continuously locks and unlocks the door & Joe continuously cleans already cleaned areas [modalizer]
Joe has a compulsive disorder [predicate].
- A set of physical and psychological attributes implies another psychological (AP):
Joe [character] walks into a shopping mall and Joe becomes fearful [modalizer] Joe is agoraphobic [predicate] and the physical dimension of his psychological state causes [modalizer] Joe to run away [predicate]

Following this attribution process, the characters' inner complications, traits and habits transcend to the surface structure and are unveiled to the audience. The irrelevant psychological, physiological, intrapersonal, sociological and intellectual parameters of the characters will have to be assigned a lower priority or omitted for a state of dramatic effectiveness to be reached. The categorization of the story-world parameters (Rescher 1975, 42) is as follows:

- Actual parameters are essential without which the existence of a character is impossible, that is, height, weight, ethnicity, etc.
- Necessary parameters serve the story and plot.
- Possible parameters serve as the pool of available and compatible parameters.
- Non-possible parameters are incompatible with the characters' functions unless a reconfiguration of the story-world elevates them to acquire a truth-value status.

This categorization reveals the inherent hierarchy of the characterization parameters based on importance. Character actions that affect the plot or other characters function as the determinant tool for identifying such hierarchical importance. Actions in this category, performed or received, constitute *core events*, and their function is the advancement of the plot at each bifurcation node. Narrative events can be further categorized into *satellite* and *trivial*. Satellite events do not affect the plot directly but may create core events indirectly. In comparison, trivial events do not affect the plot at

all, either indirectly or directly. Core, satellite and trivial events can be upgraded or downgraded accordingly as the story progresses, but not always.

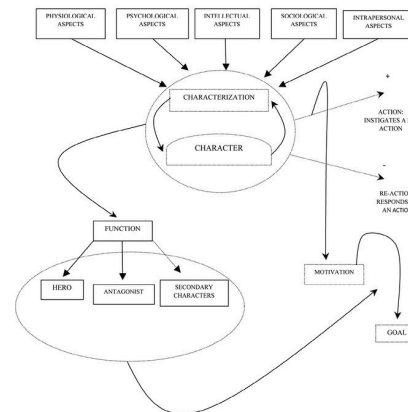


Figure 5.2 Semantic representation and function of the fictional agent.

Characters can also be categorized, through their function, as core, satellite and trivial units. Primary characters affect and are affected by the plot directly thus, as core components, belong to the deep structures of narrative. Secondary characters are satellite components since they only affect the plot indirectly. Trivial characters add flavor or dimensionality to the story. Fictional characters alter their behavior in anticipation of the actions of other characters and so their actions are also in need of parameterization. Furthermore, what elevates a character to the level of a protagonist is a call to action to the antagonist's plan and not because that character is acting by choice (Egri 1960, 108). The motivation of the protagonist to act can be both inner and outer as her persona has to grow, change and rise to the challenge. For this motivation to acquire a meaningful dimension there must always be something at stake for the protagonist: the safety of her family, her own survival, her property, etc.

As I have previously mentioned, fictional agents are neither secondary to the plot nor are simply bearers of actions and nothing more. Since actions and characterization are the determinant factors of the characters' success or failure then there must be consistency in their configuration. Inconsistent character behavior causes the story-world's historical path to collapse, removing any sense of narrative causal continuum or continuity. This damages the emotional connections that have been established between the audience and the characters so far, hindering the story's forward momentum. Audiences expect characters to act consistently, somewhat predictably, and in-character for the duration of the story.

Narrative stereotypes facilitate rapid communication of the themes to the audience (Paulos 1998, 28), aiding the audience to "get into" the story quicker, utilizing any mental benchmarks it has created through repetition of attendance in cinemas or readership. The audience identifies with the characters faster and the story has an increased level of stability. This allows the creation of story-worlds in the most economical of ways: through employment of stereotypes for primary and secondary characters, who execute specific functions and have set agendas. The use of stereotypes also allows the luxury of not having to explain everything that happens in the story since the audience summarizes narrative information that may be too time-consuming to establish (Paulos 1998, 29).

The character parameterization process begins with the economical insertion of possible propositions before the process for the correction of any logical inconsistencies ensues. Investigating the fictional agent as a crucial narrative unit, the story-world interactions and interrelations can be better understood through semantic networks that emphasize the relationships between various narrative components in a structural framework. In Figure 5.2 is shown a semantic representation and function of the character as a crucial narrative component.

Having described the process of the story-world configuration, in the next chapter I will discuss the importance of the characters' function and the function of narrative actions and events in relation to the underlying causality that permeates a complex narrative system. The driving force behind the creation of narrative causality is goal-oriented narrative action and the psychological motivation that justifies it.

Chapter 6

Narrative Causality

GOAL-ORIENTATION: A KEY COMPONENT OF NARRATIVE PARAMETERIZATION

Fictional agents, at least in mainstream literature and motion pictures, and especially protagonists and the hero types, are goal-oriented entities, who seek to restore the equilibrium of their current affairs. Goal-orientation adds forward momentum and direction to the progression of the story while its deterministic nature narrows down the sets of story alternatives. It also affects the outcome of actions, limiting possible bifurcation options, and overall streamlining the narrative (Bordwell et al. 1988, 16). Real-life individuals strive for the satisfaction of their psychological and intellectual needs, and this interaction creates societal clashes. The goal-striving pattern in every human endeavor stems from the inclination of humans to seek intentions behind every action (Bordwell 2008, 117). Therefore, it is plausible to extend the importance of goal-orientation in order to describe the actions of fictional agents and for the dramatic conflict this intentional interaction creates.

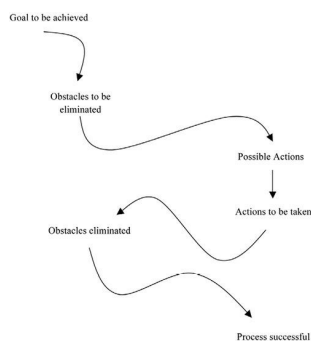


Figure 6.1 Restoration of the equilibrium based on a forward-thrusting goal-oriented process.

Due to the goal-oriented behavior of the social agents, complex patterns of interaction emerge as individuals seek connections with one another and alter their behavior in a variety of ways in anticipation of the actions or reactions of others (Miller and Page 2007, 28). Unclear goals create plenty of disorientation not only to the audience but to authors as well. This is evident during the early development stages of the story-world where authors attempt to balance out all the narrative components and draw interconnections so to further enhance the plot. Without a well-defined goal, characters will seem lost and without an end purpose, merely drifters without a sense of direction. As a consequence, the progression of the plot and the pace of the story will suffer. Furthermore, the existence of a narrative goal liberates the audience from the constraints of constantly wondering “what the story is about.” Assigning a goal to a character is like assigning a task. Notions of chance must be eliminated since what follows is a product of the character’s actions for the accomplishment of a task, as is shown in Figure 6.1.

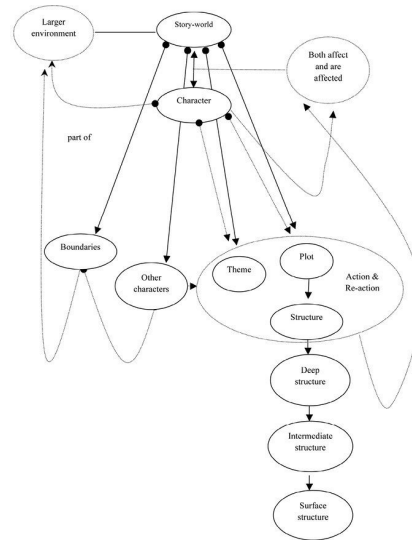


Figure 6.2 Semantic representation of the relationship of the characters to the story-world.

Whether the goal is achieved or not, the outcome is projected clearly onto the surface structure by the character's tangible actions. Such actions can be generated consciously or be mere reactions to the antagonist's actions. Motivation is not always evident onto the surface structure and it can be absent from genre works of narrative as they have a built-in audience and tend to rely primarily on the proceedings of the plot instead of the relations between the characters. What underlies the hero's actions is the psychological state of his *motivation*—why the character acts the way he does; a dynamic narrative component that has a truth value. Additionally, motivations, deep rooted or situational, justify the actions of the characters, adding real dynamism to the story. Some decisions of the characters involve rational thinking and a utility maximization principle such as when investing money or buying property. Other decisions involve emotional thinking such as intuition, judgment, instincts or personal preferences. Therefore, the actions of all fictional individuals are better understood if the motivation, which forces them to act the way they do, is also understood.

