Narrative Ephemera: Documents in Storytelling Worlds

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Abstract

Purpose: Some virtual, immersive stories are filled with documents that users must locate and interact with to experience a narrative. Exploring a new area of inquiry in the information science field, this study focuses on individuals' experiences with documents in a particular 3D storytelling world.

Design/methodology/approach: Using a qualitative approach, this study examined user interactions with virtual documents to better understand the relationship between information behavior and narrative spaces. This study employed observations of users in a story-rich world, followed by semi-structured interviews using virtual artifacts and stimulated recall.

Findings: Using an interpretative phenomenological analysis, this study found that 1) environmental and personal influences, 2) the search and the narrative experience, and 3) expectation and confirmation events surround a user's experiences with documents in storytelling worlds. These influences and experiences determine the user's relationship with these documents, which may be considered narrative ephemera—objects that a user accumulates to create and structure a story. This model of narrative ephemera depicts the user's search for narrative cadence, fulfilment of competence needs, and visions of story events or the user's own lived experiences. Individuals may experience these phenomena from a document, shifting back and forth between the designers' intentions and the users' own realities.

Originality/value (mandatory): This study represents a first attempt to investigate information behavior in a distributed narrative space: a virtual world filled with documents. This study reveals that commonly employed information behavior theories, as well as literary and motivation theories, may be well-suited for investigating story worlds. Continued research in this area of inquiry may benefit educators as well as designers of digital stories.

Keywords: Information behavior; digital storytelling; documents; immersive environments; narrative.

Introduction

Video game designers, the creators of storytelling worlds, often litter virtual environments with "information-as-things" (Buckland, 1991), virtual objects that users must find to experience a story. A document, using Buckland's (1997) and Briet's (1951) definitions, is any physical object that signifies. In the case of distributed narrative, where users must find objects to progress a story, these objects signify information related to plot. Although a story's narrative arc may dictate many elements of user behavior in a virtual world, the meaning a user ascribes to a document and the information it conveys could vary widely.

Because educators are adopting immersive, digital storytelling (Davarsi, 2014) and scientists are focusing on the different impacts of computer games (Boyle *et al*., 2016), practitioners and researchers alike may benefit from understanding how users find and experience documents in virtual environments; a user's (or student's) "reading" of a video game may be intertwined with how she discovers information in that virtual space.

At this time, however, only a handful of information behavior researchers have focused on information seeking in 3D virtual environments. These investigations tend to focus on goal-directed activities in multi-user experiences (Adams, 2009; Harviainen and Savolainen, 2014; Nahl, 2010; Ostrander, 2008) rather than story-driven games. This is not surprising. Information behavior research often measures or describes what the user "got out of the encounter" (Latham, 2013, p. 547), highlighting how users seek access to information sources rather than what they experience or "feel" (Savolainen, 2019). Some information science research has focused on inward, reflective experiences with documents (Latham, 2013; Reuter, 2007; Ross, 1999), but these studies are grounded in the physical world. What about story-rich virtual worlds? What about the documents that inhabit them? To address the growing interest

in games research and its intersection with information science, this study asks: **How do participants respond cognitively and emotionally to documents in a narrative-driven, virtual world?**

This study and its focus on information behavior in a 3D storytelling space represents a new area of inquiry in the information science field. In addition to advancing the field, this study may inform designers of digital stories on when to employ unguided information-seeking tasks or, instead, apply mechanics to explicitly direct user behavior. Application of such techniques may lead to more engaging narrative spaces that allow users (and learners) to find information without disrupting literary experiences.

Video Games as Story-rich Information Systems

To conduct information behavior studies on virtual worlds, researchers may first need to reinterpret video games or 3D immersive stories. Harviainen and Savolainen (2014) reframed video games as information retrieval systems embedded within complex user interfaces. Within these systems, the user learns to adjust their information practices to fulfill knowledge gaps. Just as some information behavior studies focus on the relationship between affective behavior and physical actions, such as selecting a back button or using a history function (Bilal and Kirby, 2002), movement in a 3D space may be considered a form of dis/embodied query reformulation. The difference is that, within story-rich games, the user's query reformulation may either enact or enable narrative. As such, story-rich games may yield novel insights into the future of immersive information behavior, which is multi-sensory and participatory (Robinson, 2015a; 2015b).

Despite the potential for applying an information science lens to game studies, research in this area has been limited. The focus of information behavior researchers has been on multi-user synthetic worlds, such as *Second Life* (Harviainen and Savolainen, 2014; Nahl, 2010; Ostrander, 2008) or *City of Heroes* (Adams, 2009; Sköld, 2015), which are not framed by a

single, particular plot that drives gameplay. Their findings, however, show that information seeking models and theories are readily applicable to story worlds. To uncover how individuals experience documents in narrative spaces, researchers may need to draw from additional theories and concepts.

Unpacking the Document for Narrative Spaces

To investigate user behavior in narrative spaces, both game and information scholars may benefit by drawing from document studies. Specifically, researchers may find utility in utilizing Latham's (2014) concept of person-document transactions. By expanding the definition of document to any physical object that signifies, Latham (2014) unlocked document theory for objects in museum spaces, "allowing the object of study to be the document rather than the disciplinary constraints associated with it" (p. 551). Drawing from her phenomenological research on individual experiences with museum objects, Latham's (2014) conceptualization of document experiences is holistic and involves "the whole person and environment" (p. 558). Similarly, studying documents in virtual narrative spaces may need to account for aesthetic experiences that are not confined to objects themselves.

Gorichanaz and Latham (2016) expound on the document experience by exploring a framework for document phenomenology. They offer a phenomenological structure of document becoming: documents furnish intrinsic (physical) information and extrinsic (attributed) information, and people furnish abtrinsic (e.g., related to psychological state) and adtrinisic (e.g., memories) information (Gorichanaz and Latham, 2016). It is through these elements that information becomes meaning and a document comes into being. The mutual altering between document and human, they argue, is a transaction.

This study explores these document theories and concepts in a new space—an interactive story world. Robinson (2015b) elaborates on the future of documents, which may be influenced by pervasive, multisensory, and participatory technologies that blur the lines

between reality and unreality. Because story-rich games still rely primarily on the user's sight and hearing to interact with documents, such objects may not fully meet Robinson's (2015b) description of a new generation of multi-sensory documents. A story-driven game's ability to prompt aesthetic or emotional experiences and its ability to situate the user as a participant within a narrative, however, represents key elements of Robinson's (2015b) elaboration on the future of immersive documents. To catch a glimpse of documents in the future, information scientists may benefit from investigating virtual objects within story-driven games today.

Last, it is worth noting that although this study proposes investigating person-document transactions in a story-rich virtual world, it does not explicitly position user experiences within a theoretical or conceptual framework. Instead, it draws upon the vocabulary of these studies as well as theories from other disciplines in a generative manner to, as Jackson and Mazzei (2013) suggest, push "theory to its exhaustion in order to produce knowledge differently" (p. 265).

Methods and Procedures

To answer the main research question of how individuals respond cognitively and emotionally to documents in a narrative-driven, virtual world, this study's author conducted a qualitative study of user experiences with a particular video game. Specifically, the present study uses interpretative phenomenological analysis (IPA) (Smith *et al.*, 2009). Such an approach aligns with Robinson's (2015a) emphasis on phenomenology to investigate immersive information behavior, and it heeds the suggestion of Sköld et al. (2015) that investigating games as information systems may require hermeneutic deconstruction of player interpretations of a play-space. The goal of IPA is to promote participant reflection and understand the individual's sense-making process regarding particular experiences (Smith *et al.*, 2009). In this case, this study's author promoted participant reflection on experiences with documents in a distributed narrative. To accomplish this, user actions were observed in the

virtual world that informed intensive, semi-structured interviews. To ensure that these interviews focused on experiences with documents, the study employed stimulated recall with virtual artifacts chosen by each participant. Before conducting these procedures, a secured Institutional Review Board (IRB) approval was obtained.

