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Narrative Rules? Story Logic and the Structures of Games

Abstract

Ever since scholars in the humanities have studied computer games, the relationship between play and narrative has been a much contested issue. Much dissent stems from incompatible basic assumptions about play and narrative, which, this paper argues, can be reconciled by a formalist approach to games and narrative on a structural level. First, event structures and story structures are shown to be central to various theories of narrative. Correlating these findings with Espen Aarseth's reflections upon nonlinearity, an understanding of narrative revolving around event logic is developed. Building on the theory of games developed by Roger Caillois, the paper then develops a model of games in which three layers of structures are governed by three types of rules. The most abstract of these layers arranges game elements in a meta-structure which is based on both ludic and narrative logic. In a final step, nonlinear game structures are explained within this model and categorized in a typology that orders them by the type of agency players can execute.

Introduction

Theorizing the properties and functions of narrative in computer games is a precarious venture. The reason is not that we lack literary theories or theories of games, but that we have so many of them. While this pluralism of theories is usually a good thing in the humanities, enabling us to choose from a variety of methodologies, the many contradicting approaches and conflicting research questions make it all but impossible to come to terms with phenomena that involve, at the same time, games and narrative.

Both concepts are vague, and as even the scope and definition of the terms “game” and “narrative” are far from undisputed, this terminological and conceptual uncertainty is amplified in derived theories of computer games (Ryan 2006, p. 200).¹

Instead of trying to reconcile games and narrative on a systematic level, scholars have usually opted for alternative approaches. They have either ignored and even denied differences between games and narrative, or highlighted them so much as to treat the two as incompatible – the positions usually defined as narrativism and ludology (Frasca 2003). More recently, the problem has been taken to an even more fundamental level by re-contextualizing computer games in terms of rhetoric (Bogost 2007) or riddles (Montfort 2005), or by considering them as a completely new kind of discourse (Aarseth 2004) or aesthetic experience (Kirkpatrick 2011).

While these and other new approaches such as computer forensics (Kirschenbaum 2012) pose valid questions and produce valuable new insights, the possibilities of reconciling concepts of narrative and games have not yet been exhausted. Like recent studies in seemingly established concepts like immersion (Calleja 2011), this paper proposes not to discard established theories, but to subtly modify them.

Summarizing the core arguments from an earlier book-length study in German (Backe 2008), it proposes an answer to at least one central, basic question: How do computer games combine the rigidity of narrative structure with the openness of play? Or, more specifically: by which logical structures is agency over events and story progression in a game possible? How can we conceptualize a structure which allows for player agency and, at the same time, produces one or possibly several stories from a linear or nonlinear sequence of events?

These questions will be approached in a structuralist manner, i.e. by talking ‘about form *in the sense that what one says can be formalized*: which means that it can in

principle be expressed in a formal notation, a symbolism' (Holloway 2010, p. 2). By combining some frequently overlooked ideas of structuralist narratology with Roger Caillois' theory of games, I will demonstrate how narrative acts as a structuring device for ludic processes and can, therefore, be understood as an element of games.

After explicating the scope and initial assumptions of the study, this paper analyzes the role of structures in narrative and applies its findings to the development of a formalist model of games. In this part, it will mainly reassess and systematize existing research. Afterwards, the focus will shift to describing a multi-layered model, within which, I argue, the most abstract layer of ludic rules can be replaced by a narrative structure. The paper will then go on to show how our understanding of higher-level agency in games especially benefits from this model, outlining a typology of player influence on story progression in games and verifying it by discussing a number of examples. Both the model and the typology are intentionally simple and formalistic. Their aim is not to rival more detailed theories of agency (Wardrip-Fruin et al. 2009) and game ontology (Zagal et al. 2005), but to offer a systematic concept of narrative within games.

Scope and Initial Assumptions

The basic proposition of this paper is to assume that there are “narrative computer games” which can be conceptualized with theories of narrative and games – a stance that, as has already been mentioned, is frequently contended, if only because both “game” and “narrative” are elusive categories. Nonetheless, there can be no doubt about the fact that the single-player campaigns of games in virtual worlds (to heuristically delimit the scope of this study) are conceived and, more importantly, perceived as both games and storytelling devices. This paper will present a specific method for the

discussion of this phenomenon. Terminology from the contexts of “game” and “narrative” will be mostly used in a wide, inclusive sense, because ‘[...] delimitation is not the point of a theory geared towards facilitating analysis’ (Bal 2009, p. 3).

Initial research in the still-young discipline of transmedial narratology has shown that such an inclusive attitude is necessary for defining narrative without considerations for mediality. That single-player campaigns invite being perceived as stories is, according to Marie-Laure Ryan (2005, p. 4), the most important indication that they possess narrative qualities. Extending this kind of reasoning to games, single-player campaigns appear to have pronounced ludic qualities because they are perceived as games. As players get both impressions at the same time, we can further assume that games and narratives have something important in common. This paper proposes that the compatibility of games and narrative does not stem from the types of shared elements – both have places, characters, and events – but from structures, i.e. similar ways of connecting these elements.

In games and narratives, we can perceive structures that are syntactic in the wider sense of the term, i.e. sequences of elements within a whole. I am not thinking about surface structures here, especially not in the narratological dimensions of focalization, mode, and time introduced by Gérard Genette, or the spatial epistemology favored by game studies since Janet Murray (Murray 1998, p. 132). The structures I am referring to are those of events, which form a deep structure in both games and narrative, not in the media-technological sense of an underlying code (Juul 1999, p. 55), but the (onto-)logical sense of a series of causes and effects. The obvious difference seems to be that the sequence in a narrative is authored and static, while in a game, it is rule-driven and dynamic.

But is that assessment true for single-player campaigns? The majority of them offer a single, linear storyline, in which levels, missions, or quests are arranged in a sequence that is ordered by an author in the same way as that of a novel or a movie. This is absolutely unmistakable in games like *Max Payne* (2001), which at the beginning shows the ending, the narrative conclusion, thereby already foretelling the game's outcome – an arrangement unthinkable in games in the physical world. Within the organizational units of levels, missions, and quests, the player controls the avatar and moves at will. But here, too, exists a structure of required and optional events, e.g. collecting points or objects. And still, it is possible to “toy around” with a game and just ignore these structures in free, aimless play. This suggests that single-player campaigns can be envisioned as multi-layered constructs, in which some layers can be pre-structured through narrative design or the imposition of goals. If all campaigns adhere to the same principles, the non-linear structures of e.g. “open world” games must be assumed to operate on the same abstract layer. Even in this type of game, there are goals and a (albeit variable) structure of units to be found, so even though their syntactics are not completely authored, they are not completely free either.

As the initial assumption is that these phenomena are games, the layered model of structure proposed here must conform to a framework of general properties of games. As I will demonstrate, a careful reading of Caillois allows for the formulation of a hierarchy of rules found in every game which accommodates narrative structures as well as ludic ones. But before examining the structuring functions of rules in games, it is necessary to specify the role of linear and non-linear structures in narrative. To this end, I will discuss various narratological and structuralist positions to show that structure is a generally prevalent concept, and that although it is used in different meanings, all of them are relevant for understanding the non-linearity of games.

