Documenting *Digital Dialogues*: Engaging Audience in the Construction of a Collective Documentary Across Time and Space

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Abstract. Stories naturally reveal themselves to us through space and over time. Today's digitally networked society provides a fertile environment for the exploration of narrative forms in new and diverse ways. The *Digital Dialogues* Symposium provided the setting for a series of experimental approaches to the recording and documenting of an event in time. Using custom designed software, participants collaboratively constructed their interpretations and impressions of the conference events, distributing them through interfaces that encouraged real-world discussion and supported continuing online dialogue.

1 Introduction

"Narrative is first and foremost a prodigious variety of genres, themselves distributed amongst different substances – as though any material were fit to receive man's stories..."

Roland Barthes, 1966

As Barthes suggests in his *Introduction to the Structural Analysis of Narrative*, stories are a cultural universal – they have taken on a variety of forms across societies and centuries since the very beginning of human history [1]. As both fictional and non-fictional accounts, expressed through words, images, sounds and gestures, stories allow us to reflect on the way we live, and provide a means of structuring and expressing our experiences and understanding of the world around us.

Documentaries are a particular type of story that explore real-world events in a primarily audio-visual form. Like most stories presented to large audiences in a cinematic or broadcast medium, conventional documentaries convey one or more narrative threads from one or more points-of-view. The specific story that a documentary will tell – its focus and its perspectives – is decided on by the filmmakers during the production and editing process. By the time it reaches an audience, the traditional documentary has been transformed into a fixed and linear form. This rigidity is in sharp contrast to the creation process, since in following a

dynamic and evolving story in real time, documentary filmmakers must constantly adjust to an ever-changing environment.

Unlike cinema, television, radio and other fixed mediums, computers are capable of combining the power of multimedia content processing and delivery with malleable story structures. Using digital media to present a documentary piece as a perpetual "work in progress" was done as early as 1986, when a networked Unix-based system was used for the interactive presentation of the evolving documentary *New Orleans: A City in Transition* [4]. Designed for Urban Planning students, the system provided an associative query mode and offered basic video and text editing tools. Together, these features enabled students to add their own notes and reports to the database and create new trails for others to follow.

Since then, many systems have been built that support varying degrees of audience participation, such as dynamic browsing of story material, re-sequencing of existing footage, addition of textual comments, and incorporation of new content clips. For an impartial audience, or for an audience that is removed from the documentary events, these systems probably provide a sufficient level of interactivity. But in cases where the documentary is being created for an audience that is closely involved in the real-world events being portrayed, we believe that digital tools can be used to provide an even greater level of engagement in the storytelling process. The fundamental idea is that of co-construction – involving the community in the collective construction and telling of their own story.

In this paper, we describe our experiences in organizing a storytelling workshop at the *Digital Dialogues: Technology and the Hand* symposium at the Haystack Mountain School of Crafts in Maine [15]. Our goal for the storytelling workshop was to create a collective record of the symposium that would allow participants to reflect on their experience. Using a new set of digital tools – a tangible storytelling system, an online video weblog, and a content annotation tool – we provided symposium participants with the means of engaging in a collaborative storytelling process both during and after the event.

2   Context

"The narrative mode [of thought] is based on the spatial and temporal ordering of experience…"

Jerome Bruner, 1986

Given that narratives naturally unfold across both time and space, we chose to work with a set of digital tools that support both temporally and spatially structured approaches to story revealing. We believe that these two approaches can complement each other, providing greater depth and personal involvement in the story material. The remainder of this section focuses on these complimentary notions of story revealing.

2.1 Story Construction in Time

For centuries, people have used diaries, journals and commonbooks to record the events of the day, interesting anecdotes, their thoughts and their hopes for the future. Writing in diaries helps people reflect and make sense of their lives, by documenting the "transition from nature to narrative, from time suffered to time enacted and enunciated" [7, p.3]. Whether they record their thoughts for catharsis or revenge, for entertainment purposes or for an imagined posterity, the story that emerges from their remembered words helps us construct a mental picture of who they were, how they acted and the times they lived in. Recently, the diary format has been adapted online in the form of a "*Weblog*" or "*blog*" – a regularly updated online journal or diary where the blog owner can post thoughts, opinions, favorite links, photos, or stories. An estimated 500,000 'bloggers' are publishing content on the Web today, culminating in the development of a richly intertwined community of vocal and self-aware content producers, commentators and observers [6]. Aristotle defined the art of storytelling as being that which gives us a shareable world, a philosophical position that is championed by the communal, dynamic and multivoiced nature of the weblog publishing community. Here stories of the everyday are entangled with the opinions of others, expanding the narrative in a constant cycle of understanding, interpretation and recreation.