The Story-rich 3D Environment: *Gone Home*

This study uses *Gone Home*, a first-person 3D video game created by the Fullbright Company (2014). Users embody the character of Katie Greenbriar, a twenty-year-old student returning home to Oregon after a year abroad in 1995. Users guide Katie through the large, empty house, rummaging through artifacts of her family's life to uncover the mystery of their disappearance and the dysfunction within their home: marital strife, alcohol dependence, and, the most essential plot point, parental reaction to the coming out of Katie's sister, Sam.

Gone Home's controls are simple. The users utilizes controls and features similar to many other traditional, first-person 3D games. The user may move in eight directions, crouch, interact with in-game objects using an action button, and may use a "zoom-in" function to closely examine objects. These documents, such as a vase or even a crumpled receipt, create the game's *mise-en-scene* and unlock its story. See Figure 1, which depicts the myriad objects a user may pick up and investigate.

Fig. 1. All movable items within *Gone Home* gathered in the Greenbriar foyer (Morganti, 2014).

The documents users interact with vary in their narrative value to *Gone Home*. Most interactive items may not directly add to the story of the Greenbriar home. These items (like a Lisa Frank trapper keeper) mostly serve to elicit consumer nostalgia from the 1990s and to add playfulness to the game (Sloan, 2015). Other items, such as an intimate note, are key artifacts that unlock non-diegetic, audio narration (i.e., spoken entries from Sam's diary). See Figure 2, which depicts two different ways that players may interact with objects in *Gone Home*. Although the game does induce non-linear information seeking for these narrative fragments, *Gone Home* guides the user to the game's conclusion through hints in these key artifacts.

Fig. 2. Left-to-right: a concert poster (a static, non-interactive item that can only be viewed) and a family photo (with the user interface prompting the user to interact with the object). Although these objects may afford different forms of interactions, they both distribute fragments of *Gone Home's* narrative.

Participants

As IPA is an idiographic approach that relies on in-depth analysis of participant perceptions, a small sample size (*n* = 6) was used (Smith *et al.*, 2009). Participants were recruited from college-affiliated organizations dedicated to gaming or storytelling in the Midwest of the United States, chosen based on the study author's personal connections. These associations included undergraduate students enrolled in digital storytelling courses at a large

public university, a graduate assistant at a game development and research laboratory, and volunteers who organize gaming events for middle school and high school girls. Calls for participation were announced through short, in-person presentations in digital storytelling classes or through departmental points of contact.

All six participants exhibited an interest in games and storytelling, and each participant was familiar with first-person perspective games, as well as typical PlayStation 4 controls for such games. To determine the participants' interest in video games and digital stories, Quantic Foundry's Gamer Motivation Profile (n.d.) was utilized as a screening tool. All participants showed a broad interest in gaming, making them well-rounded individuals for understanding gameplay experiences. Sharing a common interest, the study's author and each participant uncovered together how they experienced documents within the virtual space. This collaborative approach led to more vibrant descriptions of the phenomenon (Savin-Baden and Howell Major, 2013).

Virtual Task and Observation

To examine user experiences with virtual documents, participants were asked to wear a set of Tobii Pro Glasses 2, a wearable eye-tracking system, while playing 40 minutes of *Gone Home* on a PlayStation 4. This set-up allowed the study's author to observe and record gameplay from a separate room while tracking gaze patterns with virtual objects. The first 40 minutes of *Gone Home* was chosen for game play because this section of the game promotes exploration without revealing all of its plot points. Much like reading a book for the first time, this open exploration allowed the participant to bring their own horizons of expectations to the story, to select features to attend to, and respond to those features (Ross, 2005). Observing this exploration guided additional questions for the semi-structured interviews.

Semi-structured Interviews and Data Analysis

After observing 40 minutes of gameplay, each participant was then asked to sit for an in-depth, semi-structured interview with stimulated recall. These interviews typically took 30 minutes to complete. After beginning each conversation by answering opening questions regarding their gameplay experience, each participant was then asked to reflect on three items that stood out the most to them. The interview schedule then included questions designed to unpack why the participant chose their specific document, questions regarding their search process, and questions about their narrative experience. As the interview continued, each participant was asked to lead the interviewer to where each document was located, stimulating further dialog and interaction with the item. In total, 240 minutes of in-game behavior and 187 minutes of interview dialog was recorded.

Then each interview transcript was analyzed following the procedures outlined in *Interpretative Phenomenological Analysis* by Smith, Flowers, and Larkin (2009). After transcribing the interviews, the study's author followed a six-step process for analyzing the data:

1. Interview transcripts were read (and re-read) without conducting annotations. This repeated reading promotes an understanding of interview development, interview-interviewee rapport, and the narratives that bound together each portion of the interview (Smith, Flowers, & Larkin, 2009).

2. Initial coding was conducted, by adding descriptive, linguistic, and conceptual comments to each transcript. The initial coding was completed using Dedoose, a qualitative and mixed-methods research analysis software. Initial codes included short phrases, such as "character development," "hesitation," "personal factors," "usability," "story vision," "suspicion," "layers," etc. In total, there were 89 distinct initial codes that were applied.

3. Through an inductive process of re-organizing codes and accompanying excerpts for each participant, these codes were then used to uncover initial themes. Turning these codes into themes established concise statements that synthesized what was important from the initial coding (Smith, Flowers, & Larkin, 2009). In total, the collapsed initial themes established 38 statements from all participant interviews.

4. Next, connections across the themes were identified. Smith, Flowers, & Larkin (2009) warn that this step is not prescriptive, but one way of establishing initial connections is through categorizing themes chronologically. This chronology aided in mapping how themes related to one another and in developing super-ordinate and sub-ordinate themes. With these themes established, it was also important to look for oppositional relationships between themes when applicable.

5. The iterative process began again by moving to the next interview transcript.

6. In the final step of data analysis, the study's author drew connections across all cases and created a master table of themes. This table aided in establishing recurrent themes in participant experiences. The themes within this table were then collapsed into five recurrent themes that are detailed in the study's results.

Description of the Participants and Their Chosen Items

The following section briefly introduces each participant observed and interviewed for this study. These descriptions include the participant's initial reactions to the game, perceptions of the plot, and the three items that each found personally salient. Participant names have been changed to maintain confidentiality. (See the Appendix for images of all chosen items.)

Brittany

Based on the documents Brittany experienced, she felt that there were two plots within *Gone Home*. She described one plotline that followed a conspiracy surrounding the protagonist's father and another that surrounded Sam's (the protagonist's sister) initiation into

a violent, teenage subculture. Brittany focused on (1) a box of books written by the protagonist's father, (2) a note between Sam and her soon-to-be love interest, and (3) a crumpled, sternly written note from the father's boss. Brittany frequently expressed appreciation for the minute detail of the objects and home interior within *Gone Home*. At the time of the interview, Brittany was a second-year college student majoring in Theater Production, with a focus on set design.

Carson

Carson progressed the furthest in the game. As such, he had a clear understanding of *Gone Home*'s plot and its focus on Sam's disclosure of her sexuality. In addition to discussing the story, Carson often mentioned his own upbringing, as well as aspects of video game design. For Carson, the most important items were (1) a video game cartridge, (2) an intimate love note between Sam and her love interest, and (3) a phone book. At the time of the interview, Carson was a graduate research assistant at a game development and research laboratory.

Dillon

After playing the game, Dillon described the plot as one centered on the family's drama. He did not, however, entertain notions beyond the facts presented by the virtual documents. Nevertheless, Dillon found the game's apparent lack of linearity and promotion of exploration novel. For Dillon, the most important items were (1) a single book believed to be written by the protagonist's father, (2) a box containing a laser disc player, and (3) a note hidden within a false-bottom drawer. At the time of interview, Dillon was a fourth-year college student majoring in Communications and Indigenous Studies.