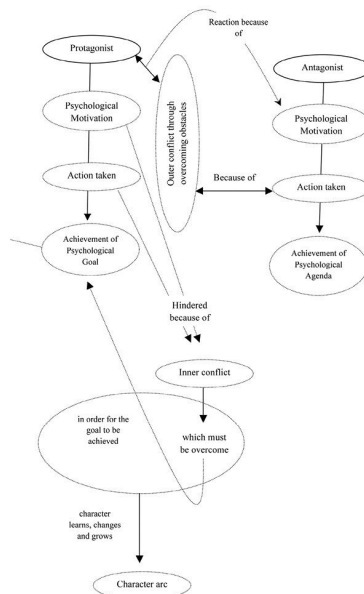


Figure 6.3 Semantic representation of the relationship between the protagonist and the antagonist.

From a structural point of view, *goal* is the underlying organizational component that unifies the actions of all the characters and subsequently of the whole. The motivational justification of the pursuit for the achievement of a goal creates narrative causality, linking together scenes in a web of interconnectedness. It also categorizes the underlying psychological goals and motivations of the fictional agents high in the structural hierarchy in the deep structural level.

The semantic relationship of the fictional agent to the story-world is shown in Figure 6.2.
 The relationship between the protagonist and the antagonist is shown in Figure 6.3.

FICTIONAL AGENTS AND THEIR ACTIONS

Characters act either to prevent a change or instigate one in their state of affairs. In his seminal work *The Logic of Action*, philosopher Georg Henrik Von Wright regards action as an intentional “at will” process that creates or prevents a change whether not acting always leaves something unchanged or intentionally lets something to happen (Von Wright 1996, 121). Special attention must also be given to the definition of *change* as a transformation of the state of affairs in the deep and intermediate structures. An attempt to define *narrative action* must take into consideration any previous narrative events that have been intentionally instigated by other characters (Meister 2003, 42), who behave in a goal-oriented way or according to a plan, and always have a motive. Therefore, an incident is considered to be an action if it was caused by the intentional, purposeful and motivated behavior of a conscious agent. The psychological dimension of the characters’ actions plays an important role both in the cause-and-effect unfolding of the plot and the emotional alignment of the audience. It would be hard to separate actions from the psychological need that caused them in the first place without purpose as it functionally controls intended action (Van Dijk 1975, 280).

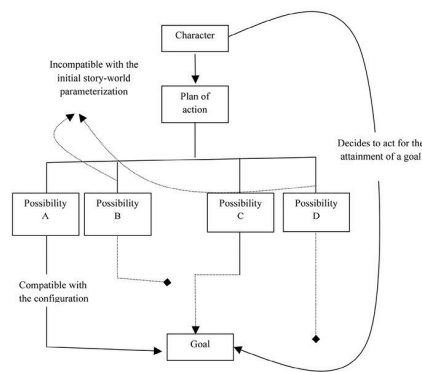


Figure 6.4 Semantic representation of a plan of action.

Actions without intentions are mere *doings*. Thus narrative action has two main components: the action itself, which has intentionality ingrained in it, and the actions and events or the series of events this action creates (Searle 1983, 91). For a detailed description of narrative action and the change it brings to the state of affairs the following must be defined first: (i) the story-world’s initial state of affairs when the action is instigated, (ii) the state of affairs after the action has taken place, and (iii) the effect the action had, or will have, on the state of affairs (Herman 2002, 55; Von Wright 1996, 123–124). Narrative actions can be categorized as *core actions*, which have a crucial effect on the plot, and as *satellite actions*, which have a lesser or minimal effect. For example, the first core event that puts the story into motion in a screenplay is usually the *inciting incident* or *catalyst*, and the second core event, which solidifies the fact that a major change has disturbed the equilibrium, is the first plot point. The first core narrative action is therefore the hero’s reflex reaction to these core events right after the first plot point. The altered state of affairs is presented in the second act along with the hero’s efforts to reinstate the state of affairs to its initial state, or the actions of the antagonist to prevent the hero from achieving this. Each character’s possible plan of action is defined by a sequence of individual acts, and it takes place over the following stages: (i) the formulation of a goal, (ii) the actualization or non-actualization of a set of actions for the achievement of the goal, and (iii) the attainment or non-attainment of the goal in question (Herman 2002, 56). The plan of action is shown schematically in Figure 6.4 where a character decides to act for the attainment of a goal.

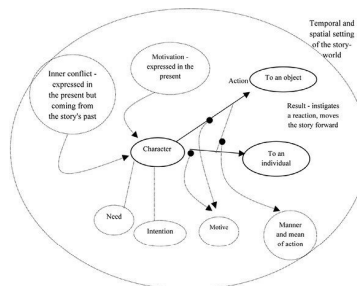


Figure 6.5 Semantic representation of narrative action as a force that carries information.

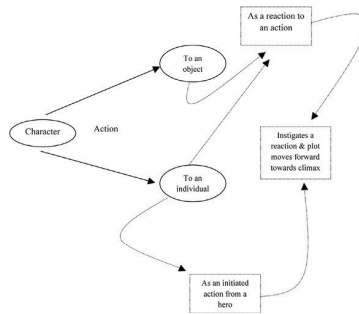


Figure 6.6 Semantic representation of an action as a purposeful force.

The potential plan of action contains endless possibilities of individual sets of actions [A, B, C, D,...], each of which will bring the character closer to the attainment of his goal with a varied degree of success. Possibility A is the only set of actions that allows the attainment of the goal without altering the initial parameterizations of the characterizations and of the story-world's. Possibilities B and D will never lead to the achievement of the goal either because the limitations of the story-world do not permit certain actions or because the characterization prevents the character from acting in a certain way. However, possibility C can be a potentiality that has not been fully utilized because of story-related limitations that were put forth in the story-world configuration. In order to fully explore possibility C, the initial parameterization and story propositions must be altered. What distinguishes possibility C from possibilities B & D is that the changes in the story-world configuration are going to be minor if C is actively pursued whether major revisions might be needed in order to implement possibilities B & D. By altering the configuration so to accommodate possibilities B & D, the complex narrative system will undergo an informational turbulence that might influence the original narrative significantly.

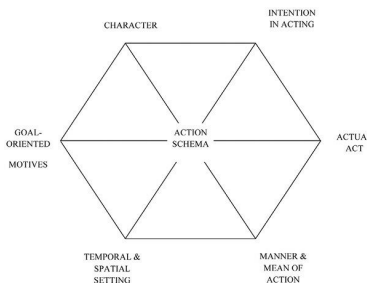


Figure 6.7 The six elements of the action schema.

The *six elements of action* (Rescher 1996, 138–140) describe a plan of action in universal terms: the first element is a *conscious agent*, who can be an individual or a group acting together or separately. The second element is the agent's *intention* in acting, expressing this way a desire for the attainment of a goal. The third element is the *actual act*, core or trivial, while the fourth element is the *manner* and *means* of action. The fifth element is the *temporal* and *spatial setting*, which refer to the story-world and its boundaries at large. The sixth element is the *motive* behind the action, the causal and motivational justification behind the character's actions. When narrative causality is coupled with the characters' psychological dimensions of having a goal, or a need, and a desire to attain it, forward momentum is created. Actions carried out by fictional agents are forces that carry information, that is, who, what, how, when, where, why, usually having a purpose and are aimed at other characters so to create a causal result that will generate meaning. Using semantic representation, Figure 6.5 shows how narrative action is an information-carrying force.

While Figure 6.6 shows how purposeful narrative actions carry information.

A character receives and processes narrative information which comes from other characters but also generates and conveys narrative information that influences other characters. The purpose of this grouping of narrative components is the generation of new narrative information that is relative to their sources. This hierarchical bidirectional association links together fictional agents with incidents, facts, moments, actions and events. Although narrative causality facilitates the story's smoother progression toward its resolution, causal relations between narrative events are not always necessary. Rescher's six elements of action that were presented above can be incorporated into an *action schema* which purpose is the clustering and consolidation of narrative information relative to the action at hand at each structural node.