"Leafed through the diary a little. Got a kind of inkling of the way a life like this is constructed."

Entry from Kafka's Diary, kept while writing *The Trial*

The act of producing a diary provides a space for the author to construct and reconstruct their identity, their interpretation of events and their reflections on a life lived. Constructionism as a philosophy is based on the idea that people learn by making, especially things that can be shared, shown, discussed, examined and admired. This sharing of artifacts and objects leads not only to the refinement of the creator's original idea but also to a deeper appreciation of how work is interpreted and a more comprehensive understanding of the making process. This "socialized reflection" is complex and multi-layered, where ideas emerge and evolve by sharing them in conversations and narratives, and flourish particularly well in social environments where interaction and discussion is encouraged [3]. In the physical world the mode of interactions of our conversations and discussions, informed by our prior experience, intuition and imagination, exist obviously and transparently. The level of abstraction is very different in the virtual world, so support structures must be built to enable and sustain these conversations and in so doing, allow multiple storytellers to coherently hear each other's voices while weaving tales and connecting the experiences of their online community.

2.2 Story Construction in Space

Just as they are temporal trajectories, stories can also be considered as spatial trajectories. Michel de Certeau notes in *The Practice of Everyday Life* that narration

is called diagesis in the Greek language since it establishes an itinerary as it travels through [5, p.117]. He also states that "space is a practiced place", thereby using narrative to distinguish between the concepts of place and space. While a map divides place, a story traverses space. In other words, people can fulfill the potential of a landscape by giving it personal meaning. Places can really only become spaces through the actions of a person who moves through them. Through human action and the creation of memories, spaces are transformed into a social construct – they are the arena for story construction and narrative development.

Lev Manovich dedicates an entire chapter of his book *The Language of New Media* to digital navigable space [9]. Computers can be used to represent stories as complex data structures, and this narrative data can in turn be presented to users in a spatial form – both literally and metaphorically. Moreover, using tangible media technologies we can bring the story space back into the tangible/physical environment, providing audiences with an even more direct mode of navigation to the narrative world.

3   Related Work

The development of our temporal and spatial storytelling tools has been influenced by research from a number of different areas, including in particular online storytelling, online collaboration, and spatial narratives. The range of works within these areas is relatively broad. This section takes a brief look at a few notable and particularly relevant examples.

3.1   Online Publishing and Collaboration

Online publishing systems support the development of communities of users for a variety of purposes, whether to entertain, to educate, to inform or to enlighten. The Slashdot news service provides users with daily links and discussion of IT related stories, in an open, yet moderated format [13]. Designated editors choose which submitted stories to publish, and the community of readers and commentators moderate posts according to insightfulness, humor and other levels of interest. MIT's Silver Stringers initiative is a community-centric approach to gathering and publishing news, where members participate as reporters, photographers, illustrators and editors of a localized Web-based publication [12]. Collective activity, learning and collaboration are supported and facilitated by specifically designed software tools (*Pluto*, *HDL*) that are tailored towards all levels of technical experience.

Weblogs build on these publishing formats by providing a method and framework for organizing *any kind* of information, that can be authored by one primary individual (Kottke.org) or by multiple contributors (Metafilter.com). The weblog format was initially used mainly as a mechanism for filtering or pre-surfing links found online, with authors providing some contextual information about the link's relevance, making them pioneers in the art of microcontent [18]. The development of more user-friendly weblog tools (*Blogger*, *Greymatter*, *Movable Type*) led to the

emergence of a more personal approach to web publishing, where blogs began to more closely resemble online journals.

3.2 Online Video Collaboration

The Interactive Cinema Group's Shareable Media Project is a web-based system that explores how a community of users can tell stories and express ideas through a shared database of digital video clips [8]. Novel editing and visualization tools (*Individeo*, *PlusShorts*) help rethink the traditional timeline interface while additionally showing how the video content is being used by the community. Several websites currently allow users to upload their own video clips and, using simple drag-and-drop-interfaces, combine them with existing online media to create continuously evolving video stories or music videos (Tv.oneworld.net, GetMusic.com). An alternative approach to online sequence building is the Mimicry system, which allows authors and readers to create external links to video and audio media found throughout the web using a plugin controller [2].

