

# BUILDING INTERACTIVE STORIES

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We live in an age of electronic literature: e-book readers are being supplanted by the tablets and smartphones that most of us already carry, with whole libraries, such as Project Gutenberg's collection of public domain texts, available on demand while web comics and digitized comics, such as Marvel Unlimited, bring archives into our phones. However, much of this electronic literature is not meaningfully digital, and in most cases even the term "electronic book" is a misnomer: the stories we consume on digital devices are often simply wrappings for a print codex. Some works take technology a step further and meaningfully use the digital to afford interaction: videogames are the most popular example. Electronic books have the potential to make use of the interactions digital technologies allow. In the age of iPads, tablets are filled with interactive picture books (including adaptations of the works of Dr. Seuss and Lewis Carroll) and digital texts. For instance, the inkle studios app, *Frankenstein* (Morris 2012), allows the reader to explore the experience of the Creature through a choice-driven narrative, although the tragic outcome is predetermined. Reviewer, Laura Miller, notes the satisfaction this exploration offers even as the reader cannot "save" the Creature:

The great insight that writer Dave Morris brings to this adaptation of the novel is that while a reader cannot significantly change the outcome of the story, the interactive element *can* change the shading and flavor of the tale. It can be mournful and reflective or action-packed. The creature and his creator can show greater or lesser ambivalence about their own behaviors.

(Morris 2012)

Such works are examples of interactive stories: works that communicate a narrative through a system that allows for readers to take a range of actions to explore or direct the experience.

The integration of interactive stories into digital humanities practice has taken several forms. Interactive stories are certainly an object of study, and the intersection of digital humanities with media and game studies (as well as communities dedicated to making and studying interactive stories, such as the Electronic Literature Organization, which released *Electronic Literature Collection 1, 2, and 3*) has assisted our understanding of what interactive stories might accomplish. A growing interest in games in the classroom has also focused attention on serious and educational games, which often use interactive storytelling as one means to build an

experience. (Significant examples include Jane McGonigal's *Evoke*, an alternate reality game encouraging players to collaborate and address world hunger and water shortages, and *Play the Past*, a nondigital role-playing game system for character-based play in history courses.) By building interactive stories, we can communicate complex ideas that change our relationship to texts and have the potential to serve as textbooks, persuasive works, thought experiments, and personal narratives. In this chapter, I first position and define interactive stories as a medium, placing the form in its contested space in scholarship. Then I survey exemplars, design principles, and platforms for building interactive stories.

### Defining Interactive Stories

When we discuss interactive stories, the examples that come to mind are usually digital: an interactive picture book on the iPad, an adventure game, a hypertext novel. Defining interactive stories by their use of digital media can seem like an alluring place to start. Bryan Alexander defines digital stories as “narratives built from the stuff of cyberspace” (2011: 3), a definition that can be broadly interpreted and recalls some of the challenges of defining digital humanities. This definition can make it difficult to decide where the category ends: Alexander suggests using the “born digital” test to focus on works designed for the affordances of the web (15). We can understand affordances as those things a digital media environment offers that are significant capabilities of the form: for instance, the ability to encode hyperlinks and create meaning through nonlinear connections, or the ability of a system to take input, evaluate it based on a set of procedures, and respond.

However, nondigital systems can include elements of these affordances. *Choose Your Own Adventure* novels offer prescriptive systems for allowing decision-based narratives navigated through multiple paths, while Oulipian texts such as Raymond Queneau's *A Hundred Thousand Billion Poems* (1961/1998) offer paper-based algorithmic poetry generators. Queneau's poetry-generator uses the physical book to bind the lines of potential poems together, but each line is its own page, allowing the reader to combine the pieces to form new works. Such systems fall into the broader definitional rubric Espen Aarseth offers as “cybertext”:

[A] machine for the production of variety of expression. . . . [W]hen you read from a cybertext, you are constantly reminded of inaccessible strategies and paths not taken, voices not heard. Each decision will make some parts of the text more, and others less, accessible, and you may never know the exact results of your choices; that is, exactly what you missed.

(Aarseth 1997: 3)

In physical media, the paths not taken might be easily mapped, as anyone who has marked the page of their last choice while reading a *Choose Your Own Adventure Book* is aware. In digital systems, like in Queneau's generator, the paths not traveled are often too numerous to easily explore. Aarseth's definition thus complicates the easy association of the medium with the technology.

