

# Game Spaces Speak Volumes: Indexical Storytelling

**Clara Fernández-Vara**

Massachusetts Institute of Technology  
77 Massachusetts Avenue, NE25-379  
Cambridge, MA, USA  
telmah@mit.edu

## **ABSTRACT**

In the problematic exploration of the narrative potential of videogames, one of the clearest aspects that bridge stories and games is space. This paper examines the different devices that videogames have used to incorporate stories through spatial design and what is known as environmental *storytelling*, focusing on the design elements that make the story directly relevant to gameplay beyond world-building and backstory exposition. These design-related elements are accounted for with the term *indexical storytelling*.

As a refinement of the concept of environmental storytelling, indexical storytelling is a productive game design device, since reading the space of the game and learning about the events that have taken place in it are required to traverse the game successfully. Storytelling becomes a game of *story-building*, since the player has to piece together the story, or construct a story of her own interaction in the world by leaving a trace.

## **Keywords**

Narrative, spaces, environmental storytelling, semiotics

## **INTRODUCTION**

Spaces are one of the obvious bridges between narrative and games. Stories take place in a spatial dimension, which contains the existents (characters and setting) that give way to the organized series of events that make up the story (Chatman, 1980). Spatiality is also one of the defining qualities of digital environments (Murray, 2001) and, by extension, of videogames. Murray argues that while other media can represent space, such as in paintings or novels, digital environments offer the possibility of navigating those spaces. Murray's observation can be refined and extended: the player can also manipulate the space, interacting with the objects in it.

Videogames also provide a space for performance, another fundamental element of performance activities (Schechner, 2003), under which we can also classify videogames (Fernandez-Vara, 2009). In this performance space, players restore a specific behavior (Schechner, 1985; Fernandez-Vara, 2009), a script that may be encouraged and afforded by the game. For example, a first person shooter encourages players to shoot, run and take cover; the layout of the level can encourage certain ways to navigate it to reach a goal. The script is more flexible than one may initially expect—in the same way that a

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

dramatic text is different depending on the theatre company, the same game may encourage different types of gameplay. Going back to the example of the first person shooter, there may be players who may try to complete the game by not shooting anybody, or always attack enemies barefaced without taking cover. Although the game may afford the behavior, it may not be possible to succeed by following those strategies. The space of the videogame also provides cues to restore behavior—for instance, a platformer encourages jumping by putting obstacles in the way, structuring the ground at different levels, and distributing bonuses and items in places that may be difficult to access.

Using spaces as a fundamental meeting point for games and stories has been repeatedly invoked, mostly in the practice of *environmental storytelling* (Carson, 2000; Pearce, 2007; Rouse, 2010; Smith and Worch, 2010). This paper extends and refines the concept, by proposing ways in which game design can encourage narrative gameplay both through the design of the space and through the tools provided to the player.

## **ENVIRONMENTAL STORYTELLING**

Environmental storytelling is a concept borrowed from theme park design (Carson, 2000; Pearce, 2007); it is a general term to refer to how spaces can evoke and construct a narrative experience while navigating a space. According to Carson, in theme parks or rides “the story element is infused into the physical space a guest walks or rides through.” Carson briefly describes his bag of tricks as a Disney Imagineer, referring to the power of evoking other stories, using theatrical trickery and establishing causality between what the player sees and the events that may have happened before. Carson’s overview shows that the concept of environmental storytelling is very broad, and encompasses a variety of strategies.

Borrowing concepts from theme park and ride design as a concept can be problematic, however. Designers of theme parks understand the player as a *visitor* who makes sense of the space, rather than an active agent (Pearce, 2007). Many strategies of theme park design focus on the navigation of the space, providing a continuous sense of the topography of the space. For instance, the so call “wieners” in Imagineering are elements that draw visitors to them, attracting those visitors to a specific area, such as Cinderella’s Castle in Disney World in Florida (Marling, 1998). Through these strategies, the designers of the park structure the experience of the visitor, and create a narrative.