Structure in Narrative

As much as theories of narrative diverge, there is no dissent about the assumption that a story is a sequence of events. Structuralism in its original form (Barthes, Todorov) focused almost exclusively on the sequential relation of events. Their narratological and neo-structuralist successors still stress the importance of the event level, even if they usually privilege the discourse level. In the tradition of Genette, critics usually agree to concentrate on the actual surface level of expression, the artifact itself, that which can be quoted or reproduced. It is on this level that narrative structure is most frequently discussed: 'Narrative discourse consists of a connected sequence of narrative *statements*, where "statement" is quite independent of the particular expressive medium' (Chatman 1978, p. 31). Yet the discussion of discourse has its limits, because it does not allow for 'the determination of what narrative is *in itself*' and the identification of a 'substratum' common to all artifacts perceived as capable of telling stories (Chatman 1978, p. 9).

One of the main problems in this task has always been the divergent use of terminology. Martinez and Scheffel (2009, p. 26) have differentiated no less than nineteen terminologies in English, French, German, and Italian, which distinguish between two and five categories each. None of these typologies are identical, and even the presumably evident and commonplace terms "story" and "plot" are used in three different meanings in English alone.

For the purpose of my argument, Mieke Bal's theory offers a conceptual and terminological middle-ground. What Chatman and Genette call discourse, the surface level of an artifact, is in her terminology simply called text. In literature, this expressive layer consists of the narrator's enunciations, and only from them, we can reconstruct what has happened in the fictional world. The text "hides" two further layers, fabula and

story. To Bal, the main difference between fabula and story is that in the latter, 'events are arranged in a sequence which can differ from chronological sequence' (Bal 2009, p. 8). The fabula, then, is the 'material or content that is worked into a story, [which] has been defined as a series of events. This series is constructed according to certain rules. We call this the logic of events' (Bal 2009, p. 7). Bal's reasoning highlights the relevance of the fabula as the (albeit implied) basis of every story and, therefore, every text. The fabula is not an ephemeral, hidden collection of events that informs a story, as narratologists often argue, but an entity with a structure and logic of its own.

Structuralism analyzes similar connections on the level of what Bal calls the story. Roland Barthes already posited that 'without reference to an implicit system of units and rules' (1979, p. 81), there could be neither narrative nor story. In his seminal "Introduction to the Structural Analysis of Narratives," he develops a system of such units and rules according to which they are co-dependent, meaning that he distinguishes four classes of units which are defined not by their possible content, but by their structural function, i.e. the type of syntactical rule manifest in them. He first separates functions from indices, with the former being syntagmatically related units of operation, the latter being paradigmatically related units of signification (Barthes 1979, p. 93). He then subdivides functions into cardinal functions and catalysers. Cardinal functions are the nuclei of stories, as they deal with events that have consequences. Within the structure of a story, cardinal functions are related by a logic of consequence. They constitute the skeletal framework of a story, because their consequential nature always implies an option, a possibly different chain of events, 'two acts which will unfailingly carry the narrative along different paths' (Barthes 1979, p. 94). Catalysers are the functions between two cardinal functions, and their relation is of a purely consecutive kind. They are 'areas of safety, rests, luxuries' (Barthes 1979, p. 95), which give a story

coherence and verisimilitude by fleshing out actions, yet which are not crucial and could be omitted or changed without significantly altering the story. Indices and informants are distinguished in a similar fashion: indices proper refer to characteristics of narrative agents and places, while informants locate the action spatially and temporally (Barthes 1979, p. 96). Again, the former are constitutive of the specificity of a story and thus need deciphering, interpretation, while the latter are ‘pure data with immediate signification,’ ‘ready-made knowledge’ (Barthes 1979, p. 96).

Barthes’ rules and units will be crucial later on, as they offer a link to the logic of games outlined by Caillois. Both describe the way in which artifacts are constructed, yet they make no claims about the way these artifacts are received, which is of no lesser importance for the questions at hand. Story construction and reception go hand in hand, though, in the cognitivist approach of David Herman, who subsumes them in the term “story logic:” ‘In using the phrase *story logic* [...], I mean to suggest that stories both have a logic and are a logic of their own right’ (Herman 2002, 22–23). The logic that stories have is, according to Herman, one of preference for certain narrative elements, their proportions, and further narrative strategies, while the logic that they constitute ‘[...] is an unreplaceable resource for structuring and comprehending experience, a distinctive way of coming to terms with time, process, change’ (Herman 2002, 23).

Stories, then, are constructed following their own logic of generic preferences to fulfill the (anthropo-)logical function of facilitating understanding. This they can only do by manipulating a given sequence of events, by omitting some details, telling things in a specific order, and, most importantly, imposing a beginning and an ending and thus transforming a mere series of events into what in Aristotelian tradition is usually identified as a whole (*Poetics* 1450b). Events excluded from the story have to be inferred from those included, which is only possible by creating an event structure out of the

story in an ongoing process: What allows recipients to process an event 'is not an individual item in the narrative but the *total* of items up to and including that one.' Narrative thus does not appear as 'a set of events but a *set of sets*: each member of this total set is a set of events which represents the narrative *so far as we have read* (or listened) *up to a certain point in it*' (Holloway 2010, p. 7). Yet knowing what has happened up to a given point in a story is not sufficient for comprehension, because recipients implicitly relate 'to a *final term* in the series of sets, to how the narrative will resolve and conclude' (Holloway 2010, p. 8).

Narrative comprehension therefore depends on both perceiving a series of events under the assumption that they belong to a whole and processing them as parts of an overarching syntactic and causal structure. This means that recipients will operate under the assumption of both a logic of story and a logic of events. Especially when a text does not readily supply one, 'readers, intentionally or not, search for a logical line in such a [fantastic, absurd, or experimental] text. They spend a great amount of energy in this search, and, if necessary, they introduce a line themselves' (Bal 2009, p. 182).

To sum up: The formative elements of narrative deep structure are units that relate to each other logically by consequence. Recipients reconstruct this deep structural coherence from the surface text's sign structure by relating the sequentially ordered information they perceive to an assumed logic of events. In other words, events and the assumption of their relationship within a fabula are what gives an artifact the appearance of a story.

The Topology of Non-linear Texts

The discussion of structure in linear narratives begs the question of whether these results are equally applicable to texts with some degree of non-linearity, which many

single-player campaigns exhibit. After all, agency has been considered one of the defining traits of digital games since Janet Murray's introduction of the term (Murray 1998). As Wardrip-Fruin et al. argue in their critical reassessment of the concept, Murray imagines agency as more than activity for its own sake (Wardrip-Fruin et al. 2009, p. 2). It means exerting meaningful influence on the game world, i.e. being able to contribute non-trivially to its events and to, at least partially, determine its outcome. This is congruent with one of Caillois' definitions of games: their outcome is neither pre-determined nor completely predictable, because it results from player action (Caillois 1958, p. 20).