This interdisciplinary discourse and range of media leads us to find discussions (and definitions) of interactive stories in a range of spaces. Hartmut Koenitz, Gabriele Ferri, Mads Haahr, Digidem Sezen, and Tonguc Ibrahim Sezen recently summarized the history of what they term “interactive digital narrative” as originating with text-based games in

the 1960s and following three evolutionary paths: “text-based, cinematic/performative, and ludic/experimental” (2015: 11). These trajectories are useful for resolving the multitude of disciplinary spaces where interactive narrative is discussed and performed. Likewise, Chris Crawford defines interactive storytelling as a field that emerged in the 1980s but did not really take off until 2010:

[L]ike the proverbial elephant, everybody perceived it from his or her own vantage point. Moviemakers see it as a form of cinema, video-game people claim it as an extension of their own field, computer scientists think of it as part of the broader field of artificial intelligence, and experts in the art of improv consider it to be the computerization of their skills.

(Crawford 2012)

Ultimately, defining interactive stories hinges on understanding the role of interactivity. Marie-Laure Ryan identifies interactivity as the essential affordance digital systems bring to our ability to produce and experience narrative: “Digital media do not simply place us in front of a static text; they situate us inside a system that continually produces a dynamic object” (2004: 329–30). Janet Murray suggests that this interactivity transforms the roles of authors and readers:

[I]n electronic narrative the procedural author is like a choreographer who supplies the rhythms, the context, and the set of steps that will be performed. The interactor, whether as navigator, protagonist, explorer, or builder, makes use of this repertoire of possible steps and rhythms to improvise a particular dance among the many, many possible dances the author has enabled. We could perhaps say that the interactor is the author of a particular performance within an electronic story system, or the architect of a particular part of the virtual world, but we must distinguish this derivative authorship from the originating authorship of the system itself.

(Murray 1997: 153)

This definition yields a productive concept, the procedural author, suggesting that we can best define interactive stories through the work of their creation, including the creation of a rules-based system to communicate a narrative.

### **Why Not “Games?” The Ludology Vs. Narratology Debate**

Defining interactive stories as procedurally authored works intersects them with games. The challenge of labeling and categorizing interactive stories reflects an ongoing debate in the field, particularly in game studies. While it might seem easy to pull the lens of game studies (and with it, the term “game”) into any discussion of interactive narrative media, this tendency has been largely debated in both academia and popular discourse. Game studies is a relatively new field: Aarseth suggests that computer game studies emerged as a full international scholarly field in 2001, which saw both the first international computer game conference and the publication of the first issue of *Game Studies*. In outlining the challenges for this new discipline, Aarseth stakes out the need for computer game studies as its own discipline, noting that “games are not a kind of cinema, or literature, but colonizing attempts from both these fields have already happened, and no doubt will happen again” (2001).

These “colonizing attempts” refer to the tension between approaching games primarily as narratives (usually associated with scholars from disciplines such as literature or film) versus approaching games primarily as systems of mechanics or simulations. There have been several accounts summarizing and extending this debate over the past two decades. While the two “camps” (which is itself an oversimplification) are often labeled as ludology and narratology, they might better be understood as interaction versus narration. Michael Mateas (2002) rejects the term narratologist, which reflects a particular humanities discipline, not just the study of narrative. To recall our challenge in defining interactive stories, the tension of games with other narrative media is central to defining the uniqueness of games. Writing a few years after the publication of Aarseth’s *Cybertext* (1997), Mark Barrett suggests in “Irreconcilable Differences: Games vs. Story” that “not only are story and game achieving their emotional power through uncertainty of outcome in exactly opposite fashions, but the power derived from one method destroys the power of the other” (Barrett 2000). This opposition seems to set up a hard binary that is difficult to traverse, and indeed a few years later Gonzalo Frasca (2003a) summarized the debate as one driven by false binaries, suggesting that, while the characteristics of games may not seem to fit all definitions of narrative, re-defining narrative might shed new light on both games and stories. Frasca elaborates on this incompatibility in “Simulation vs. Narrative,” with another analysis of the binary conflict: “simulation cannot be understood just through its output. This is absolutely evident to anyone who played a game: the feeling of playing soccer cannot be compared to the one of watching a match” (2003b: 224). These debates ask us to reconsider what is important in the experience of the interactive story: Is there something new about being able to press buttons or touch a screen to change a story’s path? Or are these narratives better understood as drawing on the history of literature, film, and poetry? Our answer might well vary with each piece we explore—a videogame’s frantic pace draws the focus to interactivity, while a digital work of poetry heralds back clearly to literary narrative traditions. Thus it is unsurprising that Celia Pearce (2005) takes issue with Frasca’s dismissal of the simulation-narrative debate, drawing our attention to the very different levels of narrative present in different interactive forms. A player of games such as Scrabble and Chess might later tell a story of their experience, but the game itself does not present a strong narrative.

