

VISUAL INTERFACES FOR SHAREABLE MEDIA

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Shareable Media is an effort to provide a coherent structure that will facilitate distributed collaboration and communication among filmmakers, storytellers, artists and audiences. The extensible architecture of the Shareable Media Project has the capability to deploy multiple applications targeted towards a variety of uses and audiences. The visual interfaces that have been developed for current Shareable Media applications, illustrate our intention to provide easy-to-use tools and effective content visualizations, that operate coherently together to form new and engaging video-based story forms. These applications facilitate users' creation of multiple sequences from a video clip database, and explore the juxtaposition of heterogeneous elements, the integration of video and text, and the description of edit structure. **PlusShorts** uses punctuation as an iconic system for describing and augmenting edited video, where the punctuation symbols are used to detail the structure of a video sequence and inspire dialogue about the essence of that structure. **Individeo** features a browser that visualizes the sharing of video content through a dynamic, sociable interface. **Individeo** also allows editing of video integrated with text, allowing media-based dialogs and collaborative cinematic productions. In combination with multifarious content, these interfaces provide prototypes of new story forms where the edited structure and the shared context are made explicit. We are partnering with several physical storytelling communities from different countries, and we wish to explore emergent storytelling techniques, virtual collaboration, community-oriented self-organization and global communication.

INTRODUCTION

A comprehensive and sustainable shared media system necessitates the development of an extensible infrastructure, compelling interfaces and an active, engaged community of users. The development of novel interfaces for collaborative co-construction will be the focus of this paper.

The visual interfaces for Shareable Media seek to transform the experience of creating, sharing and thinking about video and ultimately move towards the prototyping of new story forms. These applications broaden the generally understood definition of shared video from one of simply posting an edited video on the web and emailing your friends about it, to a more wide-ranging comprehension encompassing notions of recreation and re-appropriation of original content in a search for new and diverse meanings. The **PlusShorts** application exemplifies a focus on movie structure, where a symbol system is utilized to directly explain and describe the structural features of a video sequence. With **Individeo**, the explicit visualization of the sharing process introduces a contextual level of understanding, where meaning is derived not only from the individual clips, but also from their positioning both within specific sequences and in relation to other neighboring sequences. Both of these applications, in their design and their functionality approach a new type of story form, where the navigational tools for finding content, the visual display used for reconstructing content and the final playback mechanism, operate seamlessly together to inform and evidence the meanings produced by each component.

The next section of the paper will detail previous and related work to the visual interfaces for the Shareable Media Project, followed by descriptions of two current applications, **PlusShorts** and **Individeo**. The paper will conclude by describing some of the issues that arise as a result of this project and future research directions.

BACKGROUND

In articulating the vibrant relations between text, texture and context, folklorist Kay Stone provides us with a useful framework in which to survey variations in fairy tale, such as Snow White: “ The text is the basic story of Snow White; its texture is the specific language (visualization in the case of film) of a particular story; context is any relevant personal, social, historical, and other influences. There might be countless oral texts of Snow White, each with its own texture and context. The storytelling event, or actual verbal composition of a story, is extremely sensitive to immediate contexts that might motivate changes in texture. Thus Snow White in oral tradition is multitextural and multicontextual. There is no single "original" or 'authentic' oral text. The story would never be told in precisely the same words even by the same person. A unique context for each telling produces different textures, and thus a variety of oral.” [Stone]

Text-based story is naturally transformable. It costs almost nothing to produce your own version of Snow White, either orally or in writing. Many fairy tales are initially created anonymously and have been re-told over hundreds of years. People have the freedom to consider and interpret them from a number of personal, critical, cultural and theoretical perspectives. More recently, this past century has witnessed exceptional activities on transformable work within the video and audio-based story realms.

Beginning in the late nineteenth century, Cubism and Dada artists imported readymade fragments into original art works. As early as 1914, Marcel Duchamp exhibited his bottle rack, bringing a complete unmodified object into an art space for the first time. During the same time period, Plunderphonics was emerging as a variation of transformable music within music communities. Musicians or DJs took original pieces of music, varied the speed, reversed the direction of spin and mixed it with other tracks. In 1920, Stephan Wolpe used eight gramophones to play music at different speeds simultaneously. In 1939, John Cage brought a gramophone record, *Imaginary Landscape No. 1*, into a public performance [Cutler]. The found footage films of the post-sixties non-fiction cinema show film editors playing with notions of deconstruction to both question received understandings of documentary footage and create powerful new and challenging interpretations of this content. These early examples demonstrated how recontextualization of existing art works could be served as powerful basis for new creations.

In the broadcast media age, amateur media fans collect, select, inflect, re-circulate, amplify, parody, or recombine primary images and songs for re-creations. In *Textual Poachers*, Professor Henry Jenkins suggests ten ways, such as Recontextualization, Expanding the Series Timeline and Refocalization, employed by media fans to rewrite a television show [Jenkins 1992].

For example, media fans recontextualize broadcast material by writing short 'missing' scenes that can provide extra explanations for a character's conduct. Another fan managed to compile a five-minute show from a 30-hour collection. The methodology of story recreation and reuse employed by these media fans' inspires us to design a new generation of media applications aimed at a much broader society of users, including families, friends, artists and musicians.

