GPSFilm: Location-Based Mobile Cinema

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Abstract

GPSFilm invents an alternative way of watching movies based on the viewer's location and movement. Using a GPS-enabled PDA or mobile phone, the audience experiences a type of cinema in which the story is revealed through their journey. The free, open-source application premiered in Asia along with the first film made specifically for the system, the Singaporean chase comedy "Nine Lives". Navigational storytelling has a long history and now because of emerging mobile technologies, cinema can join this narrative tradition. It is now possible to create cinema with a direct reference to its viewing location. Movies can be personalized and localized. Storytelling becomes a physical, viewer-controlled experience where a journey of fiction ties directly to a journey of fact.

GPSFilm is a new media artwork developed in Singapore that invents an innovative way of watching a movie based on the viewer's location. Using a GPS-enabled PDA or mobile phone, a movie is revealed as the viewer travels. By merging mobile computing with cinema, the audience creates a new type of film experience. The open-source application uses emerging technologies to bring story into real space, using neighborhoods, architecture, and landscapes as part of the cinema experience.

As the viewer explores a park, a neighborhood, or even a city or country, GPSFilm continually 'reads' their location and plays scenes that are tied to those places. As they travel, each viewer edits his own version of the story based on his journey. Similar to a computer game, GPSFilm tells stories by exploring an environment, but by taking it off the screen and back into the real world.

Historical and Theoretical Background

Navigational storytelling has been around for centuries—from cave drawings to cathedrals to Disneyland—where a path unveiled a story. The first theaters, televisions, and home computers forced a movie audience to be tied to their chairs. However, while recording is linear, narrative is not. The limitations of technology took the loose, malleable traditions of oral storytelling and made them fixed and linear. The idea that cinema is something viewed while seated and stationary is not a formal property of the medium, it was a restriction of the existing technology. This restriction fostered the accepted idea that the linear, cause/effect journey of the novel is the best form for cinema, a belief that was based more on machine culture than narrative history. Contemporary culture and digitization are allowing for an expanding openness to nonlinear forms—very few videos on YouTube actually tell a linear story, game culture continues to expand story possibilities—and it seems that audiences are becoming ready for spatial narratives. Now film can join other story genres that are shaped by their place and audience.

Because of emerging technologies, audiences now have the ability to move and watch, to follow stories by following paths again. Like many other types of storytelling, cinema can now be responsive to its location. We're entering a new generation of cinema narrative that actually harkens back to much earlier forms of narrative.

GPSFilm was developed as part of the cinema history timeline but also could be placed into the history of interactive narrative (hyperlink stories, CD-Roms, *etc*.) or the development of mobile and locative technologies. The conceptual background for the project was tied to Situationist Derives—a device used by French anarchists in the 1950's. In Guy DeBord's "Theory of the Derive" (1958)[2], he calls for people to "drop their relations, their work and leisure activities, and all their other usual motives for movement and action, and let themselves be drawn by the attractions of the terrain and the encounters they find there." This idea of drifting through an environment and letting the forces within it pull or push one into a unique journey works well with locative media once separated from its radical intent. DeBord's idea of giving space a narrative agency ties well to locative cinematic experiences and was a touchstone for the development of the GPSFilm application.

About the Application Code

GPSFilm is released as an open source application that runs on any GPS-enabled mobile phone or PDA. The application allows for a developer to create story spaces as small as parks to as big as the globe itself. The movies are also interchangeable and easily matched to any place.

The application was developed for both laptops and mobile devices in .Net Framework and contains two main components—one obtains the GPS coordinates and integrates them with the mobile device while the other plays the corresponding movie clip in an embedded movie player. Each GPS film is associated with a specially formatted text file consisting of the various zones, their coordinates and the corresponding clips. An installer was also developed so that the application can be conveniently installed on any computer.

One of the most important components of the application design was the recognition of zones (neighborhoods) instead of singular points like most other GPS-based narrative experiments that had been done so far. Instead of moving from single-point beacon to beacon, GPSFilm defines geographical spaces, leading to better emotional and sensory possibilities. The programmers developed an algorithm for the device to recognize the zone in which a user is traveling. The zones can be any shape or size and, using the longitude and latitude of its corners, calculations are made to determine viewer's location.[3]

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[2] Guy DeBord and I. Chetglov, *Theory of the Derive,* trans. A. Jorn (Barcelona: Actar/Museum of Contemporary Art, 1997)

[3] A complete explanation of the mathematical formulas used can be found in

Additionally, the code was developed to utilize GPS technology instead of WiFi to avoid being viewed as a purely urban experience. The films created for the system can be layered on top of the coordinates for a remote forest, the middle of the ocean, the polar caps just as easily as downtown Los Angeles. Any environment can be a story space.