Grace

Grace correctly summarized the story as centering on the growing relationship between two teenage girls, and she frequently described using a systematic approach to discover this information. Grace also presumed that there were secret documents exchanged between the

game's characters. She believed that they could be hidden in mundane, everyday objects. As such, when asked to choose three in-game items, Grace chose (1) a box of tissues, (2) a box of playing cards, and then (3) a friendly note passed between Sam and her love interest. At the time of the interview, Grace was the coordinator of a non-profit gaming organization for girls.

Leah

Finding the narrative progression slow, Leah focused on finding plot-salient items as efficiently as possible. When describing the plot, Leah focused on the loneliness of Sam while also noting some unknown, eerie plot point she had not yet discovered. Leah chose (1) a box of books written by the protagonist's father, (2) a key to the home's front door, and (3) a record player. At the time of the interview, Leah was a fourth-year college student majoring in Film Production.

Marcus

Marcus recalled immediately being determined to find Sam in what he assumed was a haunted house. Given the amount of items in the game, he expressed being uncertain of what information was important for reaching this goal. This frustration could be due to Marcus exploring areas of the home that did not contain narratively salient items. When asked to choose three in-game items, Marcus selected (1) a locked locker in Sam's room, (2) a family portrait, and (3) a string of lights surrounding a locked, attic door. At the time of the interview, Marcus was a fourth-year college student majoring in Communications.

Results: Emerging Themes

Through coding, identifying initial themes, and finding connections between interview transcripts, five overarching themes regarding user experiences with virtual documents emerged. These themes surround the users' experience with what this study will refer to as narrative ephemera. Narrative ephemera are transitory items that a user accumulates to create a story. How users react emotionally and cognitively to narrative ephemera depends on (1)

environmental influences, (2) personal influences, (3) their search experience, (4) their narrative experience, and (5) the formation of expectations and confirmation events.

Figure 3 provides a visual representation of these themes. The figure depicts how environmental influences, such as the atmospheric qualities and intent of the world's designers, and personal influences, such as lived experiences, initially frame how participants reacted to documents. This is represented by the figure's outer circle.

Within the outer circle, the figure then depicts how the storytelling world fostered experiences that were primarily search-driven or narrative-driven. This dichotomy is represented by the themes' physical separation within the figure. These two themes each had their distinct characteristics. Search experiences, the way participants sought information, were typically goal-oriented and immersion-oriented. Narrative experiences, interactions that related specifically to *Gone Home*'s story, were characterized by the extent to which documents provided contextual information or how they fostered visions of the story.

Search experiences and narrative experiences, however, were not isolated phenomena, as depicted by the dashed, "permeable" line that bisects the diagram; the search for information influenced participant understanding of *Gone Home*'s narrative sequences and plot. This evolving understanding of the narrative, in turn, influenced information-seeking behavior. Furthermore, during participant meaning-making, in-game documents either created narrative or plot expectations that could then be confirmed or denied as their in-game experience continued.

The figure presents all five of these themes within a circle, a deliberate choice meant to invoke the participants' experience. A circle has neither a beginning nor an end. When traversing an encircled space, an individual could take any direction—bouncing between different points within the circumference—based on her wants or needs. The following portion

of this paper examines the aforementioned themes, referred to now as narrative ephemera, a label chosen to express the participants' ever-shifting descriptions document interactions.
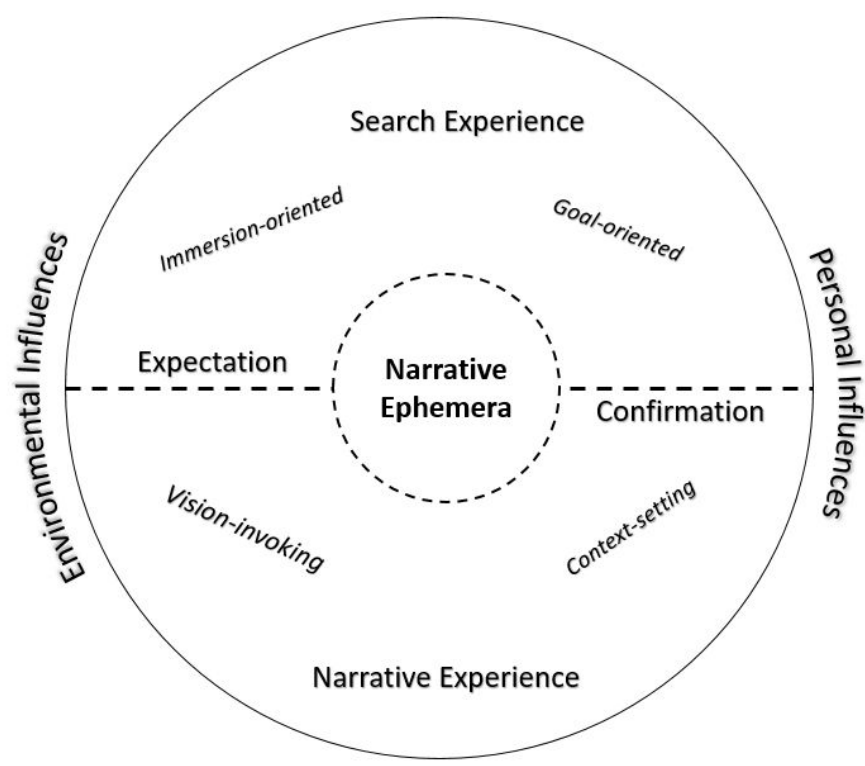

Fig. 3. Visual interpretation of the five themes that illustrate how users experience documents in narrative worlds.

Theme 1: Environmental Influences

Gone Home's designers include atmospheric qualities typically found in mystery or horror storytelling to impact user behavior at the beginning of the game. This behavior includes the users' search process and ensuing reactions to narrative ephemera. Although all six participants mentioned the eeriness of the in-game environment, users responded to the atmosphere differently based on their interactions with documents in the virtual house. (See Figure 4, which depicts the atmospheric qualities of the Greenbriar living room.) For participants who did not experience many key items and expressed skimming documents, like Marcus, they focused on ambient information from the environment. For instance, Marcus frequently mentioned atmospheric qualities, such as noise and light:

So it was just, like, super mysterious and I kept hearing noises so I wouldn't, I didn't

know if it was like a scary game or not. And then they were talking about like [ghosts]

stuff and like seeing ghosts in the TV room. So, and it was really, like, it would creak

and stuff, I'd be like, okay, that's a ghost. Like something's going to jump out.

Fig. 4. Marcus focused on information provided by the atmospheric qualities of specific rooms, such as this living room.

Leah, also focused on the atmosphere, and described her virtual artifact, a record player, as going beyond simply a cue for how the room was used to being a tool to alleviate her anxiety:

I just saw the record player and I'm like, you know, I like old jazz music. So I let it play

throughout. Um, they kept me, you know, kept me from being alone. The TV, I tried to

keep the TV on, but the TV just made that announcement. It didn't work. So this one

kept me like, you know, not alone. Like I wasn't alone in here. I have something playing

in the background so it's not too silent and weird and creepy as I go through the house.

For other participants, like Grace, virtual documents set her at ease and changed her perception of the environment:

And then it was, it was interesting to read the note about the electrical problems in the

house. And so that sort of explained, you know, what was going on with some of the

lights and everything and then combine that with the, um, with the bad weather. And

so that just, it made it all very atmospheric, but also at the same time it, there was good

reason for it to be atmospheric, you know, so like my original suspicions of like, is

zombie going to jump out from around the corner or is there a ghost or something like

that or you know, are they trying to somehow mess with me and my flickering the lights

or something like that. Like there's, it's creepy, but there's an explanation for all of it.

So it kind of sets my mind at ease a little bit and lets me focus on exploring other things.