3.3 Traditional Spatial Narratives

Many examples of spatial narratives can be found in classical literary and artistic works. In many mythological tales, the hero discovers his identity and builds character by moving through physical space. Famous examples of a hero's journey in literature include Homer's *The Odyssey*, and *Gulliver's Travels* by Jonathan Swift. Artistic traditions, such as Chinese landscape painting, Japanese scrolls, and Impressionism, depict spatial narratives by incorporating multiple viewpoints and narrative events within a single visual landscape. In narrative art forms such as theater and cinema, storytellers often make extensive use of the physical space and settings in order to evoke a particular atmosphere for the story. Many stage plays and films also present a spatial story structure. For instance, in Jim Jarmusch's *Night on Earth*, we follow the story of five different cab rides taking place on the same night in five different locations around the world. Finally, physical game-play often incorporates both narrative and spatial elements. Children have been creating and participating in spatial narratives for centuries, using their dolls and other toys as tangible props in the story world. In a similar vein, board games such as Monopoly and the Game of Life structure the gaming experience as a spatial trajectory with many narrative components.

3.4 Digital Spatial Narratives

As Manovich suggests, navigable space can be used to represent both actual physical spaces and abstract information spaces in the digital domain, and for this reason it has grown to be a dominant paradigm in human-computer interfaces [9]. Narrative uses of this paradigm fall primarily into the realm of computer games and online communities such as MUDs (multi-user domains). The 1993 game Myst is one well-

known example of a computer game that tells its story by organizing spatial features to be traversed by the player. Other forms of digital spatial narratives can be presented as interactive art installations in physical space. They combine images, videos, text and audio elements within a spatial layout that can be traversed by the viewer. Examples include the works of George Legrady, such as *Sensing Speaking Space* [16]. Many tangible storytelling systems also use spatial methods for structuring narrative elements. For instance, StoryMat is a physical play mat that stores children's stories by recording their voices and the movements of the toys they play with [11]. These stories later revive on the mat as other children play and tell new stories within the same space.

4   The *Digital Dialogues* Storytelling Workshop

Held at the Haystack Mountain School of Crafts in Maine, the *Digital Dialogues: Technology and the Hand* symposium served as a testbed for our ideas on how to collectively document an event in space and time with a relatively large group of story creators. The symposium brought together roughly 65 people from a variety of arts, crafts, and technology-oriented areas, ranging from pottery and papermaking, to computer science and haptics. The symposium offered participants the opportunity to use their hands in forming materials, media, and ideas. Through the creation of artistic pieces in a studio-based environment, participants were able to collaboratively explore the intersection between different technologies, physical materials, and the skill of the human hand. The goal of the symposium was to explore how technology and handcraft can be brought together, and to initiate dialogues and an exchange of expertise between these two traditionally separate communities.

   We had been invited to Digital Dialogues as storytellers, to organize a workshop that would enable participants to document the events taking place across the different craft studios over the course of the symposium. Our goal was to create a living record of the event – a documentary piece that would grow as the symposium progressed, and would incorporate the widely differing perspectives of such a large number of people coming from such a great variety of backgrounds. Our hope was that this evolving record would allow participants to reflect on their experience both during and after the event, supporting the sharing of ideas across their different fields of work. Our core storytelling team consisted of two other experienced storytellers: David Tarnow, a radio producer from Toronto, Canada, and George Fifield, a media arts curator, writer and artist. In addition to this initial group, we hoped to engage as many of the symposium participants in the storytelling process as possible.

4.1   Workshop Preparation

Preparations for the workshop took several months, beginning with discussions on how to structure the storytelling experience for the community of participants and provide a basic narrative framework for the piece. At an early stage, we realized that the story of the symposium would grow along three main axes: time (the workshop

would last for 3-4 days), space (the symposium was spatially distributed throughout a number of different craft studios), and character viewpoint (the many participants in the symposium would be able to provide widely differing personal perspectives on the event). By keeping track of this information for each piece of content, we could create a large database of story clips that could be queried according to different parameters or combinations of parameters. The same story could thus be viewed in many ways using different digital interfaces. The Tangible Viewpoints interface served as a tool for collaborative story exploration during the symposium, while a temporally structured video weblog provided an online record of the event and forum for continuing the discussions started at the symposium.