Not only games, but any artifact that changes under the influence of an interacting agent, cannot have a purely linear structure. Espen Aarseth has identified this kind of artifact as "cybertext," 'a machine for the production of variety of expression' (Aarseth 1997, p. 3). While easily confused with non-chronological narration or semantic ambiguity in linear narratives, Aarseth argues, non-linear texts have a fundamentally different deep structure that is best described as topological. He defines textonomical topology as 'the study of the ways in which various sections of a text are connected,' which entails both 'formal structures that govern the sequence and accessibility of the script' (Aarseth 2003, p. 766) and a system of smaller units, which he calls 'textons,' the basic elements of textuality (Aarseth 2003, p. 767). In the reception process, one or several textons are presented to the reader in an unbroken sequence, which Aarseth calls 'scripton', and with which he defines the formative quality of non-linear texts: 'A nonlinear text is a work that does not present its scriptons in one fixed sequence, whether temporal or spatial' (Aarseth 2003, p. 767).²

To Aarseth, such non-linear texts are no longer narratives, a term he reserves for linear texts, but ergodic texts which require a non-trivial effort for their traversal. His

reasoning is not so much based on the formal structure that is not a fixed sequence, but on the reading process of such texts and their ontological hierarchy.

In a narrative, the discourse consists of the event plane, where the narration of events takes place, and also what I call the progression plane, which is the unfolding of the events as they are received by an implied reader. Here, these two planes are identical, as the reader's progression follows the event line. In an exploratory ergodic text such as hypertext, the progression plane is divorced from the event plane, since the reader must explore actively and nontrivially to make sense of the event plane. In adventure games, the relation between events and progression is defined by a third plane of discourse: a negotiation plane, where the intriguee confronts the intrigue to achieve a desirable unfolding of events. (Aarseth 1997, p. 125)

To rephrase Aarseth's model: in a linear text, the events, their arrangement, and the way they are expressed – fabula, story, and text – are static, having been pre-determined by the author. All textons are in a fixed position, and the reader is presented with one or several coherent scriptons. In a hypertext, the events are static and authored, yet the reader's progression through the text is not. The textons are connected by hyperlinks, and the reader creates the scriptons he or she reads by interacting with the text. The order in which the (still pre-determined) events are encountered is changeable, which means that the author does not control the order in which events are presented, or, in other words, that the text does not have a story-structure. Aarseth calls this, in an earlier yet more detailed paper, the 'absent structure of narrative' (Aarseth 2003, p. 774). In a narrative game, the player 'negotiates' a desirable unfolding of events, i.e. exercises influence not only on the levels of narration or story, but on the events themselves. Aarseth draws the following conclusion:

If the absent structure of narrative is the key problem in literary hypertext, in determinate cybertext the absent structure is the plot. Since without a user there can be no action (*praxis*) in a determinate cybertext, the concept of story (*fabula*) is meaningless. In fiction the story determines and hides behind the plot, which produces the action, whereas in cybertext the plot itself is hidden, and so the discursive causality is reversed: action determines (or seeks in vain for) the plot, which if found does not produce anything interesting, only (barely) closure. (Aarseth 2003, p. 774)

Here, I disagree with Aarseth. He considers all types of non-linear texts at once, yet implicitly privileges experimental literature that completely subverts notions of narrative order. Commercial computer games are more conservative, adhering to a greater degree to narrative traditions. As such, his claims about the quality of narrative and endings are unspecific and unsubstantiated. For the same reason, his rejection of the *fabula*-concept seems premature when discussing games with narrative ambitions (as opposed to works of literature that deconstruct narrative). He is right in suggesting that the topological structure of a “cybertext” (which includes narrative single player campaigns) is not a *fabula* in the sense that the temporal order of its scriptons would be pre-determined. But not all textons can be manipulated to the same extent. In any text that is supposed to produce a coherent story, there has to be the deep structure of Barthes’ cardinal functions. Even in a non-linear campaign, a skeletal structure of narrative exists in the form of pre-determined key points of the story, i.e. some textons will always be used in scriptons at the beginning, ending, or some crucial key point in between. Non-linearity in games manifests itself, structuralistically speaking, in allowing the player agency over the outcome of a cardinal function, in determining one of several possible paths. While it is true that a non-linear text does not have one *fabula*, it seems more logical to consider it – in allusion to Aarseth – a machine for the selection between several *fabulas*. Additionally, the player tries to make sense of the events encountered in

the game world, and, if so prompted by a campaign suggesting narrative cohesion, will look for or even actively introduce a logic of events. What Aarseth identifies as ‘a struggle for narrative control: “I want this text to tell *my* story; the story that *could not be* without me”’ (Aarseth 1997, p. 4), is also a self-conception of the player as an agent of narrative cohesion, of being the force that introduces order to a non-linear, topological artifact. This is equally implicit in the concept of higher-level agency in the vein of Murray: ‘Murray’s agency is not participation, not simply doing what we are expected to do without shaping the larger structure’ (Wardrip-Fruin et al. 2009, p. 2). What can this act of giving shape be apart from a transformation of the game world by introducing a firmer, more stable structure, of giving order to the non-linear arrangement of elements encountered?

My conclusion is that although the structure of a game is topological, i.e. made up of elements that are not ordered in a fixed sequence, the player – in the function that approximates what Aarseth calls the intriguée, the implied addressee of the game’s story (Aarseth 1997, p. 111–113) – will try to establish narrative cohesion by consciously or subconsciously establishing a sequential order. In all types of narrative, this means processing events to arrive at conclusions about their inner logic, but in computer games (and other cybertexts), the player can (or expects to) actively shape the ‘larger structure.’

Types of Rules

To conceptualize how this can be a feature potentially present in all games, we have to take a closer look at how games are structured, both hierarchically and syntactically.

How do games facilitate the **creation of** sequential **structures**? Where in the game logic are **cardinal functions and catalysers** located, and how can they be subject to **agency**?

From our experience with games and the previous discussion of narrative structure and nonlinearity, we can formulate a number of expectations. In games, we can perform (1) actions that are aimless and do not contribute to the 'larger structure,' (2) actions that are required to play successfully, which usually means to proceed in the game, and (3) actions that seem to determine which course the story will take. These three types of actions could be said to loosely correlate with (1) catalysers, (2) cardinal functions in a fixed structure of linear texts, and (3) cardinal functions in the flexible structure of non-linear texts. While (1) might be said to be the level of events, (2) and (3) could be conceptualized as the fabula that emerges from them, and we might assume that they are connected by different types of logical structures.

The three different structures should be present in every kind of game, from crossword puzzles to team sports, if the narrative properties of single player campaigns in virtual worlds are to be explained in terms of a theory of games. If we assumed that structures in games are the product of rules, we should be able to identify different types of rules. There have been other distinctions of rule types, most notably Gonzalo Frasca's (2003, pp. 231–232) distinction of manipulation rules and goal rules, yet neither his nor Ang's (2006) approach allows for an inclusion of narrative into the system of rules. Building on their reflections, I will develop a strictly formalistic model of rules and structures in games.

Caillois' theory lends itself to such considerations because of its wide scope and the resulting high level of abstraction. Instead of describing the perceived properties of games – e.g. the number of players and the required equipment – Caillois categorizes the motivations of playful behavior and identifies two radically different ways of playing, the unstructured *paidia* and the structured *ludus* (Caillois 1958, pp. 52–53).

For the purpose of this paper, his four types of games – *agôn*, *alea*, *mimicry* and *ilinx* – are less relevant. They denote games based upon competition, luck, make-belief, and intoxication or willful loss of control (Caillois 1958, p. 27), a much larger range of activities than covered in other theories of games, which tend to identify all games at least partially with what Caillois calls *agôn*, i.e. games of competition.