The atmosphere in the game, which included horror-tropes, changed as participants found and

experienced more information in the environment. For others who did not find key items, the

horror elements maintained prominence in the participant's experience.

Theme 2: Personal Influences

Beyond the environmental qualities in this virtual world, personal experiences also

influenced how participants searched for and responded to narrative ephemera. For example,

four participants described how prior gaming experience affected how they searched for and

ascribed value to particular documents. Grace's description of her exhaustive search pattern

illustrates how a user's history may influence information seeking, "I'm sure, like, past

gameplay and similar games has rewarded me for doing that. And so I've kept using that

strategy 'cause it's worked before."

In addition to describing their gaming experience, participants frequently chose virtual

artifacts that conjured memories. Describing one of his chosen artifacts, a video game cartridge

(see Figure 5), Carson shifted from focusing on his gaming experience to his personal

memories:

I was born pretty much '94 so close to the year of this game. So it's, like, funny. That's,

like, this is the year that you're in and then yeah, this, this cracked me up… I think it

probably just goes back to, like, it's an extension of, like, I thought about my childhood

playing, like, you know, Yoshi's Island, things like that. I thought back to times I'd seen these cartridges, kind of the, as a gamer, like how meta it is to have a game inside of it...

Fig. 5. Finding a video game cartridge within the virtual environment, Carson described how the object fostered childhood memories.

In one instance, it was the lack of gaming or associated memories that altered responses to in-game documents. Brittany, who lacked extensive gaming experience, found a note that referenced a popular 1990s video game, *Street Fighter*. Brittany mistook this reference, and it shifted her anticipation of *Gone Home'*s plot. When asked about the plot, Brittany mentioned focused on the protagonist's sister:

> She seems that she's had trouble fitting in, she's gotten involved with the wrong crowd… The daughter, being someone who has trouble fitting in, kind of like that punk vibe, [she] was into fights…. So it's some sort of fight club that she's involved in out there.

Although the plot of *Gone Home* does not include any connection to a violent club, Brittany's personal experiences influenced her understanding of the story.

Theme 3: The Search Experience

Participants also focused on how and why they searched for information within the virtual environment. Their search for narrative information often shifted between goal-oriented and immersion-oriented behavior, and the extent to which participants exhibited and described each behavioral style varied.

Goal-oriented Searching

At the beginning of *Gone Home*, participants were placed within the virtual world with little information regarding the story. Their first goal was to find any documents that could provide some description of the plot and how to proceed navigating the environment. Typically, participants found key items that prompted audio narrative within the first few minutes, providing a sense of immersion in the story. However, if participants did not experience key documents in a timely manner, their goal of simply progressing the story began to override any sense of immersion. This lack of immersion led some participants to disregard documents that did not seem pertinent. For Leah, this meant ignoring items unless they were related to the character Sam. Leah mentioned that, "At this point, I just didn't care. I didn't care about it all. I needed to see all of Sam's stuff." Marcus also echoed this sentiment when he said, "I was skimming, like hardcore skimming, which is like looking at like, like, after a while I was just, like, 'Okay, like if it doesn't have Sam's name and I'm like, I'm just like not going to read it.'"

Without experiencing key documents, these participants did not experience narrative immersion. Instead, they exhibited a narrow focus on known narrative elements, such as single characters.

Immersion-oriented Searching

Unlike purely goal-oriented behavior, immersive-oriented behavior led players to take more time with objects, and, in some cases, purposefully avoid information. Some participants stated that this would ensure that they experienced the game's story as the designers intended. Participants described searching for "secondary" items before experiencing items with high

narrative value, such as documents that prompted audio narrative. For Marcus, this meant avoiding a seemingly ominous room where he expected the climax of the story: "I remember distinctly that, like, I didn't want to go there until, like, I was done looking at everything because... I don't know. I thought that that was going to be like where the jump scare was." (See Figure 6.)
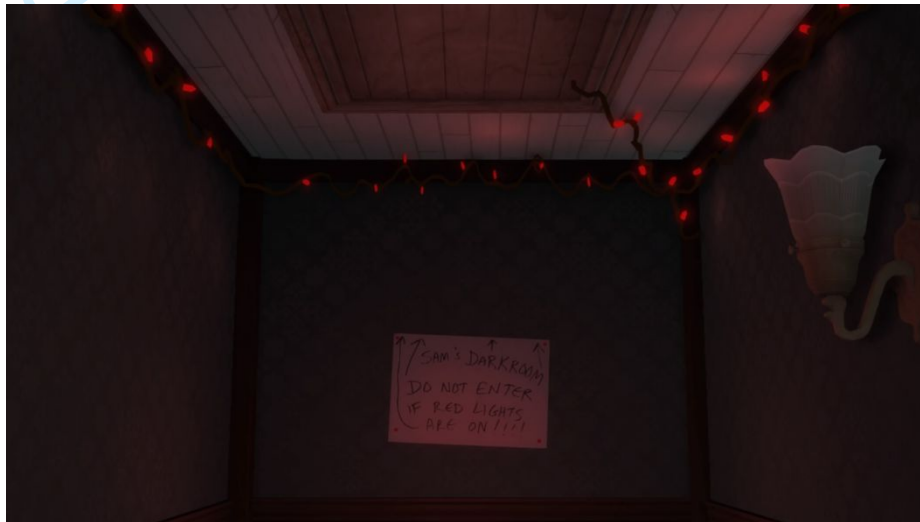

Fig. 6. Hoping to avoid the story's climax, Marcus detailed changing his search to avoid narrative-rich spaces, particularly this ominous darkroom found in the Greenbriar home.

Carson, focusing on "stumbling" upon information, described the challenge of experiencing stories in virtual environments in *Gone Home:*

I've been like, "Oh, I kind of jumped to something that I didn't deserve yet." And so that's, that is a tough thing about these. Like, you know, if you're talking about an open experience where it's like a movie, as opposed to like a guided experience, I find that sometimes you can stumble into a story that kind of pushed you either ahead of what you should know or kind of jump starts the story, which can either be like a really cool moment of kismet and, like, "yes!" or, on the other side of it, be, like, "Yeah, so, now I know that there's a password," but I don't know how far back in the timeline I need to go to like get to their naturalistically."

Carson later described that these moments of kismet lead to a natural "momentum" of being on "a trail of getting that story." This momentum could include pauses, however. Being on the "trail" did not lead to faster search patterns. For example, one immersive-oriented behavior participants mentioned was pausing to fully read a document or fully absorb audio narrative.

Although each participant's search process was highly individual, two elements connected immersive and goal-oriented search patterns. First, participants recounted being methodical in their search. Second, participants presented an interesting linguistic pattern. Five out of the six participants described both their search and the environment with words that conveyed stratified information. They used terms like "digging," "diving," "uncovering," "layers," and "the surface."

Theme 4: The Narrative Experience

Narrative ephemera provided context clues that the participant then pieced together to understand *Gone Home*'s plot. For example, participants stated that objects helped them to establish the identity of their embodied protagonist, Katie, and items assisted in developing an understanding of other characters' personae. Items also acted as temporal anchors, helping participants to arrange narrative events and to understand the era in which the story takes place.

Because narrative ephemera provided different types of context, participants applied varying levels of value to these objects. This is unsurprising, as some documents in the game trigger actual character narration. Describing what he perceived as useful items, Dillon mentions these burst of audio narrative:

> I think a useful one would probably be, oh, gosh, definitely this letter. The letters are really useful I think, 'cause that's kind of primarily how you get a lot of your context for either the characters, the situations, stuff like that.

Some participants did describe, however, that there was a cumulative effect of the seemingly less important items. Describing her involvement in theater production, Brittany focused on how minute details could provide context:

And so, like, I go into a space for, like, a theater and I'm like, "okay, well this is, these are the minute details that say something about a person that aren't, that isn't like outright saying, like, isn't telling the story," but it's really integral to their character development and like seeing who they are as a person... And I don't know, it just gives kind of a look into what's going on in the person's life and, the more you find out, the more you can kind of put a nail on what that, well, all those details meant.

