INTRODUCTION

One of the most important aspects, which is also the most neglected, in amateur/independent film and video production is distribution. The traditional distribution schemes, such as television or theatrical release, fail to recognize such productions. After all, in an environment where market driven commercialism is the priority, the amateur/independent film and video production is inevitably marginalized: "Here’s a sad fact: scores of films are made every year, and never get distribution beyond some very obscure film festivals" (Kobler). To a degree, it illustrates the case of an incomplete cycle of communication, in which a cultural product is left without an audience. Is it the fate of amateur/independent productions to be put away on a forgotten corner of the producer's shelf, accumulating dust?

Not anymore! The digital revolution, along with the development of the Internet, promises a future with many possibilities. Some even call this "...the democratization of tools" (Peterson 14). Bart Cheever, executive producer of the Digital Film Festival, an organization in the forefront of the digital film revolution, explains: "Abbie Hoffman once said that freedom of the press only applies to

those who can afford a printing press. Today anyone with a PC and a copy of Microsoft Word has, in effect, a printing press on their desktop. This same phenomenon is coming to the world of filmmaking as for the first time in history extremely powerful, extremely high-quality filmmaking tools become available on a mass level." The prediction is that the digital technology will redefine the production and distribution processes to empower marginalized filmmakers to realize their vision. Cheever predicts the following about the digital revolution and the filmmaking process:

- Low Cost. The low cost/high quality equation of digital filmmaking means that a much wider range of people will be able to make film. Many more stories will be told.
- Ease of use. Most digital film and animation software is relatively easy to learn. Powerful software can be learned in days instead of years.
- Ubiquity. With computers now in 43% of American homes powerful filmmaking tools are for the first time within the reach of a large section of society.
- Digital Auteurs. Technology is allowing one person to do what once took an entire team: write, shoot, mix sound, create graphics and visual effects and edit.
- Distribution. The internet will allow filmmakers to connect directly with their audience and bypass traditional "filters": Major Studios and Networks.

In other words, this new digital technology will provide more power and flexibility to the content creators than ever. Moreover, with the distribution over the Internet, the creators will no longer be bound to the hegemony of the traditional media outlets. Rather, it will

provide a possibility to bypass the traditional distribution schemes to enable direct interaction between the creators and the audience. Already, the Internet has demonstrated a strong possibility to become an effective alternative distribution medium for visual content: a cyber forum for direct communication with the audience. In his manifesto, Rutledge observes the revolutionary possibilities of the Internet:

> The Internet is redefining communication, including static concepts we have grown accustomed to: concepts like advertising, television, research, shopping, mail, and games. Previously 'known' industries are being pulled apart by a shift in empowerment. Existing forms of distribution will soon give way to a new paradigm -- where you decide what you want from the wealth of entertainment available on the Net, where the down-streaming form of those digital files are fluid and constantly evolving, surging to fill your television screen or computer monitor or VR glasses, whatever the case may be (Rutledge, Manifesto).

To explore the exciting possibilities of this new medium, the following chapters will discuss theories to support the rationale of web-delivery, the technologies that enable such delivery, and current trends in online delivery of visual content. Furthermore, research will be conducted to test the validity of the premise behind the Internet delivery of visual content. Ultimately, the research attempts to examine the new possibilities of the

Internet as an alternative medium that could overcome the hegemony of the traditional distribution methods.

CHAPTER 1

WHY BOTHER WITH THE MARGINALIZED CREATORS?

Overview

Before exploring the new model of alternative distribution, the following questions need to be addressed: why do the marginalized creators deserve such an opportunity? What is the significance of experiencing such marginalized productions in this new, alternative medium? Why even bother with them?

In this chapter, discussion of cultural theories by Newcomb and Hirsch will provide the rationale behind the Internet delivery of visual content for the traditionally marginalized amateur and independent productions. Specifically, the discussion will compare two competing communication theories, the transmission and the ritual view. Based on this discussion, the idea of a cultural forum will be introduced, as a space in which cultural representations are examined to construct, maintain, and transform culture.

Theoretical Framework

The basis for Newcomb and Hirsch's argument is in the ritual view of communication. Specifically, they quote Carey, who compares two distinct ideas of communication:

transmission and ritual. The transmission view suggests that “...communication is a process whereby messages are transmitted and distributed in space for the control of distance and people” (Carey 15). The transmission view of communication presupposes the existence of a message distinct from reality, which in turn can be distributed. It also assumes the communication structure of sender, message, and receiver, in which the meaning of a message is consistent throughout the communication process. In mass media research, it is also referred as the Magic Bullet Theory, which states that "a media message would reach every eye and ear in the same way, like a symbolic 'bullet,' immediately bringing about the same changes of thought and behavior in the entire audience" (Lowery and DeFleur 13). The assumption here is that reality can be put into a message that can be duplicated to manipulate the audience. Therefore, the transmission view implies that reality exists independent from the communication process.

On the other hand, the ritual view suggests that “...communication is directed not toward the extension of messages in space but toward the maintenance of society in time; not the act of imparting information but the representation of shared belief” (Carey 18). It assumes that reality is not a given fact, but is shaped and molded

through communication: “...a ritual view conceives communication as a process through which a shared culture is created, modified, and transformed” (Carey 43). Therefore, unlike the transmission view, the ritual view assumes that reality is the product of communication, not a given fact separate from the communication process. Therefore, “reality is brought into existence...by communication” (Carey 25).

Goodman’s writing is helpful in exploring the ideas of communication and reality presented in the ritual view of communication. He probes the idea of representation in Languages of Art: “...representing is a matter of classifying objects rather than of imitating them, of characterizing rather than of copying....” (Goodman 31). In other words, representation is based on organization by the means of classifying and characterizing, rather than a mere duplicate of reality. In this line of thought, if representation is organization, it is no longer a representation as the transmission view might suggest: the message is not just duplicated and extended in space and time. Rather, representation is a construction because it has been molded and provided identity by the organizer who classified and characterized the events of the world. This is the idea that reality is perception: events of the world

are classified and characterized, and therefore given a unique identity, by the perceiver. This implies that everyone experiences, or classifies and characterizes, the events of the world in his/her own unique way. Therefore, what one perceives to be reality may not necessarily be what others perceive to be reality; your truth may not necessarily be my truth and my truth may not necessarily be your truth.

However, the transmission view does not acknowledge the uniqueness of perception in communication: the duplicated messages are simply distributed and received. Therefore, the meaning of the message is singular, which stays consistent before, during, and after the communication. The ritual view, on the other hand, suggests that reality (meaning) is a constructed perception of the events of the world by the perceiver who experiences them through classification and characterization. Therefore, there can be multiple meanings to a message.

Based on the idea of ritual view of communication, Newcomb and Hirsch develop the notion of culture as a forum. In specific, they argue that the creators and the viewers of television are the cultural *bricoleurs* who seek and create “...new meaning in the combination of cultural elements with embedded significance” (Newcomb and Hirsch

505). These *bricoleurs* are situated in the *liminal* stage (the process of communication) in which “rules may be broken or bent, when roles may be reversed, when categories may be overturned” (Newcomb and Hirsch 505). In other words, Newcomb and Hirsch look at television as a forum (*liminal* stage) where creators and viewers (cultural *bricoleurs*) test out their ideas and examine themselves. In so doing, reality is constructed, maintained, and transformed.

In summary, based on the ritual view of communication, Newcomb and Hirsch suggest that events are classified and characterized by the cultural *bricoleurs* (perceivers) who in turn construct reality (meaning) through communication in the *liminal* stage where different realities are examined. Unlike the transmission view, which would argue that a singular meaning is inherent in the message, the ritual view argues that multiple meanings arise during the communication process.

Purpose

The important argument in the ritual view of communication is that reality is shaped by the communication process (cultural forum). In other words, the cultural representations, which trigger the communication

process, function as the crucial determinant in constructing reality. Therefore, it is essential for the cultural forum to embrace a variety of cultural representations to construct a reality that is representative and fair. Just as the idea of democracy, equal opportunity of representation is necessary to ensure fair and impartial construction of reality.

However, the current media environment only allows certain type of cultural representations to be consumed. Specifically, commercially driven mainstream cultural products from giant media conglomerates dominate the culture of today. For example, cultural products of Hollywood not only rule the domestic but also the global market, ensuring the cultural domination of certain types of cultural representation around the world. In this environment, fair and impartial construction of reality is impossible. This kind of cultural dictatorship only ensures the reproduction of dominant ideology rather than fair representation. Therefore, as creators of cultural and symbolic representations of the world, traditionally marginalized producers are entitled to a cultural forum to help construct broad and legitimate representation of the culture.

Indeed, the traditional distribution schemes do not effectively serve this goal. Many marginalized productions do not even get a chance to be presented to any type of audience. In other words, the ideals of communication, the fair construction of reality and culture, are impractical in traditional means. Clearly, the traditional distribution process is ineffective for marginalized productions in achieving the cultural forum in meaningful ways.

However, the dawn of the new digital technology seems to promise many exciting opportunities. Although the technology is not quite there yet for high quality, full screen, real time video delivery, the use of the Internet as a distribution tool for visual content is slowly taking place. As Leland reports, this trend was evident as far back as 1998: "The emergence of the video web as both a marketing and distribution channel for independent producers was apparent at NAB '98.... [What was] evident was the Web's role as an alternative to traditional broadcasting, and the Internet's continuing use as a tool to enhance the production process" (146).

Already, some Internet sites are devoted to the web delivery of visual content. The success of such online screening sites as Ifilm.com and AtomFilms.com proves the trend, in which independently produced film/video contents

are consumed in large quantities, which could not have had any exposure with traditional distribution. These movies are viewed, criticized, and commented on by visitors from everywhere. For example, as of March of 2000, a short animated film entitled More has been viewed about 50,000 times and voted as the highest rated film on the Ifilm.com site. Moreover, the reviews from the visitors enable the site to function as an interactive forum transcending temporal and spatial boundaries of traditional media. Such an environment, filled with rich interaction, which the Internet is able to provide, both in quantity and quality, is truly revolutionary.

With the fast growing technology of today, the Internet as a viable distribution tool for high quality visual content is only a matter of time. In the end, the future of technology promises a day when online, high quality, full-screen, real-time delivery of visual content could be possible for a mass audience. Moreover, "Someday the internet will give independent filmmakers the power to distribute films themselves - creating a direct connection between filmmaker and viewer. A film uploaded from a filmmaker's living room in Sao Paolo or Indiana becomes instantly available to anyone with net access, anywhere on earth, 24 hours a day" (Film on the Net).

Without a doubt, the Internet could open more doors to the *liminal* stage to enable cultural forum, in which the inefficient traditional delivery methods can be overcome to enable meaningful communication. In fact, it means a possibility of exponential expansion of the cultural forum full of rich interaction between the traditionally marginalized content creators and the audience. In the end, the Internet will revolutionize the way people perceive and experience visual media.