4.2 Application Overview

The *Digital Dialogues* Storytelling Workshop involved three primary application modules. The Video Weblog component, constructed by Aisling Kelliher, utilizes and adapts freely available software, while the Tangible Viewpoints system was developed and implemented by Ali Mazalek. The Cinemaware application is a video content management tool developed in the Interactive Cinema Group. It was used in the workshop to prepare and integrate video content with both the online Video Weblog and Tangible Viewpoints system.

Video Weblog. The *Digital Dialogues* weblog uses Movable Type software - a "decentralized web-based personal publishing system designed to ease the development and maintenance of regularly-updated content"[17]. The sixty-five participants in the conference can upload audio, video, image or text files and commentary to the main Media Lab web server using the Movable Type interface [14]. These uploads appear as chronologically ordered posts, with the most recent additions being displayed at the top of the weblog. The weblog can be organized and displayed by date and/or category, where categories include 'technology', 'culture', 'craft', 'diaries' and 'ideas'. In addition, the site contains an interactive simulation of the Tangible Viewpoints system, where users can navigate through the online media content using a map representing the conference setting. Visitors to the weblog can append comments or links to any of the posted 'story threads', thus expanding the dialogue from beyond the initial participants and events of the symposium to a wider audience.

Fig. 1. Screen grab of the Digital Dialogues Video Weblog

Tangible Viewpoints. This physical platform supports interactive story navigation through the manipulation of graspable pawns and other tangible tools on a sensing surface [10]. To date, two different storytelling applications have been written for the interface: a narrative engine for multi-viewpoint character-driven stories, and a navigation system for spatially distributed collective stories. At the *Digital Dialogues* symposium, we used the latter of these two applications as a tangible/spatial means for the audience to collaboratively navigate through their co-constructed story.
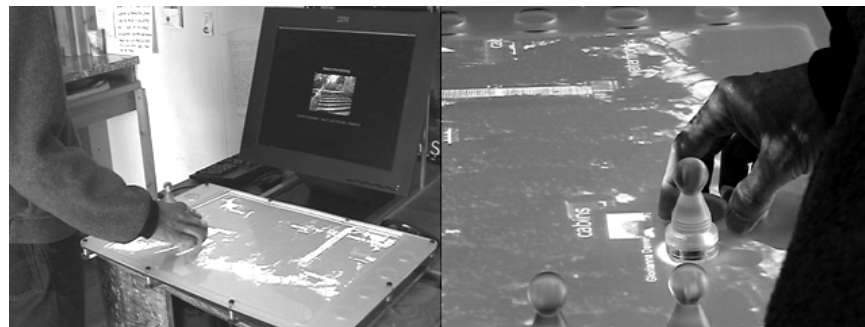

Fig. 2. Workshop participants interacting with the Tangible Viewpoints interface

In the spatial narrative application, a visual landscape is projected onto the Tangible Viewpoints interaction surface. For *Digital Dialogues*, we used a satellite photo of the Haystack environment that shows the layout of studio spaces on the school's campus. Pawns can be mapped to different characters in the story, and moved around the map in order to reveal content clips in the form of small thumbnails. These content clips are dynamically retrieved from the story database through character and location-based queries that are determined by the placement of the pawns on the interaction surface. A clock tool can be used to retrieve clips using

the additional parameter of time. Content clips can be played back on a nearby monitor by gliding a lens-shaped selection tool over the thumbnails on the interaction surface. The Tangible Viewpoints system supports a variety of media types, including still images, videos, audio, and text.

Cinemaware. This is a custom-built capture, annotation, editing and compression tool for preparing video content for integration with multiple display and distribution applications. Implemented in Java, the application provides four modes of operation: live capture, keyword annotation, rudimentary editing and batch processing. The capture mode provides an interface for capturing video through a USB port, while the annotation mode presents an extensible interface for adding freeform text annotations, time-code associated keywords and general movie properties such as title, character, location and time. The annotation schema can be modified to incorporate appropriate input fields depending on the needs of external retrieval and display applications. Captured video clips can be refined using a simple editing interface, and the batch-processing mode enables the export of multiple video, image or audio files according to a specified compression output.

4.3 Collective Story Creation and Engagement

The symposium was organized as an all-day live-in event, located on the beautiful wooded waterfront campus of the Haystack School. Participants spent three days living together in log cabins, eating together in a communal dining hall, and working together in studio spaces. We arrived at the symposium a day early in order to choose a central location in which to set up the storytelling workshop. Since most of the symposium participants had little to no digital storymaking experience, we wanted to make the story creation process as simple as possible. We provided digital cameras (both video and still image) and two editing stations for participants to use.