Based on Carson’s concept, Jenkins (2004) discusses how game design can be an exercise on narrative architecture, as a middle-of-the-road position in the old ludology vs. narratology debate. Jenkins enumerates different strategies in which gameplay can become a narrative experience, focusing on two main concepts: *evocative spaces* and *micronarratives*. Evocative spaces reference stories or genre narratives that the player may already be familiar with; the space does not “tell” the story, but draws from the previous narrative experiences of the player. *American McGee’s Alice* (Rogue Entertainment, 2000) is a prototypical example: a twisted version of Lewis Carroll’s stories which, as Jenkins points out, the game relies on the previous knowledge of the

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

novels, usually through the Disney versions of the story. Micronarratives, on the other hand, are short scripted events that are integrated within the interaction of the player. These micronarratives create the emotional landscape of the game, by encapsulating the conflict of the game in short events. Jenkins' does not provide examples from videogames, but refers to Eisenstein's *Battleship Potemkin*, and its sequence on the Odessa steps as an example of how brief narrative moments generate emotional hooks for the audience, and how that could be translated into videogames.

Nitsche (2009) builds on Jenkins' concepts of narrative by qualifying these devices as *evocative narrative elements*, building blocks which structure the player's experience and help her understand how the gameworld works. As Nitsche defines them, "[S]uch elements can be anything and any situation in the game world that is structured to support and possibly guide the player's comprehension." The player has to figure out the connections between these elements, and by doing so, she forms a narrative. Nitsche's most relevant contribution is that these elements are interrelated—they are part of the fictional world, which the player learns about by establishing connections between elements. It is up to the player to interpret and make sense of the elements, thus the events of the story depend on the player herself: "The aim of narrative elements like these is not to tell a linear story, but to provide evocative means for the interactor to comprehend the virtual space and events within it, and generate context and significance in order to make the space and the experience of it more meaningful" (Nitsche, 2009).

These diverse academic approaches to environmental storytelling reveal that it is a rich concept, which involve a variety of strategies and narrative phenomena. Two running ideas seem to be the spine of the environmental storytelling: one, the narrative shapes the space, and navigating it constructs the narrative sequence; two, the player must piece the story together, interpreting the objects and events in the space.

Environmental storytelling as a specific discipline is also gaining prominence in game industry discourse. In 2010, two game design talks dealt with the topic at the Game Developers Conference in San Francisco (Rouse, 2010; Smith and Worch, 2010), one of the main industry gatherings worldwide. Each presentation discussed different ways in which the design of the space of the game can tell the story of the world.

Richard Rouse focuses on world design, defining environmental storytelling as "the story told by the game-world as if the player wasn't there." The techniques he proposes consist first on having a clear idea of what has happened in the world, and considering carefully what has happened in each location. Through different design techniques, such as controlling the navigation, puzzle design, revisiting the space, and distributing resources with narrative connotations, the player can learn about the world at the same time she is playing. Other proposed techniques are borrowed from film, such as camera movements, reveals, and lighting, to focus the attention of the player on specific events.

Smith and Worch propose similar strategies, focusing specifically on the player as an active agent in the space, who makes sense of the space and pieces together the

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

information embedded in it. Environmental storytelling is understood as a way to provide narrative context, as well as creating player identity. More importantly, Smith and Worch differentiate between the design of the environment itself, and systemic environmental storytelling, which creates opportunities for the player to generate events that tell a story in the space. As an example of systemic storytelling, they refer to *Half-Life* (Valve, 1998) deathmatch mode. Gunshots leave a trace on walls and environment; every player can also paint graffiti anywhere.