CHAPTER 2

Technology

Overview

Just a few years ago, delivering video over the Internet was simply unthinkable. Now, it is slowly starting to take place, developing a segment of industry dedicated to the delivery of visual content. Truly, the Internet technology of today is changing rapidly; so much so that, sometimes, it is even hard to predict the immediate future.

Today, the delivery of visual content over the Internet relies on certain technological foundations. Specifically, multimedia architecture, compression technology, and streaming technology are important to understand the new medium. Although these technologies may seem immature at this time, the rate and the quality of their developments have been more than impressive. To better understand the web delivery of visual content, the following discussion will focus on the three technologies. Due to the vast scope of these topics, in-depth discussion will not be feasible. Instead, this chapter will focus on the conceptual understanding of each technology.

Multimedia Architecture

Before discussing the specifics, definition of the terms is in order. Multimedia is defined as "...media presentations which combine various elements such as sound, graphics, and video" (Glossary of Terms). Multimedia architecture, then, is defined as "software including system extensions, plug-ins, servers, etc. which provides for the creation storage and playback of synchronized multiple media types" (Glossary of Terms). The following illustrates a common confusion associated with multimedia architecture:

> Architectures are often called "formats", which is misleading. A format is the actual file description in which files are stored, and are part of an architecture. For example, the QuickTime architecture has a QuickTime movie file format. However, an architecture is much more than just a format.... For example, QuickTime controls how dynamic media is handled by the computer, including how movies are displayed to the screen, file conversions, and much more. So, in a nutshell, a format is a subset of an architecture; they are not the same thing. While the various architectures have a lot in common, there are also quite a few differences between them. Some are dedicated to playback via the WWW, while others are stronger at CD-ROM. Many work best on a specific range of computers. There is no one "best" architecture; choosing between them depends on your application and needs. (Introduction to Multimedia Architectures and Codecs)

Currently, QuickTime, RealPlayer, and Windows Media comprise the three most popular multimedia architectures

for web-delivery. Table 1 shows the target architecture for 12 online screening sites. Currently, both QuickTime and RealPlayer seem to be the choice over Windows Media.

Table 1

Target Architecture for 12 Major Online Screening Sites*

Online Screening Sites	Target Architecture
dfilm.com	QuickTime
ifilm.com	RealPlayer, Windows Media, QuickTime
atomfilms.com	RealPlayer
ifmp.net	QuickTime
inetfilm.com	QuickTime
minutemovies.com	RealPlayer
shortfilmnetwork.com	QuickTime, RealPlayer
thebitscreen.com	RealPlayer, Flash
uxoomi.com	QuickTime
shortbuzz.com	RealPlayer
hollywooddigital.com	Windows Media
reelmind.com	Windows Media

*This information was complied by the researcher.

QuickTime seems to be the choice of many multimedia producers over other architectures due to its versatility. The following testimonials reveal the definite preference of QuickTime by many online screening site administrators:

> ...this site is 100% quicktime and has always been, because we think they have the best codec out there. -- Bart Cheever, dfilm.com (Cheever, Re: Questions for a research)

> We chose QuickTime, because of reliability and best quality available. -- Editor, inetfilm.com (Editor)

> QuickTime, because RealPlayer is profoundly limited and phoney. -- Steve Bennett, ifmp.com (Bennett)

Developed in 1991 by Apple, QuickTime is the earliest commercially available multimedia architecture. Over the years, QuickTime has matured into a powerful multi-platform multimedia software that has became the industry standard for authoring and delivering time-based data over the Internet, CD-ROM, DVD, and other media venues. The versatility of QuickTime is evident in its multiple applications other than video, such as "still images, animated images (sprites), vector graphics, multiple sound channels, MIDI music, 3D objects, virtual reality panoramas and objects, and even text" (QuickTime 4 API Documentation). The following is the official definition of QuickTime from Apple:

> QuickTime is a package of system-level code, with C and Pascal programming interfaces, that higher-level software can use to control time-based data. In QuickTime, a structure of time-based data is called a movie. With QuickTime, applications can create, display, edit, copy, and compress movies and movie data in most of the same ways that they currently manipulate text and still-image graphics (QuickTime 4 API Documentation).

Due to its wide-range of possible applications, it is "...used by software developers, hardware manufacturers, and content creators to author and publish a wide range of media" (QuickTime).

Compression

The development of compression technology is crucial to the Internet delivery of any multimedia because of today's low bandwidth infrastructure. This is especially true for visual content such as video, which carries a large amount of data: "Uncompressed video takes up huge amounts of space (approximately 27 MB/sec), which is more data than most systems can handle" (Introduction to Multimedia Architectures and Codecs). The following analogy provides a good illustration:

> Compression is like making orange juice concentrate. Fresh oranges go in one end and concentrate comes out the other. The concentrated orange juice takes up less space, is easier to distribute, and can be easily reconstituted by the consumer. Video compression takes a large

> file and makes it smaller. The smaller files require less hard disk space, less memory to run, and less bandwidth to play over network or the internet (Sorenson Video 2 User Guide 10).

The software element that enables the compression of media is typically referred as a codec, short for compressor/decompressor. The examples of video codec include Animation, Video, Component Video, Media 100, Avid QuickTime, Sorenson, and Cinepak; the examples of audio codec include Qdesign Music, IMA, and Purevoice.

Essentially, a codec performs both authoring and delivery functions. On one hand, a codec functions as a compressor during the authoring process (*capture*, *save as* or *export* command, for example) to create a smaller file using a unique algorithm. A codec also decompresses the previously compressed file and rebuilds it during the delivery process (playback of the compressed clip on the desktop, for example).

In their practical applications, codecs are further categorized into authoring codecs and delivery codecs based on their unique capabilities. Relatively speaking, authoring codecs are designed for high quality output, and not specifically concerned with reducing the file size. Therefore, they are more suitable for the production of multimedia. The following provides examples of such codecs:

> Authoring codecs, such as M-JPEG and the Media 100, are used during the capture and creation of content, and not used for actually distributing material to viewers. They are essentially an "intermediate" production and storage format.... For capturing your video, you should use the codec specified in your capture system's documentation. Generally you'll use a system specific codec, such as the Avid Media Composer codec, or Media 100 codec.... During editing and effects, you should generally use your specific capture system's codec [Avid Media Composer codec or Media 100 codec]. For truly lossless production…the Animation codec at 100% quality is also often used (Media Cleaner 4 User Manual 164).

On the other hand, delivery codecs are concerned more with the file size, data-rate, and streaming capability to cope with low bandwidth and less powerful computer processors. Typically, these codecs eliminate parts of the data (lossy compression), and therefore are not suitable for settings that require high-quality outputs. Sorenson Video codec is the most powerful delivery codec today for the web-based application, which delivers "...excellent quality at low data rates" (Media Cleaner 4 User Manual, 165). Here are some tips in using delivery codecs:

> For progressive download delivery over a network, you should generally use Sorenson Video. For true streaming delivery, either Sorenson Video or H.263 are often used.... For delivery on CD-ROM, you generally should use Sorenson Video unless you need viewers to be able to view the video with slower machine. For slower CPUs, Cinepak is often the best choice (Media Cleaner 4 User Manual 164).

More in-depth information on codecs with excellent examples can be found in CodecCetral at http://www.terran.com/CodecCentral.

Spatial vs. Temporal Compression

As discussed, the basic idea behind compression is to remove redundant data to decrease the overall file size. Different codecs use different algorithms to remove such redundancies. In general, however, there are two types of compression schemes in video compression: spatial and temporal. Spatial compression attempts to remove redundancies within an image:

> Spatial refers to compression applied to a single frame of data. This frame is compressed independently of any surrounding frames. Compression can be lossless or lossy. A spatially compressed frame is often referred to as an "intraframe" (Sorenson Video 2 User Guide 11).

An example of spatial, or intraframe, compression may be a footage that includes a large area of solid color, such as a blue sky; in this case, the coordinates of the blue area and the color blue is saved, rather than the pixels of the entire area. In other words, one pixel of blue can represent a large area that has blue in the image.

On the other hand, temporal compression, often called interframe, is concerned with the relationship between successive frames in the video:

> Temporal compression identifies the differences between frames and stores only those differences. Unchanged areas are simply repeated from the previous frame(s) (Sorenson Video 2 User Guide 11).

An example would include a footage that contains a static interview in which the person's mouth is the only moving part of the image; in this case, frame 1 can store the image in its entirety as a keyframe, and frame 2, 3, 4, and 5 can store only the information regarding the changing mouth. Then, when the footage is decompressed, or reconstructed for delivery, the information stored in the frame 1 would fill the missing part of the image in frame 2, 3, 4, and 5, making them a complete image.

Both spatial and temporal compression seek to reduce the redundant information, whether they be within the frame (intraframe) or between the frames (interframe).

Streaming

Prior to streaming technology, the whole content had to be downloaded over the Internet in order to be viewed. This can be an excruciating experience, especially if one is dealing with a large file size content over a slower

connection speed. Moreover, the lack of immediate access can discourage the visitors from further exploration. However, development of the streaming technology changed all this, providing a possibility of an immediate access to the contents regardless of the file size. In fact, it is what made the Internet an appealing delivery medium for visual contents. John Molinari, CEO of Media 100 Inc., notes: "Streaming media is really transforming the Web into a broadcasting medium. This means every personal computer user can distribute television programs themselves using the internet." Indeed, the immediate access to any visual material over the Internet promises many extraordinary possibilities for visual content creators.

Currently, there are two types of delivery methods over the Internet: progressive download and true streaming. They are often referred to simply as streaming due to their similarities, but each has its own advantages and disadvantages. The basic difference between the two stems from the fact that progressive download uses an HTTP server, whereas true streaming uses a specialized server and protocol designed for streaming:

> "Progressive download" refers to online media which users may watch as the files are downloaded.... [It] is often called "HTTP streaming" because standard HTTP servers can deliver files in this fashion, and no special

> protocols are needed (Media Cleaner Pro 4 User Manual 35).

With progressive download, there is an initial downloading time until the file has enough data to continuously play the whole content from beginning to end. Therefore, depending on the connection speed and the file size of the content, the user may have to wait during the initial download. Once it accumulates a critical amount of data, the movie is played as the rest of the data is being downloaded. The biggest advantage of progressive download is the control over the image quality: the users get the quality as intended by the creator. The obvious disadvantage is the possibility of initial waiting time: the bigger the file size and the slower the connection speed, the longer the wait. Terran Interactive Inc. provides a good insight on the issue:

> Progressive download is best for relatively short, high-quality clips. The file is downloaded via HTTP or FTP at a pre-determined level of quality. The user doesn't have to wait for the whole file to download to start watching it. If they have a slow connection, or if the movie was made at a high data rate, there will be a delay before the movie starts playing (QuickTime).