The action schema is shown in Figure 6.7.

THE FUNCTION OF NARRATIVE ACTIONS, EVENTS AND CAUSALITY

The functional relationships between characters are distinguished by the degree of their mutual dependence. However, the emphasis must not be put only on *what* a character does but also on *which* character does what and *how*. In other words, the emphasis must gravitate equally between *who* does *what* and *how* since each aspect is a direct derivative of the other. Otherwise, the importance of the fictional agents will be neglected and standalone events will be elevated to the cornerstones of storytelling, which is exactly what Propp advocates (Propp 1968, 28). Narrative events are either *actions* or *happenings* and both can affect and change the state of affairs along the state space (Chatman 1980, 44). Actions are carried by a conscious agent, with intention and motivation to be incorporated in the actual act. Whether happenings occur randomly or out of probability of happenstance, that is, a natural disaster. *Core events* have a logical underlying causal connection and advance the plot because they generate new narrative information. If a core event is removed from the state space, the narrative logic will suffer (Chatman 1980, 53) as a logical hole will appear. This happens because core events are usually associated with the hero's *goal-path*, a continuum of important events, facts, actions and reactions, and the narrative's internal logic. A goal-path consists of a series of sets of actions which these three elements: an *attempt* to action, unsuccessful or successful, an *action*, and the *outcome*. What follows a character's unsuccessful attempt is another attempt until the desired effect is achieved through an action. In other words, events are branching points in the structure as they create alternative paths for the unfolding of the plot: a character may or may not react to an action or happening. However, if *trivial events* are removed from the state space no informational disturbance will occur. The sole function of trivial events is to add dimensionality and realism to the story, elaborate an aesthetic dimension, and to reveal the theme or character traits.

Narrative causality owes its emergence on inferences drawn from the story-world's unique configuration and the interactions between the totality of the narrative components. The semantic dimension of interactions and interrelations plays a great role to the generation of meanings, causal actions and overall dramatic conflict as all the narrative elements are supplementary to each other. Narrative causality does not exist independently in some abstract realm detached from the characters in question, their actions and events. On the contrary, narrative causality is in fact an accumulation of logical inferences made by the audience or the reader (Simons 2008, 122) based on evaluation of the supplied information. Causality is relevant to the importance people give to their interactions with the physical world, and the meaning and observations they derive from such interactions. There is no difference, at least metaphorically, between reality and the proceedings of a fictional world where psychological motives, goals, intentions and needs connect different characters who are in pursuit of varied agendas. It seems then that the meaning the audience infers from diversified character interactions is, in hindsight, a firm justification of narrative causality. Narrative heterogeneity plays an integral part to the creation of causal relationships. The strategic configuration and subsequent arrangement of all the narrative units elevates an otherwise simple succession of events and actions into a meaningful whole (Ricoeur 1985, 105). The creation of a logically consistent deterministic framework of causal order ensures that the characters' past actions define their future ones. Narrative causality narrows down the alternative story possibilities at the forking path nodes. This way logical problems of justification and plausibility are solved, and the story is steered to its resolution. Forking paths present *what-if* alternatives for the progression of the story and differ fundamentally from the concept of alternative narrative realities which present alternative worlds with parallel proceedings. Forking path *what-if* scenarios are entirely immaterialized or hypothetical options, and only their final actualization is presented to the audience or the reader.

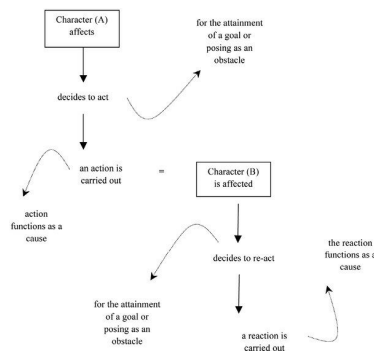


Figure 6.8 A heuristic story progression mechanism.

Action begets reaction begets action is a sequence resembling an autocatalytic progression with rapid forward movements happening in bursts of activity, continuously shifting the balance from dramatic lows to dramatic highs. Each successive narrative event or action becomes a causal instantiation (Bordwell et al. 1988, 17) as the story advances, in what is known as the *principle of causality*. This exchange, physical or informational, creates a necessity for reciprocal action. Action and reaction are two functions fulfilling a single role: the advancement of the story at hand to its desired end-state. Action is the end process of a character's mobilization for the attainment of a goal. The same action is also another character's passive reception that will beget a reaction. This two-way interaction, shown in Figure 6.8, constitutes one of the fundamental heuristic *story progression mechanisms*.

However, tight narrative causality and narrative logic are needed for coincidence and loosely linked events to be fully eliminated from the state space in a cause-and-effect interaction, either this is spatial, temporal, or both. Justification and logical consistency guarantee the story's continuity as opposed to unjustified, unmotivated and loosely connected story actualizations that result to the narrative appearing disjointed (Herman 1974, 88). Although in reality there is no actual passage of time (Wittgenstein 1996, 179), the story's forward and temporal progression is based on subsequent events and actions, with causal justification to be structured in the historic past of its story-world.

THE FUNCTION OF GOALS, MOTIVES, NEEDS AND CONFLICTS

The struggle of characters for the attainment of a goal adds purpose and an ending destination to their quest, a process which eventually eliminates chance and coincidence from narrative, as I explained above. The goals of opposing characters must be relative and conflicting because having characters with clearly defined goals aids the unfolding of events. Stories that lack goal-orientation have to resort to the elicitation of emotions through character interaction in order to compensate for the loss of dramatic conflict which is related to motivated cause-and-effect interaction. In character-driven stories, the causal sense of goal-orientation has been substituted by the characters' inner psychological need or desire as opposed to plot-driven stories where the characters struggle for the attainment of external goals. It is possible though to incorporate both internal and external goals, balancing the dramatic elements and providing the basis for a heightened emotional and intellectual experience.

Motivation works best in the present time as this is the temporal window within which the characters are usually introduced. Motives and goals also provide a causal justification as to why characters act and react in the present. But for motivation to function properly, direct correlation between what is happening in the present and what has happened in the characters' past is needed. If the characters derive their motivation from events that took place in the distant past then without proper justification for the delay in their acting the audience may wonder why the characters are only acting now and not earlier. For example, in *Kill Bill Vol. 1 & 2*, the Bride sets out to revenge those who wronged her only after she recovers from coma. This provides a plausible justification as to why considerable time has passed before she began taking action. Similar tricks are employed in *Old Boy* and *The Count of Monte Cristo* where the main characters are imprisoned for years before they act. In contrast, *Gladiator* and *Unforgiven* are examples of motion pictures that employ heroes seeking revenge in the present where no considerable time has passed between the motivating events and the characters decision to act. On the contrary, inner conflicts work best when they are acquired in the past, distant or not. Inner conflicts usually hinder the hero's ability to act in the present, a condition which must be overcome and resolved before the end of the story as part of the character's emotional journey of growth and change. If an inner conflict is acquired in the present then there will not be enough time to justify why the efforts of the characters have been hindered by this psychological condition.

Similarly, the positive force that wishes to reinstate the story's state of equilibrium must be stronger from the negative force reveling on chaos. In *Die Hard*, the protagonist's desire to save his wife, who is being held hostage by a group of terrorists, carries a larger emotional weight from the antagonist's desire to steal hundreds of millions of dollars in bearer bonds. Eventually, each conflicting situation creates a new situation, another manifestation of a cause-and-effect dynamic (Egri 1960, 165). This is why the configuration of the protagonist's narrative goal must be antithetically associated to the antagonist's goal and agenda, but also to be directly linked to the story's overall premise. The psychological states of the characters must align but remain opposing in nature in the micro level because interesting dramatic results emerge in the macro level when characters operate from self-interest.

