

Towards Computer Game Studies

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Introduction: Ludology¹ and Narratology

It is relatively stress-free to write about computer games, as nothing too much has been said yet, and almost anything goes. The situation is pretty much the same in what comes to writing about games and gaming in general. The sad fact, with alarming cumulative consequences, is that they are under-theorized; there are Huizinga (1950), Callous (1979), Ehrmann (1969), and Sutton-Smith (1997, Avedon and Sutton-Smith 1971) of course, and libraries full of board-game studies, in addition to game theory and bits and pieces of philosophy — most notably Wittgensteins — but they won't get us very far with computer games. So if there already is or soon will be a legitimate field for computer game studies, this field is also very open to intrusions and collocations from the already organized scholarly tribes. Resisting and beating them is the goal of our first survival game in this paper, as what these emerging studies need is independence, or at least relative independence.

Response by J. Yellowlees Douglas

Eskelinen makes some compelling points in "Towards Computer Game Studies" that traverse ground that has remained virtually untrammelled. Surprisingly so, given the recent explosive growth of PC and videogames — in 2001, Americans began to lay out more cash for interactive games than for evenings at the cinema. And Markku's uses of both Genette and Aarseth help make games like *Tetris* and *Civilization III* intelligible in theoretical terms. In the end, treating all computer games as if they fall tidily into a single genre is a heroic gesture, intended to lay the foundation for a sound critical understanding of what transpires when a user picks up the phone and hears a threatening message from *Majestic* on the other end of the line, as well as for what's going on during the forty hours you've just

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It should be self-evident that we can't apply print narratology, hypertext theory, film or theater and drama studies directly to computer games, but it isn't. Therefore the majority of the random notes and power-ups that follow will be spent modifying the presuppositions firmly based on the academic denial of helplessness. Obviously I need a strategy, and fortunately I have one to use the theories of those would-be-colonizers against themselves. For example, as we shall soon see, if you actually know your narrative theory² (instead of resorting to outdated notions of Aristotle, Propp, or Victorian novels) you won't argue that games are (interactive or procedural) narratives or anything even remotely similar. Luckily, outside theory, people are usually excellent at distinguishing between narrative situations and gaming situations: if I throw a ball at you, I don't expect you to drop it and wait until it starts telling stories.

It's good we don't have to start from scratch, as there have been attempts to locate, describe, and analyze the basic components and aspects of the gaming situation, which are essentially different from the basic constituents of narrative and dramatic situations. I'm thinking here of Chris Crawford's early classic *The Art of Computer Game Design* (1982) (and its companion of games and computer games in particular), Gonzalo Frasca's (Frasca 1998, 2001) and Jesper Juul's (Juul

spent with *Grim Bendango*.

But while *The Sims* and *Black and White* are closer to say, a game of chess than to an episode of *ER*, a growing number of games use narratives as affective hooks to draw readers in and hold their interest, and to appeal to a wider audience (see the Douglas and Hargadon chapter for on-line surveys calling strongly for more backstory), an audience not necessarily interested in the gratifications offered by shoot-'em-up skill-based games or by strategy-based simulations. *X-Files: The Game*, for example, like *The Last Express*, derives its entire intelligibility and appeal from blending the trapings and satisfactions of traditional narratives with the exploratory and agency-based pleasures of interactivity. In both *X-Files* and *Last Express*, as well as *Sega's Shenmue*, virtually none of the action represents

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1999, 2000) papers and theses on ludology, and most of all Espen Aarseth's articles on computer games and cybernetic theory (Aarseth 1994, 1997, 1998a, 1998b, 2001a, 2001b).

To begin, I'd like to demonstrate or test a safe and painless passage from narratives to games by trying to "exhaust" classic narratology (Chatman 1978, 1990; Genette 1980, 1988; Prince 1982, 1987; Bordwell 1984). Most naive comparisons between narratives and games usually result from too narrow, broad or feeble definitions of the former: usually it comes down to discovering "plots" and "characters" in both modes — games and narratives. However, we should know that's not good enough, as we can find those events and existents in drama as well, which is clearly its own mode. The minimal definition of narrative derived from Gerald Prince and Gerard Genette states basically that there must be two things or components to constitute a narrative: a temporal sequence of events (a plot, if you want to water down the concept) and a narrative situation (with both narrators and narratees for starters). I think we can safely say we can't find narrative situations within games. (Or if we sometimes do, most probably in *Myst* or *The Last Express*, the narrative components are then at the service of an egodic dominant).

In short: a story, a backstory or a plot is not enough.

a test of any kind of skill, dexterity, or problem-solving. In fact, unlike all other games, your ability to remain within the other-world of the interactive depends mostly on your continued willing suspension of disbelief and not on your ability to out-manuever, out-serve, out-gun, or out-run your opponents.

Ultimately, looking to either narratology or to games for our understanding of interactives will offer only a highly limited return, since we're looking at essentially a still-developing range of genres in a new medium. Just as film is more than the sum of image, mise-en-scene, sound and narrative, interactives can be both more than the sum of game or narrative. In *Shenmue*, for example, players can track Ryō's search for his father's killer, but they can also elect to live in Ryō's world and simply interact with its constituents — 332 characters

A sequence of events enacted constitutes a drama, a sequence of events taking place a performance, a sequence of events recounted a narrative, and perhaps a sequence of events produced by manipulating equipment and following formal rules constitutes a game. This is really very trivial but crucial: there are series and sequences of events that do not become or form stories (in *Tetris*, for example). The reason for this is equally simple.³ In games, the dominant temporal relation is the one between user time and event time and not the narrative one between story time and discourse time.

Regarding the fallacy of recognizing similar characters or existents in games, drama, and narratives, the situation is similar. In computer games you can operate your character, if there is one in the first place,⁴ perhaps also discuss with other characters or voices and the characters can be dynamic and developing (not only in an interpretative sense), such as by changing themselves with level points and power-ups. Such "characters" are entirely functional and combinatorial (a means to an end), instead of any intrinsic values; they have only use and exchange values to them. These entities are definitely not acting or behaving like traditional narrators, characters, directors, and actors, their supposed counterparts in literature, film, and the stage.

(including several animals) — hang out at the local arcade visit the family shrine, work, browse the contents of your fridge, and care for your ailing kitten. Is this a game? A narrative? Or something else altogether?

Regarding Richard Schchner's Response

Richard Schchner's response to Douglas and Hargadon's essay (which also responds to Markku Eskelinen's essay) is found on p. 192.

Eskelinen Responds

I don't think Richard Schchner's "I don't think" carries the intellectual weight it was perhaps intended to carry. In fact I don't think it even qualifies as a commentary.

<http://www.dedot.com/threads/frisperson/eskelinen2>

To summarize: different existents, different event structures, and different situations. On the other hand, narratology is not completely useless, if its key concepts and distinctions are not taken for granted but traced back to their roots. In the following pages that is exactly what we try to do.⁵ The elementary categories of classic narratology are transformed into an open series of ludological components, if for no other reason than to further specify the features inherent to games.

Before going into the finer points of ludology, the more or less peaceful coexistence of local traditions and global technologies should also be acknowledged. There's no guarantee whatsoever that the aesthetic traditions of the West are relevant to game studies in general and computer game studies in particular. It's tempting to assume that one reason for the never-ending series of unsuccessful game definitions and disciplines is the need or urge to make clear-cut distinctions and compartmentalize aesthetics. To take an obvious counterexample: according to the *Narjyasatra* every art contains parts of other arts.⁶ It would be almost equally sensible to speculate on Japanese aesthetics (after Keene 1995) and claim that a tradition that emphasizes the values of perishability, suggestion, irregularity, incompleteness, and simplicity, is perhaps better suited to approach computer games than its Western counterpart.⁷

The Gaming Situations⁸

According to David Parlett, formal games are systems of ends and means (Parlett 1999, 3). The latter part consists of specific procedural rules of how to manipulate the equipment (pieces or tokens or whatever). In computer games there are events and existents, the relations and properties of which the player has to manipulate or configure in order to progress in the game or just to be able to continue it. Events, existents, and the relations between them can be described at least in spatial, temporal, causal, and functional terms. It's equally self-evident that the importance of these dimensions varies from game to game and sometimes also within the phases and levels of an individual game.

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A quick look at Espen Aarseth's typology of cybertexts (Aarseth 1997, 62–65) should make us see that the dominant user function in literature, theater and film is interpretative, but in games it is the configurative one. To generalize: in art we might have to configure in order to be able to interpret, whereas in games we have to interpret in order to be able to configure, and proceed from the beginning to the winning or some other situation. Consequently, gaming is seen here as configurative practice, and the gaming situation as a combination of ends, means, rules, equipment, and manipulative action.

Jacques Ehrmann understood games as economy, articulation, and communication, and the player as both the subject and the object of the game (Ehrmann 1969, 55–57). The levels of articulation as specified by Warren Motte — the relations of player-to-game, player-to-player and game-to-world (Motte 1995, 25) — give important clues concerning the elementary differences between games and narratives. To take only one example: in multiplayer games the positions of players constantly affect each other. Such an arrangement would be very unusual but not impossible to execute in narrative fiction. The way I read *The Idiot* (Dostoevsky 1955) would then change other peoples' *Idiots*, or their readers' possibilities when reading them, and vice versa. That wouldn't make much sense, but in games such a practice has always already been in existence, and the current massive multiplayer games may very well be the most important change in audience structure since the invention of the choir, as Espen Aarseth (2001b) recently suggested.

Accordingly, we can distinguish the static user positions of literature, film, and average drama from the dynamic ones of games and certain installations and performances. We should also mention mobile positions in the wake of mobile gaming and games such as the recent *Nokia Game⁹* that contacts the player through multiple channels (text messages, television, the web etc.) and demands action.

As we already stated, games have other than mere interpretative goals. These goals can be reached by traversing, negotiating, or otherwise overcoming a series of obstacles and gaps. When studying narratives

as systems of gaps, Meir Sternberg (1978) made three heuristic distinctions: gaps are either permanent or temporary, focused or diffused, and either flaunted or suppressed.¹⁰

I think computer games can also be described that way, with the all-important exception that these gaps are not static and interpretative but ergodic (Aarseth 1997, 1) and dynamic: they need action to be encountered, closed, and dealt with. Aarseth's four user functions (interpretative, explorative, configurative, and textonic (Aarseth 1997, 60–62)) are useful in specifying what kind of action is required from the player. In practical terms this means options such as finding paths, completing prefabricated relations, or adding new game elements for the other players to struggle with. The resulting typology of 32 possibilities could then be used to map out both qualitative and quantitative differences in the information given to the player in different stages and phases and levels of the game.

Focalization is one of the key elements of the narrative situation in classic narratology. In its most abstract sense, it's a channel for narrative information and is ultimately based on the assumption of the uneven distribution of knowledge. Focalization is accompanied by the category of distance that regulates the amount (too much or too little) of information distributed through the channel, or two channels (audio and visual), as in film. This is exactly the level where I would like to draw a few parallels between this ludology-in-progress and narratology. One could argue that information is distributed and regulated very differently in games than in narratives, as in the former it's also invested in formal rules. In some cases the knowledge of these rules is all that's needed to succeed in the game (in *Tetris* for example). It's important to understand that rules are not conventions. One can by all means change between conventions while reading a narrative, but one cannot change the rules of the game while playing.¹¹ The situation is more complex however, since it is common that the player has all the information needed but lacks skills.

In Genette's (1980, 215) narratology there are three main categories — narrative level, person, and time of

the narrating — that specify the narrator's position or the coordinates of narrative acts. Parallels are pretty obvious, or at least easy to draw, as it would be only sensible to note the arrangement of levels in a game, and whether or not the player is represented by a character in a game as well as the player's possibilities to time her action.

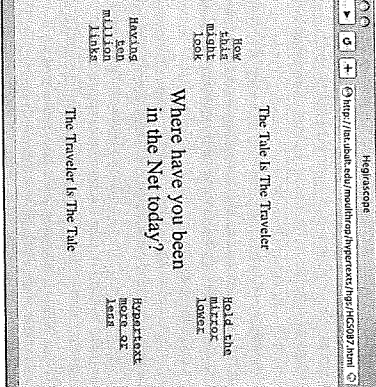
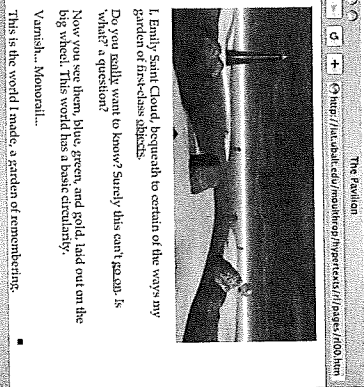
Aspects of Time in Computer Games

According to the famous statement of Christian Metz, "one of the functions of narrative is to invent one time scheme in terms of another time scheme" (Metz 1974, 18). Contrary to this, in games there's only one necessary time scheme, the one already noted: the movement from the beginning to the winning or some other situation. In cases where another time scheme is invented, it is not as important as the first one.