Smith and Worch's approach to systemic environmental storytelling is akin to the concept of indexical storytelling here proposed, although they are superficial mechanics to create narratives. In their *Half-Life* example, they show an image of a player character who had been killed while drawing a smiley with gun shots. The corpse, the blood stains, and an unfinished smiley tell the story of what happened to the player, who must have been too distracted to realize another player was coming upon him. This story is involuntary, however, and the tools do not really create a narrative experience that relates to gameplay, it is an afterthought. *Indexical storytelling* is a strategy to construct the narrative of the game, based on leaving traces and affecting the space, either on the part of the designer or the player.

### **INDEXICAL STORYTELLING: DEFINITION**

Instead of focusing on how the game world may generate a narrative, let us shift our attention to how narrative contributes to gameplay, and to helping the player restore behavior in the game. The novel concept of *indexical storytelling* refers specifically to generating stories through traces, both on the part of the designer and on the player.

### **Index, Symbol, Icon**

The concept of indexical storytelling derives from Charles Peirce's philosophy of language (Peirce, 1998). According to Peirce, a sign is a mediation, a representation that conveys to a mind an idea about a thing. Thus the nature of the sign involves the idea, the object that represents it (the sign), and the interpretant who establishes the relationship between the idea and the object. In Peircean philosophy, there are three types of signs:

- icons / likenesses: signs that convey ideas by imitating them, such as a photograph, a drawing, gestures or onomatopoeias (words that imitate the sound they refer to, such as *crack* or *roar*).
- indices / indications: the idea is physically connected with the sign. Peirce provides a sign post as an example (the direction of the signpost is where one should go). Other examples are smoke as an indication of fire, a sneeze denotes a cold (Fiske, 1990).
- symbols / general signs: signs that are associated with meaning through usage; the relationship between the sign and its meaning is arbitrary (Saussure, 1983) and part of a tacit social agreement. Most words are symbols, the sign denoting biohazard is a symbol where the association between the object and the idea it represents means is purportedly arbitrary.

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

Indexical storytelling is a story told mainly through indices in the Peircean sense. An index has a relation to the event, often is the consequence of it, which points to something that happened or is going on, inviting the player to reconstruct what happened. The player has to connect the relationship between the sign and the event that it points to. As Peirce notes, “[s]ome indices are more or less detailed directions for what the hearer is to do in order to place himself in direct experiential or other connection with the thing meant.” That is, indices can help the player situate herself in the world, and relate her experience in the game with her previous knowledge. Therefore, indices are a type of sign in video games which contributes to restore behavior by providing cues to the player.

Indices, however, can be more than sheer markers pointing the player towards what she has to do, but encourage her to interpret and reconstruct the events that have taken place in the space. Moreover, players can also leave their own indices on the space, creating opportunities not only for storytelling, but also for narrative gameplay. The next section unpacks the variety of indices used in videogames.

### **INDEXICAL STORYTELLING IN PRACTICE**

Indexical storytelling is the construction of a game narrative mainly through indices. The story is not “told” in a traditional sense, but rather put together through different pieces, as Nitsche suggests with his concept of evocative narrative elements. Thus, indexical storytelling is actually more story-building, both on the part of the designer and the player—the designer creates the elements of the story and integrates them in the world, the player has to interpret them and piece them together.

In the context of the fictional world of a games, indices can work both as indications of what could or should be done in the game (closer to Peirce’s definition), or as indications of what happened in the world before the game started. An example of the former are direction signs which tell the player where to go; indications of previous events can be footprints or bloodstains, which tell where someone has walked on, and that someone has been wounded.

Indexical storytelling is a refinement on environmental storytelling, since it specifies the ways in which story and game are integrated together based on leaving traces in the gameworld. The traces can be constructed through the design of the game, either in the design of the space, or the design of systems that allow players affect the space and leave traces on it. Indexical storytelling is a pre-existing practice, although not identified as a distinct set of strategies—both Rouse and Smith and Worch provide many instances of indexical storytelling in their presentations. Games like *Bioshock* (2K Boston / 2K Australia) or *Portal* (Valve Corporation, 2007) are recurring examples when talking about environmental storytelling; it is not surprising that both are also good sources of examples of indexical storytelling.