The details participants focused on could also conjure explicit mental images of what occurred in a space. This conjuring typically occurred when participants created a mental schema of how items connected within a storytelling space. Sometimes, these item connection moments were related to proximity. Looking at a liquor cabinet and note found nearby, Leah envisioned the protagonist's father drinking after receiving a discouraging letter:

I read it and then I don't know, but I did notice that it was, you know, it was with the liquor. So I just started looking at the liquor. Like, did he get drunk after, you know, after that failed letter?

In other instances, documents could conjure visions without explicit item connections. Focusing on some Post-It notes with self-motivating scribbles (see Figure 7), Brittany began to envision familial strife:

And that's kind of what he chooses to do rather than, like, be with his family. If he's going to spend this much time, and there's something going on there where he's slacking, then there's, and there's also not a huge relationship with the family that's evident there.

These visions, in turn, formed expectations that were later confirmed or refuted by other objects.
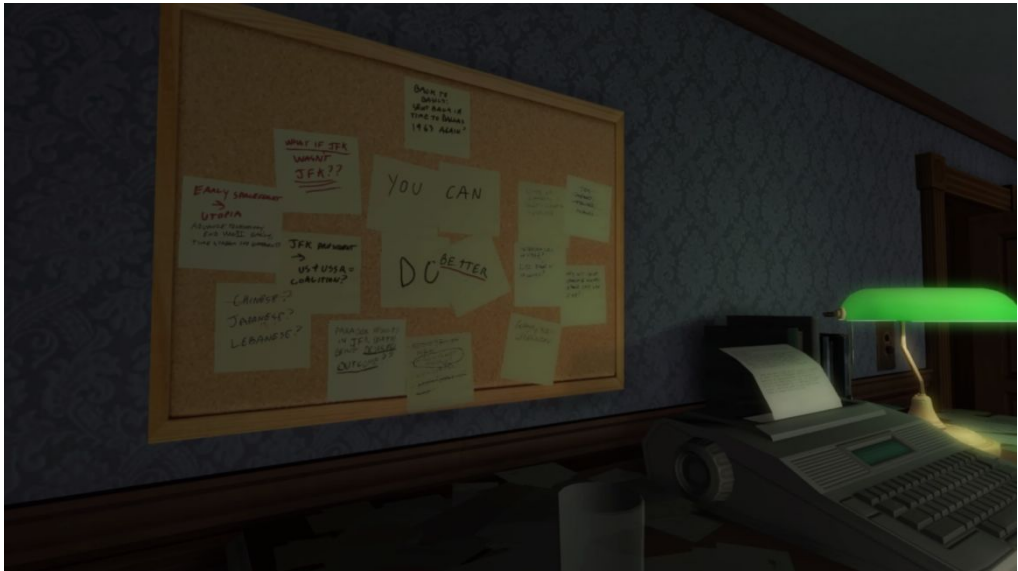

Fig. 7. Documents could foster mental images of plot points. Brittany, focusing on some sticky notes within the environment, conjured elaborate visions regarding the protagonist's father.

Theme 5: Expectation and Confirmation Events

Participants created mental images of character actions, and narrative ephemera confirmed, refuted, or fueled expectations based on these visions. One document in the environment, a family portrait, shows how narrative ephemera could lead participants to have these expectation or confirmation events. During our conversations, half of the participants focused on this family portrait. Marcus, for example, recounted how it did not match his visions of the characters:

> And I realized that, like, Katie was a lot older than I thought she was. For some reason, I thought they were, like, closer to the same age. So it was just, I got to, like, put, like, faces to names and that made me, like, understand it just, like, a little bit better.

Dillon explicitly used the portrait as a tool to verify information (see Figure 8):

I don't know if you saw it, but I grabbed the photo, the photo in here, and I was sitting there, and I was like, "is that her? Is that...," Cause I had to hold it up to the, to the portrait [laughing] to try and figure it out. Cause I'm like, is that her?

Fig. 8. Dillon compares a loose photo with the family portrait in the Greenbriar Foyer.

Sometimes objects fueled false-beliefs envisioned by the participant. Marcus frequently described the house as being haunted. Although participants frequently discussed the eeriness of the house, they correctly dismissed this expectation after interacting with enough narratively important items. Marcus, unlocking relatively few audio narrative segments, found documents that fueled his false belief throughout his gameplay experience (see Figure 9): "I don't know what kind of trouble they got themselves into, but Sam's been seeing a ghost in the TV room."
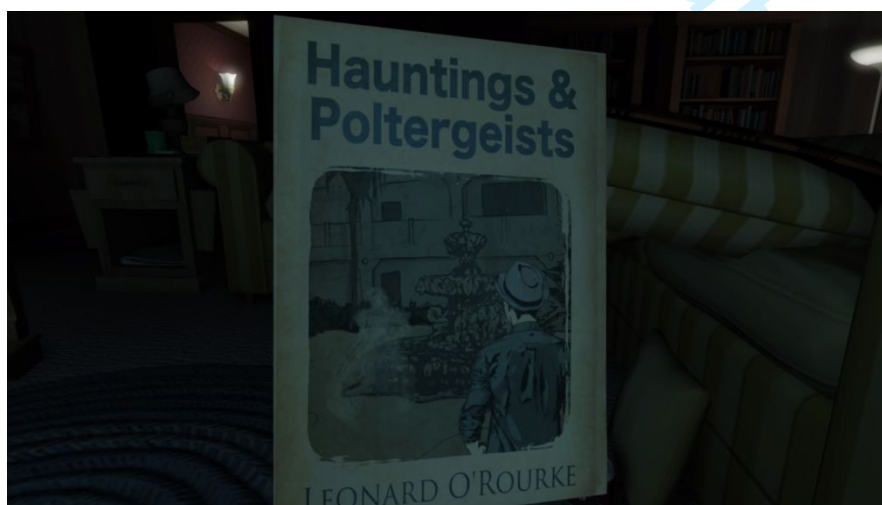
Fig. 9. Marcus found a book within the environment that fueled his belief that the home was haunted.

Discussion: Interpretation of Themes

The themes discussed above were derived from participant experiences, and the following section interprets these themes using a scholarly lens. Specifically, these themes related to (1) a search for narrative cadence, (2) fulfilling competence needs, and (3) cognitive transportation. These three elements help to explain how participants respond to documents in narrative spaces, providing a clearer understanding of information experiences within virtual story worlds. This section then concludes with a description of how participant experiences bear similarities to aspects of reader-response theory.

Narrative Ephemera and Narrative Cadence

Based on the findings of this study, narrative ephemera drive the user's search in a distributed narrative world. These transitory documents foster a desire for an "optimal" narrative cadence, a perceived rhythm to discovering plot information. Optimal is purposefully bracketed in quotations with two scholars in mind: (1) Dervin (1976), and what she calls the dubious assumption that people search for information in the most efficient, optimal manner possible, and (2) Csikszentmihalyi's (1990) description of an optimal flow experience, where individuals experience a sense of immersion in a given task.

Participant desire for efficiency in their narrative experiences is understandable. In distributed narrative worlds satiated with hundreds of objects, users may experience information (or cognitive) overload. This overload may prompt individuals to differentiate between "need to know" versus "nice to know" (Paisley, 1993) layers of a particular narrative. A sensation of urgency and need for efficiency emerges. Users begin to assign value on in-game documents. This value assignment becomes apparent with search patterns that exhibit the least effort (Zipf, 1949), such as skimming or relying on previous gameplay experience to meet

a goal. The user's optimal experience with a document becomes one of finding narrative saliency and of advancing a story as quickly as possible. This desire for efficient, optimal progression, however, may lead users to mistakenly disregard documents that may be necessary to advance their understanding of the plot at hand.