About the User Interface

A simple graphical user interface has been designed that allows the viewer to download both the application and selected films off the website as well as a simple installer. Once the program is initiated, the device reads the location coordinates of the user and determines whether they are in an applicable zone. This normally takes about one minute and the time is concealed by playing an introduction and opening titles for the chosen film. Once the device recognizes the location, the scenes tied to that zone are played. If the user exits and enters a new zone, the scenes change accordingly. If a previous zone is re-entered, the film resumes from the point it was left off. The GUI also allows for the film to be played regardless of zone as well as offers visual maps of the entire story space and locative data. When initiated outside the story space, a video plays that explains the system, shows a trailer from the film, and informs the user of the parameters of the story space.

About the Content

The GPSFilm application and source code were released in 2008 along with the first film made specifically for the system, Singaporean filmmaker Kenny Tan's chase comedy of mistaken identity "Nine Lives". “Nine Lives” begins with the film’s climax scene followed by each of nine neighborhoods tied to a separate flashback. As the viewer travels through the story zones, they learn more about how the climax came to happen by seeing the crazy events that led up to it. Each neighborhood tells a different part of the story of how a confused exchange of three duffle bags on a public bus stop causes a hapless office worker to be running from both the Police and a dim-witted crime gang. The Chinese gangster comedy is a unique Singaporean cinema genre and has proven to be popular with those who have downloaded the system. Downtown Singapore was chosen for the prototype as it provided a wide range of visual possibilities—modern offices, historic shophouses, dark alleys and lush parks.

Unlike traditional, linear movies, GPSFilm works best with stories that unfold in more unusual ways, where any scene can be viewed before any other. The story structure was key—it had to work in

any order at any speed—story as shuffle. Narrative experiments with the system included each neighborhood being a different character (e.g. "Roshomon"), a different point of view (e.g. "Vantage Point"), documentary (where each neighborhood is a question of who, where, when, what, how), familial and rhizomatic models like the Greek constellations, or a shared event where each neighborhood would react in a different way. Initially, there was concern that the system was too specialized for story possibilities but the opposite has proven true due to a proven flexibility with the narrative.[4]

During the scriptwriting phase, the writers for "Nine Lives" conceptualized the structure by using the metaphor of entering and exploring a stranger's house. Each room would tell the explorer more about the family that lived there without it mattering which rooms were visited first or how long the explorer stayed in each room. Locative storytelling requires an architectural approach to the narrative as it is the literal exploration of a space to reveal story.=

A flashback structure was finally selected and used for "Nine Lives". When the system is powered on, the film's climax appears first and each neighborhood reveals through flashback more depth and information about how that climax moment came to happen. With nine neighborhoods, the opening and the closing, the total filmed content is 110 minutes long. A two minute opening comically introduces the characters and the climax situation. This opening refreshes the memory of the mobile viewer but also gives the hardware time to connect to the GPS satellite and download the first needed coordinates and corresponding video clips. Mobile viewing is likely to be fragmented and over several different journeys; by repeating the climax and characters with each power-up, the viewing experience is made more consistent.

Ten minutes of content were filmed for each of the nine neighborhoods. The writers and programmers slowly walked through each neighborhood and measured how long it took to get from one edge to the other and to gain insight into the characteristics of the place. They then rode a taxi through each of the neighborhoods, revealing both the fastest and slowest time it took for each zone. Fortunately, Singapore's Central Business District broke up into very even sections--Chinatown was about the same size as the Financial District which was about the same size as the Riverfront. The programmers stood on corners and got the coordinate readings of the intersections of the neighborhoods and input those coordinates into the code. For "Nine Lives", the neighborhoods are adjacent and simply crossing a street can trigger a new scene to be played. The system also allows for the zones to be miles apart.