Unlike progressive download, true streaming provides an immediate, realtime playback of the content:

> "True streaming" refers to technologies which maintain the bandwidth of the media signal to the viewer's connection, so that the media is always seen in realtime.... Specialized media servers and streaming protocols are required to enable true streaming (Media Cleaner 4 User Manual 35).

The realtime playback is a significant advantage of true streaming because it provides an immediate feedback to the users. Also, because downloading is unnecessary, the user can access the material at random points. In other words, the user can jump anywhere in the timeline and still access the content in real time. However, the image quality may suffer depending on the connection speed. Again, Terran.com provides a good insight on the usage:

> "True Streaming" is generally best for longer pre-recorded clips or live events. ... If the user's connection isn't fast enough, or the network experiences congestion, frames may be dropped in order to preserve the realtime playback. One advantage of true streaming is that it allows the user to skip ahead -- useful if you're watching an hour-long lecture (QuickTime)!

In the end, the user's experience with progressive download and true streaming depends largely on the bandwidth. With high bandwidth, both types can achieve realtime playback in good quality, provided that (for progressive download) the download is faster than the playback and that (for true streaming) the connection speed is fast enough and net congestion is low. In this environment, the only notable difference between the two is

the random access capability, a feature unique to true streaming. The real difference may only be apparent with low bandwidth: either (for progressive download) the user has to wait for the initial download of the content, or (for true streaming) the image quality suffers a great deal.

In general, progressive download is a better choice when control of the delivered image is crucial, and true streaming is a better choice when the immediate playback is crucial. Darren Giles at Terran Interactive Inc., who was an adviser to the creation of the Phantom Menace trailer, agrees:

> Even if you don't have a fast internet connection, the original intended quality of the clip will be intact when you play it back locally. By design, Quicktime handles progressive download clips better than the competition. Of course, there is no single answer for everything. If you're going to provide live coverage of an event or delivery of a long clip, you'll probably want to use true streaming. But for shorter content, especially where preserving quality is key, progressive download is absolutely the way to go. Broadband is making this more viable" (Johnson 91).

Summary

Certain technological foundations are behind the delivery of visual contents over the Internet. Specifically, the development of multimedia architecture,

compression technology, and streaming technology enabled the Internet to be a viable medium of video delivery. However, the current technologies and low bandwidth connections are still limited in providing good quality visual content. Hopefully, in the near future, new developments in these technologies and increased bandwidth will enable web-delivery that is more appealing to the mass audience.

Chapter 3

Current Trends

Overview

Technological development over the past few years has facilitated the Internet delivery of visual content. In fact, it created a fast growing industry with a considerable potential for success in the future. The growing excitement is evident even for the Hollywood heavyweights: "Steven Spielberg talked of its 'unlimited potential.' Ron Howard described it as 'stimulating and liberating.' And Jeffrey Katzenberg compared it to the dawn of MTV. These are the soaring expectations for Internet filmmaking and animation heading into 2000" (Miller).

Right now, several sites specialize in web-delivery of short format visual content. Among others, AtomFilms.com, Ifilm.com, and Dfilm.com stand as the leaders of the bunch. These sites function as portal sites in which visual content of all kind (short films, animations, and documentaries) is available for free, 24 hours a day, 7 days a week. Already, they have a growing but solid audience base that is interested in viewing online visual content: "[the online screening sites] showed that there is significant consumer interest in short movies and cartoons

that can be viewed online" (Miller). Submitting content to these sites is free, and most sites do not require ownership rights or exclusivity. In addition, some even provide personal web pages and E-mail accounts to filmmakers.

In comparison to the traditional methods of distribution, the implication of such delivery scheme is significant. For creators, especially the marginalized ones, it offers greater exposure than the short format visual content has ever seen before. For viewers, it offers an opportunity to see unique content that is not available anywhere else. This is very closed to the ideals of cultural forum, in which diverse cultural representations are examined to construct a fair representation of reality. The mission statement from Reelmind.com reiterates the point:

> Devoted to the creative process, REELMIND offers filmmakers and animators an outlet for their work free from compromise and traditional distribution constraints. By utilizing the Internet, REELMIND empowers each individual to reap the benefits of a united artistic community while promoting their personal visions to the world (Mission Statement).

In essence, the promise of Internet delivery is that it would empower the traditionally marginalized visual content creators, especially those who work in the short

format. Ultimately, these services provide a way to realize the vision of the marginalized filmmakers against the hegemony of the traditional, market-driven distribution schemes.

Quality Issues

The image quality of the video delivery on the Internet today is, to say the least, problematic. This is a significant drawback that limits its appeal. Unfortunately, the current compression technology and the bandwidth infrastructure for the Internet are not optimal for video delivery, often resulting in blurred and jerky images. When viewed at low bandwidth, such as 28.8kbps modem, images can even be unrecognizable. Moreover, with true streaming technologies such as RealPlayer, the flow of the visual content can often be disrupted due to Internet congestion, not to mention the horrible image quality at low bandwidth. With progressive download, the time required can be a huge stumbling block, especially for unmotivated users who crave immediate access. Obviously, such distractions do not provide a suitable environment for a decent viewing experience, not to mention a meaningful communication: "The state of film on the web today leaves a lot to be desired -

small window size, low quality, long download times, etc." (Film on the Net).

Essentially, it is a battle against the bandwidth. Without question, the online screening sites utilize every means possible to achieve the best results. Still, the bandwidth is the single biggest problem in attracting a mass audience. As Miller reports, "Only 5% of the nation's 100 million households are expected to have high-speed Internet connection by the end of 2000 compared with about 2% now, according to Jupiter Communications. This means that for the vast majority of home Internet users, watching even a short cartoon will, for the foreseeable future, require extraordinary patience and a willingness to endure low-quality images in a viewing window about the size of a postcard." Gregory Hall, a program coordinator of shortfilmnetwork.com, confirms the point: "Full screen video is available now (you can watch Film Club, for example, at full screen once it becomes downloadable April 7th [2000], for example), but the majority of audience members are using slower transmission speeds. The download time is excruciatingly slow for small bandwidth pipes." Certainly, such limitations in technology and infrastructure need to be addressed for the proliferation of visual contents over the Internet. As the New Venue's

Jason Wishnow suggests, "...film on the web today is akin to the turn of the century Kinetoscopes and Nickelodeons people used to pay to peek into, more exciting for their potential than their actual content" (Film on the Net).

Voices from Filmmakers: Pros and Cons

The candy-coated promises of Internet delivery, supported by such words as democratization and empowerment, sound extraordinarily attractive, especially to marginalized creators. However, will it really deliver its promises? It is certainly dangerous to be wrapped up in the idealism of the medium and be oblivious to the limitations or possible negative effects. What are some of the problems involved with the Internet distribution of visual content? What are the practical implications of this new medium to the working filmmakers of today?

Doug Block

Doug Block, an award winning independent documentary filmmaker of 19 years, has been fascinated by the Internet and recently produced a documentary entitled Home Page. In an attempt to promote the film, he launched a promotional web site, and showcased his documentary online at Ifilm.com. In an interview for Video Systems magazine, he

suggests that the Internet will bring more opportunities to documentary filmmakers. Specifically, Block is positive of its impact on massive audience reach, and also on the extended experience the Internet can bring to the documentary audience:

> I think it's going to create an enormous change. First, it's going to more easily allow filmmakers to reach targeted audiences that fit their subject matter. Plus, because documentaries are about real people and real subjects that are important to viewers, the links on a film's website offer a great deal of added value to what people are seeing. I mean, for example, there was an inherent interactivity with *Home Page* because the film was about people who have these great websites. And we always encourage people to go from seeing the film to these people's websites and follow up on the story. You can continued to find out what happened to them since filming ended, or contact them directly by email. ... It makes it a more interactive experience. ...it's like the Web is made for this kind of organic theater where the audience can get very, very deeply involved (Porter 129).

However, despite the wide audience reach and extended documentary experience, Block also observes that the scope of the Internet viewing experience is limited to sampling:

> So what the Net does, which I think is so great, is create an experience equivalent to going into a bookstore where, if you have the time, you can read the whole book. People don't generally do that, but they can. And most people think it encourages sales of books. Likewise, the idea behind the streaming the film was to give the opportunity to sample it, knowing that the image quality was going to vary depending on what kind of modem they were using. I didn't think people would have the patience to watch it on a small

> screen. Even at high-bandwidth, it's still not going to look fantastic. So, I wanted people to look at it, get intrigued, and then click on the video and buy it (Porter 129).

As Block correctly observes, watching online visual content is a different experience in a different context than the conventional media experiences such as theatrical or television viewing. Moreover, he suggests that the quality will never be equal to the traditional media, even with high bandwidth access. Therefore, he argues that the Internet may only be suitable for sampling purposes. In light of the expected arrival of digital television in the near future, the image quality on the computer monitor may never be satisfactory even with high bandwidth. On the other hand, if the convergence occurs between the two media, in which the user can access high quality Internet content through digital television in high bandwidth, the quality will not be an issue. Furthermore, this new medium will provide more than samples of visual content. However, given the current status of technology and infrastructure, Block's observation may be correct. Nonetheless, his outlook is positive. Indeed, the Internet is a powerful and liberal promotional tool with certain benefits such as extended viewing experience. It clearly helps the traditionally marginalized filmmakers by providing them

with more opportunities than were available before the arrival of the Internet.

Helmut Kobler

Helmut Kobler, video game producer for 6 years and an aspiring filmmaker, recognized the potential of web delivery, and produced a short film entitled Radius, which was tailored to Internet delivery. In his article "Internet Film: The New Promise Land," he also recognizes the advantages of mass audience reach. However, he argues that, for online content to be successful, immediate attention from the audience is crucial:

> ...not every film will actually **succeed** on the Internet -- i.e., get broad exposure, and make a difference in moving your career forward. The ones that do will recognize the Internet as a special, unique medium for film, and tailor themselves accordingly.... One of the things we were very conscious of doing with *Radius* was opening it up with a bang—i.e., an intense sequence where our pilot/heroine is shot down behind enemy lines.... The point of all this is to illustrate the importance of grabbing the audience's attention almost immediately—i.e., in the first minute if possible. How you do this is up to you as a storyteller/filmmaker, but it's necessary if you want an average audience member to watch your film from start to finish. The fact is, net film viewers are probably watching your masterpiece in a small video window on their computer, sitting at a desk. It's not the ideal environment to watch a film, and there are plenty of other distractions like other films, e-mail, MS-NBC, and Amazon.com competing for their attention. They simply won't

> have the patience to sit for minutes as you slowly develop your story (Kobler).