INTERACTIONS AND INTERRELATIONS OF THE NARRATIVE COMPONENTS

In complex narrative systems, the removal of a crucial component populating the intermediate structure results in reduced functionality of the narrative system in whole. However, the alteration or removal of a deep structure component results in zero overall functionality. For example, if inner conflict (intermediate structure element) is not incorporated in the configuration of the characterization then the character may appear to be weak or one dimensional. The same could happen by not utilizing a theme, backstory revelations or subplots, all intermediate structure components. Even without

any of these components, the narrative can still be a functional whole but its dramatic value will be minimal, or not be enticing enough, even monotonous and derivative. Genre films and books are primary examples of narrative works where the subversion of certain narrative components, that is, the characters' psychological needs and in-depth characterization, favors the stories' plot-driven dimension at the expense of the characters' interrelations.

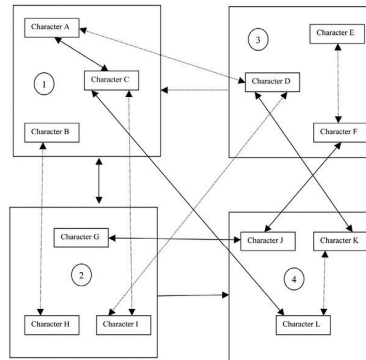


Figure 6.9 Coupling of narrative components.

Although some creative decisions are intentional, some other can be products of happenstance or narrative determinism stemming from the story's historical path. A character's reactions to events or other actions must always be justified by subsequent incidents or events or through other characters' actions, doings, responses and sayings. Dynamic interactions between the narrative units contribute to the continuous progression of the story, allowing the creation of an action-reaction causal thrust. Even if the behavior of fictional individuals in the microlevel is analyzed, there may still be problems in understanding the probabilistic implications of their actions in the macrolevel. Narrative components utilized individually will not produce anything meaningful dramatically. A setup involving a character living alone in a room who cites random events from her past could be an interesting experimental work of narrative appealing to a specific audience or readership but it lacks almost all of the ingredients of a story with universal reach: goal-orientation, a clear and well-defined structure, causality of actions and events, psychological motivation for the attainment of a goal, and dramatic conflict. It seems that narrative complexity arises from single interactions between tightly interconnected narrative components as though real-world complexity transcends to fictional story-worlds.

Since it is the interrelations and synergetic interactions of the narrative units that add meaning to the whole, an important aspect that needs further explanation is *narrative coupling*. Narrative coupling defines the strength of the relations between narrative components and to which extent these relations affect the overall narrative (Marion 1999, 159). If the aim was the quantification of the characters' interactions then measuring and analyzing the quantity of connections between characters could be a valid starting point. However, this quantification is meaningless as it does not contribute to our understanding of how stories emerge. But it also supports the argument that the more character interconnections there are the more exciting the narrative will be. What is of importance though is that meaning derives from the quality of the interconnections of the narrative units and the strength with which they are connected.

In Figure 6.9, the coupling of narrative components is shown schematically.

The four squares represent a set of individuals grouped together under a common theme or goal. The dashed lines represent a *loose coupling*, such as an indirect relationship, where thick lines represent a *tight coupling* or direct relationships. Bidirectional arrows represent a situation which can be categorized as a relationship that mutually affects a set of characters, a change in the state of affairs, or an action which instigates a reaction. Monodirectional arrows represent an action that is not followed by a reaction, or a change in the state of affairs of a group or a single individual.

There is a direct correlation between *coupling strength* and *attractors* (plot points). Since thematically and locally relevant narrative information is consolidated around the attractors by the plotting and action schemas, managing the change from the cascading damage due to informational turbulence is another function of attractors. Controlling informational change locally prevents changes from spreading to other parts of the narrative work and allows the whole to retain its structural integrity throughout. In other words, the functionality of the plot points to contain change in a localized manner limits or prevents a wide-reaching structural change. Although the proceedings in the state of affairs are affected in their entirety, the change is retained and controlled locally, structurally represented by the attractors and spatiotemporally by the characters' actions at each of the structural nodes. If structural coupling manifestates in a looser manner than the structure of the three-act paradigm, meaning that the gap between attractors (plot points) would be substantial and the relations between the narrative components weak, the pace of the story will be the first to suffer. If structural coupling is tighter, which means that there will be more structural points along the state space, the pace will be

faster, depriving the audience of the chance to digest what is happening in terms of information exposition. If the structural coupling is frenetic the action will be never-ending. Therefore, a moderate structural coupling brings about a sense of integrity to the whole, allowing enough time for narrative information to be conveyed in the right manner. In a moderately structurally coupled narrative system, one that utilizes the three-act structure, informational, structural or emotional change spreads along the state space in a controlled manner, and dramatic highs strategically alternate by dramatic lows and vice versa.

Different genres abide to different structural coupling arrangements. An action adventure has a faster pace compared to a romantic comedy, whereas a suspense thriller needs to have substantially more plot twists from the average drama. In narrative works where genres overlap, that is, action thriller, action sci-fi thriller or sci-fi thriller, the conventions for structure are a hybrid of arrangement. The aim of the structural coupling is to allow new narrative information to blend in so change along the state space can take place in a controlled manner. Since the constancy of the structural arrangements is assumed, the change and the degree of change relative to the level of structural coupling dictates the fluidity of the narrative system in whole (Lewin 1997, 178). The function of structural coupling is clearly manifested by the action and plotting schemas where informational clusters are created, making the connections between the structural arrangements and the story-world's configuration to be explicit anywhere along the state space.

The psychological needs of the characters should match, be opposing and antithetical as it happens in human societies where different people have different goals which are pursued separately (Minsky 2006, 26). Characters become closely coupled which results in their interactions to becoming highly nonlinear. It will be difficult to remove a character with an implemented function without causing the whole to crumble. Even though dramatic conflict is present throughout a narrative work, its emergence occurs because of the interactions between the narrative components operating under the constraints, boundaries and limitations of the story-world (Marion 1999, 51), emphasizing the fact that narrative is an emergent derivative of the narrative units' interactions at one level deeper down.

The interrelations of the narrative components can be mainly actualized in the characters' psychological states of motivation. Characters have multiple dimensions in their characterizations that attribute to their persona: goals, flaws, needs, one or more levels of conflicts, motivations, best and worst attributes, attitudes, beliefs and points of view. Fictional agents form a fabric of social relations based on the configuration of their psychological capacities. In narrative systems it is not the characters themselves who interact with each other but the opposing or matching parameters of their characterizations that form a network of background social relationships. These relationships integrate into the structural framework of the narrative system, which is used as a point of reference for the context (Hawkes 1977, 18).

Typically, the configuration of the protagonist's role also dictates the configuration of the role of the antagonist. Under this arrangement, character and premise facilitate each other. Narrative works are not experienced in parts where the narrative components are analyzed individually but as wholes (Parker 2006, 12). The creative matrix (Parker 2006, 13) facilitates the interrelation of various narrative elements by distinguishing them in three pairs: (i) story and theme, (ii) form and plot, and (iii) genre and style. However, only components related to structural orientation are included in the creative matrix whether characters and their psychological capacities must also be integrated.

The conceptual differential relationships of the narrative components are dictated by the propositions of the story-world in question and the configuration of the characterizations of the conscious agents at hand. Concepts, meanings and therefore, stories emerge out of such differential relationships and the context these relationships attribute to the narrative. The relationships are dynamic and nonlinear while their content is defined approximately since there are more *what-if* story alternatives that what can be actualized (Luhmann 1985, 25). The underlying facilitating mechanism of such *what-if* story alternatives is the plot-algorithm. This heuristic mechanism that advances the story and how narrative information is produced at the various levels of structure are the topics of the next chapter.

Chapter 7

The Plot-algorithmic Process

THE THREE LEVELS OF STRUCTURE

The interrelations and interactions of the narrative components are actualized over many structural levels. From the deep structures of universally identified themes, psychological goals, needs and motivations to the surface structure and the physical arrangement of the text. Three different levels of structure can be identified in narrative, an elaboration of Ferrara's observations in *Theory and Model for the Structural Analysis of Fiction* (Ferrara 1974, 247):

- i. The deep, core or abstract level is where all the universally identified themes, goals, needs, and desires of the characters, their characterization, and the story-world's underlying laws, principles and propositions are contained in the form of core narrative components. This hierarchical categorization happens due to principles and criteria that are not defined locally but universally as I showed in the opening chapters.
- ii. The strategic, syntactic or intermediate level. Most of the narrative interactions occur in this level as the narrative system produces given outcomes, such as story what-if alternatives, forking path possibilities, etc., from a given input of narrative data in the form of story-world configuration. The dramatic conflict that is generated in this level is projected onto the surface structure through a series of action beats, scenes and scene sequences. All the underlying interactions, interrelations and interconnections between the narrative components are facilitated in this level, which is considered to be the strategic level.
- iii. The semantic or surface level is the level where the forking path or story alternative decisions are actualized through the physical arrangement of the text. This level showcases the progress of the story-world configuration; narrative complexity has been reduced and the narrative system has reached a point of temporary or permanent equilibrium. Additionally, the indeterministic nature of infinite story possibilities has been transformed into a deterministic historical path of sets of narrative events and actions.