His two ways of playing, however, are of crucial importance for the task at hand. Of the two ways of playing, *paidia* is the more archetypical. Caillois characterizes it as free play, the voluntary act of doing something for its own sake and for personal enjoyment. *Paidia* is not governed by fixed rules, does not know winners or losers, and is rarely identified by a proper name. Most early children's games and playground activities are *paidia*. Flying a kite is a good example: it does not have a proper name like "chess" or "soccer," only a description, and has neither rules nor goals.

Ludus, on the other hand, signifies games with proper names that refer to a set of (often commonly known) rules. The most important characteristic of *ludus* is that it is goal-oriented in an intrinsically motivated way. The player imposes an arbitrary goal upon him- or herself, a task without a benefit in the world outside the game. By declaring this task the goal of the game, the player infuses it with meaning and focuses on achieving it. In a similar way as the playing field, the goal is primarily a concept, something which is not easily achieved, and it is the difficulty, not some intrinsic value of the goal, that determines its value, as evidenced by the fact that most rules seem to be introduced to increase the challenge. In all regulated games and sports, such arbitrary goals can be identified, from running a challenging distance to scoring a high number of points. The problems in distinguishing *ludus* and *agôn* arise from the fact that games of *ludus* are often played in some kind of competition, yet Caillois maintains that there is no

inherent connection. His rationale is that winning in a competition presupposes playing as well as one possibly can, which is a goal set to him- or herself by the player.

The second key concept of Caillois' is his definition of games as closed systems. Apart from their voluntary nature (Caillois 1958, p. 17–18), the defining characteristic of all games is their detachment from the real world. Both *paidia* and *ludus* establish a context that is separate from the rest of the world, and actions within it are supposed to have no impact on the outside reality. This 'espace pur' (Caillois 1958, p. 19) is constituted by a common belief, rituals, and voluntary obeisance and could therefore be called a holy environment.³ According to Caillois, the game environment comes into existence when players agree on rules. It is a virtual world, defined by the players in dimensions of spatial layout and the possibilities of movement and actions within it. According to Caillois, this "world" can be a playing field, a game-board, a deck of cards, and the concept is easily applied to a fully-realized computer simulation. The confines and parameters set by the rules define, first and foremost, a mental image of an environment with properties that are not necessarily identical to the rest of the physical reality.

This is easily demonstrated by taking soccer as an example. Its rules are complex and detailed, and, in regulation games, all physical aspects of the playing field and other objects are meticulously defined in their dimensions. These parameters pertain not so much to the essential game as to the competitive sport connected to it, not to *ludus* but to *agôn*. The regulations ensure that, when playing competitively, every playing field is identical, so that no team has an advantage. Just like other, non-material regulations – such as determining the right of kick-off by chance and changing sides after half-time – these rules are aimed at ensuring the 'espace pur,' even in competitive situations where the motivation of *agôn* (winning) might be stronger than that of *ludus* (playing as well as

one can). The importance of the mental representation of the game space and its rules becomes even more evident if we look for the most basic rules of soccer. The game can be played with the most improvised physical equipment. It does not need 22 players, a leather ball, and chalk lines on grass; four people can do it on a street or in a field with nothing but a couple of stones for markers and an empty soda can for a ball. In both cases, the players relate primarily to a mental construct detailed in the rules of the game, of which the playing field and all equipment are merely a physical representation.

As Caillois points out, this construct becomes only tangible when rules are violated (Caillois 1958, p. 18). If the ball leaves the playing field, the game gets stopped. This does not happen primarily, Caillois argues, for reasons of *agôn*, i.e. to prevent unfair advantage, but because the agreement to play only within the predefined confines has been violated (Caillois 1958, p. 84). When the ball leaves the game world, it must be re-introduced in a formal manner, because within the logic of the game, it only exists as long as it is a part of this virtual world. Extending this logic, the game world might be conceptualized as an ideal environment in which only actions that conform to the rules are possible. This not only applies to the physical dimension of all playing material (including the playing field), but especially to the artificial restrictions imposed upon the player as a means of introducing challenges. Prohibiting field players in soccer from touching the ball with their hands means that, in the idealized mental image of the game environment, it would not even be possible to do so. If play is stopped for such a rule violation, it is mainly because the physical world has deviated from the mental image of what should be possible within the game world. Like the ball leaving the playing field, this constitutes a rupture in the fabric of this virtual world, which can only be mended by ritually re-instating the rules through a formalized new beginning. The role of the referee is, on this level, much closer to that of a priest than to that of a judge: stopping

play after a breach of such elementary rules is not a punishment but a necessity, because the fabric of the virtual, ritualistic world agreed upon at the outset of play has been violated.⁴

These observations can be systematized to conclude that there is a set of rules in games that does not make any predication about achievements or goals, winners or losers. Instead, they define on a theoretical, abstract, and logical level what can be done in the game. They define the virtual world, the mental image that players project on the basis of these rules. For this reason, I propose to refer to them as world rules. The existence of this specialized type of rules implicitly presupposes at least one other type of rule which specifies the aim of the game, which, according to Caillois, is the arbitrary goal(s) set by the player(s). This second type of rules, which defines what it means to play successfully, will be referred to as goal rules. Strictly speaking, these rules still do not have to make any predication about winning or losing (functions of *agôn*), but are primarily the definition of what the player(s) set out to achieve. The primary goal rules of soccer would be “score as many goals as possible while getting as few as possible goals against.” While these rules define what it takes to play well and successfully, they do not proclaim a winner. In team sports, this distinction is very theoretical and tentative, yet, as I will show, it is crucial for a systemic understanding of games.

The distinction of world rules and goal rules might seem rather theoretical with regard to games in the physical world. When considering computer games and their digitally simulated environments, it becomes more apparent. In games in the physical world, there is a gap between world rules and the factual, physical abilities of players, which sometimes can seem like the actual defining characteristics of a game. Again, we might distinguish between a regulation sport and the underlying game, a distinction easily illustrated with computer game adaptations of games in the physical world. A

“highly realistic” racing game like *Richard Burns Rally* (2003) simulates all the physical aspects of the sport, from the traction of various types of tires to engine failures and even mistakes of the crew during pit-stops. The polar opposite is a highly idealized racing game like *TrackMania* (2003), which approaches the idea of an ‘espace pur’ by completely ignoring such physical factors and even forgoing collision detection between competing cars, allowing every player to take the optimum racing line even if someone else does so too. While *Richard Burns Rally* simulates what racing in the physical world actually means, *TrackMania* simulates what the pursuit of the purely ludic ideal of racing would be, even though it is impossible in the physical world and is at odds with the agonistic model most of us will associate with racing.

In computer games that simulate virtual, three-dimensional worlds in which the avatar, other characters, and objects move, a major part of the world rules is determined by the parameters of the physics engine. The player’s speed and range of movement are bound to the game world’s virtual laws of physics, which means that there is no difference between the abstract definition of what can be done in the game world and its implementation in the simulation. In computer games that simulate sports, this can lead to the almost paradoxical situation that violations of the world rules of the simulated game (e.g. soccer) are made possible in the simulation, because they are formative of how the game is actually played (as opposed to its ideal set forth in the rules).⁵ Even though their goals and even their game space and play material can widely differ, games that use the same engine often share at least parts of the virtual physics, as evidenced in the almost identical movement of the avatars in *Half-Life 2* and *Portal*.