There are two main types of stories in games: the *history of the game world* and the *history of the player*. Indexical storytelling can be a device for both—in the case of the history of the gameworld, it refers to the indices left over by previous events, which have left a trace in the space that the player navigates, and which the player has to interpret. Indexical storytelling can also generate part of the player’s history, where the player can

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

leave indications in the world, which other agents in the world (human or computer-controlled) can interpret.

The following sections provide different approaches to indexical storytelling with respect to these two types of stories, and how they help the restore behavior in the game space.

### **History of the Game World**

It is relatively easy to find examples of how the history of the game world is constructed through indices, because it is the most common application of indices in games. Most of the examples that Rouse as well as Smith and Worch provide refer precisely to how to create the story of the fictional world through environment design. The following examples are classified depending on the type of behavior that is encouraged by the indices that relate to the history of the game world.

#### *Detective Work*

There are games where the gameplay revolves around discovering the history of the game world, what has happened before the player enters the space. In these games, the player becomes a detective, and is specifically prompted to piece together the story of the events. The behavior restored in these games usually involves examining the environment, reading documents, cross-questioning witnesses and suspects, and eventually reconstructing past events. Some of these games are inspired directly by genre fiction, such as *Gabriel Knight: Sins of the Fathers* (Sierra On-Line 1993), or *Phoenix Wright: Ace Attorney* (Capcom, 2005). Other games may not have an explicit genre fiction connection, such as *Myst* (Cyan Worlds, 1999), and yet the player also plays the role of a detective, by figuring out the origins of the world, and how the different cultures shaped their technology.

In games like *Myst* or *Deadline* (Infocom, 1982), reconstructing past events is core to gameplay, similar to how it works in detective stories. In *Myst*, the player is dropped on an island, and figures out the workings of the machines and contraptions on it at the same time she learns about the story of two brothers, and how they ended up trapped in two different magic books. In *Deadline*, the player is a detective working against the clock to find out whether Marshall Robner has committed suicide or has been murdered. Both games follow the model of the *whodunit*, where the story of the detective is ancillary to that of the crime (Todorov, 2000); the history of the world thus drives the plot. On the other hand, games like *Gabriel Knight* or *Phoenix Wright: Ace Attorney*, correspond to what Todorov identifies as a *thriller*, which involves both solving a murder mystery and the adventures of the detective when trying to acquire the evidence to find the culprit. In the thriller, the history of the world and the history of the player are developed together.

#### *Interpretation of Remains*

Remains of previous events are usually the core examples of how environmental storytelling works; most of the examples in the presentation by Rouse, as well as Smith and Worch, are remains. This type of indexical storytelling is constituted by the traces left behind by other agents who have been in the space before. The remains are objects that those agents have modified previously.

The scribbles on the walls in *Portal*, written by previous test subjects, are a typical example of this (Rouse, 2010). These scribbles look like the diaries of someone who was trapped in the same test labyrinth as the player, and found gaps to go behind the scenes and leave their testimony of what happened to them, as well as the count of the days they spent in a particular nook, or the famous revelation “The cake is a lie.”

The game world of *Bioshock* is created through remains—it is the other recurring example when talking about environmental storytelling in games. In every level, there is graffiti on the walls (often written in blood), and audio recordings of the people who lived in the underwater city of Rapture. The more sophisticated examples involve objects that tell a small story of the characters. For example, the main conflict of the game is introduced in Neptune’s Bounty, the fisheries of Rapture. As a place of commerce, it had also become the point of entry for smuggling items from outside. Smugglers, however, were not allowed in the city—as the player first enters the space, there is a corpse hanging in front of a wall, arms spread out imitating the figure of someone crucified, and the word “smuggler” painted over his head. Later in the level, the player finds out what the smuggler was bringing in—bibles and crucifixes, which are forbidden fare in the city according to the introductory film at the beginning of the game.