In the form of the written text, surface structure is immediately observable whereas deep structure can only become evident through a retrospective retracting of the alternative scenarios and the forking path actualizations. Surface structure is primarily composed of sequential and causal narrative events and actions, therefore is syntagmatic. Deep structure is populated by a finite number of core narrative components whose logical configuration can be altered or substituted so to create of a multitude of stories, thus is paradigmatic (Rimmon-Kenan 1983, 10). It seems then that there is a high-hierarchy correlation between narrative components populating the deep structure and their surface structure manifestation.

The importance of goal-orientation in narrative is solidified by cognitive psychology experiments (Bower et al., 1979), which investigated how alternative scenarios associated with common activities, such as going to the restaurant or getting up in the morning, were evaluated by students. The experiments revealed how people understand and remember stories and the characters in them through recognition of the characters' psychological goals. The mechanism is similar to the mechanism invoked in actual person perception as people, like fictional agents, are motivated to achieve goals or satisfy needs. When the goals and motives of the characters were confusing, thus the elements of the story were unclear or not properly defined, the subjects struggled with recall and judged the story poorly (Bower 1978, 211). Furthermore, readers and audiences identify with the hero, her plan and her journey in achieving her goal, which is defined by obstacles, actions, justifications and events. The goals and motives of the characters provide the basis around which audiences perceive narrative through an assessment of the characters' actions (Bower 1978, 215). Further experiments showed that the recall of goal-oriented actions was superior to that of non-goal-directed actions (Lichtenstein and Brewer 1980, 412). The inclusion of the goal in the deep structure is further solidified by the fact that readers and audiences determine the coherence of narrative events after they have established who the hero is. This identification is achieved through the hero's actions to reinstate the equilibrium but also through understanding of what the hero wants to achieve by the end of

the story, whether she fails or succeeds in her attempt. Each dramatic act concludes locally with the attainment of a subgoal and the initiation of another one; a sequential link of subgoals that forms the hero's main goal-path along the state space (Johnson and Mandler 1980,62–63).

Psychologist Abraham Maslow (Maslow 1943, 370–375) devised a six-part hierarchy of human needs, all of which are motivational factors that fuel the hero's quest to attain a goal:

- a. Biological and physiological needs, such as food, sleep, drink, warmth, etc., are often associated with one's survival. This is a universal need that all people understand and it provides a clear dramatic conflict in narrative.
- b. Safety needs, such as protection, security, stability, law, etc. In narrative, this need is usually portrayed by the actions of a character who is seeking a safety heaven or attempts to evade an intruder.
- c. Love and belonging needs, such as friendship, family, intimacy, affection, relationships, etc., a desire for having a family or belong in a community.
- d. Esteem needs, such as independence, confidence, self-respect, acceptance, prestige, etc., which are based on personal achievement or contribution to a professional field or the community.
- e. Self-actualization needs, such as self-fulfillment, personal growth, acquisition of knowledge, gaining understanding, realizing potential, etc.
- f. Aesthetic needs, such as the appreciation of beauty, of pattern, of form, etc.

The deep structure forms the transformational spine of the story-world and gives the story unity, coherence, and meaning since all the narrative laws, principles and propositions exist in this level. Furthermore, the deep structure serves as the initial ground for the configuration of the narrative building blocks, which then are contextually transformed in the intermediate structure before their aesthetic interpretation is projected onto the surface structure through the action of the characters. The main distinguishing factor between deep and intermediate structure is the differentiation of the narrative components as core and secondary. Secondary narrative components are relative to the physiological, sociological, intrapersonal, intellectual aspects and traits of the characters, and the rest of the psychological aspects that are not fundamental. Such aspects are the characters' ideals, dreams, hobbies, pursuits, temperament, cultural activities, and so on. Spatiotemporal boundaries and constraints, historical setting and backdrop, vertical and horizontal structural constraints, and the overall theme are all narrative components that populate the intermediate structure. Strategic decisions that pair up the theme, the context, the characters and their characterization along with the principles of the transformational process are made in this structural level. Character interrelations and the dramatic conflict that they generate also belong to the intermediate structural level as are the internal and external conflicts of the characters, the narrative events that beget actions and reactions, the narrative history and the historical affairs, and the actualization of the story's subplots.

The surface structure comprises the implementation level, where the outcome of the interactions of the core and secondary narrative components is projected onto. The core and secondary narrative components are processed, modified and transformed in the intermediate structure and emerge onto the surface structure through dialogue and action beats, scenes and scene sequences, all supported by the story's overall structural arrangement. The strategic arrangement of scenes, events, and actions that form the plot is also actualized in the surface level of structure. This surface-level order arrangement allows the readers and the audience to follow the story by creating the necessary mental benchmarks and representations and eventually to identify with the emotional struggle of the hero by drawing inferences about his intentions, motivations, desires and overall goals. This way previously disjointed and seemingly unconnected narrative parameters, story-laws and principles are now come into being into a coherent whole (Herman 2002, 54).

Even if action beats, scenes or scene sequences are moved around on the surface structure, through implementation of any causal adjustments where needed, the whole retains its structural conformity without a distortion of its emerging meaning. This surface structure rearrangement is needed in order to optimize dramatic conflict, clarify the characters intentions, facilitate the infusion of new narrative information, or because of structural limitations. Surface structure is the level where the story as a whole is actualized and outwardly projected. Prior to this surface-level actualization though a transformational process must first take place in the intermediate structure, a process which consists of the following minimum prerequisites:

- i. Configuration of the propositions, assumptions, principles, laws and parameters that define the story-world and its horizon, the permissible narrative actions and events.
- ii. Calibration of the narrative components' parameterization so to achieve the basis of strong dramatic context through coupling. Character and plot are best to be developed synergistically and not independently as they will otherwise be disjointed.
- iii. Clustering of narrative information according to a common theme or context, and implementation of the

transformation mechanism, which consolidates the narrative data the action and plotting schemas provide. The plot-algorithm assists in the mapping of the story alternatives and forking path possibilities, creates couplings between narrative components, and generates action, conflict, and context, while it also brings change to the story through narrative evolution, leading it toward its climax and resolution.

- iv. Decisions for the advancement of the story must be based on the internal narrative logic and the historical path of the narrative system in question, abiding to the deterministic constraints arising from their implementation.
- v. Logical checks must be applied to the narrative logic in order to test the story in terms of coherence and consistency, and troubleshoot where necessary.

All decisions on how to advance a story are qualitative and probabilistic in nature and are based on a myriad of factors. The heuristic nature of the plot-algorithm signifies that no hard transformational rules exist which rigidly apply to all works of narrative. Core narrative components share an objective status and thus act as prerequisites of the transformational process, functioning as base rules.

THE GENERATIVE ASPECTS OF THE PLOT-ALGORITHMIC PROCESS

An algorithm is a recursive and sequential logical procedure for solving a wide array of problems in a finite number of steps. Our everyday life is consisted of algorithms. We plan by what means we are going to travel to work, calculating alternative scenarios so not to be late or if something goes wrong. In our professional environment we interact with multiple colleagues, each and every one of them having a different personality, mood or agenda, and we must perform to the best of our abilities in order to solve arising problems. After several hours at work, we find ourselves once again planning our way back home, or whether and how to socialize. From making a phone call, to delivering a lecture, to cooking, to filing our archives or tax returns; all are problem-solving or problem-anticipating steps of heuristic thought processes that aid the organization of an increasingly complex life.