Still, we could split this progression into two interplaying registers and argue that the dominant temporal relation in (computer) games is the one between user time (the actions of the player) and event time (the happenings of the game), whereas in narratives it is situated between story time (the time of the events told) and discourse time (the time of the telling). The key concept here is the dominant.¹² As we all know, narratives such as Stuart Moulthrop's *Hegirescope* (1995) and Reagan Library (1999)¹³ can utilize both user and event times for narrative purposes, and games like *The Last Express*¹⁴ can use story and discourse times for gaming purposes (see sidebar).

Despite these possible hybrids, the underlying restriction remains the same: there's no narrative without story and discourse times and no game without user and event times — everything else is optional. In the course of a game the player encounters temporal phenomena or events with different durations, speeds, orders, and frequencies — and some of these must be manipulated or configured to move from the beginning to the winning or some other situation. Even though game time doesn't have much in common with narrative time, this does not prevent us from observing similar temporal categories in both modes, as order, repetition or speed are not narrative or game-like in themselves.

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4, sidebar 1-2. Screenshots from Stuart Woodthrop's *Region Library* (1999) and *Hegirascope* (1999).

In formal narratology,¹⁵ events are divided into actions and happenings based on their relative kernels and satellites based on their relative importance. There's also a difference between punctual acts and more durational actions (Chatman 1978, 32-56). Events can, of course, be more or less separate or connected, and we can borrow the three elementary possibilities of combination from Claude Bremond: embedding, enchaining, and joining (Bremond 1980).

In our case, games can be differentiated from each other on the basis of which events can or cannot be manipulated, which parts and dimensions of events can be manipulated, and/or how long and how deeply. An almost ready-made set of temporal relations can be derived from print and film narratives — this act gives us six categories to study: order, speed, duration, frequency, simultaneity, and the time of action. It's very probable there exist other noteworthy temporal relations, but I'll begin with these.¹⁶

Let me note in passing that the manipulation or completion of multiple relations takes place in time — a kind of general economy of games — but here we are dealing only with the restricted economy of manipulating temporal relations. The importance of mutable temporalities varies from game-to-game, and there are games that are more dependent on other kinds of variables. For example, turn-based strategy games such as *Civilization* seem to favor causal relations over temporal ones to create event structures that have remarkable similarities to complex board games. We are talking here about quantitative differences at one extreme there are multiple and highly interdependent chains of events with a complex tactical and strategic calculus and at the other end looser chains of completed action episodes or stimulus-response cycles with no or minimal cumulative consequences. Taking into account the demands of gameplay (a well-balanced combination of tempo and cognitive tasks) it makes sense that the former games utilize intransient time and the latter transient time.

Order. In computer games this is the relation between user events and system events, or the actions of the player and their interaction with the event structure (happenings) of the game. In some cases there's only one sequence of events, and the player has to act accordingly, in the sense of keeping up with it for as long as is humanly possible. *Tetris* (like many of its arcade relatives) best exemplifies this type of game. In other cases, commonly in exploration games such as *Doom*, order is a tripartite combination of events, negotiation, and progression (Aarseth 1997, 97-128); in these cases the player must find and test possible event sequences until the right one is found and the

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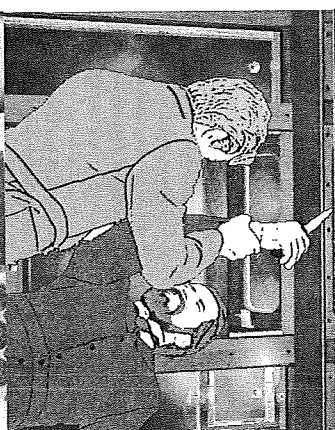
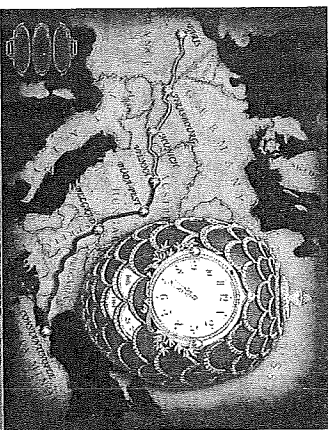
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game can continue. So you either follow the order or spend your time finding it. In cases where the player cannot affect the order of events there is still the difference between variable and invariable sequences of events. In *Tetris*, where those objects just keep falling, the player can't know in what exact order they'll follow each other. This is also one of the simplest ways to limit or prevent anticipation.

Frequency. This factor concerns the repetitive capacities of the game. Basically, both events and actions (or to be precise, the player's chances for taking action) may happen only once or an unlimited number of times. There may also be a limit to these recurrences, a kind of a middle ground between those two extremes. In some computer games, especially in role-playing games such as *Ultima Online*, at least some actions are irreversible and one cannot go back to a previous situation and undo the changes. In other kinds of games, the player can by all means keep banging his head against the wall until a break occurs somewhere. Sometimes it is even advisable. We could also describe recurring events in terms of their determination (the span of time in which an event or set of events recurs), specification (the rhythm of recurrence of the event or set of events), and extension (the duration of the recurring event or set of events) (Genette 1980, 127-140).

Speed. This aspect concerns pace. As we know, one of the great gifts computers brought to gaming is their superb ability to keep pace. To once again borrow a concept or two from Espen Aarseth, we can say that the main difference here is between transient and intransient games. In the former, the computer controls the pace and in the latter the player controls the pace. On the other hand, this concerns only the agent of speed. There are at least two other relevant dimensions of speed: its steadiness (for some reason the obvious alternative to this is almost always acceleration, not deceleration), and its importance as a goal in itself (as in some sports games).

Duration. This variable contains at least three aspects. First, Richard Schechner distinguishes between event time and set time (Schechner 1988, 6-7). In the former case, the game is over after all the



4, sidebar 3-5. Screenshots from *The Last Express*, designed by Jordan Mechner (1997). (Jordan Mechner, Phoenix Licensing)

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events are properly traversed, and in the latter there's a temporal limit to all this and the winner is the one who's in the better position when the set time is up. Second, temporal limitations can either affect the whole game in its entirety, or only some parts of it that should be traversed within the set time. *The Last Express* is an intriguing combination of these possibilities. In games such as *Doom* the players should usually try to reduce the time span or duration allotted to any odd monster. If such an entity is allowed to live to life to its full extent, the game is over. Third, the reverse options may be equally valid depending on the situation — to reduce the duration of an event by cheating or getting out of the situation, or to prolong the duration of an event (letting it happen) by avoiding any confrontation, as in *Thief*.

The time of action concerns the player's possibilities for action. Basically, the player can act before, after, during (or in between) events. Not all games allow all these possibilities, and not all of these possibilities are equally important in any one game or in any one situation in a game. This is just one aspect of the type or the modality of action. It also corresponds in some degree to the difference between turn-based and real-time strategy games.

Simultaneity. The player may have to increase or decrease the number of simultaneous or parallel events, generate, or initiate such events. A typical example would be *Command and Conquer* and its multiple pieces. Events may have to be alternated, embedded, or linked to each other, or such prefabricated connections and arrangements may have to be reversed and dismantled.

We could easily go into greater detail here by introducing various subdivisions to the temporal categories discussed previously; or by taking more rigorously into account temporal requirements (in terms of speed, order, duration, etc.) set for the player's possible and necessary actions, and mapping them onto the temporal dimensions of game events. So, after all, there's still much nontrivial work to be done, as ludology, like the games it studies, is not about story and discourse at all but about actions and events, the relations of which are not completely fixed.¹⁷

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Notes:

1. A concept introduced to computer game studies by Gonzalo Frasca in 1998.
2. Those who see and wish to see narratives everywhere (to me, a serious disorder in aesthetic pattern recognition) should at least know their narratology, which is usually not the case. Narrative is a contested concept for sure, but it still doesn't make sense that comparisons between narratives and games, as well as those between print and hypertext narratives, are and were based on seriously outdated and unsophisticated theories of narrative. In order to make any reliable claims for novelties or similarities between modes and media, one should (at least) first gather the most sophisticated knowledge there is; let's say combining formal narratology (Genette, Prince) with the narrative tricks and treats of postmodernist fiction that once again reconfigured the relations between narrative and textual designs (see McHale 1987, 1992), and the tradition of procedural writing (especially various poetics of the QuilPo; see Bénabou 1998) — and then transform that knowledge into the digital realm, perhaps through Aarseth's cybertext theory (Aarseth 1997) and its functional and heuristic map of the textual medium (a seriously understudied dimension of traditional literary studies). It's painfully obvious this is not the case, and narrative is just another marketing tool used to sell us everything else except narratives. To complete the irony, it could be observed that various poetics and poetic practices (such as John Cayley's programmatology, Eduardo Kac's holopoetry, and Loos Pequeno Glazier's kinetic works) which give their strings of signs different durational values are much "closer" to games than print and classic hypertext narratives with their static (permanent) scripts and intransient time.
3. There are plenty of reasons, of course. The main thing is that any element can be turned into a game element, and a single element is enough to constitute a game if it allows manipulation, and this fact alone allows combinations not witnessed in narratives or drama. Consequently, both the number of game elements and the relations between them can be different in specific ways that are typical of (computer) games and only of them.
4. This is crucial too, as from chess and soccer to *Tetris*, games have managed quite well without characters.
5. We'll discuss the gaming situation and game time in separate sections; this division mimics Genette's presentation of tense, mood and voice in *Narrative Discourse* (1980).
6. This Sanskrit classic is then about remediation some 1,500 years before Bolter and Gustin (1999). There are important differences of course. The fact that dance theatre contains elements of music doesn't turn the latter to the former in the *Nyayasastra*. But for Bolter and Gustin, computer games are audiovisual narratives, because they seem to contain cinematic components.
7. Of course this is a broad generalisation, but an educated one.
8. This game is kind of a footnote to Eskelinen (2001b) where the gaming situation and its spatial, causal, functional, and temporal parameters are studied and articulated more fully.
9. *Nokia Game* -http://www.nokiagame.com-> is interesting in how

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it makes use of the immediate media environment of the player, as the following excerpt from its rules makes clear:

The player must complete various kinds of challenges and puzzles based on the given clues in order to proceed to the next stage of the Game. A time period for completing a task in question may be limited for some tasks (e.g. for couple of hours) or the clue might be informed to the player with the time limit will be informed to the exact time. This task or clue in question. The player may find clues via received short messages to his or her mobile phone or via other various kind of media, such as e-mail, Internet, TV, radio, magazines or newspapers. At most stages of the game the player has only one chance to complete the task in question. At some stage of the Game some players will be excluded from the Game based on a wrong answer or action, or based on not being among the announced number of best players that performed the task in question.

The game continues for a month for the winner, and a little less for the other players.

10. Sternberg's gaps are not to be confused with the inevitable overdetermination and ambiguity of meaning in Wolfgang Iser's phenomenology of reading (Iser 1978) and literary anthropology (Iser 1989). Instead, they are regulating the flow of information, and what readers can and cannot know. So even though we might guess it was the butler who did it, the appropriate information will be released at a specific point in the text.

11. Or if one does, then it is another game. Conventions usually change over time but rules don't (or not necessarily). This means games can be played by their original rules (if they are known) whereas writing is always already an orphan that can't be reduced to its original context (and conventions long gone).

12. Dominant, or to put the same idea in a politically correct way: "textual service" (see Chatman 1990, 10). Throughout this essay I invoke the heritage of Russian formalism on purpose, as it may well be that computer game studies need to go through formalistic phases similar to the ones that film and theater studies went through in the first half of the twentieth century, to gain their relative independence.

13. *Hyperzscope*, a web fiction by Stuart Moulthrop, limits the reaction time of its readers to 30 seconds per node. Within that period of time the reader must decide which narrative thread to follow and choose a link; otherwise the program makes that decision for the player. In *Reagan Library*, also by Moulthrop, the content of the nodes change when they are revisited for the first three times (there's more text available for the persistent reader). This affects or at least has the capacity to affect and alter the temporal relations between story time and discourse time (see Eskelinen 2001a).

14. *The Last Express* is an adventure game (a murder mystery) happening in the real-time of the game world. The player must find the culprit in time; that is, he may run out of time to solve the crime, as there's a temporal limit to the duration of the

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exploration. In other words, the wasted time also counts, and the player has to manipulate "discourse time" and condense it to contain the relevant story events.

15. Genette distinguishes between formal and thematic narratology (Genette 1988, 16). The latter is content-oriented, and interested in stories and themes (i.e., things like plot configuration and characters, in general, the "narrated"), and the former focuses on the specifics of narrative as a mode. To the detriment of thematic narratology (best exemplified by Marie-Laure Ryan's approach to games (Ryan 2001)), there are no specific "narrative contents."

16. For possible "new" categories, see Eskelinen and Koskimaa (2001).

17. Here's a preliminary example of how to apply some of the key concepts utilized in this paper to *Tetris*, probably the most successful abstract computer game ever:

story time	< narratives >	discourse time/element time	< games >	user time
order	.....	X (random)		
speed	.....	X (accelerating)		
frequency (repetition)	.....		0	
duration	.....		0	
simultaneity	.....	X (no simultaneity)		
time of narration/action	.....		X (during and after)	

Explanation: Dotted line = non-existent relation, X = non-manipulable relation, 0 = manipulable relation.