As does Block, Kobler notes that the Internet experience is different than that of the traditional media. Specifically, he suggests that it is based not in traditional entertainment context but in the context of information. In this peculiar environment, it is certainly difficult to expect the same kind of attention from the audience as in television or theater. Inevitably, Kobler defines the Internet as a stepping stone for an upcoming filmmakers rather than a medium on its own -- a new avenue to break into the existing industry:

> Now if this audience consisted solely of everyday film fans sitting at their PCs in Iowa or who knows where, then such exposure wouldn't be so valuable. But Internet film is **also** catching the interest of more agents, producers and even film studios (for instance, consider that Steven Spielberg and Ron Howard recently launched their own net film site called Pop.com, Leonardo DiCaprio is sponsoring a net film festival, established sites like AtomFilms and Ifilm were hot commodities at the recent Sundance Film Festival, and so on). It's the fact that 'the establishment' is taking Internet film seriously that makes it a great opportunity for exposure. **If** you can create a film that entertains everyday net film fans, you're also likely to attract the attention of some people and companies that can move your career to the next level. Filmmakers who have done successful net films like Joe Nussbaum (*George Lucas in Love*), and Mark Osborne (*More*), and others have moved on to bigger and better opportunities (Kobler).

Kobler's view on this unique medium emphasizes that its true value to the filmmakers is only as a practice ground. Specifically, he sees the industry specific, professional audience to be the real value of the new medium for the up-and-coming filmmakers. In other words, he does not see the genuine value in the medium as a delivery tool for broader and richer communication. Although the future may hold more than what he suggests, given the particular state of the technology today, Kobler's observation may be correct. However, like Block, he still recognizes the potential of the medium to reach a mass audience.

S. D. Katz

If Block and Kobler are somewhat positive about the effect of the Internet delivery of visual contents, S. D. Katz is not. A filmmaker and an author of books such as Film Directing Shot by Shot: Visualizing from Concept to Screen, Katz is more skeptical about the impact of this new medium. Specifically, he warns that Internet delivery will fragment the already fragile independent film industry:

> Desktop video has made everyone a potential filmmaker, and now we are told the Internet will allow anyone to launch a micro studio. Anyone and everyone. And there's the catch. We are all about to drown each other out. Putting up a website will be about as compelling as an ad in the Yellow Pages. The Internet is going to fragment the

> popular audience for films--or at least steal from the margins--as focused DV publishing efforts permit filmmakers to target, say, left-handed, bi-sexual seniors. This, however, may not be a sufficiently large or loyal audience to support regular production, even with the bargain basement cost of DV production and Internet distribution. What's more, viewers only have a certain amount of time available for film-going, and this will now be divided between Internet viewing and a night out at the movies. Television reduced movie attendance, and now both these older mediums will have to share some of their viewers with the Internet (Katz 8).

Indeed, he is convinced that the more opportunities this new medium brings will fragment the market and saturate the audience to the point of self-destruction. Interestingly, however, the assumption behind Katz's argument is that Internet delivery will be a legitimate outlet for visual content along with movie theaters and television, rather than a sampling medium or a stepping stone for aspiring filmmakers. In other words, he recognizes the possibilities that this new medium can bring to the traditionally marginalized filmmakers. However, he also suggests that the Internet will not stay purely alternative:

> A close reading of the many Internet broadband deals cut in the last 12 months reveals that Apple, Microsoft, the alphabet networks, the portals, the telcos, and cable companies are all buying stakes in each other (or outright buyouts) and cutting cross-marketing deals. The computer industry no longer offers an alternative to the media conglomerates. They are one and the same. What this means is that we are likely to see the major studios control mass marketing on the

> Internet, with a new subclass of filmmakers creating and releasing their alternative work to segments of the indie market. If this produces an audience similar to the short story audience loyal to a handful of small literary magazines..., that may be sufficient recognition for some filmmakers. But unlike short story writers, filmmakers will not be able easily cover their costs--even DV production (Katz 8).

In summary, Katz argues that the mainstream media conglomerates will control the Internet, and the traditionally marginalized filmmakers will be further marginalized in this new environment by the same traditional forces; so much so that the recovery of the production cost is impossible. Finally, Katz warns that the idealism of the Internet delivery may just be a false hope of the desperate filmmakers faced with a premature medium of, in reality, limited possibilities:

> Despite the hype, the overthrow of traditional media venues is not in the cards; the big guys will simply co-opt the indie market. We will see the deck reshuffled over the next few years, but all the players at the table will be familiar. Meanwhile, indie filmmakers who want to stay out of the mainstream may have new tools, but limited means. Many will be shocked to discover that they'll have to settle for filmmaking as an avocation (Katz 8).

In light of the merger between AOL and Time Warner this year, Katz's somewhat gloomy prophecy is not groundless. In an article entitled, fittingly, "Gatekeepers Inc.," John

Higgins reports a story not too distant from what Katz has predicted:

> ...behind the public enthusiasm lies private anxiety over the power of a combined AOL Time Warner. Suddenly, the company that serves the largest portfolio of Internet users will also own the largest producer of TV shows and movies, as well as cable programming and cable systems passing 20% of the nation's households. And those cable systems can distribute not only TV but high-speed Web content rich with video and audio. ... The combined AOL Time Warner will have several gates that media and Internet rivals will want to pass. Competing Internet Service providers will want to access to Time Warner Cable's high-speed pipes, a fight they had been fighting side-by-side with Case. Competing Media companies will want to push their content to AOL customers and ensure that it's accessible to Time Warner Cable Users subscribing to other services (Higgins 22).

Certainly, the merger of AOL and Time Warner is a significant event that can shape the future of this new medium. Katz's chilling prediction of Internet domination by the media conglomerates may become true in a very short time.

Summary

From different perspectives, all three filmmakers recognize the unique nature of the medium that could provoke a significant change in the industry. Whatever their outlook may be, they are paying serious attention to this new medium. Indeed, the media conglomerates are

looking into the Internet as a medium of substantial possibilities, just as the marginalized filmmakers have. The current trends that online screening sites have set are just the beginning; it is the tip of the iceberg of what is coming. Sooner or later, the quality issue will likely become a thing of the past, and high quality video images and audio will flood the Internet. Nonetheless, the question remains: Will traditional forces take over the Internet and dominate, keeping the status quo of today's media accessibility? In other words, will the cultural forum still be ruled by the cultural tyranny of today's media? Or, will the marginalized creators of today flourish with this new medium, overcoming the status quo? Will it open new doors to provide a chance to fairly represent the culture with the diversity of content? At this point, nothing is sure except that this new medium has a golden possibility of rich cultural forum that no other media are capable of today.

CHAPTER 4

Research

Research Questions

Many predict that the Internet will become a powerful medium that transcends the traditional boundaries of the existing media. Indeed, the Internet is growing faster than ever, often leaving the industry with uncertainty. The delivery of visual content over the Internet is one of the areas facing revolution and uncertainty at the same time. Truly, the new possibilities that the Internet can bring are fascinating. Specifically, the delivery of traditionally marginalized productions, such as short format visual content, promises new possibilities of a rich cultural forum.

Online Promotion

As reviewed in the Chapter 3: Current Trends, the Internet delivery of visual content today is a reality. However, these online screening sites are essentially portal sites that function as distributors. Although most of the services are free, they still are gateways for the filmmakers. Indeed, the established audience base that these sites offer can be attractive to filmmakers.

However, once the film is submitted, the filmmaker loses control over how the film is experienced by the audience. Specifically, the submitted content can be lost in the hierarchy of the site, among all the other films that the site carries. For example, the short film Glove at Ifilm.com is now competing for attention against more than 800 other films.

Moreover, the choice of the delivery architecture and digitization, which have a huge influence on the viewing experience of the end user, is completely up to the site administrators; in other words, the filmmaker does not have control over the quality of the delivered contents.

In addition, the design, overall look and feel of the site is completely up to the site administrators as well. For example, to the filmmaker's surprise, the web page given to Glove at Ifilm.com focused exclusively on violence as a strategy to promote the film. Specifically, the page used bloody pictures that suggest gory violence, which the filmmaker considers as a misrepresentation of the film. All this undermines the purpose of using the Internet as the distribution tool: the power to reach an audience directly with the content the way the filmmaker has intended.

Currently, however, promotion of one single visual content on a non-portal site, in which the whole movie is

available online, is rare. More often than not, film related sites are limited to providing samples or trailers, along with such information as synopsis, production notes, and credits. Perhaps, it is due to the limited access to the digitization/compression technology, and also the fact that a mass audience reach is not as effective as portal sites. Certainly, it is more advantageous to promote the contents at portal sites, which provide a strong audience base and the appropriate technology for free.

In light of this, this research attempts to establish a direct connection between the filmmaker and the audience to bypass the media gates, thereby maintaining the power of the filmmaker. Specifically, it focuses on the web-delivery of an independently produced content on a non-portal site. However, in practical terms, is it possible to successfully promote visual content over the Internet without the benefits of the existing audience base? In other words, can it complete the cycle of communication by creating a forum in which audience can interact with the content the way the filmmaker has intended?

i. Production

In an attempt to answer this question, a short film entitled Glove and a promotional web site for it were

produced (see Appendix A for the script). The promotional web site included general information about the film as well as online versions of the film in QuickTime (available at http://glove.tc.msu.edu). Specifically, the film was compressed using Sorenson codec to produce 4 different versions of progressive download QuickTime movies: low quality, medium quality, good quality, and best quality. Sorenson codec was chosen because it was the best codec at the moment in terms of image quality for online delivery of QuickTime movies. For the delivery method, progressive download was chosen over true streaming to keep control over the quality of the movie. Therefore, QuickTime was the choice over Realvideo and Windows Media because those two were essentially architectures more suitable for true streaming than progressive download. Accordingly, for the control of image quality, QuickTime was the only choice.

ii. Promotion

The film and the site were promoted in various ways over the Internet, such as submission to different search engines as well as contacting various list-servs. To promote the film effectively, the audience was isolated as much as possible by focusing on industry professionals, independent filmmakers, and those who are interested.

The concept behind search engine is for the user to find desired web content by typing in keywords. Therefore, it is crucial to equip the web site with relevant keywords that the likely user would associate with, so that those words can be indexed by search engines for the display of search results. In general, search engines index web sites in two ways: indexing of the meta tags (tags that contain the information about the site that are not displayed on the actual web pages), or indexing of the HTML text in the body of the web pages. Therefore, it is crucial to come up with keywords that can represent the content of the site, and then implementing them in both the meta tags and the HTML body text. Visit http://commtechlab.msu.edu/humans/kimsimon for more information on the characteristics of search engines.