The problem with interpreting remains is determining how they relate to gameplay. Considering them evocative narrative elements, they involve the player’s interpretation of what has happened in the space – Smith and Worsch, as well as Rouse, make a similar argument. As was the case of the detective story, the story becomes a puzzle that the player has to piece together, but it is not directly relevant to gameplay or encourage a specific behavior. Conversely, remains provide the player with room to come up with her own understanding of the events that have taken place there. What is more, different players will probably have different interpretations, allowing for a multiplicity of ways to understand the history of the space.

Another less explored type of remains are ghosts, as the remains of other agents (human or not), who have inhabited the space before the player arrives. The first level of *Bioshock*, for example, features some ghosts that lament their being trapped in Rapture. A more sophisticated example can be found in *Demon’s Souls* (From Software, 2009), whose online component allows players to see the ghosts of other players. There are bloodstains on the ground, which are indications that a player died in that specific spot. By stepping on it, the player triggers of the image of the ghost and see the last few seconds of that player’s life; the animation gives the player clues about how the other player died—maybe they fell off a cliff, maybe someone attacked them. These ghosts become an indication of what *not* to do; in fact, at times it can be dangerous standing on a bloodstain where there may be a trap, or which is in range of the fiery breath of a dragon—the previous player might have died precisely by standing there.

Another more sophisticated use of remains, which contributes to restore behavior, is to help the player create her identity in the world (Smith and Worsch, 2010). The player can consider whether she is like the characters that have left those leftovers—in *Portal*, the

person who left the scribbles is another test subject, presumably, and the player can wonder whether to do what they did or not. The previous subjects have created a precedent, but is the player going to follow their steps? By creating an identity, the game provides a model of behavior that the player can restore in the game. In the same way that the space of first person shooters and platformers encourage certain behaviors, indexical storytelling can instigate specific character behavior.

### *Signage and Tutorials*

Using signage in games is relatively common, usually as a way to let the player orient herself in the world. After all, it is an explicit type of indication in the Peircean sense—it tells the player where to go or what to do. In *Bioshock*, for example, there are signs on the walls which indicate the name of the different areas (such as Neptune's Bounty, or Fontaine Fisheries), there are also direction signs at crossroads that point the way to those areas. Other signs, such as advertisements for the different plasmids (injections that change the DNA of the player character and bestow him with different powers), provide information about the story of the world, reinforcing the idea that Rapture has become hyper-commercialized (Rouse, 2010). There are posters that announce a New Year's Eve party early on in the game, and the streets decked with banners displaying diverse mottos reflecting the philosophy that lead to the building of the city. These advertisements and posters, although they are part of environmental storytelling, do not contribute directly to gameplay; they are remains that the player has to make sense of to understand the world better.

In relation to gameplay, signage can be more than mere help to navigation: in *Super Mario 64* (Nintendo, 1996), the starting area is a garden where there are different signs for the player to read. These signs tell the player about the different movements that can be performed in the space. For example: "Climbing's easy! When you jump at trees, poles or pillars, you'll grab them automatically. Press A to jump off backward." These signs not only suggest, but dictate the specific behaviors (in the form of button presses) that make up the basic mechanics of the game.

There are two issues with signage that functions as tutorial. First, it is difficult to consider them part of a story, since they are descriptions rather than events themselves. These indications are tools that will allow creating events in the history of the player, but the signage itself may not be directly conducive to an event. Secondly, and more importantly, even though the sign is situated in the virtual space of the game, it is referring to the controller, which is in the physical space where the player is ("press A to jump off backward"). These indications become extradiegetic pointers to actions that are outside of the fictional world. The fictional world is the setting of the story; stepping out of it can be an artistic statement, but more often than not it breaks off from the diegesis, i.e. the world of the game. Juul identifies the blue arrows in *Grand Theft Auto III* (DMA Design, 2001) as a case of a game element that defies the coherence of the fictional world—the arrows point to the location the player must go in the mission. Discussing them in terms of semiotics, these blue arrows are actually extradiegetic indices, which are part of gameplay but are not part of the fictional world.