Discourse time in narratology is somewhat similar to event time in ludology, the former could be seen as a series or a combination of individual event times, either fixed (or semi-fixed) as in print or hypertext narratives, or variable as in games. Still, as the time needed to complete a game usually varies considerably from player to player, I prefer event time to discourse time. One should also note that in computer games there's always a conceptual difference between events as they exist in the game and as they are presented to or generated for the player (very much like textons and scriptons in cybertext theory; see Aarseth 1997, 92). In less abstract games there might be a fictive timeline into which the events are situated (in *Civilization*, it is the continuum between 3000 a.c. and 2020); it could be called content time (because we are not dealing with stories here).

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Genre Trouble: Narrativism and the Art of Simulation

Espen Aarseth

Eskelinen Douglas Schneider
 Ludology> Aarseth Crawford Mouthtop
 Mouthtop Gromala Cayley

II. Ludology

Introduction: Stories and Games

Currently in game and digital culture studies, a controversy rages over the relevance of narratology for game aesthetics. One side argues that computer games are media for telling stories, while the opposing side claims that stories and games are different structures that are in effect doing opposite things. One crucial aspect of this debate is whether games can be said to be "texts" and thereby subject to a textual-hermeneutic approach. Here we find the political question of genre at play: the fight over the games' generic categorization is a fight for academic influence over what is perhaps the dominant contemporary form of cultural expression. After forty years of fairly quiet evolution, the cultural game of computer games is finally recognized as a large-scale social and aesthetic phenomenon to be taken seriously. In the last few years, games have gone from *media non grata* to a recognized field of great scholarly potential, a place for

Response by Chris Crawford

Three elements of Espen Aarseth's paper dominate my attentions. First is the assumed conflict between interactivity and narrative. This assumption is certainly widely shared, and seems justified by our complete failure to produce a truly interactive storytelling product. However, one need only contemplate the process by which a grandparent might tell a child a bedtime story to realize that interactive storytelling has been with us a long time. Our task is to design algorithms that capture the dramatic rules used in such practices. Such algorithms are certainly beyond our grasp just yet, but we should not be too hasty to assume them ungraspable. Give us some time; we can do it. A second point that caught my attention was Aarseth's apparent dismissal of interactivity:

academic expansion and recognition.

The great stake-claiming race is on, and academics from neighboring fields, such as literature and film studies, are eagerly grasping "the chance to begin again, in a golden land of opportunity and adventure (to quote from the ad in *Blade Runner*). As with any land rush, the respect for local culture and history is minimal, while the belief in one's own tradition, tools and competence is unflinching. Computer game studies is virgin soil, ready to be plowed and plowed by the machineries of cultural and textual studies. What better way to map the territory than by using the trusty, dominant paradigm of stories and storytelling? The story perspective has many benefits: it is safe, trendy, and flexible. In a (Western) world troubled by addition, attention deficiency, and random violence, stories are morally and aesthetically acceptable. In stories, meaning can be controlled (despite what those deconstructionists may have claimed). Storytelling is a valuable skill, the main mode of successful communication. And theories of storytelling are (seemingly) universal: they can be applied to and explain any medium, phenomenon, or culture. So why should not games also be a type of story?

In the context of computer games (and in most other contexts as well) stories and storytelling appear to be extremely old phenomena, spanning all of media

The hidden structure behind these, and most, computer games is not narrative—or that silly and abused term, "interactivity"—but simulation.

While I certainly agree that the poor term has been much abused, I still believe that it remains the very essence of the entire computing experience. The computer is not at heart an audiovisual device: videocassette recorders handle that task better. Nor is it a data storage device: paper provides a cheaper and more capacious means of storing data. While computers before 1980 had batch input, processing, and output, the computer revolution that began twenty years ago arose from the ability to close the loop with the user, so that input, processing, and output were

Game Design as Narrative Architecture

Henry Jenkins

The relationship between games and story remains a divisive question among game fans, designers, and scholars alike. At a recent academic Games Studies conference, for example, a blood feud threatened to erupt between the self-proclaimed ludologists, who wanted to see the focus shift onto the mechanics of game play, and the narratologists, who were interested in studying games alongside other storytelling media.¹ Consider some recent statements made on this issue:

Interactivity is almost the opposite of narrative; narrative flows under the direction of the author, while interactivity depends on the player for motive power. (Adams 1999)

There is a direct, immediate conflict between the demands of a story and the demands of a game. Divergence from a

Response by Jon McKenzie

The model of creativity often associated with digital media is not that of originality and uniqueness but recombination and multiplicity, a model hardwired to the computer's uncanny ability to copy and combine images, sounds, texts, and other materials from an endless array of sources. Indeed, in different though related ways, both digital media and poststructuralist theory teach us that it is impossible to create and study the new without drawing at times on forms and processes taken from what is already around us. From this perspective, no genre, work, or field is unique and self-contained; each is a specific yet fuzzy combination of other things that are themselves diverse and nonunique. In short, what makes something "unique" is

story's path is likely to make for a less satisfying story; restricting a player's freedom of action is likely to make for a less satisfying game. (Costlyan 2000, 44-53)

Computer games are not narratives... Rather the narrative tends to be isolated from or even work against the computer-gameness of the game. (Juul 1998)²

Outside academic theory people are usually excellent at making distinctions between narrative, drama and games. If I throw a ball at you I don't expect you to drop it and wait until it starts telling stories. (Eskeinen 2001)

I find myself responding to this perspective with mixed feelings. On the one hand, I understand what these writers are arguing against — various attempts to map traditional narrative structures ("hypertext," "Interactive Cinema," "nonlinear narrative") onto games at the expense of an attention to their specificity as an emerging mode of entertainment. You say "narrative" to the average gamer and what they are apt to imagine is something on the order of a choose-your-own

not so much its make-up but its "mix-up." For practical, conceptual, and institutional reasons, any formation of a field of "ludology" may inevitably involve arguing for that field's uniqueness and originality, its clear-cut distinction from other fields; thus, games are not narratives, not films, not plays, etc." Yet I'm willing to gamble that if a formal discipline of ludology ever does emerge, it will sooner or later discover what other disciplines have learned: discoveries are triggered by the oddest (and oldest) of sources.

As Henry Jenkins suggests, games are indeed not narratives, not films, not plays — but they're also not not-narratives, not-not-films, not-not-plays. Games share traits with other forms of cultural production,

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adventure book, a form noted for its lifelessness and mechanical exposition rather than enthralling entertainment, thematic sophistication, or character complexity. And game industry executives are perhaps justly skeptical that they have much to learn from the resolutely unpopular (and often overtly antipopular) aesthetics promoted by hypertext theorists. The application of film theory to games can seem heavy-handed and literal-minded, often failing to recognize the profound differences between the two media. Yet, at the same time, there is a tremendous amount that game designers and critics could learn through making meaningful comparisons with other storytelling media. One gets rid of narrative as a framework for thinking about games only at one's own risk. In this short piece, I hope to offer a middle-ground position between the ludologists and the narratologists, one that respects the particularity of this emerging medium — examining games less as stories than as spaces ripe with narrative possibility.

Let's start at some points where we might all agree:

1. Not all games tell stories. Games may be an abstract, expressive, and experiential form, closer to music or modern dance than to cinema. Some ballets (*The Nutcracker* for example) tell stories, but storytelling isn't

although reducing them to any one of these comes at a certain cost. Jenkins rightly contends that game designers should therefore seek to expand the forms and processes from which to draw, rather than reduce them. He is also right to point out that some ludologists are themselves much too quick to reduce narrative to overly simplistic models (e.g., strictly linear structures). Most importantly, his exploration of spatially oriented narrative forms provides provocative approaches to contemporary game design. At the same time, however, Jenkins's stated goal to offer a "middle ground" between ludologists and narratologists remains slanted toward the narratological end of things. This is indicated in his essay's title, "Game Design as Narrative Architecture." A more playful

IV. Game Theories

an intrinsic or defining feature of dance. Similarly, many of my own favorite games — *Tetris*, *Bix*, *Snoord* — are simple graphic games that do not lend themselves very well to narrative exposition.³ To understand such games, we need other terms and concepts beyond narrative, including interface design and expressive movement for starters. The last thing we want to do is to reign in the creative experimentation that needs to occur in the earlier years of a medium's development.

2. Many games do have narrative aspirations. Minimally, they want to tap the emotional residue of previous narrative experiences. Often, they depend on our familiarity with the roles and goals of genre entertainment to orient us to the action, and in many cases, game designers want to create a series of narrative experiences for the player. Given those narrative aspirations, it seems reasonable to suggest that some understanding of how games relate to narrative is necessary before we understand the aesthetics of game design or the nature of contemporary game culture.

3. Narrative analysis need not be prescriptive, even if some narratologists — Janet Murray is the most oft-cited example — do seem to be advocating for games to pursue particular narrative forms. There is not one

ludologist might have offered a response titled "Narrative Architecture as Game Design." Johan Huizinga, after all, analyzed law, war, poetry, and philosophy as "play, and across diverse cultural traditions storytelling has complex agonistic dimensions.

Another middle ground for ludology might be "experience design," a notion and practice that runs in different ways from Brenda Laurel to Donald Norman to Eric Zimmerman. Experience design refers to the generation and shaping of actions, emotions, and thoughts. How one operates a kitchen appliance, takes in a sophisticated science exhibition, or becomes enmeshed in a role-playing game — or for that matter shops in a store, reads a novel, or visits a polling booth — all this

future of games. The goal should be to foster diversification of genres, aesthetics, and audiences; to open gamers to the broadest possible range of experiences. The past few years have been ones of enormous creative experimentation and innovation within the games industry, as might be represented by a list of some of the groundbreaking titles: *The Sims*, *Black and White*, *Magicka*, *Shenmue*; each represents profoundly different concepts of what makes for compelling game play. A discussion of the narrative potentials of games need not imply a privileging of storytelling over all the other possible things games can do, even if we might suggest that if game designers are going to tell stories, they should tell them well. In order to do that, game designers, who are most often schooled in computer science or graphic design, need to be retooled in the basic vocabulary of narrative theory.

4. The experience of playing games can never be simply reduced to the experience of a story. Many other factors that have little or nothing to do with storytelling *per se* contribute to the development of great games and we need to significantly broaden our critical vocabulary for talking about games to deal more fully with those other topics. Here, the ludologists' insistence that game scholars focus more attention on the mechanics of game play seems totally in order.

can be approached in terms of experience design. How are interactions organized and solicited? How does one event flow into another? How does the overall experience "hang together"? Although Laurel theorizes experience design using the model of Aristotelian theater (arguing that it has been shaping audiences' experience for centuries), there are in practice an almost unlimited set of performative modes to draw upon: sports, rituals, sagas, popular entertainments, movies, jokes, and so on.

Perhaps what's really at stake in ludology is less the right model and more a sense of tone and attitude — a willingness to mix it up, to entertain many possibilities, to play with lots of different models.

5. If some games tell stories, they are unlikely to tell them in the same ways that other media tell stories. Stories are not empty content that can be ported from one media pipeline to another. One would be hard-pressed, for example, to translate the internal dialogue of Prooust's *Remembrance of Things Past* into a compelling cinematic experience, and the tight control over viewer experience that Hitchcock achieves in his suspense films would be directly antithetical to the aesthetics of good game design. We must, therefore, be attentive to the particularity of games as a medium, specifically what distinguishes them from other narrative traditions. Yet, in order to do so requires precise comparisons — not the mapping of old models onto games but a testing of those models against existing games to determine what features they share with other media and how they differ.

Much of the writing in the ludologist tradition is unduly polemical: they are so busy trying to pull game designers out of their "cinema envy" or define a field where no hypertext theorist dares to venture that they are prematurely dismissing the use value of narrative for understanding their desired object of study. For my money, a series of conceptual blind spots prevent them from developing a full understanding of the interplay between narrative and games.

First, the discussion operates with too narrow a

From Markku Eskelinen's Online Response

For some reason Henry Jenkins doesn't define the contested concepts (narratives, stories, and games) so central to his argumentation. That's certainly an effective way of building a middle ground (or a periphery), but perhaps not the most convincing one. . . .

Jenkins also misrepresents a dispute (on the usefulness of narratology), important parts of which he seems to be unaware of. It has its roots both in Espen Aarseth's *Cybertext* (which deals extensively with the relationship between stories and games, showing elementary differences in communicative structures of narratives and adventure games) and Gonzalo Frasca's introduction of *ludology* to computer game studies. A

Game Theories	Henry Jenkins	Markku Eskelinen
Julia Pearce	Tom Pearce	Flanagan Bernsten
Zimmerman	Crawford	Julia Pearce

model of narrative, one preoccupied with the rules and conventions of classical linear storytelling at the expense of consideration of other kinds of narratives, not only the modernist and postmodernist experimentation that inspired the hypertext theorists, but also popular traditions that emphasize spatial exploration over causal event chains or which seek to balance the competing demands of narrative and spectacle.⁴

Second, the discussion operates with too limited an understanding of narration, focusing more on the activities and aspirations of the storyteller and too little on the process of narrative comprehension.⁵

Third, the discussion deals only with the question of whether whole games tell stories and not whether narrative elements might enter games at a more localized level. Finally, the discussion assumes that narratives must be self-contained rather than understanding games as serving some specific functions within a new transmedia storytelling environment. Rethinking each of these issues might lead us to a new understanding of the relationship between games and stories. Specifically, I want to introduce an important third term into this discussion — spatiality — and argue for an understanding of game designers less as storytellers and more as narrative architects.

discussion of the present topic which ignores these works, cannot hope to break new ground. A few facts of cultural history wouldn't hurt either: as the oldest astragals (forerunners of dice) date back to prehistory, I'm not so sure games fit within a much older tradition of spatial stories."