During the symposium, participants could take the cameras freely to record footage in the different studios around the school. At the editing stations, they could then trim their clips as desired, and provide a variety of textual annotations (such as location, time, title, description, and thematic information) using our custom-built Cinemaware tool. Coupled with these annotations, the story pieces could be uploaded to our database and simultaneously distributed to the tangible and online interfaces.

We discouraged participants from doing complicated editing and effects when creating their story pieces, as the learning curve was far too steep for the short timeframe and the type of environment we were working in. All of our story creators were also involved in creative projects in the craft studios, and the storymaking component served to complement these other projects, allowing participants to create a shared record of their experiences and ideas. We encouraged them to think about the footage they were capturing in a spontaneous way as they were recording it - a sort of conceptual form of "in camera" editing. In this way, all they needed to do at the computer was set in/out points for their clips, provide annotations, and perhaps string together several clips to create a montage.

Fig. 3. Participants shooting and editing footage during the Workshop

For the most part the story creation process went smoothly, and we were able to load people's content into the system at reasonably close to real-time. We encouraged participants to use the Tangible Viewpoints interface to collectively engage with their story as it was still being created. The iteration between story creation and story engagement became an act of story revealing, allowing participants to shed preconceived ideas of narrative form in the collaborative construction of stories. After the symposium was over, the *Digital Dialogues* weblog provided a means for participants to remember and reflect on the event, and to engage in continuing dialogues on the topics addressed during the symposium.

5 Evaluation

Participants in the conference brought a range of moviemaking styles, approaches and experience to the storytelling workshop. As the workshop progressed, we observed how the multifarious styles evidenced by participants evolved and changed according to their interactions with other media collectors and the Tangible Viewpoints system. For those accustomed to capturing large amounts of data for finely tuned editing later, they began to modify their working methods to accommodate for a more rudimentary and 'quick and dirty' approach to the editing and construction of sequences. Some participants decided to shoot according to particular themes –'peoples' hands', 'collecting water' – and allow users of the system to slowly discover the themes as they navigated through the database.

As people experimented with the Tangible Viewpoints interface, their engagement with the video clips was enhanced by the fact that they were familiar with the people and events portrayed in the movies. The video clips presented an opportunity for many of the craftspeople at the symposium to watch themselves actively engaged in their craft for the first time, and to reflect on their skills, techniques and work methods. Participants in the workshop iterated between creating story modules and exploring multiple navigation and playback routines in the Tangible Viewpoints

system. This movement between creation and engagement was a cyclical process, with each part informing the evolution and meaning of the other.

The physical/graspable nature of the Tangible Viewpoints interface supports collaborative engagement with the story material. Given that the system was set up in a central location – the school's dining hall – participants were naturally incited to interact with the piece in an informal and social manner during breaks and meal-times. This collaborative story viewing activity helped foster the exchange of ideas between symposium participants. The spatial layout of story material in the Tangible Viewpoints interface also helped in grounding the digital story material in relation to the actual events taking place in the real world.

In the weeks following the symposium, approximately one third of the participants logged onto the *Digital Dialogues* weblog, with several community members adding photo and video content. This initial activity tapered off after a number of weeks, although a core group of dedicated users continue to post and access the weblog regularly. There are several possible explanations for this. The majority of the participants at the conference had limited video or computer experience and while both expert help and supporting tools such as Cinemaware were readily available at the Haystack event itself, such comparative advantages and hands-on encouragement were lacking afterwards. The content remit of the weblog as presented after the symposium was strongly focused around the conference themes, thus creating a rather rigid framework that may have prevented the introduction of additional ideas or unique discussion threads.

To entice repeat visitors and to encourage participants to think of alternative ways to engage with one another, we have recently created an online simulation of the Tangible Viewpoints system, where users can navigate through the database of clips using a map interface. Additionally, we are producing two symposium attendee text profiles each week, updating the community on the interviewees latest work and eliciting responses to questions concerning the symposium's central themes.

6 Conclusion

Combining metaphors of time and space to explore story constructions provides a flexible framework for documenting the multiple locations, activities and points of view of a large-scale event. It is somewhat difficult to accurately measure whether this dual approach to storymaking increased the reflective or comprehensive tendencies of the participants. Further analysis of the continuing online activity should provide us with a broader longitudinal understanding of the supportive structures necessary for sustaining dialogue and discussion between the symposium participants.

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