The nature of digital content provides an efficient means for people to gather and distribute digital content. From 1982 to 1987, Professor Glorianna Davenport in the MIT Media Lab developed a "Shareable Video" project, New Orleans in Transition, on a UNIX workstation supported by a bank of videodisc players [Davenport 1987]. The purpose of the project was to give Urban Planning students an insider view into the process of change. Students using this material could make use of an editing tool which allowed them to take excerpts from the available segments, re-sequence and compile movies. Some related work has been developed in the web-based editing field from varying perspectives. VideoFarm.com is a Java-based Premiere-like editing software, which is developed mainly for online editing purpose [VideoFarm]. Mimicry allows users to create links to and from temporal (video and audio) media on the web regardless of the users' ownership of the Web pages or media clips involved [Bouvin&Schade 1999]. Unlike VideoFarm, Mimicry is created mainly from the audience's point of view.

During 1998 and 1999, Pengkai Pan focused on designing a system for asynchronous sharing of streaming video on the Internet and built a prototype, I-Views [Pan, Davenport 2000]. It allowed widely distributed groups of people to view, edit, compare, evaluate and discuss video material over the Internet. By offering shared authorship, tools and virtual environments, I-Views demonstrated a new story form: "Shareable Documentary." From this research, we have developed a more refined architecture that supports the development of multiple applications based on the Shareable Media framework. PlusShorts and Individeo are two such demonstration applications that will now be discussed in detail.

PLUSSHORTS

PlusShorts is a web application that explores the use of punctuation as an iconic system for describing and augmenting edited video. This system allows for a distributed group of users to contribute to and collaborate upon the creation of shared movie sequences, where punctuation symbols can be utilized to detail the structure of that sequence and inspire dialogue about the essence of that structure. **PlusShorts** is implemented as a java applet that can be launched from the Shareable Media website. Within the applet there are three main activity areas: a newsgroup-type interface for browsing through and selecting sequences to play, a storyboard grid for manipulating sequences and a playback area for previewing and submitting sequences.

The motivation for considering punctuation as a type of visual markup language arises from observations of the experimental usage of punctuation symbols in other art forms such as dance, painting and literature. Authors, playwrights and poets such as Samuel Beckett, Harold Pinter and e.e. cummings have experimented with using punctuation symbols in a highly expressive manner.

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[Cummings 1991]

Users can browse through and select sequences to play using a newsgroup-style interface. Here, the user loads a video sequence into the storyboard area by selecting a specific sequence post within the hierarchical tree of video threads, which can be sorted by date, author or thread category.



Figure 1: PlusShorts Interface

A viewer can navigate down through a particular video thread, where s/he can begin to determine how the content, tone, rhythm and structure of the thread changes and evolves from each user created sequence to the next. This exploration of video content allows the user to conceive of multiple storylines and viewpoints, different editing methodologies and an evolutionary approach to video construction.

Users can construct, deconstruct and rearrange video sequences/threads using the grid interface, which is inspired by traditional storyboard models. The videos in the database are represented by thumbnail images that can be placed within the layout grid, where they will be played back in sequence according to a left-to-right, top-down rule. The punctuation symbols can also be placed on the grid between and on top of the clips where they are utilized in two different manners. Firstly, by placing them between and around the thumbnail images, they can be used to describe and define the story structure of the edited movie (e.g. any clips positioned between parentheses could refer to a character development segment or a colon could be used after a title to denote an introductory clip). Secondly, by placing the punctuation symbols on top of a thumbnail image, they can be used to directly affect the playback of the final sequence (e.g. a plus sign dropped on top of a clip will cause it to be played back at double speed or a period symbol can be used to insert a black frame).

A user can open a sequence created by another participant and move or delete any of its components, to create new meanings and understandings from the same clips. Alternately, a user can choose to search through the video database using keyword and/or visual searching to obtain new clips to add to the sequence. This reworked arrangement can then be posted to the database as a response to the originating video thread.

The **PlusShorts** application is an attempt to provide a space for engaging collaboration and experimental explorations of the entire filmmaking process. The conception of a video sequence as a variant instance within a larger story thread allows creators and users to adopt a playful, explorative attitude towards moviemaking, where there is no definitive final cut, but rather a series of investigative story developments.

INDIVIDEO

Individeo is a web-based tool for creating and sharing digital video narratives. The interface is composed of a media browser and a sequence editor, which allow the user to browse a large shared set of video clips and to build new video sequences using selected clips. The aim is to provide simple and sociable interfaces for browsing and editing, and to promote online communication and collaboration using digital video in the form of a playful and constructive experience.



Figure 2 : Individeo Interface

The **Individeo** browser allows the user to navigate through the content space of a large number of video sequences. Each video sequence is represented by the thumbnail images of the video clips within the sequence, arranged along a diagonal line signifying the sequence. Using the mouse, the user can select and view a particular sequence. The user can also select and focus on a particular clip within a sequence, and the interface will dynamically display all other sequences that contain the focus clip. Shifting the focus from clip to clip leads to fluid, animated modification in the visualized structure, as it creates real-time concordance views of sequences based on the focus clip. This visualization of reuse makes explicit the sharing of media by multiple users. The browsing activity becomes a constantly revealing experience rooted in and guided by the discovery of relationships among sequences. The sociable interface presents each sequence not as a result of solitary activity, but rather as part of a web of interconnections built by multiple storytellers.