<http://www.electronicbookreview.com/thread/firstperson/eskelinen>

Spatial Stories and Environmental Storytelling

Game designers don't simply tell stories; they design worlds and sculpt spaces. It is no accident, for example, that game design documents have historically been more interested in issues of level design than on plotting or character motivation. A prehistory of video and computer games might take us through the evolution of paper mazes or board games, both preoccupied with the design of spaces even where they also provided some narrative context. Monopoly, for example, may tell a narrative about how fortunes are won and lost; the individual Chance cards may provide some story pretext for our gaining or losing a certain number of places; but ultimately, what we remember is the experience of moving around the board and landing on someone's real estate. Performance theorists have described role-playing games (RPGs) as a mode of collaborative storytelling, but the Dungeon Master's activities start with designing the space — the dungeon — where the players' quest will take place.

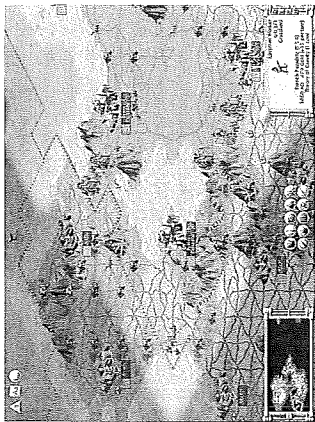
Even many of the early text-based games, such as *Zork*, which could have told a wide array of different kinds of stories, centered around enabling players to move through narratively compelling spaces: "You are facing the north side of a white house. There is no door here, and all of the windows are boarded up. To the north a

Jenkins Responds

I feel a bit like Travis Bickle when I ask Eskelinen, "Are you talking to me?" For starters, I don't consider myself to be a narratologist at all.

<http://www.electronicbookreview.com/thread/firstperson/jenkins2>

Game Design as Narrative Architecture Henry Jenkins



10.1. Civilization 3. (Atari)

narrow path winds through the trees." The early Nintendo games have simple narrative hooks — rescue Princess Toadstool — but what gamers found astonishing when they first played them were their complex and imaginative graphic realms, which were so much more sophisticated than the simple grids that *Pong* or *Pac-Man* had offered us a decade earlier.

When we refer to such influential early works as Shigeru Miyamoto's *Super Mario Bros.* as "scroll games," we situate them alongside a much older tradition of spatial storytelling: many Japanese scroll paintings map, for example, the passing of the seasons onto an unfolding space. When you adapt a film into a game, the process typically involves translating events in the film into environments within the game. When gamer magazines want to describe the experience of gameplay, they are more likely to reproduce maps of the game world than to recount their narratives.⁶ Before we can talk about game narratives, then, we need to talk about game spaces. Across a series of essays, I have made the case that game consoles should be regarded as machines for generating compelling spaces, that their virtual playspaces have helped to compensate for the declining place of the traditional backyard in contemporary boy culture, and that the core narratives behind many games center around the struggle to explore, map, and master contested spaces (Fuller and Jenkins 1994; Jenkins 1998). Here, I want to broaden that discussion further to consider in what ways the structuring of game space

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facilitates different kinds of narrative experiences.

As such, games fit within a much older tradition of spatial stories, which have often taken the form of hero's odysseys, quest myths, or travel narratives.⁷ The best works of J.R.R. Tolkien, Jules Verne, Homer, L. Frank Baum, or Jack London fall loosely within this tradition, as does, for example, the sequence in *War and Peace* that describes Pierre's aimless wanderings across the battlefield at Borodino. Often, such works exist on the outer borders of literature. They are much loved by readers, to be sure, and passed down from one generation to another, but they rarely figure in the canon of great literary works. How often, for example, has science fiction been criticized for being preoccupied with world-making at the expense of character psychology or plot development?

These writers seem constantly to be pushing against the limits of what can be accomplished in a printed text and thus their works fare badly against aesthetic standards defined around classically constructed novels. In many cases, the characters — our guides through these richly developed worlds — are stripped down to the bare bones, description displaces exposition, and plots fragment into a series of episodes and encounters. When game designers draw story elements from existing film or literary genres, they are most apt to tap those genres — fantasy, adventure, science fiction, horror, war — which are most invested in world-making and spatial storytelling. Games, in turn, may more fully realize the spatiality of these stories, giving a much more immersive and compelling representation of their narrative worlds. Anyone who doubts that Tolstoy might have achieved his true calling as a game designer should reread the final segment of *War and Peace* where he works through how a series of alternative choices might have reversed the outcome of Napoleon's Russian campaign. The passage is dead weight in the context of a novel, yet it outlines ideas that could be easily communicated in god-games such as those in the *Civilization* series (figure 10.1).

Don Carson, who worked as a Senior Show Designer for Walt Disney Imagineering, has argued that game designers can learn a great deal by studying techniques of "environmental storytelling," which Disney employs

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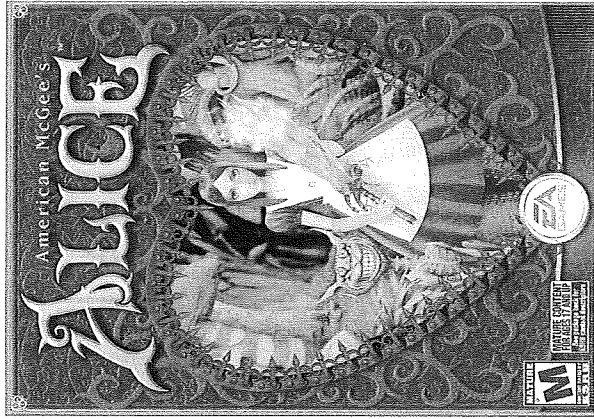
in designing amusement park attractions. Carson explains,

The story element is infused into the physical space a guest walks or rides through. It is the physical space that does much of the work of conveying the story the designers are trying to tell.... Armed only with their own knowledge of the world, and those visions collected from movies and books, the audience is ripe to be dropped into your adventure. The trick is to play on those memories and expectations to heighten the thrill of venturing into your created universe. (Carson 2000)

The amusement park attraction doesn't so much reproduce the story of a literary work, such as *The Wind in the Willows*, as it evokes its atmosphere; the original story provides "a set of rules that will guide the design and project team to a common goal" and that will help give structure and meaning to the visitor's experience. If, for example, the attraction centers around pirates, Carson writes, "every texture you use, every sound you play, every turn in the road should reinforce the concept of pirates," while any contradictory element may shatter the sense of immersion into this narrative universe. The same might be said for a game such as *Sea Dogs*, which, no less than *Pirates of the Caribbean*, depends on its ability to map our preexisting pirate amusement park designers count on visitors keeping their hands and arms in the car at all times and thus have a greater control in shaping our total experience, whereas game designers have to develop worlds where we can touch, grab, and fling things about at will.

Environmental storytelling creates the preconditions for an immersive narrative experience in at least one of four ways: spatial stories can evoke pre-existing narrative associations; they can provide a staging ground where narrative events are enacted; they may embed narrative information within their mise-en-scene; or they provide resources for emergent narratives.

IV. Game Theories



10.2. American McGee's Alice (Rogue Entertainment, Electronic Arts)

Evocative Spaces

The most compelling amusement park attractions build upon stories or genre traditions already well-known to visitors, allowing them to enter physically into spaces they have visited many times before in their fantasies. These attractions may either remediate a preexisting story (*Back to the Future*) or draw upon a broadly shared genre tradition (Disney's Haunted Mansion). Such works do not so much tell self-contained stories as draw upon our previously existing narrative

competencies. They can paint their worlds in fairly broad outlines and count on the visitor/player to do the rest. Something similar might be said of many games. For example, *American McGee's Alice* is an original interpretation of Lewis Carroll's *Alice in Wonderland* (figure 10.2). Alice has been pushed into madness after years of living with uncertainty about whether her

Wonderland experiences were real or hallucinations; now, she's come back into this world and is looking for blood. McGee's wonderland is not a whimsical dreamscape but a dark nightmare realm. McGee can safely assume that players start the game with a pretty well-developed mental map of the spaces, characters, and situations associated with Carroll's fictional universe and that they will read his distorted and often monstrous images against the background of mental images formed from previous encounters with storybook illustrations and Disney movies. McGee rewrites Alice's story in large part by redesigning Alice's spaces.

Arguing against games as stories, Jasper Juul suggests that "you clearly can't deduct the story of *Star Wars* from *Star Wars* the game," whereas a film version of a novel will give you at least the broad outlines of the plot (Juul 1998). This is a pretty old-fashioned model of the process of adaptation. Increasingly, we inhabit a world of transmedia storytelling, one that depends less on each individual work being self-sufficient than on each work contributing to a larger narrative economy. The *Star Wars* game may not simply recall the story of *Star Wars*, but it doesn't have to in order to enrich or expand our experience of the *Star Wars* saga.

We already know the story before we even buy the game and would be frustrated if all it offered us was a reiteration of the original film experience. Rather, the *Star Wars* game exists in dialogue with the films, conveying new narrative experiences through its creative manipulation of environmental details. One can imagine games taking their place within a larger narrative system with story information communicated through books, film, television, comics, and other media, each doing what it does best, each a relatively autonomous experience, but the richest understanding of the story world coming to those who follow the narrative across the various channels. In such a system, what games do best will almost certainly center around their ability to give concrete shape to our memories and imaginations of the storyworld, creating an immersive environment we can wander through and interact with.

Enacting Stories

Most often, when we discuss games as stories, we are referring to games that either enable players to perform or witness narrative events — for example, to grab a lightsaber and dispatch Darth Maul in a *Star Wars* game. Narrative enters such games on two levels — in terms of broadly defined goals or conflicts and on the level of localized incidents.

Many game critics assume that all stories must be classically constructed with each element tightly integrated into the overall plot trajectory. Costlyvan (2000) writes, for example, that "a story is a controlled experience; the author consciously crafts it, choosing certain events precisely, in a certain order, to create a story with maximum impact."⁸

Adams (1999) claims, "a good story hangs together the way a good jigsaw puzzle hangs together. When you pick it up, every piece is locked tightly in place next to its neighbors."⁹

Spatial stories, on the other hand, are often dismissed as episodic — that is, each episode (or set piece) can become compelling on its own terms without contributing significantly to the plot development, and often the episodes could be reordered without significantly impacting our experience as a whole. There may be broad movements or series of stages within the story, as Troy Dumway suggests when he draws parallels between the stages in the Hero's journey (as outlined by Joseph Campbell) and the levels of a classic adventure game, but within each stage, the sequencing of actions may be quite loose. Spatial stories are not badly constructed stories; rather, they are stories that respond to alternative aesthetic principles, privileging spatial exploration over plot development. Spatial stories are held together by broadly defined goals and conflicts and pushed forward by the character's movement across the map. Their resolution often hinges on the player reading his or her final destination, though, as Mary Fuller notes, not all travel narratives end successfully or resolve the narrative enigmas that set them into motion. Once again, we are back to principles of "environmental storytelling." The organization of the plot becomes a matter of designing the geography of imaginary worlds,

Game Theories
Jenkins
Juul
Pearce
Zimmerman

Mckenzie Eskelinen
To Pearce
Flanagan Benstein
Crawford Juul

so that obstacles thwart and affordances facilitate the protagonist's forward movement towards resolution. Over the past several decades, game designers have become more and more adept at setting and varying the rhythm of game play through features of the game space.

Narrative can also enter games on the level of localized incident, or what I am calling micronarratives. We might understand how micronarratives work by thinking about the Odessa Steps sequence in Sergei Eisenstein's *Battleship Potemkin*. First, recognize that, whatever its serious moral tone, the scene basically deals with the same kind of material as most games — the steps are a contested space with one group (the peasants) trying to advance up and another (the Cossacks) moving down.

Eisenstein intensifies our emotional engagement with this large-scale conflict through a series of short narrative units. The woman with the baby carriage is perhaps the best known of those micronarratives. Each of these units builds upon stock characters or situations drawn from the repertoire of melodrama. None of them last more than a few seconds, though Eisenstein prolongs them (and intensifies their emotional impact) through cross-cutting between multiple incidents. Eisenstein used the term "attraction" to describe such emotionally packed elements in his work; contemporary game designers might call them "memorable moments." Just as some memorable moments in games depend on sensations (the sense of speed in a racing game) or perceptions (the sudden expanse of sky in a snowboarding game), as well as narrative hooks, Eisenstein used the word "attractions" broadly to describe any element within a work that produces a profound emotional impact, and theorized that the themes of the work could be communicated across and through these discrete elements. Even games that do not create large-scale plot trajectories may well depend on these micronarratives to shape the player's emotional experience. Micronarratives may be cut-scenes, but they don't have to be. One can imagine a simple sequence of preprogrammed actions through which an opposing player responds to your successful touchdown in a football game as a micronarrative.