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.



This issue is true of most videogame tutorials—the indications point to the player’s space, to the rules of the game, which at times may be at odds with the fictional world itself. Even in the case of games which integrate their tutorials and indications about what to do next, it is difficult to stay within the boundaries of the fictional world. *Metal Gear Solid 2: Sons of Liberty* (Konami, 2001), for instance, features the codec system, a radio to talk to the diverse handlers and helpers who tell the player character what to do. The codec is a diegetic object, and yet the characters make constant references to what buttons to use and how to press them for example. The characters themselves make fun of the recurring breakage of the boundaries of the world, pointing at the incoherence of mentioning the buttons of the game with reference to the fictional world.

Therefore, tutorials and other extradiegetic indices present challenge for storytelling, given that they need to point to the space outside the game itself. Also, they provide the player with information about the range of actions that can be used in the game, but do not directly create the occasion for story events.

### **History of the Player: Player’s Traces**

There are plenty of examples of indexical storytelling devices when it comes to explaining the history of the world, and providing indications to the player about what to do (or not). Finding examples of devices that allow players to construct their own history using indices are more rare, mostly because games involving narrative still insist on dictating the story to the player, rather than letting the player build her own.

Leaving traces in the world is not a matter of mere empowerment, or lending agency to the player to affect the world and decorate it alone, as was the case of the deathmatch mode in *Half-Life*. If there is the possibility of leaving a trace, it can easily become an index.

Players can leave indications depending on the actions that they carry out in the game world. In the same way that previous events can leave remains for the player to interpret, players can also leave their own trace behind through their actions. For that to happen, the game world must be *persistent*, i.e. the state of the objects and characters must be consistent throughout the playthrough, and changes cannot be undone after the player leaves an area. Persistence is not as common as one would think, since often games tend to reset their world after the player leaves a location. For example, *Super Castlevania IV* (Konami, 1991), as well as most of the *Castlevania* series, does not have a persistent world. The player may traverse a screen and eliminate all the obstacles and enemies, but after leaving, the screen will reset, so if the player goes back to that screen, the same enemies will be patrolling the screen, and items that may have been broken are magically restored. Resetting the level is a useful design device, but it may undermine the narrative coherence of the game.

Making a world persistent does not require sophisticated technology: *Colossal Cave Adventure* (Crowther and Woods, 1975-7) has a persistent world, which is necessary to be able to solve the Pirate’s Maze. The description of every room in the maze is “You are in a maze of twisty little passages, all alike.” In order to differentiate one room from

another, the player can drop an object in each location, leaving behind breadcrumbs of sorts. The objects become indications for the player herself to be able to solve the game, since the description of the game changes because it describes the object left behind.

One underused potential of player-created indexical storytelling is the capability of other characters and agents in the world to interpret the indices left by the player, thus creating occasions for story events. Computer-controlled agents can react to player indices and change their behavior accordingly. The stealth game genre, where the player has to avoid being detected, thrives on the use of indices of this type. The sound of steps is an index of the player's location, for example; if the sound happens within the range of a non-player character, the character will search for the intruder. Thus in the stealth genre, the core gameplay is to avoid creating or leaving indications of one's presence in the world. *Metal Gear Solid 2: Sons of Liberty* (Konami Computer Entertainment, 2001), exemplifies the core gameplay of stealth games. The bodies of soldiers that have been knocked out or killed will set off the intruder alarm if discovered by other soldiers, for example; noise will also cause guards to search for the player character. Thus hiding bodies and not making noise near enemies are essential to advance in the game. More interestingly, indices can be used to trick enemies—throwing an object far from the player character to make a noise will attract the guards, working as a distraction which the player can take advantage of.