The **Individeo** editor presents a storyboard interface for creating sequences with video clips and intertitles. The user can drag and drop desired video clips from the browser into the editing area in the center of the interface. The user can also add text clips to the sequence, which will play back as silent-film-style intertitles. The video and text clips can then be arranged freely within the editing area by the user. The playback order for the sequence is determined by the visual layout of the clips with respect to standard reading rules; the editor parses the layout similar to the way we might interpret the order of frames in a comic book. Instead of the precision-oriented traditional timeline interfaces, the editing area interface encourages casual rearrangement of elements, fostering a more playful, trial-and-error attitude. The intertitles help integrate the text and the video seamlessly within a sequence. The mix of text and video enables mixed-media communication, and dialog and discussion can occur in both media types.

Using a system such as **Individeo**, filmmakers could collaborate online on film productions. The footage could be shot in different locations at different times, then added to the Shareable Media system. Geographically separated filmmakers could explore various editing options by making and comparing alternative rough cuts with **Individeo**. They could ask questions or provide comments to other members' using the text clips.

One such current production is shot simultaneously in two cities and constructed using **Individeo**. The resulting film plays with notions of time and space shared by two characters who are played by actors in two separate locations. A reactionary collaboration model is also explored, where a filmmaker in one city might respond to video clips and sequences supplied by the other director, building a feedback loop of content and sequence ideas.

ISSUES

Community

Shareable Media applications could facilitate collaboration within existing and potential creative communities. Artists can take part in the Shareable Media community by contributing original material, experimenting with sequence and story ideas, and offering feedback to other users' creations. We are currently working with active filmmaking communities in locations including Ireland, China, and New York City. We anticipate the emergence of new communities of users, amateur videographers who may achieve a level of technical and creative fluency in software-based video editing through engagement with Shareable Media interfaces. A mix of practicing artists and casual videographers, both submitting and editing video, could lead to a fertile and active environment for all parties involved.

COPYRIGHT

Shareable Media applications foreground the free reuse of all submitted content, they foreground questions about copyright protection. Beyond the issue of corporate-copyrighted material, we are seeking an appropriate model for individual contributions of original content. We feel that an open model is the right model: all contributors grant other users of

Shareable Media the right to reuse the content within the bounds of the creative activities allowed within the interfaces. A micropayment mechanism based on the number of times a clip is viewed or reused could benefit contributors. We would like to frame Shareable Media as a prototype media space with an alternative model for intellectual property, one that prizes open sharing.

CONCLUSION

The **PlusShorts** and **Individeo** applications encapsulate our desire to provide easy-to-use tools and effective content visualizations to a broad range of users. Both of these applications, in their design and their functionality, approximate a new type of story format, where the multiple components of selection, navigation, construction and viewing, function together as a coherent unit. Both **PlusShorts** and **Individeo** present broadcast media as moving beyond the perfect realization of a story idea and towards instead a notion of dialogue or co-construction between a community of users, viewers and creators.

The next phase of the Shareable Media project involves evaluation and refinement of current applications, the development of new applications and a strengthened focus on the community development aspect of the project. As the current applications become more widely used, we will be employing statistical analysis of user activity and content usage to refine the search process and improve our recommendation system. New applications being developed will utilize mobile, wireless devices such as the Palm Pilot in an attempt to enhance the messaging and discussion element of the project. Evaluation of existing physical community usage of the system along with examination of emerging virtual video-sharing communities will also continue to inform and shape the future direction of our work.

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REFERENCES

[Bouvin & Schade 1999] Bouvin, Niels Olof. Schade, René. Integrating Temporal Media and Open Hypermedia on the World Wide Web. The Eighth International World Wide Web Conference, Toronto, Canada. May 1999.

[Cummings 1991] Cummings, e.e.. *Complete Poems 1904-1962*, ed. George J. Firmage. Liveright : New York , 1991.

[Cutler] Cutler, Chris. *A History of Plunderphonics*
<http://www.l-m-c.org.uk/texts/plunder.html>

[Davenport 1987] Davenport, Glorianna. New Orleans in Transition, 1983-1987: The Interactive Delivery of a Cinematic Case Study. *The international Congress for Design and planning Theory, Education Group Conference Proceedings*. 1987

[Jenkins 1992] Jenkins, Henry. *Textual Poachers*. Routledge : New York, 1992.
pp.162-177

[Pan, Davenport 2000] Pan, Pengkai, Davenport, Glorianna. I-Views: A Community-oriented System for Sharing Streaming Video on the Internet The 9th WWW Conference Proceeding Paper, 2000

[Stone] Stone, Kay. *Three Transformations of Snow*. .
<http://www.scils.rutgers.edu/special/kay/snowwhitetext.html>

[VideoFarm] <http://www.videofarm.com/>