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Game critics often note that the player's participation poses a potential threat to the narrative construction, whereas the hard rails of the plotting can overly constrain the "freedom, power, and self-expression" associated with interactivity (Adams 1999). The tension between performance (or game play) and exposition (or story) is far from unique to games. The pleasures of popular culture often center on spectacular performance numbers and self-contained set pieces. It makes no sense to describe musical numbers or gag sequences or action scenes as disruptions of the film's plots: the reason we go to see a kung fu movie is to see Jackie Chan show his stuff. Yet, few films consist simply of such moments, typically falling back on some broad narrative exposition to create a framework within which localized actions become meaningful.¹⁰

We might describe musicals, action films, or slapstick comedies as having accordion-like structures. Certain plot points are fixed, whereas other moments can be expanded or contracted in response to audience feedback without serious consequences to the overall plot. The introduction needs to establish the character's goals or explain the basic conflict; the conclusion needs to show the successful completion of those goals or the final defeat of the antagonist. In *commedia dell'arte*, for example, the masks define the relationships between the characters and give us some sense of their goals and desires.¹¹

The masks set limits on the action, even through the performance as a whole is created through improvisation. The actors have mastered the possible moves, or *lazzi*, associated with each character, much as a game player has mastered the combination of buttons that must be pushed to enable certain character actions. No author prescribes what the actors do once they get on the stage, but the shape of the story emerges from this basic vocabulary of possible actions and from the broad parameters set by this theatrical tradition. Some of the *lazzi* can contribute to the plot development, but many of them are simple resings of the basic oppositions (the knave tricks the master or gets beaten).

These performance or spectacle-centered genres often display a pleasure in process — in the

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experiences along the road — that can overwhelm any strong sense of goal or resolution, while exposition can be experienced as an unwelcome interruption to the pleasure of performance. Game designers struggle with this same balancing act — trying to determine how much plot will create a compelling framework and how much freedom players can enjoy at a local level without totally derailing the larger narrative trajectory. As inexperienced storytellers they often fall back on rather mechanical exposition through cut scenes, much as early filmmakers were sometimes overly reliant on intertitles rather than learning the skills of visual storytelling. Yet, as with any other aesthetic tradition, game designers are apt to develop craft through a process of experimentation and refinement of basic narrative devices, becoming better at shaping narrative experiences without unduly constraining the space for improvisation within the game.

Embedded Narratives

Russian formalist critics make a useful distinction between plot (or *syuzhet*) that refers to, in Kristen Thompson's (1988) terms, "the structured set of all causal events as we see and hear them presented in the film itself," and story (or *fabula*), which refers to the viewer's mental construction of the chronology of those events (Thompson 1988, 39–40). Few films or novels are absolutely linear; most make use of some forms of backstory that is revealed gradually as we move through the narrative action. The detective story is the classic illustration of this principle, telling two stories — one more or less chronological (the story of the investigation itself) and the other told radically out of sequence (the events motivating and leading up to the murder).

According to this model, narrative comprehension is an active process by which viewers assemble and make hypotheses about likely narrative developments on the basis of information drawn from textual cues and clues.¹² As they move through the film, spectators test and reformulate their mental maps of the narrative action and the story space. In games, players are forced to act upon those mental maps, to literally test them against the game world itself. If you are wrong about

whether the bad guys lurk behind the next door, you will find out soon enough — perhaps by being blown away and having to start the game over. The heavy-handed exposition that opens many games serves a useful function in orienting spectators to the core premises so that they are less likely to make stupid and costly errors as they first enter into the game world. Some games create a space for rehearsal, as well, so that we can make sure we understand our character's potential moves before we come up against the challenges of navigating narrational space.

Read in this light, a story is less a temporal structure than a body of information. The author of a film or a book has a high degree of control over when and if we receive specific bits of information, but a game designer can somewhat control the narrational process by distributing the information across the game space. Within an open-ended and exploratory narrative structure like a game, essential narrative information must be presented redundantly across a range of spaces and artifacts, because one cannot assume the player will necessarily locate or recognize the significance of any given element. Game designers have developed a variety of kludges that allow them to prompt players or steer them towards narratively salient spaces. Yet, this is no different from the ways that redundancy is built into a television soap opera, where the assumption is that a certain number of viewers are apt to miss any given episode, or even in classical Hollywood narrative, where the law of three suggests that any essential plot point needs to be communicated in at least three ways.

To continue with the detective example, then, one can imagine the game designer as developing two kinds of narratives — one relatively unstructured and controlled by the player as they explore the game space and unlock its secrets; the other prestructured but embedded within the mise-en-scene awaiting discovery. The game world becomes a kind of information space, a memory palace. *Myst* is a highly successful example of this kind of embedded narrative, but embedded narrative does not necessarily require an emptying of the space of contemporary narrative activities, as a game such as *Half-Life* might suggest. Embedded narrative can and often does occur within contested

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spaces. We may have to battle our way past antagonists, navigate through mazes, or figure out how to pick locks in order to move through the narratively impregnated mise-en-scene. Such a mixture of enacted and embedded narrative elements can allow for a balance between the flexibility of interactivity and the coherence of a pre-authored narrative.

Using *Quake* as an example, Jesper Juul argues that flashbacks are impossible within games, because the game play always occurs in real-time (Juul 1998). Yet, this is to confuse story and plot. Games are no more locked into an eternal present than films are always linear. Many games contain moments of revelation or artifacts that shed light on past actions. Carson (2000) suggests that part of the art of game design comes in finding artful ways of embedding narrative information into the environment without destroying its immersiveness and without giving the player a sensation of being drug around by the neck:

Staged areas... [can] lead the game player to come to their own conclusions about a previous event or to suggest a potential danger just ahead. Some examples include... doors that have been broken open, traces of a recent explosion, a crashed vehicle, a piano dropped from a great height, charred remains of a fire.

Players, he argues, can return to a familiar space later in the game and discover it has been transformed by subsequent (off-screen) events. *Clive Barker's Undying*, for example, creates a powerful sense of backstory in precisely this manner. It is a story of sibling rivalry that has taken on supernatural dimensions. As we visit each character's space, we have a sense of the human they once were and the demon they have become. In Peter Molyneux's *Black and White*, the player's ethical choices within the game leave traces on the landscape or reconfigure the physical appearances of their characters. Here, we might read narrative consequences off mise-en-scene the same way we read Dorian Gray's debauchery off of his portrait. Carson describes such narrative devices as "following Saknussemm," referring

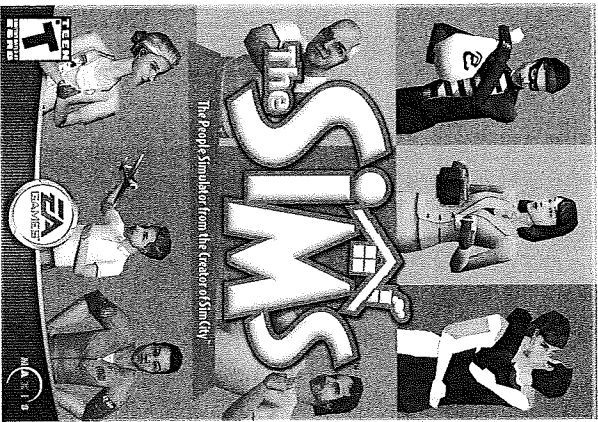
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to the ways that the protagonists of Jules Verne's *Journey to the Center of the Earth* keep stumbling across clues and artifacts left behind by the sixteenth-century Icelandic scientist/explorer Arne Saknussemm, and readers become fascinated to see what they can learn about his ultimate fate as the travelers come closer to reaching their intended destination.

Game designers might study melodrama for a better understanding of how artifacts or spaces can contain affective potential or communicate significant narrative information. Melodrama depends on the external projection of internal states, often through costume design, art direction, or lighting choices. As we enter spaces, we may become overwhelmed with powerful feelings of loss or nostalgia, especially in those instances where the space has been transformed by narrative events. Consider, for example, the moment in *Doctor Zhivago* when the characters return to the mansion now completely deserted and encased in ice, or when Scarlett O'Hara travels across the scorched remains of her family estate in *Gone With the Wind* following the burning of Atlanta. In Alfred Hitchcock's *Rebecca*, the title character never appears, but she exerts a powerful influence over the other characters — especially the second Mrs. DeWinter, who must inhabit a space where every artifact recalls her predecessor.

Hitchcock creates a number of scenes of his protagonist wandering through Rebecca's space, passing through locked doors, staring at her overwhelming portrait on the wall, touching her things in drawers, or feeling the texture of fabrics and curtains. No matter where she goes in the house, she cannot escape Rebecca's memory.

A game such as Neil Young's *Majestic* pushes this notion of embedded narrative to its logical extreme. Here, the embedded narrative is no longer contained within the console but rather flows across multiple information channels. The player's activity consists of sorting through documents, deciphering codes, making sense of garbled transmissions, moving step-by-step towards a fuller understanding of the conspiracy that is the game's primary narrative focus. We follow links between web sites; we get information through webcasts, faxes, e-mails, and phone calls. Such an embedded narrative doesn't require a branching story



10.3 *The Sims*. (Maxis, Electronic Arts)

structure but rather depends on scrambling the pieces of a linear story and allowing us to reconstruct the plot through our acts of detection, speculation, exploration, and decryption. Not surprisingly, most embedded narratives, at present, take the form of detective or conspiracy stories, since these genres help to motivate the player's active examination of clues and exploration of spaces and provide a rationale for our efforts to reconstruct the narrative of past events. Yet, as the preceding examples suggest, melodrama provides another — and as yet largely unexplored — model for how an embedded story might work, as we read letters and diaries, snoop around in bedroom drawers and closets, in search of secrets that might shed light on the relationships between characters.

Emergent Narratives

The Sims represents a fourth model of how narrative possibilities might get mapped onto game space (figure 10.3). Emergent narratives are not prestructured or preprogrammed, taking shape through the game play, yet they are not as unstructured, chaotic, and frustrating as life itself. Game worlds, ultimately, are not real worlds, even those as densely developed as *Shermie* or as geographically expansive as *Everquest*. Will Wright frequently describes *The Sims* as a sandbox or dollhouse game, suggesting that it should be understood as a kind of authoring environment within which players can define their own goals and write their own stories. Yet, unlike Microsoft Word, the game doesn't open on a blank screen. Most players come away from spending time with *The Sims* with some degree of narrative satisfaction. Wright has created a world ripe with narrative possibilities, where each design decision has been made with an eye towards increasing the prospects of interpersonal romance or conflict.

The ability to design our own "skins" encourages players to create characters who are emotionally significant to them, to rehearse their own relationships with friends, family, or coworkers or to map characters from other fictional universes onto *The Sims*. A glance at the various scrapbooks players have posted on the web suggests that they have been quick to take advantage of its relatively open-ended structure. Yet, lets not underestimate the designers' contributions. The characters have a will of their own, not always submitting easily to the player's control, as when a depressed protagonist refuses to seek employment, preferring to spend hour upon hour soaking in their bath or moping on the front porch.

Characters are given desires, urges, and needs, which can come into conflict with each other, and thus produce dramatically compelling encounters. Characters respond emotionally to events in their environment as when characters mourn the loss of a loved one. Our choices have consequences, as when we spend all of our money and have nothing left to buy them food. The gibberish language and flashing symbols allow us to map our own meanings onto the conversations, yet the

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tone of voice and body language can powerfully express specific emotional states, which encourage us to understand those interactions within familiar plot situations. The designers have made choices about what kinds of actions are and are not possible in this world, such as allowing for same-sex kisses, but limiting the degree of explicit sexual activity that can occur. (Good programmers may be able to get around such restrictions, but most players probably work within the limitations of the system as given.)

Janet Murray's *Hamlet on the Holodeck* might describe some of what Wright accomplishes here as procedural authorship. Yet, I would argue that his choices go deeper than this, working not simply through the programming, but also through the design of the game space. For example, just as a dollhouse offers a streamlined representation that cuts out much of the clutter of an actual domestic space, the Sims' houses are stripped down to only a small number of artifacts, each of which perform specific kinds of narrative functions. Newspapers, for example, communicate job information. Characters sleep in beds. Bookcases can make you smarter. Bottles are for spinning and thus motivating lots of kissing. Such choices result in a highly legible narrative space. In his classic study *The Image of The City*, Kevin Lynch made the case that urban designers needed to be more sensitive to the narrative potentials of city spaces, describing city planning as "the deliberate manipulation of the world for sensuous ends" (Lynch 1960, 116).

Urban designers exert even less control than game designers over how people use the spaces they create or what kinds of scenes they stage there. Yet, some kinds of space lend themselves more readily to narratively memorable or emotionally meaningful experiences than others. Lynch suggested that urban planners should not attempt to totally predetermine the uses and meanings of the spaces they create; "a landscape whose every rock tells a story may make difficult the creation of fresh stories" (Lynch 1960, 6). Rather, he proposes an aesthetic of urban design that endows each space with "poetic and symbolic" potential. Such a sense of place in itself enhances every human activity that occurs there, and encourages the deposit of a

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memory trace" (Lynch 1960, 119). Game designers would do well to study Lynch's book, especially as they move into the production of game platforms which support player-generated narratives.