Online play and shared game spaces are a promising avenue for indexical storytelling created by players to thrive, since the indications may be interpreted by other players and become useful information. The indices left by the player may help other players restore behavior in the game, by becoming hints or examples they may want to emulate. The online mode of *Demon's Souls* (From Software, 2009) is a clear example of this potential. The bloodstains explained above are possible thanks having an online connection, for example. Players can also leave hints and warnings to other players, such as "Beware of the ambush ahead," which other players can rate and vote for. If a player leaves useful hints, which other players will vote for, the player character will obtain extra souls, the currency in the fictional world of the game. These messages work as signage above, but instead of being provided by the game designer, it is the creation of other players.

## CONCLUSION

As the examples above demonstrate, indexical storytelling is already taking place in videogames; however, it has not been identified as a specific narrative strategy either in academic or industry terms. This paper has focused on traces and indications as a way to construct a narrative, both on the part of the designers and the player. What this survey shows is that the use of indices is pervading in certain kinds of games, such as detective games or the stealth genre.

The concept of indexical storytelling can open up a new set of game design strategies and the integration of narratives into gameplay. This includes not only expanding the palette of indices to tell the story of the world, but also considering more carefully what types of interaction are encouraged by those indices, since they are indicators of the possible interactions in the fictional world. This exploration of the use of indices in games also

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

reveals that allowing players to leave their trace in the world has a lot of potential to create not only new types of gameplay, but also let players create story events for themselves and others.

Indices in games have also revealed the issues of integrating certain types of indications in the fictional world, particularly tutorials that refer to the basic mechanics of the game. References to the game controller, to the space of the player, may undermine the coherence of the game world. Gestural controllers, such as the Wiimote, touch screens and the XBOX Kinect may help integrating the space of the player in the fictional world. Nevertheless, introducing the basic mechanics in a way that is coherent with the fictional world, independently of the controller, remains a worthy design challenge.

The two facets of indexical storytelling – with respect to the history of the world and the history of the player – also demonstrate that restoration of behavior in relation to the space presents a similar dichotomy. While the history of the world can encourage specific behaviors that will help the player advance of the game, indices related to the history of the player provide her with tools to create variations on that behavior.

Although the term *storytelling* has been used to refer to this new narrative concept, it is true that the story of the game is not technically told. As advanced above, it seems that in this particular instance both the designer and the player are constructing a narrative, so story-building also has the potential to be a collaborative activity between designer and player. Videogame story-building seems to defy traditional concepts of narrative—it is not structured, it rather lets the player pick up on the different signs at her leisure depending on her willingness to interpret them; it is also a tool for players to build their own stories. Indexical storytelling is also an unusual narrative because, unlike traditional Aristotelian concepts of drama, the story can be told through objects, the remains of previous events, rather than through character—this was the case of *Myst*, for example. The possibilities of videogames defy narrative traditions, so we can question whether story-building is really narrative, or whether games are bringing about a new experiential form, expanding and bending traditional approaches to narrative. Whether this is true can only take place through the continued exploration of how videogames incorporate story elements, and how they follow or break off from other traditions.

## **ACKNOWLEDGEMENTS**

The author would like to thank Jason Begy, Matthew Weise, Mia Consalvo, Konstantin Mitgusch, Todd Harper and Abe Stein for their input in the development of this concept.

## **BIBLIOGRAPHY**

Carson, D. Environmental Storytelling: Creating Immersive 3D Worlds Using Lessons Learned from the Theme Park Industry. *Gamasutra*, March 1, 2000. URL: [http://www.gamasutra.com/view/feature/3186/environmental\\_storytelling\\_.php](http://www.gamasutra.com/view/feature/3186/environmental_storytelling_.php). (accessed Aug. 2011)

Chatman, S. *Story and Discourse: Narrative Structure in Fiction and Film*. Cornell University Press, Ithaca, 1995.