To optimize for the search engine indexing, the following keywords and description were incorporated into the body of the web pages as well as the meta tags:

> Keywords, "digital short film, Digital Short Film, digital short, digital film, Digital Film, digital, Digital, short film, Short Film, Film, film, psychological thriller, Psychological Thriller, thriller, Thriller, suspense, Suspense, plot twist, Plot Twist, online screening, on-line screening, Glove, glove, GLOVE, Simon Kim, simon kim"

> Description, "Glove is a digital short film by Simon Kim, a psychological thriller, a tale of self-discovery"

Subsequently, the Glove web site was submitted in early February for indexing at the following search engines: Yahoo, Snap.com, HotBot, Excite, Altavista, Netscape Search, ComFind, Infoseek, Northern Light, The Yellow Pages, Lycos, Planet Search, Webcrawler.

In addition, a couple of list-servs were selected to isolate the audience in the promotion of Glove. Similar to newsgroups, list-servs are a cyber forum in which participants share opinions and ideas on a specific topic through E-mail. Among others, "Webcinema" was chosen due to its focused yet vast reach to the entertainment-oriented industry professionals around the globe (http://www.webcinema.org). Similarly, an Australian list-serv called "Oz-Short-Film" was chosen due to its focused reach (http://www.ironclad.net.au/lists/oz-short-film/subscribing.html). Subsequently, E-mails were sent to the two list-serves to promote Glove (see appendix B for sample E-mail).

The purpose of the promotion was, obviously, to access as many targeted audiences as possible for the online screening of Glove. Such promotional effort was crucial because, unlike popular portal sites that have an

established audience base, Glove was promoted individually. Therefore, successful audience reach determined the success of the premise: the capability of the Internet to achieve a rich cultural forum.

Audience Profile

Because the employed promotional strategies were mostly point-to-multipoint in nature (in other words, one message serves many), the information about the actual visitors is somewhat ambiguous. For example, the URL of the promotional site was indexed at Yahoo under Entertainment > Movies and Film > Titles > Independent. In this case, one can assume that those who searched Glove via Yahoo were interested in films in general, and especially independent films. However, this does not provide who they are beyond their interest in independent films. The list-serv and newsgroups carries the same dilemma. Who are the people searching the Internet for visual contents such as Glove? What are they like?

The research combined both qualitative and quantitative data in an attempt to answer these two research questions: success of the promotion and audience profile.

Method

In order to measure the success of the online promotion of Glove, the server log of the site was analyzed, which contained access data of all the visitors for the duration of research: from January 29 to April 21 of 2000. The server log analysis was provided by the server administrator of the Communication Technology Lab at Michigan State University, whose server contains the promotional web site for Glove.

The success was measured based on the number of times the online versions of Glove were requested, commonly referred as "hits." Therefore, the number of hits on the 4 QuickTime versions of Glove for the period of 3 months will help determining whether or not the promotion was successful.

In addition, from the server log analysis, the Domain Report was analyzed, which identifies international domains that requested the Glove web site. This is based on the analysis of a simple domain syntax. For example, a domain that ends with ".co.uk" in the place of ".com" is based in the United Kingdom.

Also, the Hourly Summary was analyzed, which revealed the average number of hits per each hour. For example, it

shows what time of the day the visitors most requested the site.

Finally, the Daily Report was analyzed to determine the frequency of the visitors' request on a daily basis during the research period. For example, it shows which day had the most requests and which had the least.

To generate an audience profile, a simple survey was conducted, which asked the visitors' demographic information and Internet usage (see Appendix C for the full questionnaire). The survey was conducted online on a strictly voluntary basis. Specifically, upon a visitor's request for the online screening of Glove, which is done by clicking on the online screening icon available at any page within the site, the visitor was lead to the survey page. Upon arrival, the visitor had a choice to either complete and submit the survey, or skip it all together. If the visitor chose to fill out and submit the survey, the result was E-mailed to the researcher and archived. If the visitor chose to skip, he/she was lead to the screening page. The overall number of collected surveys was 104. They were analyzed using frequency analysis to reveal the audience profile.

Results

Online Promotion

The server log was analyzed to determine the success of the promotion, which recorded transactions for the duration of 82 days. The overall number of successful requests (hits) for any given page on the Glove web site was 12,937; and, the average number of successful requests per day for the pages was 157 (see Table 2). The successful request means that, when requested, the page was fully loaded without any loading errors (when the visitor hits the stop loading button, for example) or any page errors (broken links that leads to pages that do not exist, for example).

Table 2

Number of Successfully Loaded Pages (hits) for Glove Web Site between January 29 and April 21 of 2000 (82 days)

Total	12,937
Average per day	157

Source: Web Server Statistics for glove.tc.msu.edu.

The log also showed that the number of requests for all the QuickTime movies, including 4 versions of the movie

and 4 versions of the trailer, was 893 (Table 3). This is determined by the number of times the files with extension ".mov" was accessed. Specifically, the combined total of the hits to the movies was 471 (52.6%), and the trailers 420 (46.9%). Interestingly, among the 4 versions of the movie available, the best quality movie was requested the most (45.6%), followed by medium quality (25.0%), low quality (15.0%), and good quality (14.2%) (Table 4).

Table 3

Overall Number of QuickTime Movie Files Requested

	Requests	Percentage
Glove	471	52.6%
Trailer	420	46.9%
Uncounted	2	0.2%
Total	893	100.0%

Source: Web Server Statistics for glove.tc.msu.edu.

Table 4

Different Versions of Glove Requested

	Requests	Percentage
Glove (best quality)	215	45.6%
Glove (medium quality)	118	25.0%
Glove (low quality)	71	15.0%
Glove (good quality)	67	14.2%
Total	471	100%

Source: Web Server Statistics for glove.tc.msu.edu.

In addition, the Domain Report shows that the requests came from 48 different countries around the world outside the United States. Even though the English-speaking countries such as Canada, United Kingdom, and Australia mark the highest requests, there were many interesting others, including Japan, Bulgaria, Brazil, Singapore, Mexico, Norway, and Israel (Table 5).

In terms of the hourly summary of the requests, the results show that the peak was at 2 p.m. However, the

Table 5

Domain Report: Countries outside the U.S. (excerpt)

Domain	Number of Requests
.ca (Canada)	3705
.uk (United Kingdom)	3052
.au (Australia)	2423
.jp (Japan)	1157
.bg (Bulgaria)	1085
.br (Brazil)	958
.sg (Singapore)	746
.nz (New Zealand)	622
.sa (Saudi Arabia)	540
.ae (United Arab Emirates)	503
.it (Italy)	469
.mx (Mexico)	444
.my (Malaysia)	396
.be (Belgium)	381
.za (South Africa)	375
.fr (France)	370
.nl (Netherlands)	280

Source: Web Server Statistics for glove.tc.msu.edu.

average requests kept the momentum throughout most of the day, from 10 a.m. to 1 a.m., until it dropped significantly during the early morning hours, between 2 a.m. and 9 a.m. (Figure 1).

Finally, the daily report between March 11th and April 21st shows that the visitors' requests peaked on March 13th and March 14th, marking 573 and 518 requests per pages respectively. Otherwise, the requests stayed relatively constant throughout the research period (figure 2).

Audience Profile

To generate the audience profile, 104 online surveys were archived, and analyzed using frequency analysis. Based on the analyzed data, it was revealed that the majority of the visitors were highly educated young professionals. The following describes the most likely candidate who visited the Glove web site: a 20 something male with a 4 year college degree, who is in the arts and entertainment industry, who spends an average of 2 hours a day online, and less than 1 hour a week watching online movies.

Please refer to Appendix D for the graphic figures of the following discussion. In terms of the sex of the visitors, male (77%) was dominant over female (23%) (figure 3). As far as the ages of the visitors, the dominant

Figure 1.

Figure 2.

segment was mostly in their twenties (48%), followed by thirties (33%), and forties (11%) (figure 4). The educational level of the visitors turned out to be quite high: most of them had a 4 year college degree (27%) or Masters degree (21%), and some were still in college (15%) (figure 5).

Not surprisingly, arts and entertainment (45%) dominated the occupation or the type of industry, followed by Internet/multimedia (15%) and education (6%) (figure 6). The majority of the visitors spent 2 hours a day online (33%), followed by less than 1 hour (20%) and 3 hours (17%) (figure 7). For the viewing of online movies, the greater number of people spent less than 1 hour (58%), followed by none (18%) and 2 hours (12%) (figure 8).

For the question "Where did you learn about Glove?," the result was split between list-serv (28%) and search engine (25%), followed by other (22%) (figure 9).

Discussion

The measurement for success was ambiguous in determining the success of the promotion, due to the lack of established criteria. Indeed, for some filmmakers, one meaningful interaction with an audience could mean a success. For others, millions of audience at the box office

may not be satisfactory. How does one determine the criteria for success? Specifically, with the promotion of Glove, how many hits represent a successful audience reach?

One useful criterion is the Ifilm.com's standard, in which 1,000 viewing is deemed significant. Specifically, on Ifilm.com, the number of views is listed only if the movie exceeds 1,000 hits from the audience. In light of this standard, the result of 471 hits could mean that the online promotional effort of Glove was barely acceptable. However, considering the unique situation of a non-portal site without the benefit of the established audience, the result can also be interpreted as satisfactory.

Still, the overall results indicate that the individual promotion of visual contents is not entirely impractical. In fact, it shows a strong possibility of a meaningful forum in which the audience can interact with the web-based visual content. The feedback from visitors who enjoyed the film reaffirms the point:

> I did watch the whole thing as it was very well paced and nicely shot (Rutledge, The Glove Feedback).
>
> ...I viewed your work and I like it. It had a little twist and twists are good. ... It is obvious that you put a lot of time in your project (Coury).
>
> ...the film was the best film I've seen on line. I've watched many films because they were on

> line, but the montage effects in this film appealed to other senses too (Reed).

Certainly, as evident in the feedback, the Internet provides new possibilities in distribution that are meaningful for the independently produced content such as Glove.

To be certain, however, not all of the 471 requests for the movies were successful. In other words, there was no guarantee that the visitors who clicked on the movies watched it in its entirety. According to the visitor feedback, there were various problems associated with accessing the QuickTime movies. For example, Jude, a visitor from Australia, had to stop halfway through the movie:

> I didnt watch the whole film as I couldnt get it to finish downloading :(It stalled twice at the point where he meets X in the toilets. It took me nearly two hours to get the download to this point twice... [...] I was viewing the 'medium' quality version as I am only on a 33.6 modem and even 8meg is a huge effort (Jude).