In each of these cases, choices about the design and organization of game spaces have narratological consequences. In the case of evoked narratives, spatial design can either enhance our sense of immersion within a familiar world or communicate a fresh perspective on that story through the altering of established details. In the case of enacted narratives, the story itself may be structured around the character's movement through space and the features of the environment may retard or accelerate that plot trajectory. In the case of embedded narratives, the game space becomes a memory palace whose contents must be deciphered as the player tries to reconstruct the plot. And in the case of emergent narratives, game spaces are designed to be rich with narrative potential, enabling the story-constructing activity of players. In each case, it makes sense to think of game designers less as storytellers than as narrative architects.

Notes

1. The term "ludology" was coined by Espen Aarseth, who advocates the emergence of a new field of study, specifically focused on the study of games and game play, rather than framed through the concerns of pre-existing disciplines or other media. (Editor's note: Markku Eskelinen, in his response to this essay, points out that the term was introduced to computer game studies by Gonzalo Frasca. This introduction, according to Frasca, was in the *Gyberzeit Yearbook* — a publication coedited by Eskelinen and named for Aarseth's *Opoverze* [1997].)
2. For a more recent formulation of this same argument, see Jasper Juul (2001), "Games Telling Stories?"
3. Eskelinen (2001) takes Janet Murray to task for her narrative analysis of *Zetris* as "a perfect enactment of the overtasked lives of Americans in the 1990s — of the constant bombardment of tasks that demand our attention and that we must somehow fit into our overcrowded schedules and clear of our desks in order to make room for the next onslaught." Eskelinen is correct to note that the abstraction of *Zetris* would seem to defy narrative interpretation, but that is not the same thing as insisting that no meaningful analysis can be made of the game and its fit within contemporary culture. *Zetris* might well express something of the frenzied pace of modern life, just as modern dances might, without being a story.
4. "A story is a collection of facts in a time-sequential order that suggest a cause and effect relationship" (Crawford 1982). "The story is the archthesis of games. The best way to tell a story is in linear form. The best way to create a game is to provide a structure within which the player has freedom of action" (Costikyan, 2000).

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5. "In its richest form, storytelling — narrative — means the reader's surrender to the author: The author takes the reader by the hand and leads him into the world of his imagination. The reader has a role to play, but it's a fairly passive role: to pay attention, to understand, perhaps to think... but not to act" (Adams 1999).

6. As I have noted elsewhere, these maps take a distinctive form — not objective or abstract top-down views but composites of screenshots that represent the game space as we will encounter it in our travels through its space. Game space never exists in abstract, but always experientially.

7. My concept of spatial stories is strongly influenced by Michel de Certeau (1988). *The Practice of Everyday Life* and Henri Lefebvre (1991), *The Production of Space*.

8. For a fuller discussion of the norms of classically constructed narrative, see Bordwell, Staiger, and Thompson (1985), *The Classical Hollywood Cinema*.

9. For useful discussion of this issue in film theory, see Donald Crafton (1995), "Pie and Chase: Gag, Spectacle and Narrative in Slapstick Comedy," in Kristine Brunovska Karmick and Henry Jenkins (eds.), *Classical Hollywood Comedy*; Henry Jenkins (1991), *What Made Pizachio Nuts?: Early Sound Comedy and The Vaudeville Aesthetic*; Rick Altman (1999), *The American Film Musical*; Tom Gunning (1990), "The Cinema of Attractions: Early Film, Its Spectator and the Avant Garde," in Thomas Elsaesser with Adam Barker, *Early Cinema: Space, Frame, Narrative*; Linda Williams (1999), *Hard Core: Power, Pleasure and "The Franny of the Visible"*.

10. "Games that just have nonstop action are fun for a while but often get boring. This is because of the lack of interludes, suspense, and drama. How many action movies have you seen where the hero of the story shoots his gun every five seconds and is always on the run? People lose interest watching that kind of movie. Playing a game is a bit different, but the fact is the brain becomes over stimulated after too much nonstop action" (Dunniway 2000).

11. See, for example, John Rudlin (1994), *Commedia Dell'Arte: An Actor's Handbook* for a detailed inventory of the masks and lazzi of this tradition.

12. See, for example, David Bordwell (1989), *Narration in the Fiction Film*, and Edward Branigan (1992), *Narrative Comprehension and Film*.

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Introduction to Game Time

Jesper Juul

The following sketches a theory of time in games. This is motivated by: (1) plain curiosity, (2) theoretical lack: much work has been done on time in other cultural forms, but there is very little theory of time in games; and (3) the hope that a theory of game time may help us examine specific games, help trace the historical development of games, connect to the big question of how a game feeds player experiences, and generally serve as an analytical tool for opening other discussions in game studies and game design.

Most computer games project a game world, and to play them is therefore to engage in a kind of pretense-play: you are both "yourself" and you have another role in the game world. This duality is reflected in the *game time*, which can be described as a basic duality of *play time* (the time the player takes to play) and *event time* (the time taken in the game world). The relationship between play time and event time is, as we shall see, highly variable between games and game genres: action games tend to proceed in real time, but strategy and simulation games often feature speed-up time or even

Response by Mizuko Ito

Time has received little attention in comparison to related discussions of identity and place in virtual worlds, and Jesper Juul's discussion opens up intriguing analytic territory. Juul draws continuities with issues of identity, place, and pretense-play, just as games enable players to try on different identities and teleport to fantastic worlds, they also enable players to experience time in ways not available in real life: time warps, time lapse, time travel, frozen time. At the same time, there are also interesting peculiarities in how to account and coordinate between "real" and "virtual" time, or Juul's play time and event time, and these issues resonate with and diverge from parallel conversations about identity and place in interesting

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the possibility of manually speeding or slowing the game. Running counter to this, abstract games do not project a game world at all, and therefore do not have a separate event time.

The play-element of games is reflected in the way we discuss them: if we utter the sentence "Brian is a pig," this is usually considered a metaphor and an insult. A metaphor, since we would propose a transfer of our ideas of a pig to Brian as a person, and an insult, since this would cast Brian in a negative light. But as Ana Marjanovic-Shane describes, to say, "Brian is a pig" while playing a game does not describe Brian as person; it only says that in this play context. Brian assumes the role of a pig. Marjanovic-Shane describes this as a proposition about a fictive plane, rather than a proposition about reality. So, computer games are much like the pretense-play of children (and adults); if we play the World War II game *Axis and Allies*, all our actions have a double meaning. We move a piece around a board, but this also means invading Scandinavia with our troops. We click the keys on the keyboard, but we are also moving Lara Croft! The harmless statement "Brian is a pig" can obviously also be said of an actor in a play, but not of the audience: if Brian is watching the movie *Babe*, we don't say "Brian is a pig." This means that when we talk about games, we assume a much more direct connection between the game and the

ways. Juul's essay brings these peculiarities up with careful and thought-provoking detail.

The question of representational realism and fidelity in the case of time is particularly intriguing. What are the trade-offs for particular game genres? In the case of objects, people, and places, certain game genres demand higher degrees of realism with regard to real life, such as flight and sport simulations, but most games take advantage of the opportunity for fantasy characters, settings, and physics. In the case of time, pauses, warps, and replays are all player-accessible technical capabilities. Current game design seems to support these options for time play at the expense of temporal realism and consistency in part to manage the balance between flow and dead time that Juul points

player than we would in movies or novels, because games map the player into the game world.

My inquiry therefore proceeds from the belief that a game theory is best built not so much by plainly importing assumptions from other cultural forms, as by examining actual games.² The primary focus here is on computer games (in a broad sense, including arcade and console games), but nonelectronic games are also included for an historical perspective.

The theory primarily describes linear, measurable time in games. An obvious objection to this would be that since the playing of a game is a subjective experience, objective time is of secondary importance. But as we shall see, the subjective experience of time is strongly affected by objective time structured by the game: game design and game rules work with objective time in order to create the player's subjective experiences. So examining objective time in games is, paradoxically, a way of understanding how the formal structure of a game feeds the more elusive player experience. The aesthetic problems surrounding "save games" are a prime example.

Finally, game time can be used for examining game history: the development of time in computer games can be seen as the interaction of two different base models: the adventure game that creates coherent worlds that the player must explore in a coherent time,

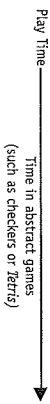
but also to coordinate between real life rhythms and play time.

This leads to another intriguing question embedded in the essay: Given fantasy time and time play as a parallel to fantasy worlds and identity play, how do we coordinate between real and virtual time? When players are essentially in two places at the same time, as two different persons, and in two different points in time, something has to give. Event and play time ideally track along the neat railroad diagrams in Juul's paper, as player and software engage in coordinated exchanges, but in reality, the contingencies of our real lives constantly intrude and put brakes on our play time. How do you answer the door to get a pizza to nourish your flesh-and-blood body when you are in the

and the action game that favors unexplained jumps in world and time by way of unconnected levels and rounds.

Abstract Games and the State Machine

To play a game takes time. A game begins and it ends. I'd like to call this time *play time*. Play time denotes the time span taken to play a game. As a first example, we may look at checkers. In abstract games such as checkers or *Tetris*, it would seem that this was all there was to it that we play games, that everything in the game happens now, while we play. In soccer — which is really just a physical abstract game — the same thing would be true: To draw a diagram of time in such a game is rather trivial:



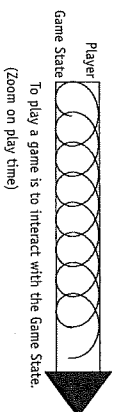
When playing checkers, tennis, or *Tetris* it does not make sense to say that you are immersed in a world; they do not contain play-pretense. The more fundamental part of games is a change of state, the movement from the initial state (the outcome has not been decided) to another state (the outcome has been decided). To help understand this, we may take a cue

middle of life and death online combat? If your opponent is a home computer, you probably have the luxury of freezing both event and play time, but if you are playing an online multi-user game, event time marches relentlessly on unless you can somehow convince your opponent to take into account your real-life circumstances.

Quickly completed games like *Tetris* or turn-based games have appeal because they can easily fit in temporal interstices. For games that demand real-time interaction and extended play, it seems crucial to lean on the capabilities of fantasy time and time play to smooth the coordination task. And Juul notes how players take nonrealist conventions of saves, replays, cut scenes, warps, level changes, and loading pauses in

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from computer science, saying that a game is actually a *state machine*: it is a system that can be in different states; it contains input and output functions, and definitions of what state and what input will lead to what following state. You can move the piece from E2 to E4, but not to E5; if you are hit by the rocket launcher, you lose energy; if your base is taken, you have lost; etc. When you play a game, you are interacting with the state machine that is the game. In a board game, this state is stored in the position of the pieces on the board; in sports, the game state is the players; in computer games, the state is stored as variables and then represented on screen.³ In the rest of this article, I will be referring to the state of a game as *the game state*. When you play a game, you are simply interacting with the game state:



If you cannot influence the game state in any way (as opposed to being unable to influence it in the right way), you are not playing a game. The difference between a real-time abstract game and a turn-based abstract game is simply that in the latter case the game

stride as easily as they assume the identity of Lara Croft. Now if only we could pause real-life time to get on with the work of gaming.

From Celia Pearce's Online Response

Juul talks about player manipulation of time (speeding up, slowing down, saving) to adjust for skill level. However, player-manipulated time schemes can also be used as a game strategy. For example, in *The Sims*, I frequently load the characters up with "lead" actions, such as chores, then run the game on double-speed until they're done. This is a time-efficiency strategy so that I can focus on more interesting game events, such as socializing. [...]

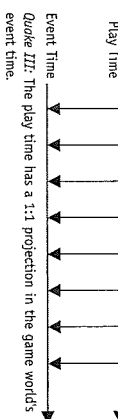
Juul's in-depth discussion of "saving" is intractably

state only changes when the player takes a turn. In a real-time game, not doing anything also has consequences. Additionally, turn-based games do not specify the amount of play time that the player can use on a specific move. (Although this may be specified by tournament rules or social pressure.)

Real-Time Games with Worlds

If we then play a real-time game like *Quake III* or *Unreal Tournament* we experience the duality described in the play section above: you are both "yourself" and a character in the game world. I propose the term "event time" to denominate the time of the events happening in the game world. In most action games and in the traditional arcade game, the play time/event time relation is presented as being 1:1. The frenetic *Quake III* is a good example of the urgency and immediacy provided by a real-time game.

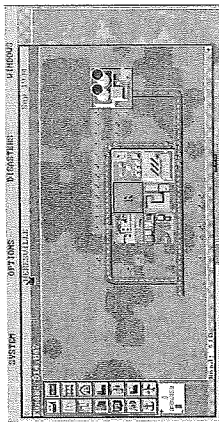
Pressing the fire key or moving the mouse immediately affects the world inside the game. So the game presents a parallel world happening in real time:



useful, but I was surprised that he made no mention of conventions of reincarnation and the role of death in game time. In many first-person shooter games, it is possible to die and rise again, whereas games such as *EverQuest* employ the convention of "perma-death." I think these approaches to and metaphors of death and reincarnation are very important, especially in terms of fictive time schemes, and should be addressed further.