The apparent impossibility of resolving this debate suggests that this tension is essential to all forms of interactive storytelling, including games. Narrative and play cannot help but conflict, as traditional definitions of narrative privilege authorial control, and allowing a user to play means surrendering at least some of that control. Ian Bogost recently surveyed the state of this debate given the evolution of game studies trends over the past decade:

Not quite fifteen years after Espen Aarseth declared [“]Computer Game Studies, Year One[”] . . . , ours is an improbable, fledgling discipline whose future is hardly secure. It’s possible we’ve all made an error in isolating any media form from its kindred, particularly in the post-2008 era of austerity, where perhaps the only way for media studies to flourish is by teaming up, Voltron-style, and finally realizing that the overall project of making and critiquing media in culture needs a strong foundation atop which to develop medium-specific theories and approaches . . . Or else, or in addition: we need more and greater dispute, such that the terms and principles of various schools of thought are clearly identifiable, associated with specific individuals and institutions, clearly namable for invocation, and receptive to invocation in critical and design contexts.

(Bogost 2015)

When seeking to build interactive stories, then, we might take Bogost's advice to consider the work as both part of a much broader media discourse and a clearly identifiable, separate form. While games in general must be understood as systems where narrative (broadly construed) might create one thread of the experience, interactive stories explicitly privilege narrative as output and purpose. By thinking of building interactive stories instead of building games, we also free ourselves from some of the constraints that go along with game design, such as the expectation of either a conflict for the user to resolve or a competition with a winning or losing outcome.

### Designing Stories for Interaction

Distinguishing interactive stories from other forms allows us to focus our design on three essential components:

- Narrative development,
- Purpose of interaction, and
- Procedural system.

First, our interactive story needs a narrative, and that narrative needs a compelling reason for existing in an interactive form. Interactive stories can draw on any genre, from horror-inspired adventures such as *The Walking Dead* (Telltale Games 2014) to comedies such as Nick Montfort's procedural poem, "Taroko Gorge" (2009), and its many versions. The distinction between story and narrative varies by interpretation: a story is a sequence of events, while narrative encompasses the techniques and texts from which story draws. Often, interactive stories play with viewpoint and the concept of the narrator: sometimes the player is directly the actor in the story, as in the "you are the hero" model of *Choose Your Own Adventure* works, while other works invite the player-reader to engage with someone else's story, as in Shelley Jackson's hypertext, *my body—a Wunderkammer* (1997). While interactive stories might remediate existing narratives, those narratives are usually meaningfully transformed in the process (see Bolter & Grusin 2000). For instance, inkle's *Frankenstein* (Morris 2012) includes almost twice the text of the original novel to allow the reader to dive into the mindset of the Creature. By moving away from the original narrator's perspective, the reader can experience the Creature's relationships with other characters and his developing philosophy. An interactive story can also be originally written for the form, which often impacts the conceit and organization. For instance, *my body—a Wunderkammer* is fragmented around the physical interface of the human form. Stories that lend themselves to interactivity can also follow traditional patterns of branching, as in Jason Shiga's *Meanwhile*, a graphic novel adapted for iOS by Andrew Plotkin that opens with the choice of vanilla or chocolate ice cream and then launches a time travel adventure that boasts "3,856 Story Possibilities" (Shiga & Plotkin 2012). Other narratives take advantage of the simulation aspect of interactive systems to allow exploration through a virtual space. For example, *Gone Home* (Gaynor 2013) slowly reveals a family conflict through objects in an apparently abandoned house. Spatial stories are particularly common in games or physical environments such as theme parks, and they rely on what Henry Jenkins defines as environmental storytelling:

[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.