Eisenstein, Sergei. (1925). *Battleship Potemkin*. Goskino.

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

Fernandez Vara, C. (2009). "Play's the Thing: A Framework to Study Videogames as Performance," presented at the Breaking New Ground: Innovation in Games, Play, Practice and Theory: International Digital Games Research Association (DiGRA) Conference, Brunel University, West London.

Fiske, J. Introduction to Communication Studies. Psychology Press, 1995.

Jenkins, H. "Game Design as Narrative Architecture," in *First Person: New Media as Story, Performance, and Game*, edited by Noah Wardrip-Fruin and Pat Harrigan, pp. 118-130. MIT Press, Cambridge, 2004.

Marling, K. A. *Designing Disney's Theme Parks: The Architecture of Reassurance*. Flammarion, 1998.

Murray, J. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. The MIT Press, Cambridge, 2001.

Nitsche, M. *Video Game Spaces: Image, Play, and Structure in 3D Worlds*. MIT Press, Cambridge, 2009.

Pearce, C. "Narrative Environments: From Disneyland to World of Warcraft," in *Space Time Play - Computer Games, Architecture and Urbanism: The Next Level*, edited by Friedrich von Borries, Steffen P. Walz, and Matthias Bottger. Basel / Boston / Berlin: Birkhäuser Verlag, 2007.

Peirce, C. *Essential Peirce: Selected Philosophical Writings*. Vol. 2. Indiana University Press, Bloomington, 1998.

Rouse III, R. "Environmental Narrative: Your World is Your Story." Game Developers Conference, San Francisco, 2010. Slides and notes available at <http://www.paranoidproductions.com/miscwritings/EnvironmentalNarrative.ppt> (accessed Aug. 2011)

Saussure, F. de, Bally, C., Sechehaye, A., & Reidlinger, A. *Course in general linguistics*. Duckworth, London, 1983.

Schechner, R. *Performance Theory*. Routledge, London 2003.

Schechner, R. *Between Theater and Anthropology*. University of Pennsylvania Press, Philadelphia, 1995.

Smith, H, and Worch, M. "What Happened Here? Environmental Storytelling." Game Developers Conference, San Francisco, 2010. Slides and notes available at <http://www.worch.com/2010/03/11/gdc-2010/> (accessed Aug. 2011)

Todorov, T. "The Typology of Detective Fiction," in *The Narrative Reader*, edited by Martin Mcquillan, pp. 120-127. Routledge, New York, 2000.

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

## **LUDOGRAPHY**

2K Boston / 2K Australia (2007) Bioshock. [XBOX 360], 2K Games.

Capcom (2005) Phoenix Wright: Ace Attorney. [Nintendo DS], Capcom.

Crowther, B., and Woods, D. (1975-7) Colossal Cave Adventure. [PDP-10].

Cyan Worlds (1999) Myst Masterpiece Edition [Windows], Mindscape International.

DMA Design (2001) Grand Theft Auto III. [Playstation 2], Rockstar Games.

From Software (2009) Demon's Souls. [Playstation 3], Altus U.S.A.

Infocom (1982) Deadline. [DOS], Infocom.

Konami (1991) Super Castlevania IV. [SNES], Konami.

Konami Computer Entertainment (2001) Metal Gear Solid 2: Sons of Liberty. [Playstation 2], Konami of America.

Nintendo EAD (1996) Super Mario 64. [Nintendo 64], Nintendo.

Rogue Entertainment (2000) American McGee's Alice. [Mac OSX], Electronic Arts.

Sierra On-Line (2003) Gabriel Knight: Sins of the Fathers. [DOS], Sierra On-Line.

Valve (1998) Half-Life. [Windows], Sierra On-Line.

Valve Corporation (2007) Portal. [Mac OSX], Valve Corporation.

**Proceedings of DiGRA 2011 Conference: Think Design Play.**

© 2011 Authors & Digital Games Research Association DiGRA. Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.