In this case, accessing from Australia may have been a huge factor for slow downloading, considering all the gates between the two countries. However, in some cases, the access to the movies was completely unsuccessful for unknown reasons:

> [...] nothing happened with the screening.....I tried best, medium, good for both the trailer and

> the film yet nothing showed once the download finished (Bapscene).
>
> My only question is: HOW can I watch the film? Nothing happened (Bakker)!!

This illustrates the limited state of the current infrastructure for viewing online video. Whatever the problem may be, it is a fact that some visitors will continue to have technical and/or infra-structural problems. What this means to the research is that the actual number of visitors who viewed the entire length of the movies is, at best, uncertain. However, it is certainly below 471.

Nonetheless, the complete analysis of the Web Server Statistics shows unique and powerful features of Internet delivery. For example, the close analysis of the Daily Report suggests that the number of visitor requests is relatively consistent throughout the research time period, with the exception of the March 13th and 14th (figure 2). The peak on March 13th and 14th can be explained by the fact that the promotional E-mail to the two list-servs was sent in the afternoon of the 13th. Specifically, the E-mail to Webcinema was sent at 1:46 p.m. on the 13th and to Oz-Short-Film at 2:17 p.m. Since all of the list-serv members received the E-mail at the same time, the requests to the site were heavily concentrated on those two days. However,

even after the initial concentration of more than 500 requests per day dropped to the average of 157 requests, the flow of requests stays relatively constant until April 19th. Since the search engine was the second popular means (25%) to locate Glove site against list-serv (28%) (figure 9), this constant stream of requests has to be attributed to the search engine. What this means is that, assuming the average number of requests stays constant after the research period, the overall hits to the Glove web site will increase. From this, one can infer that the number of views of the film will increase as well. Therefore, it indicates that the audience reach of 1,000 is a matter of time. In other words, user access of Glove is free of temporal constraints; as long as the site is up, audience will keep visiting. This is a good indicator of the possibility of reaching a mass audience.

Furthermore, the research demonstrated that the geographical boundaries are not significant for the content delivered over the Internet. Indeed, with the 48 countries around the world clicking on the site, Glove received a global exposure that transcends geographical boundaries. This is a significant accomplishment that the traditional media cannot possibly offer to the marginalized independent production such as Glove.

Moreover, as the Hourly Summary illustrates (figure 1), the site request was not restricted to certain time but shared across the day, except for the early morning hours. This result can be applied to the viewing of the movies on the site. This on-demand quality of the Web illustrates the powerful benefit of Internet delivery, which transcends the temporal limitations of traditional media distribution.

However, the research also reveals a crucial inconsistency in the promotional efforts. Specifically, why is there a huge discrepancy between the overall number of successful requests to the pages in the site (12,937) and to the movies (471)? In other words, why are visitors viewing the site and not even click on the links to the movies? This is especially curious since the promotional efforts focused on the industry-specific audiences who are interested in the area. Moreover, the promotion was specifically done to entice the visitors to the online screening of Glove. The splash page of the site (the first page that loads up when visitors click on the URL) even contains a flashing icon that says "online screening" to get the immediate attention from the visitors. In this environment, it is hard to imagine that the willing visitors, who came into the site knowing that the online screening of Glove is the major attraction, do not even

click on the link to the movies. This may prove to be a significant flaw in the promotional efforts. What would cause such behavior? Is there a possible explanation for the discrepancy?

Perhaps, many visitors came into the site and, after gathering basic information about the film, turned off by the subject matter of the film. Or, due to the lack of solid infra-structural foundation, many were scared off by the idea of watching a moving image on their computers.

However, more convincing theory may be that, in fact, such discrepancy makes sense, considering the structure of the Glove web site. The key to this theory is that the number of successful requests (12,937) does not equal to the number of visitors. In fact, successful requests mean successfully loaded pages without loading errors or page errors (see page 51). Considering that there are 62 distinct HTML pages in the Glove web site, including 9 main pages and 36 sub-pages dedicated to the production photos and film stills, one visitor can cause up to 62 successful requests (this is without counting the number of times the visitor uses the "back" button on the browser window). If one assumes that there were in fact 471 distinct visitors who attempted to watch the movies (in other words, assuming each visitor clicked on the links to the movies only once),

all it takes to reach 12,937 successful page requests is less than 30 successful page requests from each visitor (471 times 30 equals 14,130). Therefore, the likely explanation for the numerical discrepancy would be: out of 471 total visitors, each visitor entered into the site and explored the different pages, causing up to 30 successful page requests, and eventually clicked on the link to the movies. Again, assuming that there were in fact 471 distinct visitors exploring 62 HTML pages, the total successful requests of 12,937 make sense. In other words, the term "hits" need to be clearly defined in order to correctly analyze the statistical data, because it can be easily misused during interpretation. Therefore, the discrepancy in the numbers does not stem from the flawed promotional process, but from the misinterpretation of the data caused by the confusing term "hits."

Evaluation

In retrospect, the promotion methods employed in this research were somewhat limited. With the search engine promotion, the selection of keywords was somewhat arbitrary; they were chosen based on the researcher's assumption of what constitutes good keywords for promoting Glove. The selection of keywords could have been more

concrete if it were based on empirical data collected from the target audience. This could ensure the implementation of legitimate and diverse group of keywords that are more relevant and, therefore, effective.

Moreover, more list-servs and newsgroups could have been chosen to promote Glove rather than the just two. Even though the chosen list-servs had wide and focused audience reach, there are more of those that can be exploited. Therefore, compilation of various list-servs and newsgroups could help the efficacy of the future promotion efforts.

If there was a single most important element that this research has neglected in evaluating the possibilities of Internet delivery, it was the data on the visitors' connection speed. Admittedly, the biggest problem of the Internet delivery today is the low bandwidth infrastructure. Therefore, obviously, it is a crucial piece of information that could provide an insight into the nature of the visitors' viewing experience of Glove. Without empirical data, one can only assume what the actual viewing experiences were like. Therefore, it could be a possible future research item that could provide more insight into the actual infrastructure of the users.

Conclusion

Even though technical and infra-structural problems do exist today, the results of the research demonstrate the inherent benefit of using the Internet as a distribution tool. Specifically, it indicates that the distribution of an independently produced single visual content on a non-portal site can be promoted over the Internet with agreeable results. Furthermore, this new medium proves to transcend the spatial and temporal limitations of the traditional media to achieve global exposure. What is truly amazing is that this medium provides an opportunity not only for the mainstream players, but also for the traditionally marginalized ones. In other words, the Internet shows a great potential for ensuring diversity of the cultural forum, in which more alternative cultural representations can be examined. Ultimately, the more opportunities of representation will ensure fairer and more impartial construction of reality by challenging the cultural domination of commercially driven mainstream media. Certainly, the mainstream media will not disappear, and the equal opportunity may be an idealistic and absurd optimism. However, more than ever, the creators of independent visual content are equipped with the means to realize their visions: low-cost, flexible production

process and the delivery over the Internet. Therefore, as the research demonstrated, the possibilities of achieving richer cultural forum are extended. It is certainly a significant first step to the democratization of the unbalanced media domination of today's culture.

APPENDICES

APPENDIX A

Glove Script

GLOVE

written

by

Simon Kim

Thesis Project Script
Second Draft
2/25/1999

ENTROPY PRODUCTION LOGO

1. INT. ART GALLERY

Pan from a painting *Portrait of a Boy* by Thomas Couture. COORDINATOR and STAFF are looking at sample photos. College student-aged STAFF seems to be intimidated by the older and wiser COORDINATOR. Flipping through them, all they see is pictures of hands.

STAFF
Here are the pictures you asked for.

COORDINATOR
(annoyed and skeptical)
What's this? Can't this guy shoot something else?

STAFF
It's pretty unique don't you think?

STAFF's cute smile quickly fades away as COORDINATOR gazes at her. COORDINATOR gazes back at the pictures.

COORDINATOR
What's the name again?

STAFF
AL.
(looking at her watch)
He should be here soon. He said he'd drop off rest of his photos today.

COORDINATOR
(looking at the pictures)
What's he do?

STAFF

He's the photographer for the school newspaper and he takes these pictures on the side or something.

COORDINATOR
(looks at STAFF)

STAFF
I read it in his resume.

COORDINATOR
(again looking at the photos)
Hmm…it is kinda interesting.

AL
(off camera)
Excuse me.

COORDINATOR
(looking at AL, then looking at STAFF)
Who's this?

AL
(smiling)
I'm here to drop the pictures off?

COORDINAOTOR
AL? Our Mr. Hand!
(reaching his hand towards AL)
How are…

He loses words as he grabs AL's hand. AL's hand CU. As COORDINATOR squeezes, the black glove over AL's hand is crushed as if it is empty. COORDINATOR looks at AL without a smile.

CUT TO:

CREDIT SEQUENCE:

Title and credit over the montage of hands (with theme music).

2. EXT. PARKING LOT -- EARLY MORNING

The clicking sound of camera is carried over from the title sequence, gradually mixing with the natural sound. Heavy metal music is playing through the radio as AL drives the beat-up Volkswagen.

The car stops. He pulls the parking break. CU of his face in pain. He gently shakes his right hand that has the glove on. He takes out a small bottle of Aspirin and takes one in his mouth. He squints his eyes. [Al taking Aspirin needs to be exaggerated]

In an attempt to turn the music off, AL accidentally hits a button to make the music louder. Another attempt kills the music. In an awkward pose, AL reaches to the right side of the handle, and turns off the ignition with his left hand. He takes the camera from the passenger side and steps out.

CUT TO:

3. INT. BOOKSTORE HALLWAY

A shot of STACY, putting a ribbon on a baseball bat. She puts it neatly in the corner. Camera pulls out to reveal AL and MANAGER walking by.

MANAGER
(looking at STACY and waving)
Hi STACY, good morning!

STACY waves back at MANAGER.

MANAGER
(looking at AL)
Yes, we have everything a student needs in one building. This is a complete facility with everything you can imagine.

AL
(nodding his head with a big smile)
That's great!

CUT TO:

4. INT. FITNESS FACILITY

CU of camera lens, and then AL's eye as the camera is put down. His eyes look around and, as the camera comes back in the frame, his eyes hide behind the camera lens again. Click. Click.

There are four or five people (both men and women) working out on different machines (treadmill, lifting bench) in the room. AL has banner that has "PHOTO" written around his arm and black glove on his right hand. He is taking pictures of LIFTER standing in front of a mirror. MANAGER is explaining about the room as he takes pictures.

MANAGER
(the manager’s voice fades in)
So, is there anything more you need?

AL
I’ll be fine thanks.

MANAGER
(with a big fake smile)
Well, that’s good. We’ll get the front page tomorrow right?
(smile)
I'll be in the office, so let me know if you need anything.