(Jenkins 2004: 23)

Other examples of environmental storytelling include alternate and augmented reality games, such as Google's Ingress (Niantic Labs 2012), a faction-driven, science fiction battle game that plays out in real cities.

Each type of interactive story tends to use the mechanisms appropriate to its goals. Environmental storytelling is common in games and other interactive stories where the emphasis is on the action; for instance, *BioShock* (Irrational Games 2007) uses audio messages and atmospheric posters to convey the history of a sunken city in between the player's battles with monsters. More text-driven works tend to rely on a strong organizational mechanic, whether it is based on a simple choice-driven progression, such as the decision to destroy one's surroundings and self in Pierre Chevalier's *Destroy / Wait* (2013), or a spatial metaphor turned textual, such as the exploration of caves in Crowther's original *Adventure* (1976). The choice of mechanics determines the pace and sets the expectations of the user as well as the user's role: in environmental works, the user is often cast as a player, focused on motion and progression. In text-based or poetic works, the user is instead invited into the role of reader. The integration of elements from different genres and expectations can change the pace: some text-based works incorporate timers, as in Anna Anthropy's frantically paced *Queers in Love at the End of the World* (2013), which simulates the last moments with a lover prior to the destruction of the planet.

Next in our design process, our interactive story needs clear purpose and goals for the user/reader's interactions with the system. Mark Meadows addresses the challenge of system design while also engaging the ludology/narratology debate: "The narrative's structure and the design of the interactivity should be two ingredients in a single recipe. In the best forms of interactive narrative, one can't take precedence over the other" (2002). Obviously, this remark assumes the purpose of the work is to communicate a story, which fundamentally distinguishes some genres of interactive media from others. While a story might be constructed from the play of *Monopoly* or *Tetris*, it is hardly fundamental and certainly does not play a role equal to the simulation; likewise, in a game such as *Monkey Island*, the interactions and puzzles serve primarily to advance the story.

Interactive stories use interaction in several ways, including:

- Choice: Choice-driven narratives are usually branching and allow the player to move between meaningful options. A powerful example is Porpentine's *With Those We Love Alive* (2014), a text-driven game where the player writes symbols on their arm to represent key choices while responding to a nightmarish society's demands.
- Exploration: Exploration-driven narratives can involve movement through a virtual or real space (as in environment-driven works such as *Gone Home*) or the exploration of time and context, as in Dan Waber's poetic text game, *A Kiss* (2013), which includes over one thousand passages that allow the user to delve into a relationship by moving through moments before and after a kiss.
- Obstacles and Problem Solving: Overcoming obstacles to advance a story is often associated with games, from classic text games to adventure games. Alternate reality games also rely on collaborative problem solving as in *I Love Bees* (42 Entertainment 2004), a science fiction, alternate reality game where players unravel hints to receive story fragments such as a call to a phone booth at an encrypted place and time.

Finally, the nature of these interactions and the needs of the narrative determine the system and platform we must construct or use to build the interactive story. This system cannot be separated from the narrative and goals of interaction, meaning the design and procedural layers have to be built in tandem. This is reflected in Susan H. Delagrange's assertion about interactive scholarship, a genre that often draws on the methods and tools of interactive stories: "Design is intrinsic to an argument, not decoration for it, and must be part of the writing–imaging–designing process from Day One" (2009). This intersection is productive to the design and argument of my project, "Alice in Dataland" (2015), which uses multiple platforms of interactive storytelling to remediate *Alice's Adventures in Wonderland*. Shifting through platforms allows us to recognize the strengths and affordances of each, which in turn transforms the experience of our interactive stories. Such jolts of platform or modality shift are also demanding of the reader; they require attention to changes across spaces, for instance.