Understandably then, in the creation of cohesive and consistent narrative the implementation of plot-algorithms are of fundamental importance. I have so far explained how new narrative information that arises from the transformation of the story-world parameters is consolidated in the intermediate structural level based on principles of contextual and semantic relevance to the story's premise. This narrative information is then transformed into a coherent whole, out of which narrative semantics arise in the form of a story. In essence, plot-algorithms describe the deep-lying processes and activities of the narrative transformations that define the whole (Harel 1992, 4). The qualitative aspects which are implicated in the resolving of narrative problems aid the solution of logicnarrative issues in the forking path possibilities, even by approximation or probability.

Utilizing narrative thought processes, authors understand and tackle problems related to narrative logic based on their individual abilities. The *plot-algorithmic thinking process* (Futschek 2006) consists of the following steps:

- a. the configuration of potential narrative input sets, possibly infinite but practically finite, which form the entirety of the story-world,
- b. analyses of the narrative logic of story-related problems, their subsequent detailed description and the description of the desired end purpose,
- c. the creation and exploration of various forking path story-alternatives,
- d. an analysis of the effect each of these story alternatives may have on the story. Different story alternatives will have a different impact on the narrative logic and the state space of the narrative system at hand,
- e. selection and implementation of a story-alternative based on a variety of parameters such as the historic path, the hero's goal-path, and the state space
- f. necessary revisions of the implemented story-alternative, where possible, will lead to dramatic efficiency and the minimization of gaps in the narrative logic,
- g. evaluation of the impact the implemented alternative has on the story in whole. The outcome is compared to the story-related assumptions and principles of the original story-world configuration before the implementation,
- h. further revisions if necessary.

Plot-algorithms give traction to the structural process, utilizing narrative information lying in the deep and intermediate structures, processing, transforming and projecting this information onto the surface structure. Plot-algorithms are best visualized schematically through the use of tree diagrams or flow charts, presenting the forking path possibilities at each structural node while mapping the story's progression. A flow chart portraying a basic plot-algorithmic thought process is shown below in Figure 7.1.

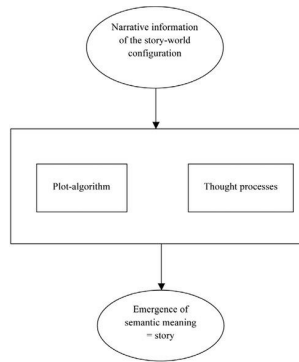


Figure 7.1 A basic plot-algorithmic thought process.

A logiconarrative problem is thought to be solved when an effective plot-algorithm that advances the story to the desired end state without gaps in the narrative logic has been devised. An ad hoc plot-algorithm can only be described retrospectively and by working backward through a mapping of all the decisions that were made at each structural node. This backward unweaving of the plot-algorithm's steps reveals the problem-solving strategy. Defining at the outset the exact plot-algorithms for the totality of a story, along with possible alternatives at each of the structural nodes, is a nearly impossible task because the strength of the narrative logic will be questionable at best. It would be better to map out or outline the story up to a point but tackle issues pertaining to narrative logic locally and specifically, no matter whether the chosen solution can be wide-reaching. A narrative composition thought process is a complicated and multifaceted procedure where arising problems must be reduced into smaller and more manageable tasks before tackled in batches. Addressing narrativo-logic problems presupposes the addition of new narrative information or the removal of existing. Either way, informational ripples will be created along the state space. Logical errors are usually to be found in the story-alternatives that were utilized at the structural nodes and forking paths junctures of the state space. However, revision of the original story-related principles and propositions may also be required.

THE PLOT-ALGORITHM MECHANISM

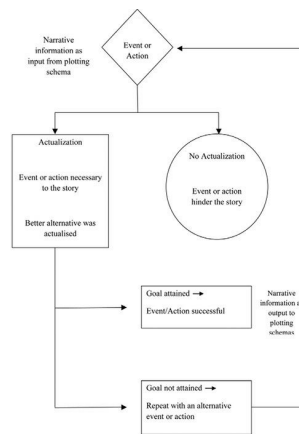


Figure 7.2 Goal-attainment described by the plot-algorithmic process.

The existence of universal narrative components signifies that narratives are created globally with the similar and isomorphic structural patterns, rules and principles but differ in cultural or local content. The ways of telling a story, even the same story more than once, are vast with varying degrees of differences in style, tone, genre and the conventions used. Present-day storytelling has egressed from Victorian novels where narrative events were happening out of pure chance or coincidence (Paulos 1998, 63). Narrative causality is preferred over coincidence while plotting has become more deterministic in nature. The main aspects of a plot with narrative determinism are adherence to the historic path, internal logic and the cause-and-effect forward progression of the story.

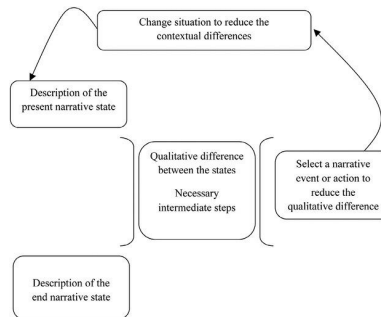


Figure 7.3 The Difference Engine.

At each structural node, different strategies for the advancement of the story exist, however all are utilized as narrative input information that is produced by the plotting and acting schemas at the previous node as narrative output. At each structural node, a narrative event or action may be actualized or may not; a better story alternative may present itself that utilizes the narrative information at hand in a more efficient way. Alternatively, the chosen narrative event or action may hinder the internal logic, derailing the story. In this case, backtracking and tackling the issue at its source by implementing a different story alternative is the best approach. This plot-algorithmic branching approach is shown in Figure 7.2.

Figure 7.2 shows that if the goal is not attained either the narrative problem was not properly addressed or the pursued story-alternative created logical errors along the state space. The process reverts to the previous structural node so a different story-alternative can be actualized. In essence, the plot-algorithm describes the intermediate states of the *Difference Engine* (Minsky 2006, 188–189), which is shown in Figure 7.3.

At each structural node, the state of the present narrative situation is compared with the future possible states and the story’s desired end-state. The generation of a list of contextual differences between the states will allow potential intermediate states—*what-if* alternatives -to emerge. By adopting a sequence of story-alternatives, a potential historic path is created which consisted of narrative events and actions whose actualization will lead, in turn, to the attainment of the goal. Each intermediate step narrows the gap between the contextual differences of the present and future states. In the event of the implementation of a successful story alternative, the story advances without any logical inconsistencies. If the chosen story alternative proves to be inadequate, the process reverts to the previous structural node and is repeated.

The process of reducing a narrative problem to smaller, more manageable, ones allows control over the story since the structural nodes serve as intermediate stepping stones. The plot-algorithm connects narrative components, subgoals, beats and batches of information that populate different structural levels, allowing the story’s coherent segmentation by describing the intermediate states of the transformation process. Plot-algorithms test story alternatives and advance the narrative through a process of reduction between potential intermediate states. By reducing the contextual differences between present and future states, the transformation process becomes evident as change is actualized in the narrative states. The differential product of this change in the content of the narrative information creates dramatic conflict, which then emerges onto the surface structure by way of the written text. This explains why narrative is the result of contextual differences that are created by the interaction of the narrative components and not of their characteristics.

The mapping of the story alternatives is a routine procedure that takes into consideration the present and future states of the state space in a similar process to an ‘If A then Do Action then Z routine’ (Minsky 2006, 138). Proceeding from a present state A to a future state Z may appear to be a massive task to be actualized in a single attempt. Such a routine can be seen below where actions are the intermediate steps describing the action schema, and which are necessary for the attainment of the goal:

If A Do Action #1 then M, where M is an intermediate state, and then
 If M Do Action #2 then Z, where Z is the desired end state.

Not all narrative events or actions lead to the desired solution, and some or all the intermediate steps may have to be repeated. Sometimes the above process can be reversed, a method known as *backward reasoning*. Backward reasoning identifies essential narrative events and actions that if are eliminated the narrative logic’s intelligibility will suffer (Simons 2008, 119). Using backward reasoning, the above routine looks like this:

To Z Action/Event #3 happens then M, and then
 To M Action/Event #4 happens then A

If either intermediate step is eliminated, the transitioning from state A to state Z will never be actualized. In other

words, the utilization of backward reasoning can reveal all those prerequisite conditions that must be created in the early parts of the narrative that will allow specific events and actions to materialize in its latter parts.