For some users in a storytelling world, the perception of an optimal search and narrative progression may be more immersion-oriented. Some users want to experience causality (Forster, 1927), the chain of events in a story, in accordance with the storyteller's intentions. Distributed narrative stories challenge the user to experience events in a particular order similar to Pearce's (2009) description of how video game players try to create a mental model of the designer's imagination. This desire for narrative cadence, however, does not necessarily equate to total immersion within a story. Instead, this challenge (and incremental achievement) of narrative cadence creates a feeling of flow (Csikszentmihalyi, 1990). The desire to experience flow or rhythmic plot progression may even cause users to avoid particular documents or document-rich spaces in an attempt to "manage" information (Case and Given, 2016).

Despite these differences in the search for narrative cadence, this study does not position immersion-oriented behavior in opposition to more pragmatic search processes, nor does it assign one experience as better than another. Ultimately, both forms of information seeking represent a form of what Aarseth (1997) refers to as ergodic discourse, where the user must provide a procedural input to move the text (or game) forward. The user's perceptions of the storytelling word and her ensuing procedural inputs are contextual—just as all information seeking is based on personal experiences as well as environmental influences. There is no correct way to experience a story.

Narrative Ephemera as Fulfilling Competence Needs

As a result of this study, documents in storytelling worlds may be interpreted as tools for simultaneously creating information needs and providing performance feedback to the user.

Storytellers create information needs in narrative spaces by heightening curiosity through suspense. Suspense, similar to epistemic curiosity, increases the desire to know (Ryan, 2008). Hunt (1963) posited that new information that is dissonant with previously formed schema or memories intrinsically motivates people. Documents, depending on the content they present, their physical characteristics, or their placement, may contribute to this dissonance. The ensuing curiosity is an unconscious precursor to an information need, a user's recognition that their knowledge is inadequate to satisfy a goal (Case and Given, 2016).

With an information need formed, documents in narrative spaces can then provide a sense of satisfaction. This interplay of goals and satisfaction is nothing new to virtual storytelling spaces. Most video games, for example, rely on pacing challenges so that players continuously experience competence need satisfaction (Przybylski *et al.*, 2010; Deci and Ryan, 2000). Although story-driven games like *Gone Home* do not typically rely on granular feedback (e.g., points on a scoreboard), they are still *ludic* worlds; they present the player with a prescribed overarching goal (Pearce, 2009). Participants sometimes exhibited what Pearce (2009) calls *paidiac* behavior—creative, unstructured play, such as trying to clog the Greenbriars' plumbing—but, primarily, the goal of narrative coherence drove document interactions. For example, participants frequently described the satisfaction of unlocking audio narrative when finding key documents. In these moments, the game "acknowledged the prowess of the players" and their information-seeking strategies (Przybylski *et al.*, 2010, p. 156).

Similarly, in-game documents fulfill competence needs when they provide expectation confirmation. As mentioned before, many games rely on external rewards: points or virtual badges and trophies. Experiences like *Gone Home*, however, are different in that they forgo apparent rewards. The object-based distributed narrative relies on the user's evocation of

"mental images of physical or social situations not actually present" (Malone and Lepper, 1987, p. 240). When these mental images are confirmed, users may feel competent.

Narrative Ephemera and Cognitive or Emotional Transportation

Findings from this study also suggest that narrative ephemera act as anchors to which mental conjuring are tied. As Gorichanaz and Latham (2016) explain, a document's intrinsic (physical) information and extrinsic (attributed) information influence how mental images are formed. This is also true of documents in storytelling worlds. These in-game documents promote visions of specific story events, as well as a user's memories.

The way documents in a narrative space prompt visions of plot bears a similarity to what Green *et al.* (2004) call narrative transportation. During transportation experiences, people "experience enjoyment through immersion in a narrative world" (Green *et al.*, 2004, p. 312). Narrative transportation occurs when perceptions of an individual's surroundings fade away as she becomes mentally and emotionally involved in the narrative. As this study suggests, this immersion is most prominent when users create a mental schema of how documents in a distributed narrative relate to each other. In a way, immersion during schema formation is unsurprising. Elaborating the cognitive-affective aspects of information experiences, Savolainen (2019) describes that affective factors tend to co-exist with cognition, the act of processing and interpreting the world; emotion unifies experience. In the case of *Gone Home*, users must map the relationship between objects to experience a story and subsequent emotions. As these schema form and immersion begins, the individual receives beneficial consequences (Green *et al.*, 2004). For example, a document can immerse an individual into a particular character's plotline and foster a feeling of relatedness, a key psychological need (Deci and Ryan, 2000). This immersion in a story may also heighten anxiety, allowing users to vicariously experience master situations unavailable to them in the real world (Malone and Lepper, 1987).

A document's physical properties may also prompt memory associations that are unrelated to the narrative space. Gorichanaz and Latham (2016) describe these properties as providing adtrinsic information, information which prompts visions of lived experiences. In some instances, this adtrinsic information may purposefully be deployed through a document to foster a form of mediated nostalgia (Sloan, 2015) and intentionally foster memories. In other instances, users may find personal salience with a document that was merely added to a virtual space as filler, objects added to fill a scene. Nevertheless, these visions of the user's lived experiences prompt abtrinsic information, such as emotions or feelings (Gorichanaz & Latham, 2016).

As users respond to narrative ephemera, they may switch between narrative transportation and visions of lived experiences. Just as Gorichanaz and Latham (2016) describe connecting with a document as a "dance of experience," so, too, is the connection with a document in a narrative world. Users may quickly transition from perceiving documents based on their connection to the narrative or its connection to the user's past.

Narrative Ephemera and the Reading Experience

Although *Gone Home* is a complex digital story, the user's search for narrative cadence, fulfillment of competence needs, and cognitive transportation may be interpreted through traditional literary theory. Specifically, experiences with narrative ephemera bear similarity to reader-response theory's position on text-based narratives; the author provides the context, and the reader creates the story (Rosenblatt, 1994). The reader's "stance" during transaction exists along a shifting continuum from efferent (goal-directed, utilitarian) to aesthetic (inward, retrospective) meaning-making (Rosenblatt, 1994; Latham, 2014). Interest, expectations, anxieties, and other factors influence the reader's stance and subsequent transaction (Rosenblatt, 1994), and the features the reader attends to dictate the nature of the transaction (Ross, 2005). Similarly, virtual storytelling spaces use documents as conduits for creating

stories that foster highly personal experiences, and the user stance on this efferent-aesthetic continuum is also fluid. In this way, just as some books use specific fonts or paratextual formatting to create distinct (and sometimes complex) narrative and information experiences (Gorichanaz, 2016), the placement or material qualities of documents in virtual spaces challenge the user's attempt to form narrative structure. In turn, this challenge influences the user's stance on the efferent-aesthetic continuum.

Conclusion

Distributed narrative spaces are intentionally designed to position the individual as a *bricoleur,* piecing together scraps of a narrative to form a coherent chain of events within a plot. This study investigated this narrative technique through *Gone Home*, a video game that relies on individuals to create their own interpretation of events prior to receiving bursts of audio narrative. This study found that between these audio events, documents provide narrative progression or cadence, fulfil competence needs, and foster visions of the story or their own lived experiences. The user may encounter all of these phenomena from a single piece of narrative ephemera, shifting back and forth between the designer's intentions, their own reality, and efferent or aesthetic experiences.

This study was designed to investigate how participants respond cognitively and emotionally to documents in a narrative-driven, virtual world. To date, information behavior research in narrative spaces, such as video games, was largely limited to multi-user synthetic worlds. This study represents a first attempt to investigate information behavior in a distributed narrative space, a virtual world where story is conveyed through objects that this study terms narrative ephemera. As this study shows, an individual's response to documents may be derived from in-game environmental or personal influences, and these factors prompt goal-oriented and immersion-oriented search patterns. The model of narrative ephemera that emerges from this phenomena highlights a new avenue for future information research: information seeking

within storytelling worlds. As this study has presented, commonly employed information behavior theories, as well as literary and motivation psychology theories, may be well-suited for investigating narrative worlds.