### Platforms for Interactive Stories

Over the past decade, digital humanities projects have benefited from the increasing accessibility of digital production tools and methods: new resources make it possible to build complex interactive systems with small teams and often without intensive programming. The impact of open source tools designed for use by "non-coders" has likewise been particularly powerful in the realm of interactive storytelling. A few of the platforms that have been widely adopted and/or offer valuable affordances include:

- ARIS: The ARIS augmented reality storytelling project was developed by a team led by David Gagnon at the University of Wisconsin–Madison. The platform allows for the development of locative games that can be played on mobile devices through the ARIS app. Building stories on this platform allows creators to employ elements of environmental storytelling, as characters and items are placed relative to real-world locations. For instance *Steel* (2013), based in downtown Madison, invites players to explore the historical steel industry and collect metal to exchange.
- Twine: Created in 2007 by Chris Klimas, Twine is a node-based system for building games that include many of the fundamental affordances of hypertext novels. Examples of Twine games include *A Kiss* (Waber 2013) and *With Those We Love Left Alive* (Porpentine 2014). Twine has proven particularly successful in bringing underrepresented voices into game development, and the subject of Twine's definition as a gaming platform has proven controversial. Twine creators typically define their works as games, inviting comparison and conversation with mainstream gaming culture, while the typical face of videogames is very different.
- Inform 7: Text adventure games remain a primary example of interactive storytelling, but the genre of interactive fiction has evolved significantly since its roots. Inform 7 is a natural language tool for building interactive stories that are centered on explorable worlds and parser-driven play (where the author anticipates the use of verbs and nouns to interact with the environment) and thus can offer a space that feels as responsive as the author's anticipation of player actions. Emily Short's *Bronze* (2011), a retelling of *Beauty and the Beast*, demonstrates Inform 7's flexibility and power while offering many variations on the fairy-tale ending.
- Adventure Game Studio: Developed by Chris Jones, Adventure Game Studio is an open source platform for building graphic adventure games. The platform features an accessible graphical interface and has seen several versions since 1997. The tool is inspired by classic

games such as *Monkey Island* and *King's Quest* and has seen several impressive independent releases, including the split-screen narrative, *What Linus Bruckman Sees When His Eyes Are Closed* (Twelve 2006).

- iBooks Author: With the introduction of the iPad as a platform for reading in 2009, more attention has centered on taking book-like experiences and enhancing them with digital affordances. Most of the outcomes of this type of development are multimodal, but rarely truly interactive: the reader might respond or act, but the system cannot react. iBooks Author has made building multimedia texts with responsive content accessible, and the less proprietary EPUB format has also been undergoing revision to allow more dynamic content. Currently, the tool is rarely used creatively and most often used for math textbooks, but the platform's capabilities are evolving.
- Unity: The Unity platform offers the tools of a production-level game engine with 3-D or 2-D graphics and an impressive range of assets for free. While most digital humanities and educational projects do not reach this level of development, Unity and similar platforms are popular choices for independent and professional interactive stories, including *Gone Home* (Gaynor 2013). Just as Twine complicates any barrier between game and interactive story, so, too, does the use of Unity remind us that the overlap between the two is extensive.

Open source platforms for building interactive stories can lower the barriers to entry for creating works that use procedural systems as their foundations. The choice of platform is essential to the feel and capabilities of a work, as different platforms better enable different types of interactions. While many of these platforms are based on minimizing the amount of coding literacy required to create interactive stories (particularly Twine and Adventure Game Studio), the development of a procedural system and the creation of rules for responding to actions are still central. The emphasis on visuals varies between platforms, with tools such as Twine and Inform 7 minimizing or eliminating the role of graphics, while Unity and Adventure Game Studio both require the development of an environment in two or three dimensions.

The choice of platform is more than aesthetic: just as the form of a book influences its content, whether subtly—through the placement of words or the division of a sentence across pages—or explicitly—as with serialized novels and their corresponding cliffhanger-based structure—so, too, does the platform's machine layer transform a work. Any interactive story relies on encoded algorithms, or decision-making rules systems, that are built into the platform. The author can set some of the rules of the system and in doing so determine the player's options for interactivity, but other rules and options are determined by the platform itself.

Building interactive stories allows us to explore the capabilities of the technologies and devices we use every day. The presence of interactive stories (and, indeed, of games) on the computers we carry in our pockets has a growing potential to change our relationship with both devices and the world around us. Through the lens interactive stories provide, we can also probe at and rethink related genres and media, from games and electronic literature to print codices and comics. Building an interactive story can also be an act of scholarship, whether covert (such as the retelling of *Frankenstein* or *Beauty and the Beast*) or deliberate (as with "Alice in Dataland" and the journal, *Kairos*). Interactive stories provide a way to communicate theories and ideas through a nonlinear form with different constraints, feedback, and expectations than an essay intended for print. By engaging with interactive stories as part of digital humanities, we can expand our methods and practice.



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