To sum up, there are two types of rules in games, world rules that define what can be done in the game world, and goal rules which define the challenge and aim of the game.

Structure in Games

As argued in the first half of this paper, we have to identify the structures present in games to determine the place of narrative in games. The distinction between world rules and goal rules gives some clear indications: world rules are a reservoir of possible actions, which one can explore and experiment with in a way that is playful in the very essence of the word. As soon as an aim is introduced, the unlimited options of free play are reduced to a number of favorable actions, turning aimless play into a structured game. The setting of a goal, however implicit, imposes a structure that follows a basic formula: when confronted with a challenge, players will assess the current status and try to correlate possible actions with the requirements of the situation. This usually means experimenting with various combinations of moves or actions until the player finds a strategy to solve the problem at hand. As soon as the goal is reached, the game comes to an end.

World rules apparently do not give structure to what happens in the game world. Unstructured, aimless play, governed only by world rules, might be referred to as the sub-structural level of games. The names of free play scenarios in computer games are very apt in this respect, because “open world,” “free roam,” or “sandbox” modes allow exploration of the game’s possibilities and experimentation with the world rules, yet do not impose any presupposed structure and limitation. But in every game, there is some degree of sub-structural play, some *paidia*. Even in a game with explicit goal rules, there will be several ways of achieving the goal, and experimenting with them is central to the enjoyment of playfulness. Sub-structural actions will be different from one playing of a game to the next, and they are almost impossible to replicate, because the world rules leave so much room for variation.

Narratologically speaking, on the sub-structural level, there are characters and events which in themselves do not form a story, but a kind of reality, a potentially limitless chain of events that has no boundaries to give it shape and coherence. If there are boundaries as the result of goal rules, the events of the sub-structural level between the commencement of the game and the attainment of the goal would be roughly equivalent to Barthes' catalysers, i.e. events that are largely irrelevant for the story.

As already indicated, the introduction of goal rules channels playful behavior towards an achievement and thus creates a micro-structure of a starting situation, a goal, and the strategies implied by their discrepancy. The intrinsic motivation of play with its joyous, aimless behavior becomes supplanted by the extrinsic motivation of challenge and satisfaction. The challenge is often twofold, because the player needs to first figure out which of the countless actions that are possible within the world rules can be applied to the formulated problem, and then execute this strategy successfully (Fig. 1). While some actions will have no perceptible positive effect (light grey in the diagram), several others will lead to the goal (dark grey), with one series of actions emerging as the dominant strategy (black).

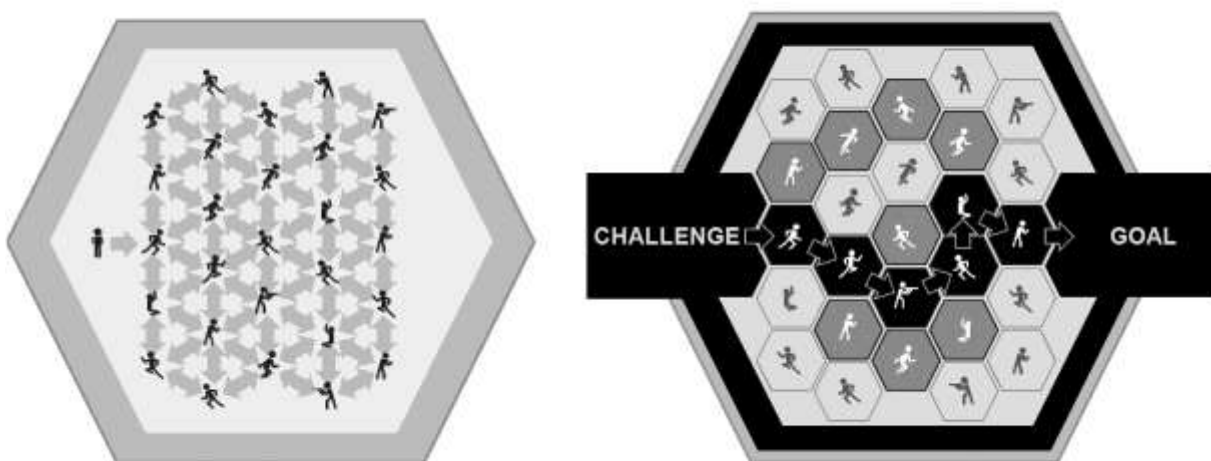


Fig. 1 Sub-structural freedom of action vs. micro-structural teleology

This ludic structure of setting a challenge and achieving a goal correlates to a narrative cardinal function. The initial state is a situation with two or more possible outcomes, and while it might not be entirely relevant how the situation is resolved, the result has established one series of events, a fabula. Implicit and explicit goals in single player campaigns usually work this way, and recounting them equals a re-telling of the game's fabula. The opening of *Half-Life* (1998) consists of Gordon Freeman on his way to work in a tram car, his being late and thus being ordered straight to lab, where he takes part in an experiment. The player may explore the game world as far as possible at this point in the game, yet no action will have any impact on the progression of either game or story, except for those that acknowledge implied goals (leave the tram car, walk down the aisle, approach the guard at the reception desk) and explicit goals (the guard tells Freeman to go to the lab). The micro-structure thus connects its elements by the same logic of consequence that manifests in the cardinal functions of a narrative.

As the example of *Half-Life* has already made clear, neither goals nor cardinal functions usually exist in isolation. They are arranged in structures with a different, more flexible kind of logic, which I propose to call macro-structures. While the micro-structure reduces the almost limitless options offered by the sub-structural level to the ones beneficial to attaining the goal, the macro-structure connects the insular units of self-contained micro-structures in one of many ways. The macro-structure could be said to be governed by contextualizing meta-rules. While a micro-structure formulates an individual goal, the macro-structure defines what the attainment of this goal means. Thus, the three levels can be distinguished by answering three central questions of the player: 'What can I do? What am I supposed to do? Why should I do it?'

In the physical world, most games have iterative macro-structures. All games can be repeated, but competitive games in particular often have an internal structure of iteration. In card games, several hands are played, and in races, a fixed number of rounds have to be finished. Some games like volleyball go beyond this by creating segmented structures which require players to first meet certain prerequisites before allowing them to score points.

Beside this type of macro-structure, which regulates a single match, there are many forms that construct more complex and far-reaching structures by connecting individual matches to a greater whole. In leagues, tournaments, and multiple event contests like decathlon, individual games or matches are performed in a sequence, and only at the end of this series is a winner determined. The outcome of each individual game can either be added up to a final score or determine whether players advance to a following round. The rules which govern these processes of calculation or progression are separate from those of the individual games: soccer and chess can both be played in tournaments governed by identical rules. At the same time, the rules of soccer and chess do not change within the different meta-games of tournament or league. What does change is merely the significance attributed to the outcome of a single game within the greater structure.