MANAGER leaves. As AL takes pictures of LIFTER, natural background sounds fade out. All that can be heard is the clicks from AL's camera and his footsteps. AL notices LIFTER's hand. The frame freezes as he takes several pictures of LIFTER's hands. CU of LIFTER's hand is followed by AL's hand with the black glove. As he takes pictures of LIFTER, he notices X through the lens. X

stands out because he is the only one looking at the camera directly. Erie music and cross cut of CU of AL and X. AL puts the camera down to see X but X is nowhere to be seen.

All natural sounds come back as someone calls for help. A STUDENT sitting on a workout bench is stuck with a heavy barbell--he cannot lift it over his head to put the barbell back. His face is completely red from agony.

STUDENT
(desperate)
Hey…can you give me a hand?
(grunt)

AL, who stands the closest to STUDENT, hesitates and just looks at STUDENT.

STUDENT
(desperate)
C'mon man…

AL puts the camera down and tries to lift the barbell with his left hand only.

STUDENT
(desperate and
yelling a bit)
Both hands, c'mon man!

CU of AL, terrified but trying. In the mean time, one of the other lifters, STUDENT 2, comes and gives a hand. CU of the STUDENT agonizing as the barbell is slowly lifted. AL screams as a sudden metallic thump sound breaks the silence--the weights on the barbell fell.

STUDENT
Shit! Are you OK man?

Cut to AL on the floor, in pain, holding his right hand with the black glove. STUDENT reaches over to AL.

STUDENT
Is it your hand? Let me see.

STUDENT pulls the glove out from AL's hand. Stunned faces of STUDENT and STUDENT 2.

CUT TO:

5. INT. RESTROOM

The restroom is empty except a fellow is in front of a urinal. Upset AL comes in. AL looks at the fellow and goes into a stool. AL sits down on the stool without taking the pants off and holds his right hand. The following sounds are heard in order: flushing, footsteps, water being turned on, and off, paper towel being ripped, paper towel being thrown, a loud cough, footsteps, and the door being open.

AL stands up from the stool but stops as door opening and footstep is heard. He sits down again.

X
(voice only)
You can come out now AL, everyone's gone.

Sound of lighter lighting cigarette. AL's stunned face. He opens the door to find X sitting on the sink. X is smoking a cigarette with his left hand and has a glove on his right hand. [NOTE: the lighting needs to be different from this point]

X
What are you looking so stunned for?
(looking at AL's hand)
Oh shit, look at that. Don't just stand there, wash it up.

X turns the water on. Visibly upset, AL looks at X, then looks away as AL approaches the sink. He looks at the exit door, takes the glove off on the right hand and puts it on the sink. CU of the glove. Blood goes down the drain.

X
(looking at AL's hand and turns his head around)
Damn man, that's really fucked up. You need more than that tiny one, need a fucking baseball glove to hide it.

AL is visibly upset but reluctant. He keeps washing the hand.

AL
(quietly)
What do you want now?

X
(with a smile)
Oh, nothing. Don't bother,
I'm just talking to myself.

Looking at AL, X starts to whistle. AL tears paper towel to dry his hand. His eyes squint in pain as he rubs his right hand.

X
Does it hurt?

AL
What?

X
(louder with his hands around his mouth)
Does it hurt?

AL does not answer. CU of his left hand crushing the paper towel. He throws it in the garbage can. X looks at AL as AL is taking an Aspirin from the bottle. X gets his last drag out of the cigarette. The sound of burning cigarette is exaggerated.

X
(shaking his head)
You changed so much man. You used to babble like a little girl all the time, remember?
(changing his voice like a girl and shaking his hand)
Oh mommy, my hand hurts, they are looking at my hands, da da da…

AL
(extremely annoyed)
Shut up!

X
Try to play basketball with that hand man. Ha! Can you even shoot? You know, like this.

X puts two hands together and imitates shooting basketball. CU of AL's steaming face. Cut to AL's right hand which is covered by the left hand.

X
(smiling but extremely sarcastic)
Oh, I'm sorry, did I hurt your feelings?
Oh my god, what have I done?
Look here, do you wanna see what hands really look like?

X takes his right glove off to reveal his hand.

X
Now this is what I call a reeeeal pretty hand.

X kisses his bare hand. CU of AL's steaming face. Suddenly, AL’s face crushes in pain. He grabs the right hand with his left hand. He takes the Aspirin bottle out and tries to open it.

X
(sarcastic)
Oh no! No, no, no, no. You think this is gonna make it better?

X tries to snatch the Aspirin bottle from AL. Both AL and X wrestle a bit, but the bottle ends up in X’s hand. X throws it in the corner. X puts the glove back and punches his palm. X jumps on him. Sound of fist meeting flesh. CU of the glove on the sink (camera moves in gradually) as the sound is heard.

DISSOLVE TO:

6. INT. RADIOLOGIST'S OFFICE

(the fist meeting flesh sound carries over, gradually replaced by the x-ray machine thump) AL is seated on a bench holding his right arm and a piece of paper. A sick-looking BOY in a hospital robe walks by. AL follows BOY with his eyes. A NURSE calls for the next person in line at which time AL takes his eyes off from BOY. AL stands up, steps into the office. As he carefully drags his body into the office, he squints his eyes in pain.

NURSE
(writing on a piece of paper without looking at AL)
May I help you?

She looks up and her face becomes stiff. AL hands over the piece of paper without saying anything. AL looks away. The NURSE looks over the paper, looks at AL, and opens up the file cabinet. She brings out a thick folder labeled "Al Hide" and slips the paper in.

CUT TO:

7. INT. X-RAY ROOM

The NURSE guides AL to the x-ray table and seats him down.

NURSE
Please take the glove off and pull the sleeve back.

AL pulls the sleeve back to reveal bruised spots. He takes the glove off (his hand is not showing). CU of NURSE's face, looking at AL's hand, then AL's face. The NURSE helps him putting the arm on the right angle.

NURSE
(polite but cold)
What happened this time?

AL
(terrified and not looking at her)
Ahh…Martial arts, I was sparring.

The NURSE looks at him.

NURSE
Don't move. Hold that pose.

She hands him the lap cover and walks away to the control room. AL's face looking at NURSE's back. Music kicks in: "Die, Die, Die my Darling"

8. INT. CAR -- AFTERNOON

(music is carried over) AL drives his Volkswagen. AL takes another Aspirin. The reflection of the scenery on the car windshield goes by like crazy. Music is played loud in the car. AL is upset. CU of AL's upset face. Face of X is superimposed.

FADE OUT

9. INT. X-RAY ROOM

FADE IN

It is a few days later: AL is wearing different cloths and his right hand is wrapped with gauze. AL is seated on a stool in front of the x-ray table. He glances over to NURSE who is in the office looking for something. AL looks down at his right hand wrapped with gauze. Suddenly a knocking sound from window is heard. AL turns his head to see. X is staring at AL through the window showing his middle finger. CU of upset AL. The NURSE steps out from the office with papers in her hand.

NURSE
Let's take another…

The NURSE stands alone in an empty room.

CUT TO:

10. INT. BOOKSTORE HALLWAY

Loud footsteps. CU of running feet. AL runs through the hallway, frantically looking for X. AL slowly turns around a corner and stops. Out of breath with sweat rolling over his head, AL gazes. Shot of smiling X behind a glass door looking right at AL. AL walks into a store located next to the corner, grabs a baseball bat with a ribbon, and walks out. STACY notices him.

STACY
(pointing at him)
Hey!

Without noticing STACY, AL passes the doorway. Store alarm turns on. A shot of AL's angry steps with the bat dangling on a side. CU of AL walking into the frame, he stops and looks at X. CU of X. AL starts pounding the bat. Up and down motion of the bat as the thumps get louder along with the store alarm. AL's CU while in motion. CU of X's feet--they shake in interval as the thumps are heard.

A hand drops the bat on the floor. Out of breath, AL drops onto the floor in fatigue. Face down, he breathes heavily.

VOICE
(whisper)
Hey…

As AL is facing the floor, XCU of AL's eye. CU of AL looking up. AL is stunned as he looks at the body on the floor--it is AL instead of X who is on the floor with a pool of blood. AL gets closer to the body and sees the face of the body closely. Bloody AL on the floor suddenly opens his eyes.

CUT TO:

11. INT. RESTROOM

Profile view of AL in front of a mirror looking at the mirror. As the camera moves to reveal the reflection in the mirror, it is the face of X. Over-the-shoulder shot of stunned AL with the reflection of X in the mirror. Sounds of children playing.

DISSOLVE TO:

The painting *Portrait of a Boy* by Thomas Couture.

THE END

APPENDIX B

Sample E-mail sent to list-servs to promote Glove

Hello webcinners,
I've been very interested in the digital technology for filmmaking, and experimented with it for my master's thesis. Basically, I wanted to produce a professional quality short film with a bare minimum resources. To do this, I made a digital short film called GLOVE and put the entire thing (15 minutes) on the web for people to see. Quicktime was my choice for the Internet delivery. The overall budget was around $1,200. It was produced digitally with the following tools: shot in DVCAM format with Sony DSR300, edited on Avid Xpress, used After Effects and Photoshop for post production. For the web, it was digitized by Final Cut Pro, and compressed with Media Cleaner Pro. Please visit the following URL for more information and to see the the short film: http://glove.tc.msu.edu

APPENDIX C

Online Survey Questionnaire

The following is the reproduction of the online survey

questionnaire:

Please fill out the quick survey before you get to the screening page. The survey result will be used for Simon Kim's masters thesis research.