About the User Experience

[4] A more in-depth analysis of the possible story structures will be presented by the author in the paper "Stories on the Run: Narrative Structures for Mobile Cinema" at ISEA2009, The 2009 International Symposium on Electronic Art, August, Belfast

As the tools and the media itself have become less expensive and more easily available, content creation has become the domain of the prosumer. While there will probably always be a love for the passive entertainment experience, a time has been entered when *assembly* has become an entertainment element. Increasingly, viewers are enjoying putting things together and watching films with alternative, non-linear structures. The DIY culture isn't just about capturing images or presenting them on YouTube, it is also about shuffling elements. GPSFilm makes the viewer the editor by allowing the viewer's journey to assemble the story. Part of the experience design is the walking or traveling; the physical editing makes it compelling in a new way.

While the cinema experience as a type of 'tour' has always had a metaphoric truth., GPSFilm makes it literal. Geospatially-embedded media content adds a layer of depth that wasn't present before as if a virtual amusement park is invisibly layered on top of a space. As a system, GPSFilm can work anywhere, but creating cinema with a direct reference to its location, where the setting of the filmed content is also the setting for viewing the film, is a unique entertainment encounter. The experience is similar to a Los Angeles resident recognizing a street corner or building in a Hollywood film. The physical recognition of a mediated location adds a personal layer to the narrative. With location-based media, that personal layer isn't memory but physical presence.

With the concept of a movie in one's pocket, the viewer is allowed to define the borders of the cinematic experience. Instead of entering a movie theatre to watch a film, the viewer enters a story space. Virtual theatres are created in physical environments. This radically changes the concepts of setting for the narrative itself. The previous dichotomies of place and time that separated audiences from movies—we are 'here' and the film is 'there', we were 'now', the film was 'then'—are now blurred and offer new possibilities and emotional experiences for cinematic storytelling.

Changing Theories of Space and Time

In addition to these discussions on how locative media changes both cinema and storytelling time and setting, it also must be noted how it transforms the spaces themselves. Recent innovations in locative technology now enable people to invisibly 'plant' virtual objects in physical space; to associate a story, a picture, a sound or a video with an actual place for others to encounter. This is a new relationship with the environment by giving place a memory.

Sociologist Anthony Giddens, among others, has written extensively about how the development

of digital technologies has radically changed the traditional views on space and time[5]. What was previously inexorably linked, emerging technologies now allow space and time to be dis-embedded from each other. Geo-spatially embedding systems like GPSFilm take this further. Space can be re-embedded with virtual cinematic spaces, a new layer of place. Additionally, there is a time re-embedding through simultaneous events as watching a GPSFilm one is present at two parallel events. The system creates a mediated location-based event re-embedded into a setting.

Future Development

The GPSFilm player and the movie "Nine Lives" are a download off the website for free. The default setting is to watch "Nine Lives" in downtown Singapore. The source code is also available on the site so a moderately-savvy user can change the coordinates to nine different zones and watch "Nine Lives" in any other location. Since current mobile screens are so small, the films can be easily compressed to fit on the memory capabilities of most mobile devices. By copying the entire film to the hard drive, it solves issues of transmission. At it's release time, the system works on any Windows Mobile device with GPS capabilities (almost all PDAs and many mobile phones). As of this writing, a team of programmers at Nanyang Technological University are porting the system over to the open-source Symbian operating system and it should work on Nokia phones by Summer 2009. Elsewhere, other teams and hackers are unofficially porting the code to I-Phones and the XXXX operating system.

Like nearly every new technology, GPSFilm is being embraced by youth culture very quickly. Reports are coming in that university students are making story spaces on their campuses by 'planting' music videos in certain areas—essentially 'scoring' a journey to their classes. Although the source code and application are still rather rough, the blogsphere shows that the concept is spreading and that there are several uses for the software that the original programmers hadn't considered.

Conclusion

Discussions of convergence usually relate to clustering of technologies—phones that play music, offer directions, keep calendars, *etc*. However, convergence can also be viewed in terms of functionality, the uses of those technologies. Technology users have a convergence of new abilities. GPSFilm is an *enabling* technology, it offers the ability to do something new with cinema by giving the power to easily tie cinema to place and generate spatial storytelling.

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[5] Anthony Giddens, *Modernity and Self-Identity: Self and Society in the Late Modern Age* (Stanford: Stanford University Press, 1991)

When a new media form emerges, the way it is used to tell stories is found at the crossroads of culture and technology. Instead of a fixed art form, cinema can also now be a type of experience design; a film can change dynamically based on location and the actions of the people watching. Movies can be personalized and localized. Film is no longer a moving picture, but a picture moving.