While the diversity of macro-structures from games in the physical world is also encountered with multiplayer computer games, single-player campaigns exhibit a marked preference for sequentially organized macro-structures. Such macro-structures often are modeled after leagues or tournaments, offering the player a series of challenges of increasing difficulty. The logic is very simple and linear, with only one goal and one possible way of achieving it: the player has to reach the goal to advance to the next round with its more challenging goals. This structure only superficially resembles

the iteration model of games in the physical world. Usually, there will be a final challenge, epitomized in the boss fights of early shoot 'em up and fighting games.

It would exceed the scope of this paper to present an argument about the reasons for this teleological type of structure. What it introduces to the realm of games, however, is the notion of an ending, something that is notably absent from games in the physical world. By finishing a game of chess, we only end a match of this game. Mastering the final challenge in a computer game's single-player campaign is frequently understood as "finishing the game."⁶ One can replay the game, yet the campaign signals an implication of closure. Even if we would agree with Aarseth's previously quoted assumption that these closures are weak compared to those of most linear narratives, the existence of a final challenge indicates consequentiality and cohesion.

Here, we can perceive a marked resemblance to the causality relations of cardinal functions. The individual challenges that form the macro-structure are connected by a logic which is interpreted by the player as a chain of consequentiality and, thus, a fabula. The basic forms of such macro-structures might be said to only suggest narrative shape where, in fact, the simple game logic of a tournament actually determines the progression from one level to the next. If the player needs to successively master every challenge, the macro-structure is a rule-system which only adorns the information about each victory with some additional (narrative) context.

A truly narrative macro-structure will abandon the logic of total success at least in some places, replacing it with either conditional accomplishments or unavoidable failure. An adventure game can formulate more complex and abstract goals than 'finish first.' Goals such as 'investigate person A' or 'fetch item B' are inherently more complex, as they imply the possibility of attaining the goal in a variety of ways. Their outcome might even be gradual, allowing the player to proceed in the game even though not all

goals have been fulfilled. The most marked deviation from game logic on the macro-structural level is to construct a situation in which it is impossible for the player to win, yet have the game continue. This decoupling of success and progress introduces into games one of the most essential elements of narrative: the protagonist's susceptibility to failure. Situations like the ending of the *Half-Life* level "Apprehension," where the avatar is inevitably caught by his opponents, allow the game to introduce new and different rules or other changes. In such instances, story logic overrules game logic: the macro-structural connection between two micro-structures runs counter to the conventions of games, yet produces a more interesting fabula and character. This effect is even amplified by having a non-linear macro-structure and giving the player influence over the outcome of crucial cardinal functions. That this strategy is aimed at improving the narrative component of a gaming experience is quite apparent with games that allow choices at the very end, maybe even without offering a single wholly positive alternative (Backe 2010) – *Half-Life*, again, is a prime example. Ending on an emotionally controversial dilemma does not aim at giving the player a feeling of success after beating a series of challenges, but clearly strives for the construction of a story with meaningful narrative closure.

By conceptualizing games as having three distinct structural levels, a number of theoretical problems can be solved or ameliorated. The free play or *paidia* of the sub-structural level allows the player to experiment with rules and game-world, which produces the endless variety of play that constitutes the game's events and the catalysers of its fabula. The micro-structure imposes goals that act as cardinal functions on a narrative level by identifying singular, meaningful situations with potentially relevant outcomes. The macro-structure connects the major events of the micro-structure. Here, rule-based game logic and story logic can be freely combined to form a

structure that arranges goal-oriented play situations (micro-structures) in a way that results in a meaningful fabula (Fig. 2).

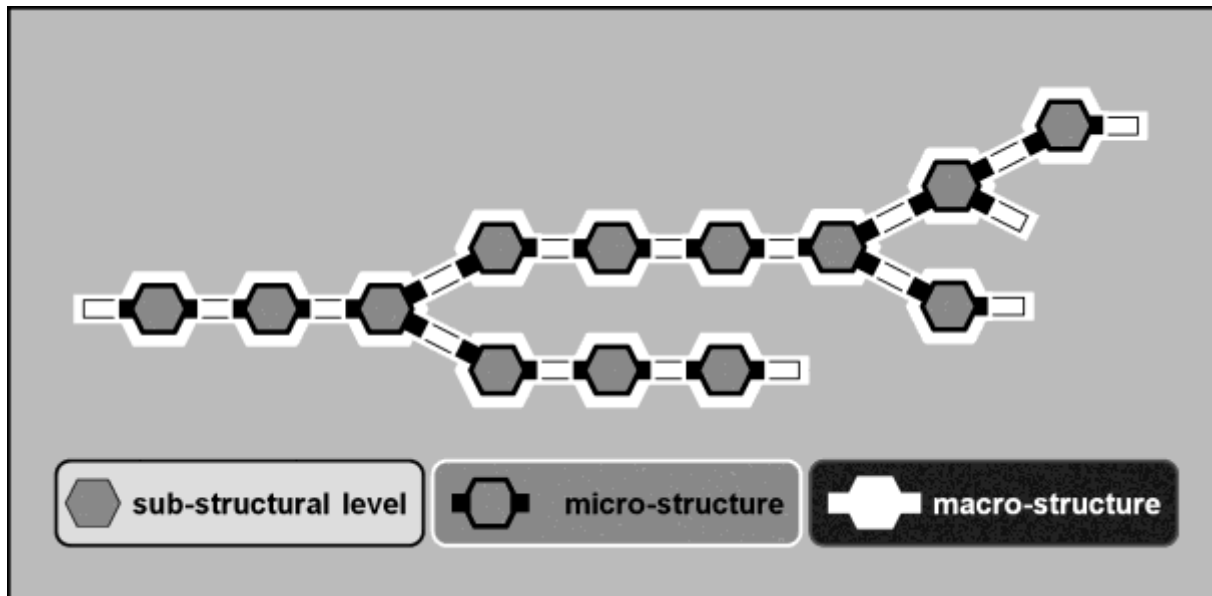


Fig. 2 Micro-structures embedded in a macro-structure

Non-linearity and Types of Influence

In a final step, I will briefly consider the way we can conceptualize higher-level agency in the model just outlined. In non-linear macro-structures, the player (consciously or unconsciously) creates one series of events from several possible alternatives, thus actualizing one of several latent stories from Aarseth's 'machine for the production of variety of expression.' Most aspects of this kind of non-linearity have been discussed at length, for example the different topologies of tree-shape, hub-shape, labyrinth and so on (Ryan 2001, p. 246–258). What I offer here is a typology of the means by which the player can influence the way the fabula progresses, i.e. a system of agency over the macro-structure.

Aarseth has stated, as discussed above, that while the selection mechanisms of hypertexts are based on choice and coincidence, cybertexts (and thus computer games)

offer the additional possibility to actively negotiate the outcome of situations. What this means is that the quality with which the player performs a challenge can be measured, rated, and stored by the game. While even literary hypertexts can include 'conditional links' that check a database for previous events, they can only record player choices (Aarseth 2003, p. 771). In single-player campaigns, any number and kind of user actions can be stored and evaluated to decide how the story progresses. The possession of an item, a noteworthy victory or defeat, the appearance, race or gender of the avatar – anything can be used by the game's author as a selector for a branching in the story structure. The use of databases makes those performance-based selectors readily available, so they can have an immediate effect, be time-delayed or even cumulative. The ending of a game may depend, as we will see in the discussion of an example, on a certain style of play, making the final cardinal function dependent on the sum total of a large number of previous actions.