Of course, the results of this study are not generalizable. This study is limited to one particular storytelling world and a small pool of participants ($n = 6$) that was sampled via the author's own connections. A different story could yield different user reactions. Similarly, a different participant, especially an older pool with more experiences associated with the 1990s (the era in which *Gone Home* takes place), may have prompted different cognitive or emotional responses. In addition to the limitations of the participant pool, there are also limitations to the research design. For the sake of brevity, participants only experienced the first 40 minutes of *Gone Home*. Time constraints are common with most leisure pursuits, but this time limit may have prompted a sense of urgency, a desire to experience as much narrative as possible. Additionally, this study occurred in a laboratory setting. User experiences in a more comfortable setting, such as their own home, may have prompted different responses to *Gone Home*.

Despite these limitations, this study is an initial step for investigating information behavior within virtual storytelling worlds—a topic largely uncovered in the information science literature. Just as affective factors influence how people begin, expand, and terminate information seeking in other contexts (Savoleinen, 2014), this study reveals how a user's narrative experiences (or lack thereof) influence these processes. No matter the direction of future research, our experiences with documents are highly personal, whether they inhabit the physical world around us or stories in which we immerse ourselves.

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NARRATIVE EPHEMERA 36

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Appendix

Brittany's chosen items: (1) a box of books written by the protagonist's father, (2) a note between Sam and her soon-to-be love interest, and (3) a crumpled, sternly written note from the father's boss.
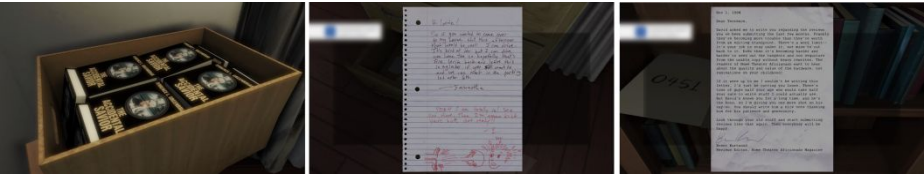
Carson's chosen items: (1) a video game cartridge, (2) an intimate love note between Sam and her love interest, and (3) a phone book.

Dillon's chosen items: (1) a single book believed to be written by the protagonist's father, (2) a box containing a laser disc player, and (3) a note hidden within a false-bottom drawer.

Grace's chosen items: (1) a box of tissues, (2) a box of playing cards, and (3) a friendly note passed between Sam and her love interest.

Leah's chosen items: (1) a box of books written by the protagonist's father, (2) a record player,

and (3) a key to the home's front door.

Marcus' chosen items: (1) a locked locker in Sam's room, (2) a family portrait, and (3) a string

of lights surrounding a locked, attic door.

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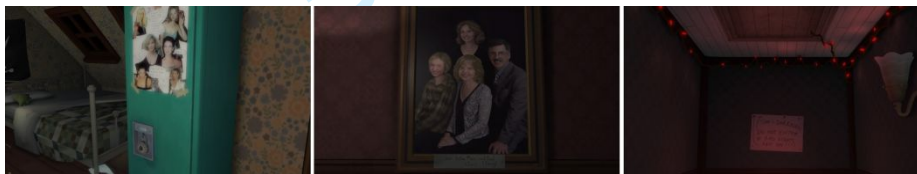51
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Fig. 1. All movable items within Gone Home gathered in the Greenbriar foyer (Morganti, 2014).

187x103mm (96 x 96 DPI)

Fig. 2. Left-to-right: a concert poster (a static, non-interactive item) and a family photo (with the user interface prompting the user to interact with the object).
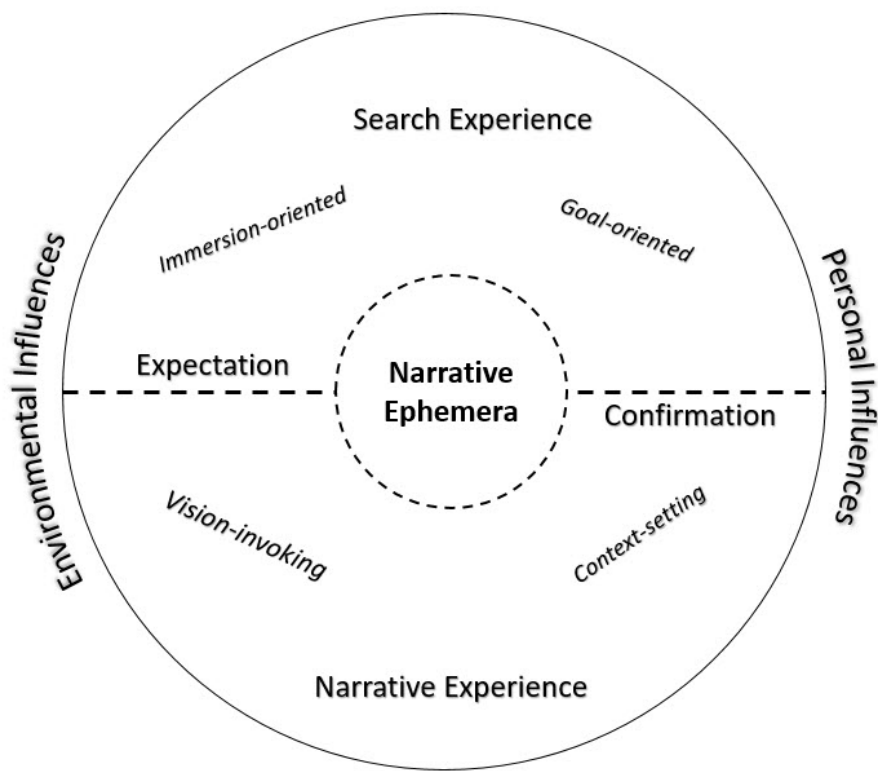
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Fig. 3. Visual interpretation of the five themes that illustrate how users experience documents in narrative worlds.

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Fig. 4. Marcus focused on information provided by the atmospheric qualities of specific rooms, such as this living room.

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Fig. 5. Finding a video game cartridge within the virtual environment, Carson described how the object fostered childhood memories.
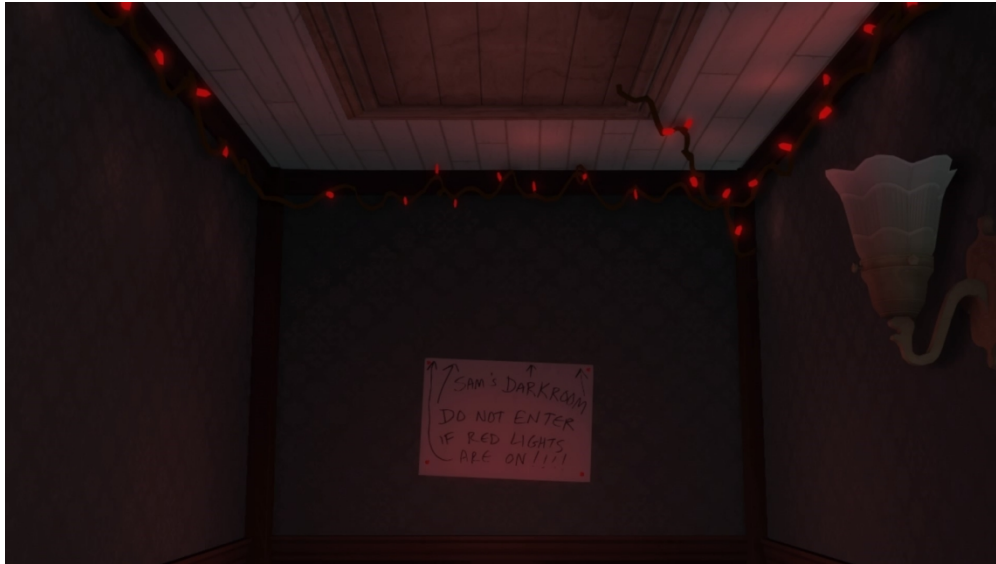
505x279mm (96 x 96 DPI)

Fig. 6. Hoping to avoid the story's climax, Marcus detailed changing his search to avoid narrative-rich spaces, particularly this ominous darkroom found in the Greenbriar home.