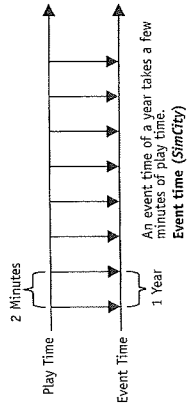
<http://www.electronicbookreview.com/thread/firsperson/pearce1>

Introduction to Game Time Jesper Juul



11.1. *SimCity*. (Maxis, Electronic Arts)

In *SimCity* we also find play time and event time. But what *happens* in the game — investing in infrastructure, building houses — happens faster than we would expect it to, were these real-life events. The event time depends on either explicit marks such as dates or on cultural assumptions about the duration of the game events. *SimCity* has both: we know that building a power plant



Juul responds

My point is not that real-time games are inherently better or ultimately more compelling than turn-based games, but we can observe that non-paced computer games have all but disappeared: the strategy game has become real-time strategy; the adventure game is often pronounced dead (and is perhaps being replaced by games like *Alice* or *Half-Life*); the commercial puzzle games are real-time.

<http://www.electronicbookreview.com/thread/firs-person/juul2>

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takes more than a few seconds, and the interface displays the current date in the event time. Playing for two minutes makes a year pass in the event time/game world.

Mapping

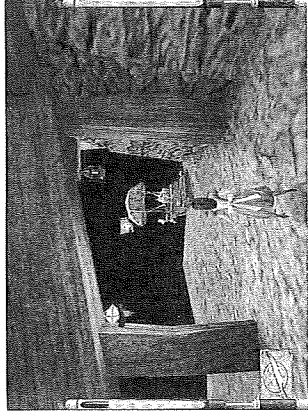
The relationship between play time and event time can be described as *mapping*. Mapping means that the player's time and actions are projected into a game world. This is the play-element of games: you click with your mouse, but you are also the mayor of a fictive city.

In this way, there is a basic sense of *now* when you play a game; the events in a game, be they ever so strange and unlike the player's situation, have a basic link to the player. Games require at least one instance of the player interacting with the game state; so games that are not abstract also require at least one instance of mapping — one instance where the player performs some act, such as moving a piece on a board or pressing a key on a keyboard, that is projected as having a specific meaning in the game world. The moment of mapping is one that has a basic sense of happening *now*, when you play. Pressing a key influences the game world, which then logically (and intuitively) has to be happening in the same *now*.

As described, action games tend to have a 1:1 mapping of the play time to the event time. In some games such as *Shogun*, *Total War*, or *The Sims*, the player

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11.2 Navigating the game world in search of a potion to make Alice small. (Rogue Entertainment, Electronic Arts)

can select the game speed, thus specifying the relation between play time and event time.⁴ So the play time can be mapped to event time with a specific speed: the player decides how long a period in play time will map to in event time.

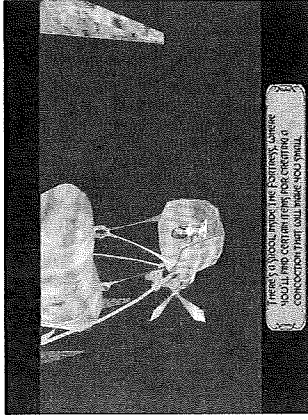
There is one extra point about the mapping itself; many games claim to depict historical events: *Axis and Allies* (about World War II) may be a good example, as may the computer game *Age of Empires*. In these games, the event time is assigned to a specific historical period. It is thus perfectly possible to play a real-time game that takes place in 15th Century France or in space in the 32nd. This can be indicated by something as simple as the text on the box ("The year is 3133"), or it can be something the player deduces from the game setting. The year specification in *SimCity* serves the same purpose: so the play time can be mapped to event time with a specific speed and it can be fixated historically.

Modern Games with Cut-Scenes

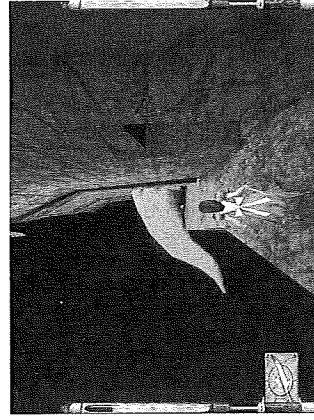
But not all event time is mapped from play time; it is quite common for the computer games of today to contain intro-sequences and cut-scenes. As an example we can look at the game *American McGee's Alice*.

The single-player game in *Alice* is a mission-based real-time game where each mission is framed by cut-scenes. Cut-scenes depict events in the event time (in the game world). Cut-scenes are not a parallel time or

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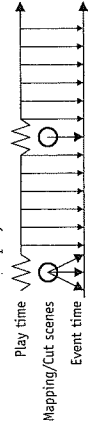


11.3. Having completed a task, you are rewarded with a cut-scene which gives you information about the next task. (Rogue Entertainment, Electronic Arts)



11.4 Navigating the game world in search of the promised concoction. (Rogue Entertainment, Electronic Arts)

an extra level, but a different way of creating the event time. They do not by themselves modify the game state — this is why they can usually be skipped, and why the user can't do anything during a cut-scene. Whereas action sequences have play time mapped to event time, cut-scenes disconnect play time from event time.



Common single player game with cut-scenes

Introduction to Game Time

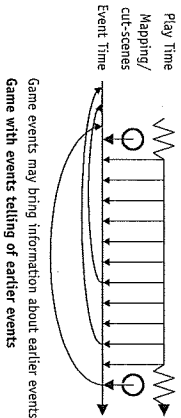
Jesper Juul

Interestingly, there is something of a convention that the play sequences use the full screen, while the cut-scenes are "letterbox," i.e., black bars are added at top and bottom. This presumably signifies "cinema," and also indicates the absence of interactivity. The letterbox presentation cues the player to interpret the graphics using cinematic conventions rather than game conventions.

The Chronology of Time in Games

Regardless of inspirations from cinema, time in games is almost always chronological, and there are several reasons for this. Flash-forwards are highly problematic, since describing events-to-come means that the player's actions do not really matter.⁵ Using cut-scenes or in-game artifacts, it is possible to describe events that lead to the current event time, but doing an interactive flashback leads to the classical time machine problem: the player's actions in the past may suddenly render the present impossible, and what then? So time in games is almost always chronological!

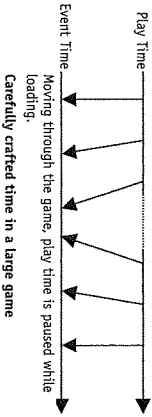
But one of the more interesting developments in recent years is that game designers have become better at creating games where things in the game's event time point to past events. Modern adventure games tend to contain not only cut-scenes, but also artifacts in the game world (event time) that tell the player what happened at a previous point in event time. This is the basic detective game model. In *Myst*, books in the game world will also tell you of events that happened prior to the time of the playing or at least outside the time that you can interact.



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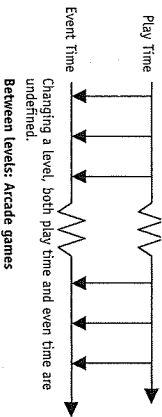
Adventure and Pong: Coherent Time vs. Level Time

Many, especially newer, games are careful to craft the event time as being continuous, creating a believable world. In *Half-Life*, the entire game world is presented as coherent (even if it features teleports). When loading, this is indicated by the word "loading," the event time is described as continuous, but the play time is on pause while loading.



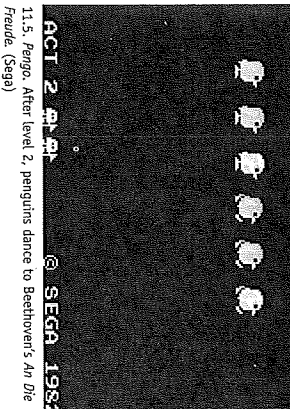
But on the other hand, many games are quite imprecise with event time. In the classical arcade game, the changing of levels is usually not described as making any sense in the game world. In fact arcade games tend to present several ontologically separate worlds that simply replace one another with no indication of any connection. One way to soothe the passage between two levels is, of course, to use cut-scenes. One of the earliest examples of this, from 1982, is *Pong's*

This cut-scene does not actually make any kind of temporal sense; it does not mean that something happens in the game world, but rather presents a break between two separate worlds in the game; the timeline of both play time and game time are broken. Play time is not mapped to event time; there is no connection between the event time of the previous level and the coming level:



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IP	7160	HL	20000	2P	0
GAME TIME	MIN.	35	SEC.		
FROM 00	TO 19	. 5000	PTS.		
FROM 20	TO 29	. 2000	PTS.		
FROM 30	TO 39	. 1000	PTS.		
FROM 40	TO 49	. . 500	PTS.		
FROM 50	TO 59	. . . 10	PTS.		
60	AND OVER	NO	BONUS.		



Similarly, in newer games like *Quake III* or *Counter-Strike*, the jump between different levels is not explained and the display refers to the materiality of the game ("Loading / awaiting gamestate") rather than to the game world.

If we think of games as fiction or stories, these kind of abrupt jumps seem unwarranted and esoteric. So why these series of separate worlds without sensible connection? Tracing this historically, we can look at the 1977 game *Space Invaders*, since this game also features several levels: having destroyed all the advancing aliens, the player is simply presented with a new wave of aliens without any explanation. There is no clear relation between these levels. The popularity of this kind of incoherent time can be explained by way of 1971's *Pong*: *Pong* is presented as a kind of tennis, and each session is played with several balls. *Pong* is structured like a meta-game consisting of separate

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rounds, but it makes sense here — this is, in fact, just like tennis. *Space Invaders* borrows the concept of rounds and projects a game world. So levels seem connected to the rounds found in sports and other pre-electronic games. This makes sense as an activity (in play time), but not when the game projects a world (in event time). But players do not seem to have any problems with such discontinuities.

Standard Violations of Game Time

In addition to the lack of connection between levels in some games, there are also some standard violations of the play time/event time relationship. Since the play time is projected into the event time, pausing the play time is supposed to pause the event time, bringing the game world to a standstill. The most common violation of this principle regards sound. In *Black and White*, the environmental sounds continue playing when the game is paused. In *The Sims*, the CD player you've purchased for your Sims continues playing when the game is paused. *Space Quest* has a rare but serious violation: *Space Quest* has several speed settings which then influence the play time/event time relation, making the player move faster on higher speeds. In one scene, acid drops falling from a ceiling have a constant speed regardless of the speed setting, and it is thus much easier to outrun the dangerous drops on the high-speed setting. (Example from Rau 2001).⁹

Save Games

So far, this discussion has been about time in individual game sessions, but adventure games and action-based exploratory games such as *Half-Life* require many game sessions and many saves to complete. In fact, the author's playing of *Half-Life* included literally hundreds of saves and reloads. The same save games were reloaded many times until progress had been made. Save games are manipulations of game time. They obviously allow the player to store the game state at a moment in play time and then later continue playing from that position. In retrospect, my playing of *Half-Life* is a combination of a multitude of small play sessions that moved the protagonist from the game's beginning to the end. A reconstruction of all the time

Introduction to Game Time

Jesper Juul

used on the game would yield a giant tree with numerous forks (the save games), numerous dead ends, and only one path through.

There are several arguments against save games, and all relate to the fact that save games allow the player to chop up the game time. First of all, save games are accused of decreasing the dramatic tension of the game, since the player simply reloads if something goes wrong. Another argument is that saves make the game easier or too easy. Both arguments could apply to my experience with *Half-Life*, since a large part of the game was played in a slightly disinterested save-try-reload routine. Although save games make *Half-Life* much easier, it nevertheless appears humanly impossible to complete the game without them. And another counter to these two arguments is the immense frustration to be had if you are forced to replay an entire game level simply because you made a mistake at the very end.¹⁰ For example, the recent games *Hitman: Codename 47* and *Gears: Citizen Kabuto* have been blasted for lacking an in-level save function (see Osborne 2000). A third argument is that the possibility of saving destroys the player's sense of immersion. The fourth, is Chris Crawford's uncompromising position, that the need for save games is a symptom of design flaws:

Experienced gamers have come to regard the save-die-reload cycle as a normal component of the total gaming experience... Any game that requires reloading as a normal part of the player's progress through the system is fundamentally flawed. On the very first playing, even a below-average player should be able to successfully traverse the game sequence. As the player grows more skilled, he may become faster or experience other challenges, but he should never have to start over after dying. (Crawford, in Rollings and Morris 2001, 5)

It seems that Crawford is thinking mostly about fairly replayable games rather than exploratory and adventure games, and in fact there are hardly any

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games that fit Crawford's description of being completable in the first go and being replayable and interesting afterwards. Save games are probably not an evil to be avoided at all costs.

But save games are mostly tied to single-player games¹¹, and mostly to exploratory and adventure games. Persistent games such as MUDs or *EverQuest* only have one play time/event time, and the players do not have an option of saving the game state and going back in play time (i.e., they can't save time, only things).