Typically, agency over the macro-structure is executed in one of three ways. The first possibility, decision-making, is (like in hypertext narratives) a conscious choice between explicit alternatives.⁷ The second possibility is performance. The game measures the performance of the player in a given situation and uses degrees of success at a later point in time to select between alternative outcomes to a cardinal situation.⁸ The third and most oblique mode of agency is based upon the choice and design of the avatar. In this case, the game selects an outcome to a situation based on an evaluation of the avatar, which can include initial choices such as race and gender as well as overall behavioral patterns, often measured in terms of karma or other moral concepts.⁹ Obviously, this mode of influence is only found in games with at least some role-playing elements, yet it is the most complex of the three, as it accumulates many instances of decision-making and performance that are directed both towards the game and the

story aspects. Deciding to play as an intelligent, peaceful person and developing their social skills means not only choosing how to play the game, but also what character one wants the protagonist of this story to be and how one envisions one's alter ego in the game world.

These three factors can have a highly complicated relationship with one another – especially avatar design and performance are quite frequently at odds – yet I want to discuss them here solely in their function as modes of agency. A simple typology can be derived from the fact that they can be used alone or in conjunction in any given game. The result is a system of eight distinct types of agency over the macro-structure, based on the means by which players can participate in and influence an interactive story (Fig. 3).

	Decision	Performance	Avatar
Type 1	static →	static →	static →
Type 2	dynamic ↙	static →	static →
Type 3	static →	dynamic ↙	static →
Type 4	dynamic ↙	dynamic ↙	static →
Type 5	static →	static →	dynamic ↙
Type 6	dynamic ↙	static →	dynamic ↙
Type 7	static →	dynamic ↙	dynamic ↙
Type 8	dynamic ↙	dynamic ↙	dynamic ↙

Fig. 3 Typology of games, based on types of user participation

All eight types are found in successful, well-known mainstream games, so even though some are less frequently used than others, none are merely theoretical. As stated before, completely linear macro-structures form the overwhelming majority. Types four, six and seven, which use two out of the three possibilities, are comparatively rare, probably because the implementation of two of the possibilities is almost as complicated as using all three, which makes type eight as frequent as types two, three and five.

Demonstrating all modes of influence and their interrelation in the various types would exceed the limits of this paper, so one especially complex example will have to suffice. *STALKER: Shadow of Chernobyl*, a first-person shooter with role-playing elements, uses all modes of influence and thus belongs to type eight. *STALKER* is a free adaptation of the short novel *Roadside Picnic* by Arkady and Boris Strugatsky (1972) and the movie by Andrei Tarkovsky (1979). Its story is set in an alternate reality where a second explosion at the Chernobyl nuclear power plant has made a whole region completely uninhabitable. Although the military has sealed off the area, rumors of an all-powerful artifact attract fortune hunters.

The avatar is one of them, and the player guides him through an inhospitable world full of mutated animals and humans. The macro-structure is, up to a point, completely linear, a series of micro-structures in the form of quests given to the avatar by a few important non-player characters. Each main quest has to be fulfilled before the next one can be attempted, resulting in a fabula that initially follows the game logic of continuous success. Sub-structurally, though, the game leaves much room for experimentation with the world rules. The game-space is firmly delimited by impenetrable fences, and many areas are not initially accessible, but apart from this definition of the game space, the world rules not only allow exploration but encourage it. The various areas of the game world must be traversed on foot, which results in the

avatar almost inevitably coming into contact with objects or entities that lure or force him into interaction. Furthermore, the player can accept side-quests from a large number of non-player characters. The catalyst-status of all these events is stressed by the fact that the side quests are algorithm-based and their quasi-random nature immediately apparent.

The exposition is simple, yet effective. The avatar has lost his memory, but he dreams in great detail of the Chernobyl power plant and assumes that he will find clues to his identity there. The game's overarching cardinal function is thus well-defined: the avatar needs money, equipment, and help to gain access to the power plant, where he might face the mythical artifact, a monolith generally referred to as "the Wish Granter," to restore his memory.

About two thirds in the game, the avatar has gathered all the necessary equipment and can start the final journey into the 'Zone of Alienation.' At this point, he learns about an informant who might have some additional information about the power plant. The player now has to decide between two physical paths through the game world: either proceed directly to the center of the Zone or backtrack to where Prowodnik, the informant, lives. Only by meeting Prowodnik do the avatar and player find out that the monolith is only a decoy and that the real bounty lies behind a secret door in the depths of the power plant. Even though the door might be found by accident, a player who has not been patient enough to visit Prowodnik will be unable to open it.

While many games offer a "good" ending and one or several less desirable alternatives, *STALKER* includes complex mechanisms for interpreting the player's behavior and uses them to choose an ending that mirrors the way the game has been played. A patient and curious player can reach the secret door, where both the avatar's identity and the back story of the Zone are disclosed. The player then has to decide

whether to participate in the conspiracy surrounding Chernobyl or to end it, so that a combination of role-play (i.e. character-based agency) and decision-making lead to the two endings that offer the most comprehensive account of the events in the game world.

By acting impatiently, the player will face the monolith, and the avatar will formulate a wish. The player has no direct influence on what the avatar wishes for – there is no choice involved. On the contrary, the game builds a profile of the avatar's character by analyzing the way the game has been played, and has the avatar express a corresponding wish. The way the player made use of his or her freedom on the sub-structural level thus becomes one of the decisive factors of the game's story. Their apparently random nature stresses that they are the arbitrary goals necessary for any ludic game, but *STALKER* does not limit their significance to the micro-structural level. They function as indicators of a playing style which is taken as an act of role-play, the expression of the avatar's personality through the actions of the player. Just as, in games in general, the attainment of the arbitrary goal is only a way to create a challenge, it becomes a gauge for the avatar's overall behavior in *STALKER*, just like catalysers in literature.

Three of the wishes are determined by judging the avatar at the moment he faces the monolith (and thus the behavior implied by his status): a wealthy avatar will ask for riches, a misanthropic avatar without any friends and a bad reputation will wish for the destruction of humanity, a philanthropist will wish for the salvation of the Zone. If the game has been played in a nondescript or idiosyncratic way, the avatar will ask for immortality. The fifth wish overrules all others and is selected if the player has resolved the conflict of two rivaling factions in one of the final levels by killing both their leaders, the most involved and challenging which is interpreted as a wish for ultimate power. Whatever the avatar wishes, the wish is fulfilled, yet in a cynical and cruel manner,

crippling or killing him. In this fashion, the player influences the way in which the story progresses and ends by all possible means – through decisions, performance and character development (Fig. 4).