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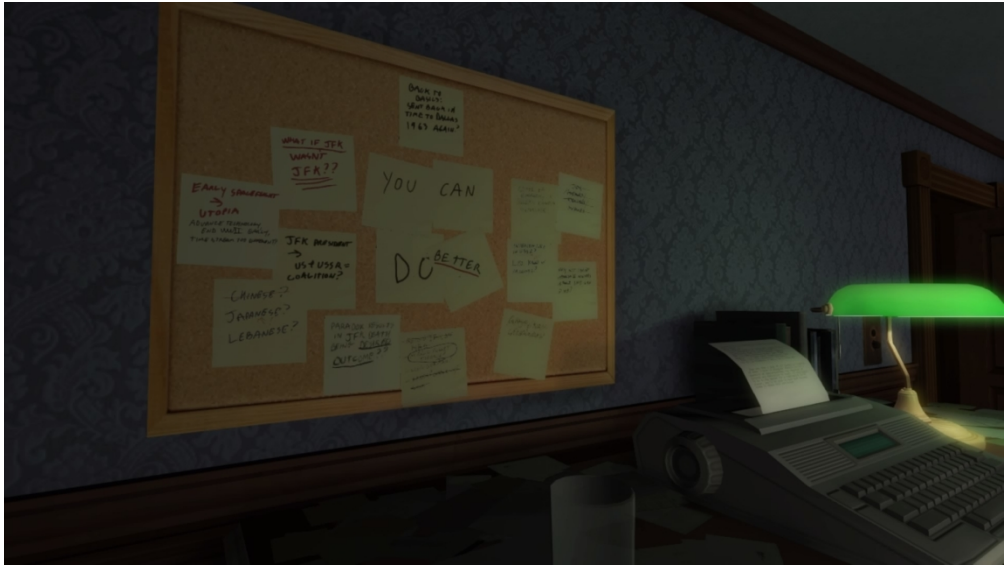13
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Fig. 7. Documents could foster mental images of plot points. Brittany, focusing on some sticky notes within the environment, conjured elaborate visions regarding the protagonist's father.

677x381mm (72 x 72 DPI)

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Fig. 8. Dillon compares a loose photo with the family portrait in the Greenbriar Foyer.
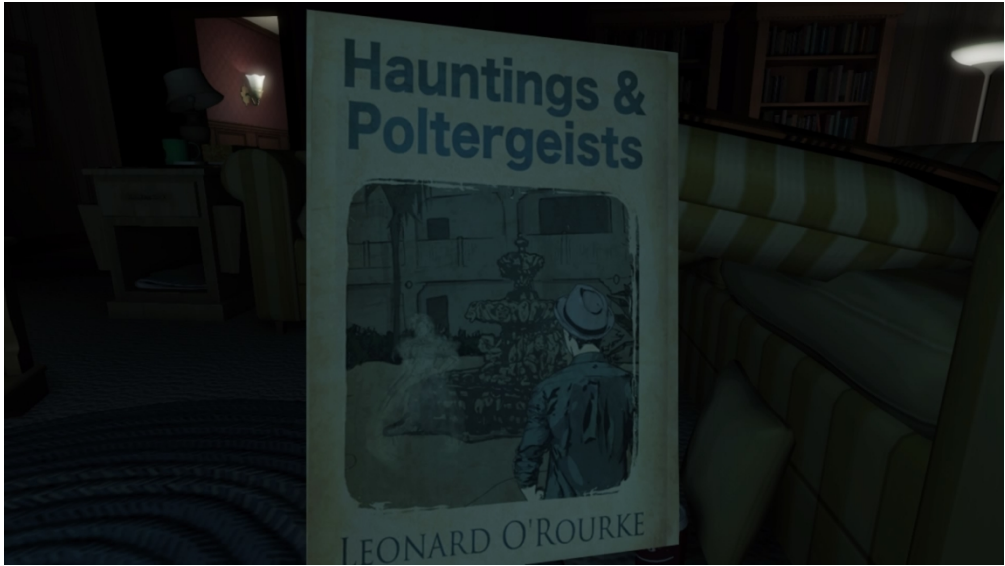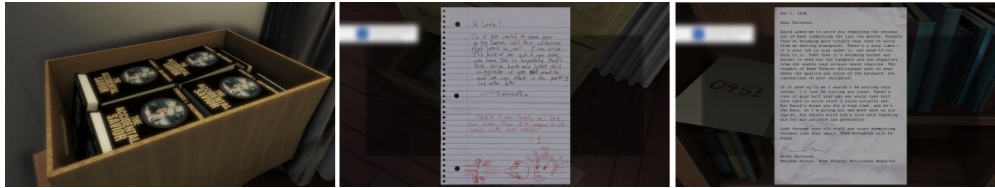
97x71mm (96 x 96 DPI)

Fig. 9. Marcus found a book within the environment that fueled his belief that the home was haunted.
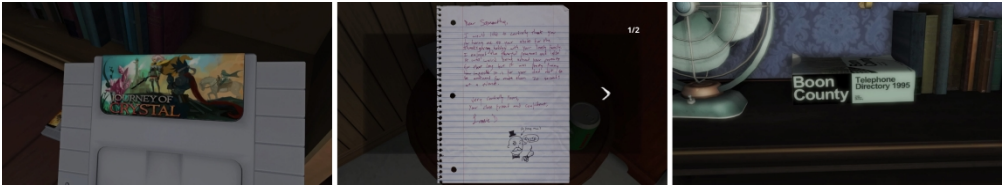
677x381mm (72 x 72 DPI)

Brittany's chosen items: (1) a box of books written by the protagonist's father, (2) a note between Sam and her soon-to-be love interest, and (3) a crumpled, sternly written note from the father's boss.
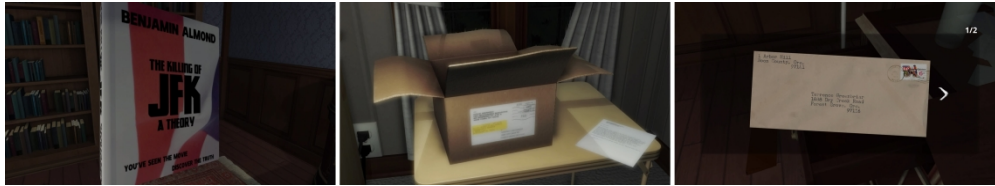
2051x377mm (72 x 72 DPI)

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Carson's chosen items: (1) a video game cartridge, (2) an intimate love note between Sam and her love interest, and (3) a phone book.

2051x375mm (72 x 72 DPI)

Dillon's chosen items: (1) a single book believed to be written by the protagonist's father, (2) a box containing a laser disc player, and (3) a note hidden within a false-bottom drawer.

2048x375mm (72 x 72 DPI)

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Grace's chosen items: (1) a box of tissues, (2) a box of playing cards, and (3) a friendly note passed between Sam and her love interest.

2050x379mm (72 x 72 DPI)

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Leah's chosen items: (1) a box of books written by the protagonist's father, (2) a record player, and (3) a key to the home's front door.

2053x369mm (72 x 72 DPI)

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Marcus' chosen items: (1) a locked locker in Sam's room, (2) a family portrait, and (3) a string of lights surrounding a locked, attic door.

2047x375mm (72 x 72 DPI)