The Experience of Time

What I haven't touched on so far is the question of subjective time: how the player experiences time in games. The objective, linear time described in the game time model feeds subjective time experiences. The experience is a product of both the play time/event time relation and of the tasks and choices presented to the player. Games are supposed to be, if not fun, at least enjoyable experiences, but this is obviously not always the case: I'd like to invoke the concept of *dead time* — when you have to perform unchallenging activities for the sake of a higher goal. One example is that to progress in *EverQuest* or *Ultima Online*, you must spend hours or days doing mundane tasks such as walking, waiting for monsters to respawn, or even fishing or chopping wood. It makes perfect sense within the context of the game world but it is a dull experience — this is the dead time. You have to perform a specific task to advance in the game, but the task in itself holds no interest.¹²

What makes a game interesting? In *Game Architecture and Design*, Rollings and Morris (2001) (referring to Sid Meier) describe a good game as being a series of interesting choices. This means that for every choice the player faces, there must be no single obviously best option; neither may all options be equally good, and finally the player needs to be able to make some kind of qualified choice within the time allocated to the task. Obvious choices make for uninteresting gameplay. The counterargument to the idea of games as interesting choices is that in the author's experience, some sequences bear repetition even though they contain no interesting choices. Repetition of a trivial task can even

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be hugely enjoyable — such as getting a perfect 100% score on the challenge stage in *Galaga*.

The concept of *flow* described by Mihaly Csikszentmihalyi can be used for shedding some light on this: Csikszentmihalyi claims that flow is a mental state of enjoyment shared by people in a variety of situations, such as rock-climbing, chess-playing, and composing music. Flow has eight key traits, two of which are clear goals and feedback (very gamelike). The flow experience also alters the sense of duration:

"Hours pass by in minutes, and minutes can stretch out to seem like hours." (Csikszentmihalyi 1991, 49) To reach a state of flow, a game must be neither too hard (which leads to anxiety) nor too easy (which leads to boredom). This means that the experience of time is tied not only to the play time/event time relation and to the challenges provided by the game, but also to the relation between game difficulty and player ability. This creates some design problems by itself since players have varying skills. There are then a variety of ways to deal with this such as skill settings, training missions, handicaps (in multiplayer games), and secret areas to explore (letting the good player experience more). The player's options of changing game speed on the fly in the aforementioned *Sims* and *Shogun* also affects the difficulty (and thereby the cognitive effort needed), allowing the player to select a game that matches his or her skills.

According to the flow framework, the player will only enjoy playing if the challenges match the player's abilities and thereby lead to a state of *flow* (the player loses the sense of objective time — time will fly). If the game is too hard, the player will experience anxiety or frustration. If the game is too easy, repetition or triviality of choice will make time be experienced as unimportant, *dead time* (time will drag).

Flow is a compelling angle on games, but it does not explain everything. David Myers has noted that the fascination of mechanically repeating trivial tasks in some games contradicts flow — repetition should lead to boredom but doesn't always. It also seems to me that frustration is a more positive factor than in Csikszentmihalyi's description, because frustration may actually motivate the player to improve in order to

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escape frustration. Finally, flow can only explain games as a challenging activity in play time but ignores the projected world, the event time.

A Model of Time in Games

Game state: The state of the game at a given time.
Play time: The time used by the player to play the game.
Event time: The time of the events in the game.
Mapping: The process of claiming that what the player does is also something in event time; a projection of the play time onto event time.

Speed: The relation between the play time and the event time.

Fixation: The historical time of the event time, if any.

Cut-scenes: When the event time is constructed through narration (i.e., told rather than played).

A History of Game Time

Time in games has become increasingly complex and varied during the history of the computer game, but it is a development that moves in two directions. The root of games in play time allows them to define their worlds much more loosely and less coherently than we would accept in most other cultural forms. At the same time, the continued developments in processing power and data storage make it possible to craft event time with increasing detail and precision. These two directions can be traced to two original computer games: the round-based, sports-like game of *Pong* (the action game) and the world-creating, explorative game of *Adventure* (the adventure game).¹³

One of the biggest changes in computer game history is the movement from being primarily played in arcades to being primarily played at home. One of the selling points of the original Pong machine was actually "Ball serves automatically" — the economics of publicly available arcade games demanded that arcade game designers create extremely short (real-time) game sessions in order to have more players insert coins. The home game has made possible games of longer duration, save games, slow games... in fact, more varied game time.

On a historical note, traditional board-, sports-, and card games tend to be quite abstract, whereas computer games mostly project worlds. Though card games in some sense present a third option since the cards are, at

least historically assigned symbolic meanings and are therefore neither abstract, nor world-projecting. Chess is, depending on your interpretation, probably symbolic and somewhere between abstract games and nonabstract games; it is possible to see chess as two societies at war (even if it isn't "realistic"), but it would be very hard to interpret chess as specifying event time that the moving of a rook would "really" take three hours in event time. This is because event time needs to be created by textual and visual cues, and chess is very low on these.

The main difference between the computer game and its non-electronic precursors is that computer games add automation and complexity — they can uphold and calculate game rules on their own, thereby allowing for richer game worlds; this also lets them keep pace. So computer games create more worlds, more real time, and more single player games than non-electronic games. (The combination of automation and pace essentially paved the way for the real-time strategy game.) Games with pace seem to be more compelling, or at least more immediately appealing, than turn-based or nonpacing games.

But as always, new forms do not simply annihilate the older ones. Some of the strangest play time/event time mappings can be found in modern pinball games, whose basic rule continues to be "hit all the flashing things," but this is now augmented by a small display sending the player on "missions." The 1993 *Star Trek: Next Generation* contains (among others) a "destroy the asteroid" mission, where an asteroid threatens "the ship," and it is the player's job to destroy the asteroid... by hitting a flashing thing with the ball. There is no way that we can believe in a connection between the player shooting the ball around and the story happening on the display, but it does not seem to matter.

Conclusion

This essay has described some fundamentals of time in games. The duality of play time and event time appears basic because it is a basic play relation. As shown, the time model proposed here can be used for examining variations in the worlds constructed by different games; it connects to the player's relation to the game, and it can be used for thinking more broadly about game aesthetics. It is also a strong genre indicator, and an essential part of game history. A further step would be more detailed examinations of how game time is constructed through manuals, visual and acoustic cues, and gameplay. Much work is also needed to understand how game time and gameplay create player experiences.

When playing a game that projects a world, the player is (or the player's actions are) projected into the game world in a very direct way — this is the play element of computer games. A more open question is whether this means that we long for the virtual reality dream of being completely immersed in games. Many of the games mentioned here work against the idea of immersion, because their discontinuous times and worlds point strongly to themselves as being games rather than believable fictional environments. This, however, does not make them any less enjoyable. Games do not need to make sense to be fun.

Looking at the terms and diagrams in the text above, should not make us forget how incredibly quickly we grasp the complexities of game time when playing. The question "When was the power plant built?" has two answers: July 2001 and September 1994. Doing several things at the same time, acting both here and in a fictive world, comes naturally to most people. As such, there is a lot of work to be done in bringing out the tact knowledge we use when playing games.

Juul Notes

1. In the play perspective, computer games have several unique traits: one being that play works by projecting actual objects into a fictive plane (such as saying, "This mouse is a spaceship"). A common problem when playing is that the real objects do not have the properties to simulate what they are supposed to represent, i.e., the mouse does not actually fly. It may not matter that much, as it is then possible to say, "The spaceship is flying," but the objects used (the props) are unable to simulate this on their own. In other words, play is good at producing any kind of world, but has problem with consistency. (Computer) games are much better at providing consistency, but they cannot easily create the worlds that play can; the subject matter of a game has to be formalized and created as rules before the game can start.

2. See Juul (2001) for a discussion of the problems of using narrative theory in the study of games.

3. On a technical note, most games are discrete, finite state machines; meaning that the ball is objectively either in or out, and that there is a limitation to the number of possible positions. (This is in games such as tic-tac-toe, chess, or *Quake*). Sports are basically analog, infinite state machines; meaning that the ball may be in any number of positions between in and out, and that there is no limit to the possible soccer matches that can be played. Sports tend to have an umpire to decide in doubtful cases, since there may be argument about whether the ball was in or out. This doesn't happen in chess. For the sake of completeness, I must add that some variations of four-in-a-row allow the playing board to be expanded indefinitely; and as such they are discrete, infinite state machines.

4. The play time/event time relation depends somewhat on the familiarity of the game events. The real-time strategy game *StarCraft* (1998) is set in space, and the player doesn't have strong expectation for the speed of the units of the Zergs or the Protoss; the speed selection is consequently not described in relation to the play time (such as "twice as fast"), but simply named "normal," "faster," etc.

5. Flash-forwards can be included as indicating something either outside the player's influence or something that the player has to fight to reach. (This then ceases to make sense as a flash-forward if the player doesn't reach it.)

6. This kind of paradox can be found in *Mor Payne* (2001) where the game simply restarts the flashback level if the player fails.

7. The prevalence of unchronological time in traditional narratives is afforded by the fixed nature of the events. Because the story in a sense has already happened, the events can easily be presented in nonchronological order for aesthetic effect.

8. *Donkey Kong* is a year earlier (1981) and features cut-scenes that actually make sense in the game world.

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9. Paul's interpretation is that this incident in *Space Quest* destabilizes the notion of event time. I think it has the appearance of a mistake and so rather confirms the idea. Although I think it is perfectly possible to deliberately create such clashes and illogic, I do not think it is the case here.

10. And then again, the joy of winning correlates positively to the amount of frustration experienced on the way, but the general trend from the 1980s till now is to make games easier or at least more tuned towards giving the player many small victories and fewer long stretches of frustration.

11. *Age of Empires II* (1999) is one of the few multiplayer games to contain a save function. This obviously requires a bit of cooperation and communication between players.

12. In an interview, game designer Starr Long comments on the dead time in such games:

Up until now, we've been building these big, giant virtual worlds. And we like to brag about, "Oh, it takes four hours to walk from one end of the continent to the other." Somewhere along the line we lost that it's not really fun to walk for four hours. That's why people don't do it. I bet. Imagine if I could go from doing one fun thing to another fun thing without this big dead time in between, where I was either getting lost because it's hard to find my way around, or I get killed on my way and have to start back over. [Mediasac 2001]

13. This is a simplistic description of computer game history, but the 1980s term "action adventure" captured the marriage of action with exploration. The third major influence on computer games is probably board games, particularly strategy games. Card games do not seem to have had a significant impact on computer games. (Most likely because they are the only major nonspatial game genre, whereas computer games are almost exclusively spatial.)

Ito Response Note

1. I use "real" and "virtual," hereafter not in quotes, as a shorthand to refer to computationally and otherwise embodied phenomenon, not to refer to an ontological distinction.

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Towards a Game Theory of Game Celia Pearce

Introduction: Why Game Theory

In mapping the trajectory of popular media, we can see a clear corollary between theory and practice.

Literature, film, even popular music all began to a certain extent as "folk" genres that, once their cultural relevance had been proven lasting, caught the attention of theorists and entered into academic discourse.

Such a cycle is currently underway vis-à-vis computer games. This medium is still erroneously considered to be in its "infancy." (In fact, it is just coming of legal drinking age in some states.) The evolution of a body of theory on computer games is an exciting prospect. As with other media, it promises to broaden and deepen the discourse of the medium (we can start talking about something beyond violence, for example). In addition, if history is any indicator, it will also have a positive influence on the practice of creating games, just as the development of film theory in the sixties and seventies did on film craft. It is ironic that academia, the birthplace of games, has mostly shunned them until recently. It is also quite appropriate that

Response by Mary Flanagan

Celia Pearce's wake-up call for new ways of thinking about games in her article "Towards a Game Theory of Game" is well-timed. Computer games at least those of a commercial genre, long ago reached their "adulthood." As a capitalist affirmation of "digital culture," the gaming industry is now more profitable than box office sales in the film industry (ticket sales were just 7.7 billion in 2000; Associated Press, 2001). In 2001, games represented a \$10.5 billion dollar industry, growing 15 % per year from 1997 [IDSA]. Gaming is a social and technological phenomenon that has worldwide influence.

But... what will theories of and for gaming actually look like?

IV. Game Theories

MIT, where the first computer game — *SpaceWar* — was created as an independent hack by computer science Ph.D. students, was one of the first places to embrace game design and game culture as a subject of academic study. Here I will invoke MIT's own Henry Jenkins, who stated in his January 2001 presentation at "Entertainment in the Interactive Age," at the University of Southern California, that the most significant evolutionary leap in the film craft occurred when people started writing about it.

Repurposing Theory

Because computer game theory is a relatively new discipline, much of what has emerged thus far has come out of theorists from other disciplines absorbing game theory into their purview. It seems axiomatic that there must always be a phase where established media seek to "repurpose" their existing "assets" for use in the new medium. Most notably, film and literary theorists have begun to discuss game theory within their own idiosyncratic frameworks. These disciplines have much to add to the discourse on games, particularly when the discussion is centered on narrative. However, they are missing a fundamental understanding of what games are about. Because of this, they continue to struggle to "fit a square peg into a round hole," so to speak, by attempting to force games into their own notions of

Pearce follows in the steps of cybertext theorist Espen Aarseth, who has argued against "applying one's favorite theory" such as literary, film, or television studies to emerging forms. In effect, Aarseth argues, this combination of theories reduces new media phenomena to broad conceptual terms such as "interactive," "labyrinthine," and "worlds." The textuality of a computer game whose materials are entirely computer-based needs to be addressed in a way that brings the experiential, social, and material aspects of such work to the forefront.

Although the application of old theories to new forms can result in such linguistic muddling, to argue that we must define game studies *devoid* of knowledge of other art and entertainment forms is not