In essence, the plot-algorithm brings together two different but irreducible schools of thought: the logico-scientific mode and the narrative mode. Where the logico-scientific mode seeks to discover truth, the narrative mode seeks to endow human experience with meaning and a goal-oriented purpose. However, both modes utilize causality differently as they both seek universal truths in the form of logical connections. Through the transformation of the story-world's deep and intermediate structure configuration, the plot-algorithm creates meanings which are universally understood. These narrative semantics stem directly from personal experience and the human condition. Plot-algorithms rely on a population of variations of story-alternatives where the outcome is not only judged by the quality of the solutions presented but also by the quality of narrative information as input. If the desired outcome is not achieved then the narrative input information will have to be redefined, re-parameterized and reimplemented into the plot-algorithm even if this entails the sequential readjustment of narrative input information in all previous structural nodes. The configuration of the story-world's components may welcome infinite values but only a finite number of narrative propositions generate the desired outcome. The fine-tuned propositions are always relevant to the story-world configuration, the historical path and the internal logic of the narrative system in question. The Goldilocks view of storytelling implies that good stories emerge when all the dramatic conditions are just about right.

NONLINEARITY AND THE PLOT-ALGORITHM MECHANISM

The requirement that truly encapsulates the generative dimension of the plot-algorithm is finiteness (Chomsky 1968), which describes that a problem must be solved in a finite number of steps. Ideas, concepts, narrative setups, story-alternatives, and further combinations of narrative information are infinite. Plot-algorithms have an initial state, an intermediate state and an end state, which produces new narrative output information that can be utilized as input information in the next structural node. Plot-algorithms have also a final state, the testing taste, where the internal narrative logic is checked for errors. Infinite story alternatives can be created by closed loops which feedback onto the structural node that was used as the initial point. The narrative information is evaluated, and if necessary, changes in the story-world parameterization will have to be made. This will create the right conditions that will allow the story's unhindered advancement although the resolution of the story may not be compatible with the historical path and inconsistent information may start appearing.

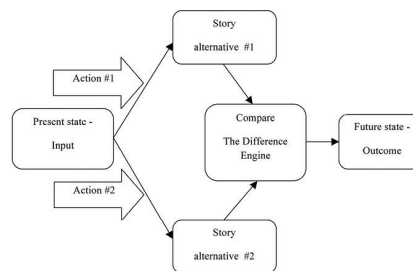


Figure 7.4 The *If-then-Do* routine and the *Difference Engine*.

The narrative output information the acting and plotting schemas produce must be precise and unambiguous since both schemas are parts of the qualitative control process that regulates the plot-algorithm's functionality. The plotting schema serves as the initial state of the plot-algorithm providing a summary of the current situation and the affiliated characters. As the plot-algorithm's intermediate state, the action schema creates a closed feedback loop in the event that all the story-alternatives are unsuccessful. Both schemas function parallel to one another, contributing similar or overlapping information. Therefore, the transformation process consists of two important aspects: the actual act or event and the manner and means of action. Evaluation of the narrative information occurs either by direct sequencing of the actions or conditional branching (Harel 1992, 19–20). Direct sequencing, like the "Difference Engine," is of the form "do A followed by B then by C....," and charts out all the actions carried out in sequence by the character. Conditional branching offers story alternatives of the form "if Q then do A otherwise B," or "if Q then do A," or "if Q then do A or B," where Q is a specific condition which has to be met in order for the story to advance. These instructional routines are called If-then-Do rules. The If describes conditions that have to be met or where certain events must happen, and the Do describes the action that must be taken. In principle, narrative systems are consisted of a succession of If-then-Do propositions. Narrative assumptions and propositions cannot be too specific or rigid because then their applicability will also be limited (Minsky 2006, 137). Instead, they must be flexible, probabilistic and be based on rules and principles with a universal

appeal. The mechanism that aids the evaluation process of what story-alternatives produce the desired narrative outcome is shown in Figure 7.4, where the If-then-Do routine is combined with the “Difference Engine.”

Figure 7.5 shows all four states of the plot-algorithm and how closed loops generate infinite story alternatives.

The relation between the plot-algorithm and the three structural levels is shown on Figure 7.6.

Finally, an elaborate plot-algorithm is shown in Figure 7.7.

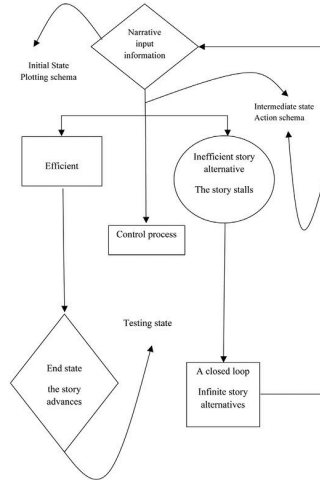


Figure 7.5 Closed loops for the creation of infinite story alternatives.

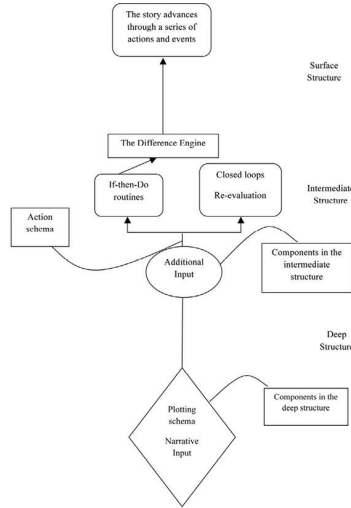


Figure 7.6 The relation between the plot-algorithm and the three structural levels.

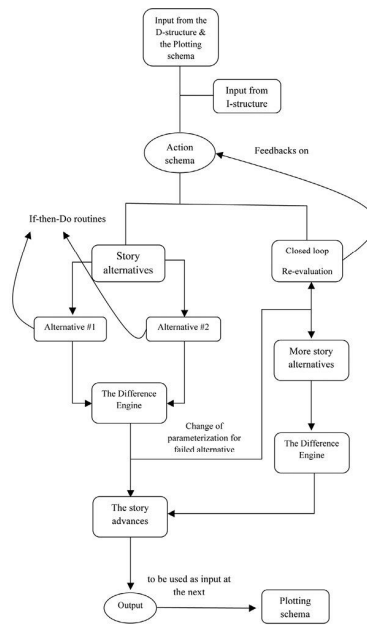


Figure 7.7 An elaborate plot-algorithm.

Epilogue

The human mind is a subtle and complex engine of imitation which has the ability to combine existing abstract concepts in the pursuit of new creations, and it constantly changes in a never-ending struggle to adapt to an ever-changing environment. The same patterns of narrative have been replicated and imitated by storytellers since ancient Greece as though they were *memes*. *Memes* propagate themselves through the transference of ideas, stories even catchphrases via an imitating process. Good ideas are passed around and proliferate with every mean possible as though they were living structures such as parasites (Dawkins 2006, 192). Memes have the capacity to carry cultural ideas, symbols and practices which are communicated by every means of communication known to humans whether it be an image, written text, sound, sign language, speech or gestures. Since memes can replicate, evolve and respond to cultural invariance they are regarded as the cultural analogue of genes (Graham 2002, 196). The term meme was first coined by British evolutionary biologist Richard Dawkins (Dawkins 2006) in *The Selfish Gene* and it is an abbreviation of the word mimesis, meaning “to imitate,” a word which derives from the Greek word μιμῆσθαι (mimēsthai). As a cultural phenomenon, memes can evolve through natural selection in a similar, and analogous, manner to biological evolution. Memes that are not successful enough may extinct and disappear from the cultural foreground while others will evolve, mutate and spread.