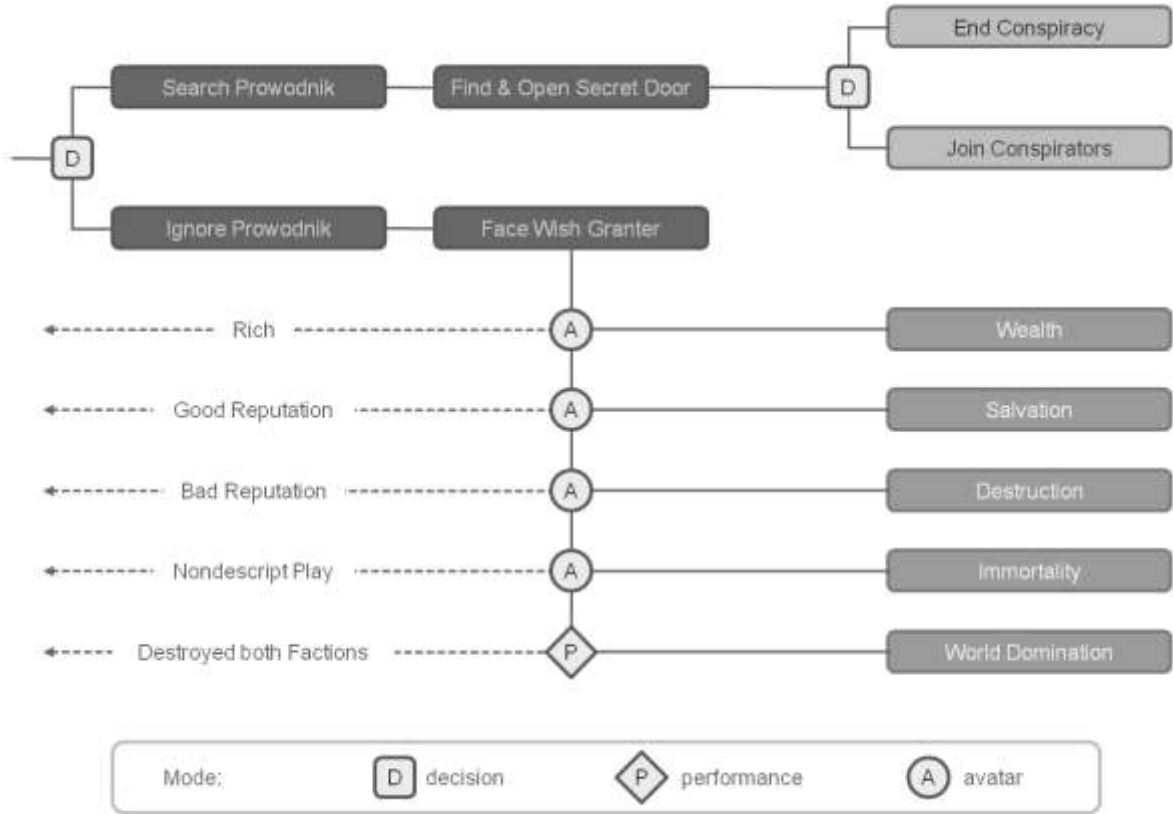


Fig. 4 Influence on the ending in *STALKER*

Conclusion

The conceptualization of narrative as a component of game structure outlined here is only a simple framework that leaves many questions untouched. By focusing exclusively on deep structures, especially the surface text is completely omitted from analysis. As stated initially, this approach is not meant to compete with or even replace others, but to possibly interface between them by stressing systemic analogies between games and narrative which frequently go unnoticed. As the discussion of agency within the parameters of this model has shown, it offers a reasonably comprehensive framework

which might be used in the future to further our understanding of other unique properties of computer games.¹⁰

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- ¹ In my own argument, I will use the narrative terminology of Mieke Bal with its distinction of event, fabula, story, and text (which will be discussed in the section 'Structure in Narrative'). I have tried to point out divergent uses by other quoted theorists, but some concepts cannot be clearly delimited, especially "narrative" used as an adjective or adverb in a necessarily inclusive sense (Ryan 2005). The concepts of play and game will be used according to the definitions of Roger Caillois (which will also be explained), and when I refer to computer games, the implied paradigm is that of single-player campaigns of games in virtual worlds.
- ² It bears noticing that this modular conception of texts is very similar to the basic ontology of narration in film, which is comprised of shots (textons in the sense of basic, indivisible unit) and sequences (scriptons, which delimit and combine individual shots). This logic informs new approaches in film narratology (Verstraten 2009, p. 14).
- ³ This assumption has some far-reaching implications and seems to exclude gambling. Caillois (as Huizinga before him) struggled to fully reconcile gambling with his idea of games, although Jesper Juul resolved the problem by explaining gambling as a game to which an outside effect – winning or losing money in the real world – is attributed (Juul 2005, p. 41). Applying this concept to the model presented here, I have argued that gambling can indeed be understood as a two-level-game, in which a game of *alea* is the subject of a bet, which entails the risk of losing something precious, which would be *ilinx* in the categories of Caillois (Backe 2008, p. 266–275).
- ⁴ Games in which forcing the opponent off the playing field is a way of scoring (e.g. Sumo wrestling) might be seen as a contradiction of the sanctity of the game space. There are two valid explanations: Assuming that the ring is the actual border of the game space, one could argue that the game's goal is to displace the opponent from the game world, leading not to a ritualistic re-commencement of the game, but the equally ritualistic declaration of a winner. A different explanation would be to not equate the ring with the game space, but rather see it as an object, comparable to a hoop or goal in ball games, while the game world would rather be the platform of clay and sand on which the ring is marked.
- ⁵ Cheating in computer games usually means actively and unilaterally changing the world rules by giving the own avatar the ability to become invulnerable or to walk through walls, even outside the game space.

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- ⁶ There are many exceptions to this observation, most of them revolving around open-world games and single-player campaigns with a high degree of non-linearity, yet it would lead far too far to go into details here. The crucial difference alluded to here is that a player statement that is absolutely commonplace when talking about computer games – ‘I finished *Dragon Age* today, but I’m gonna replay it to see the other endings’ – could not be made about games in the physical world.
- ⁷ Such explicit choices are usually made using alternatives in dialogues, an intra- or extradiegetic interface, actual paths, or optional missions. Mostly, effects are instantaneous, although there are noteworthy exceptions, like the Polish role-playing game *The Witcher* (2007), in which several decisions will have grave repercussions at a later time. The effect these decisions will have on the narrative dimension of characters and events are usually apparent.
- ⁸ In *Freespace 2* (1999), the rate of success from one mission will sometimes be reflected in the following one, because allies protected in an earlier fight will support the player. More common are games that introduce slight changes to the fabula on different difficulty settings, such as the ‘Legendary Ending’ of *Halo*, which is only attainable on the highest level of difficulty. In both cases, the quality of the player’s actions has a pronounced effect on how the story progresses. Unlike explicit choices, performance-based agency is often not immediately apparent to the player.
- ⁹ Creating and developing an avatar fuses narrative and game-oriented behavior. The decisions involved in this process are not necessarily binary or limited to a point in time but are, by their very nature, made and re-evaluated throughout the course of a campaign as they have long-time impact on the character and the abilities of the avatar. A fine example is *Dragon Age: Origins*, which not only allows the player to choose the race, gender and background of the avatar, but offers six widely different prologue levels mirroring these initial choices. Actually playing the individual origin stories has a drastic effect on the overall story and its perception by the player: even if the central quest remains the same, it has a different dynamic for a prince who seeks out glory as opposed to a female elf who is fleeing justice because she killed a noble in self-defense.
- ¹⁰ I am indebted to Daniel Vella and Markus Engels for their immensely helpful feedback and suggestions.