The way narratives are conceived, developed and communicated is similar to the meme propagation process. There is a vast variation of stories that share recurring themes and thus are universally identified. In spite of this, new story possibilities appear to be unlimited as new concepts emerge, new discoveries are made, new sciences and technologies are explored, new inventions are being facilitated, all serving as the basis for original *what-if* story concepts. Imitation of successful ideas for advancement and excellence, combined with the unique point of view and overall perception of the world of their authors, and the complexity of human mind seem to be responsible for the production of an infinite number narratives. Contrary to the limited growth of matter, the world of mind holds room for endless evolution (Drexler 1996, 165–166). But in order for humans to advance themselves, they must leave room for continuous revisions of their present principles and knowledge. This epitomizes the notion that cultural or informational evolution mimics the principles of biological evolution as past experience is incorporated in the overall process and selective elimination of less suitable content is facilitated (Hayek 2006, 22–24), paving the way for successful ideas to spread and further evolve.

I have explained so far that understanding works of narrative as complex systems presupposes the development of a set of rules and principles that describe the dynamics between the narrative components. The story-world configuration is, in fact, a flexible framework of narrative principles, propositions and story-related assumptions which can be modified where necessary. The error-correction process has as a goal the elimination of chance and coincidence and the minimization of logical inconsistencies from the narrative. Narrative evolution within the confines of complex narrative systems happens by modifying structures, and story-related principles and assumptions that have already been established (Minsky 2006, 105). Such an evolutionary process increases the order, accuracy and the amount of narrative information, and therefore, the complexity of the narrative system in question. Narrative evolution operates on a system of positive feedback by way of implementation of past experiences: capable proceedings developed in one level are used for the advancement of the narrative system to the next stage, and so on. Under this prism, narrative evolution shares many of the characteristics of the processes of biological or technological evolution in an analogous manner to the trial-and-error process of falsification for the evolution of knowledge proposed by philosopher Karl Popper (Popper 2010).

The Popperian perspective sees everything as a tentative problem in seek of a solution. In narrative, a tentative solution has to acquire an objective status through a thorough justification of the narrative logic at hand. The initial story-world parameterization may be reconfigured in order to allow the facilitation of new ideas. When new ideas are implemented a new cycle begins where the narrative system in question increases in informational size and complexification that might cause its performance to decline (Minsky 2006, 104). The more unnecessary overcomplications are avoided, especially when this is combined with the elimination of chance and coincidence, the closer we get to an equilibrium argument and the concept of rational economy where the minimum number of story assumptions will have been employed in narrative logic problem-solving (Rescher 1998, 200). The bigger, in terms of informational complication, a work of narrative gets,

the greater the prospects of its various parts to stop functioning. By eliminating superfluous story aspects with limited logical reliability and functionality, story incomprehensibility is reduced or avoided altogether. Good story alternatives derive from good story assumptions and propositions, and from a solid story-world configuration in the first place. However, the aim must be a level of simplicity and clarity for the story where unnecessary complications have been avoided but room for improvements is retained that will allow the narrative to further evolve and develop.

Under the right conditions, optimization of the story-world configuration leads to increased dramatic efficiency. However, narrative evolution cannot only be described as a process of selecting the right story alternatives as it also involves the elimination of alternatives that have adverse or negative effects. In other words, the *optimization paradox* explains why the better a story gets the more likely each subsequent change will make it worse and up to a point where finding new ways to further improve it becomes increasingly difficult (Minsky 2006, 181). Where overcomplication may cause a story to be convoluted and have reduced dramatic efficiency, oversimplification may lead to informational stagnation. Therefore, there must be a balance between these two extremes states. A complex narrative system with increased external complexity (optimized dramatic conflict) and reduced internal complexity (simplistic plot) is more enticing from a narrative system with reduced external complexity (cliché or derivative story line) and increased internal complexity (convoluted plot). Increased internal complexity presupposes the utilization of a large number of confusing parameters and what-if assumptions while it produces a convoluted story that fails to suspend the audience's disbelief. In contrast, audiences are able to follow works of narrative with reduced internal complexity although they may end up being unsatisfied. What paves the way for the dramatic optimization of complex narrative systems is structural flexibility as opposed to rigidity that would cause the narrative system to crumble over large changes (Cilliers 1998, 110). Additionally, the more heterogenic a work of narrative is the more diverse possibilities exist for the generation of interesting story alternatives.

The ideas in this book consolidate the notion that for the comprehension of complex narrative dynamics and mechanics encountered in various forms of narrative, a more comprehensive theoretical framework is required. *Screenplectics* combine the strengths of an inductive approach for the formulation of tentative theories with strong empirical confirmation for the successful theoretical candidates. Since the aim of this book is to provide empirical justification to narrative functionality rather than philosophical abstraction, the narrative propositions proposed herewith constitute the base transformational rules and principles of *Screenplectics*. Furthermore, the two fundamental questions posed in the opening chapters, first, how or what makes stories emerge in the context of narrative, and second, what underlying dynamics allow a work of narrative to function as a unified whole, have been hereby answered. The former question was answered through the argumentation presented on why stories are the emergent phenomenon of the nonlinear, forward-thrusting, cause-and-effect interactions of the narrative components. While the latter question was answered through the exploration of the complex dynamics and synergetic interaction of the narrative components over the three levels of structure, and the explanation of the plot-algorithm mechanism that encompasses all narrative dynamics on all structural levels.

One of the most important contributions of *Screenplay and Narrative Theory* is the elevation of narrative semantics into an intrinsic part of the narrative system it describes. Complex narrative dynamics allow narrative information to be organized into meaningful and goal-oriented patterns that in turn produce results in the form of emergent stories. Furthermore, the plot-algorithm mechanism, responsible for the differential transformation of the narrative components in all structural levels, has also been explained for the first time in theoretical investigations in cognitive narrative theory and narratology. Moreover, the fundamentals of *Screenplay and Narrative Theory* share a universal status and objective empirical applicability while they succeed in producing a wide array of stories in various narrative formats, forms and genres. This happens because two of the model's most important contentions share an objective status and the whole argument goes beyond the basis of simple conjecture. First, a three-act structure with beginning, middle and end is identifiable by different cultures around the world, and second, goal-orientation in narrative is of fundamental importance. Additionally, *Screenplectics* is the only narrative model that structurally incorporates character and plot under a common umbrella without putting the emphasis on single aspects such as story grammar, structural organization, semantics or the interrelations of deep-rooted narrative dynamics.

Expanding the theories presented in this book, and building upon the already established empirical knowledge of the existing propositions, will further promote understanding in the current field of investigation. *Screenplay and Narrative Theory* inevitably leads to a better understanding of narrative dynamics and the composition process in general. Fully grasping the potential of narrative complexity can shed light on new possibilities such as understanding the emergence of stories on the semantic level. Contextual emergence requires narrative components to maintain a consistent and coherent functionality throughout the narrative work while being in complete harmony with structural constraints. This thematic functionality allows us to better understand the nonlinear nature of narrative dynamics and the repercussions a simple change might have on the narrative system in whole. Context is generated through a system of differences that govern the relationships of the narrative components. The protagonist's motive to satisfy a dramatic need or achieve a goal only

acquires meaning because of the antagonist's antithetical need or agenda. A story-world brimming with narrative heterogeneity will place characters on a path-dependent or phat-dependent structural framework in which past decisions determine future potentialities for further story-branching. Path-dependent reliance describes a process where the outcome at any future point of the state space depends on the preexisting history with the events and actions to be happening in sequential order. Phat-dependence describes a process where the outcome still depends on the preexisting history but events and actions do not occur in sequential order (Page 2006, 97). The generative capacity of Screenplectics is manifested first, by the existence of a finite number of deep-rooted narrative fundamentals which lead to the configuration of the narrative units in the deep and intermediate structure and, second, by the plot-algorithm mechanism which conjoins all relative narrative information on all three structural levels. Through the transformations of a finite number of narrative components and their recursive, but varied, combinations, an infinite number of stories can be created.

Screenplay and Narrative Theory must not be used only as a suggestive pattern for the understanding of narrative dynamics but must also serve as the basis for further research. Elements in need of further analysis are the fictional agents as a complex narrative system of its own, the role action and plotting schemas play in the consolidation of narrative information, and the semantic interactions of the narrative components in the deep and intermediate structures. An analysis of the causality and motivation of narrative action must also be further researched and so must bifurcation and forking paths of story alternative dynamics. The overall aim must be the creation of an elaborate theoretical framework that will not only provide elucidation on the most-troubling aspects of narrative but it will also act as the embarkation point for further evolution of knowledge in the current field, and beyond.

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