Sex:
Male( )
Feamle( )

Age:
under 18 ( )
18-24 ( )
25-29( )
30-40 ( )
40-50 ( )
over 50 ( )

Education:
In highschool now ( )
Some or no highschool ( )
Completed highschool ( )
In college now ( )
2 year college degree ( )
4 year college degree ( )
Masters degree ( )
Doctoral degree ( )
Other ( )

Occupation/Type of Industry:
Agriculture/Landscaping ( )
Arts and Entertainment ( )
Internet/Multimedia ( )
Construction/Building ( )
Consultant/Contractor ( )
Education ( )
Financial Services ( )

Healthcare/Medicine ( )
Fitness/Nutrition ( )
Hospitality ( )
Law ( )
Maintenance/Repair ( )
Professional Svcs ( )
Public Service/Govt ( )
Retail ( )
Sales ( )
Social Services ( )
Travel, Leisure ( )
Other ( )

Average time spent on-line per DAY:
None ( )
Less than 1 hour ( )
2 hours ( )
3 hours ( )
4 hours ( )
5 hours ( )
6 hours ( )
7 hours ( )
More than 8 hours ( )

Average time spent viewing on-line video per WEEK:
None ( )
Less than 1 hour ( )
2 hours ( )
3 hours ( )
4 hours ( )
5 hours ( )
6 hours ( )
7 hours ( )
More than 8 hours ( )

Where did you learn about GLOVE?
Internet-search engine ( )
Internet-links from other sites ( )
Internet-list serv ( )
Internet-news group ( )
Film Festival ( )
Involved in the project ( )
Other ( )

APPENDIX D

Audience Profile: Survey Results

(Source: Web Server Statistics for cas.msu.edu)

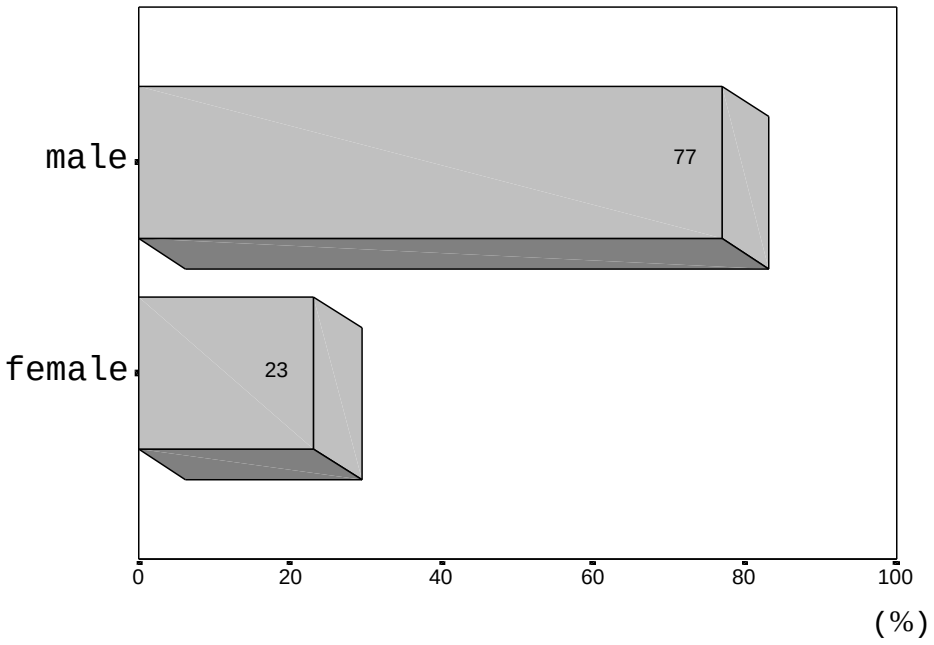

Figure 3. Sex

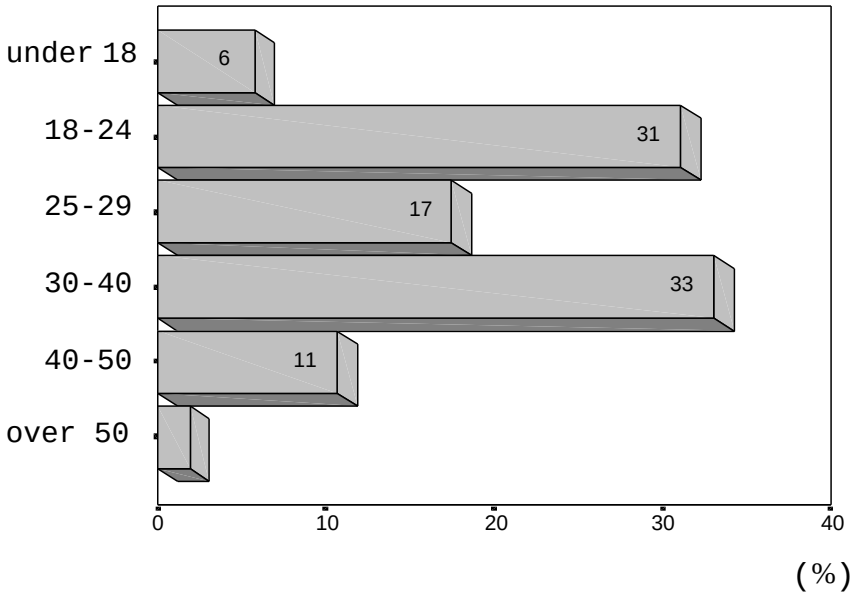

Figure 4. Age

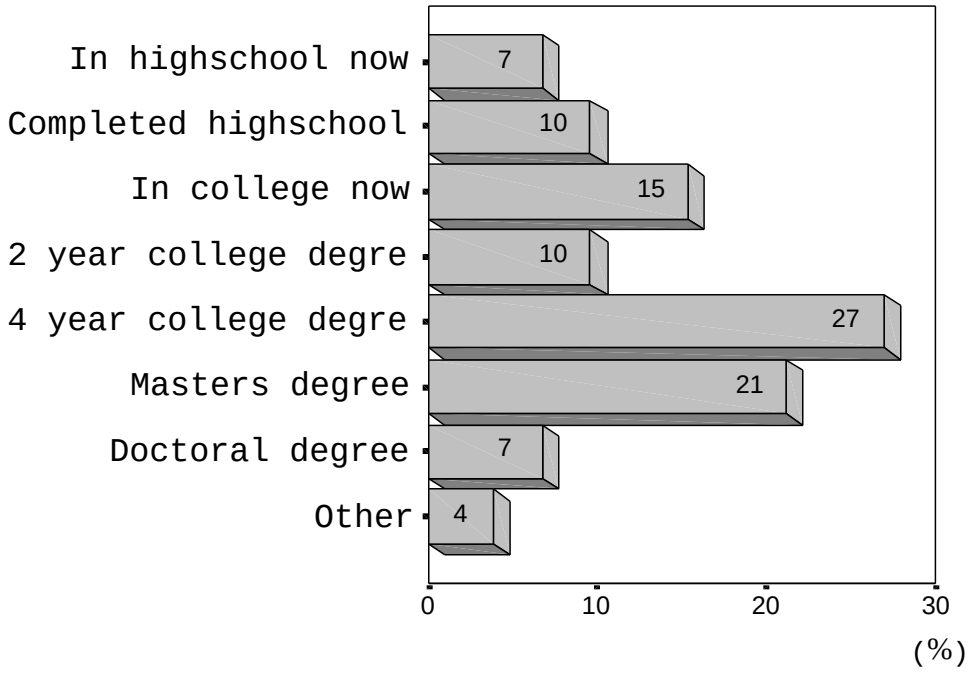

Figure 5. Education

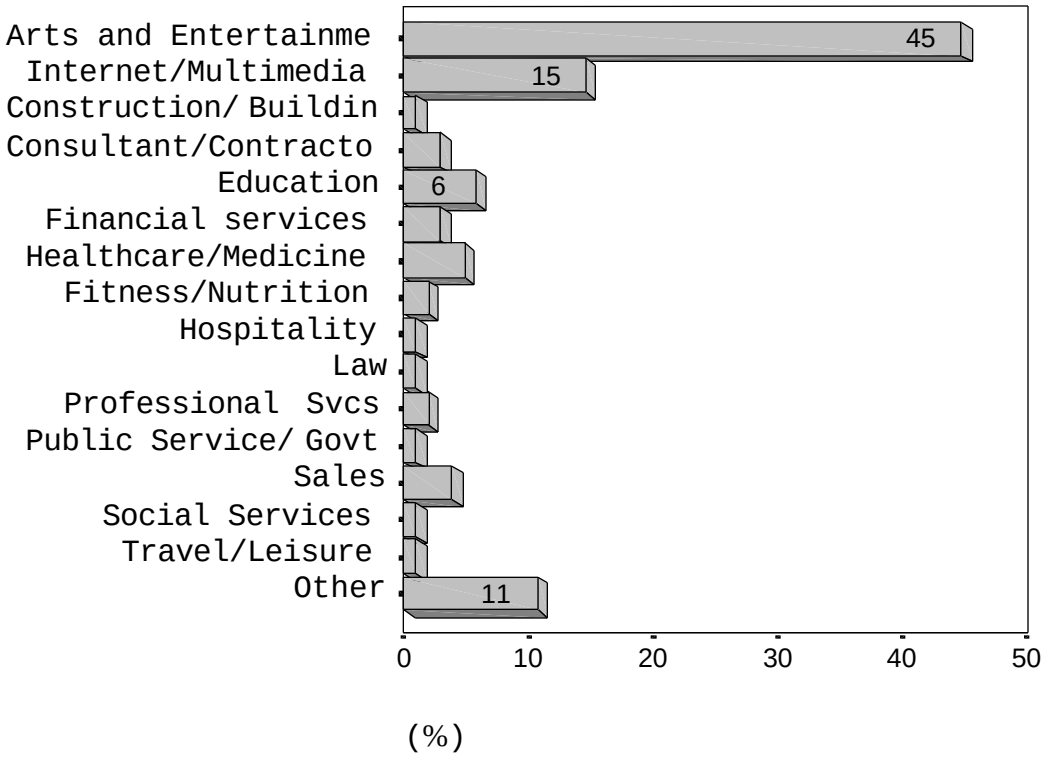

Figure 6. Occupation/Type of Industry

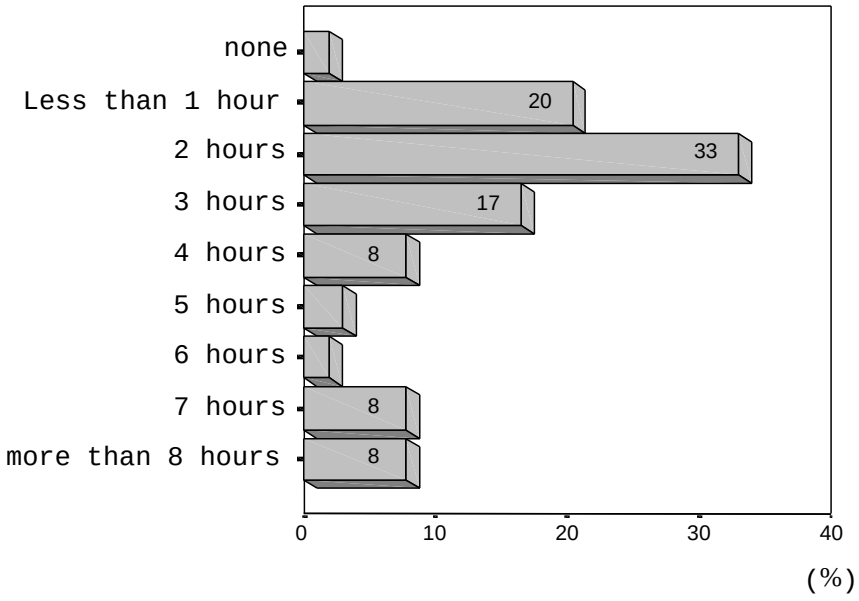

Figure 7. Average time spent on-line per DAY

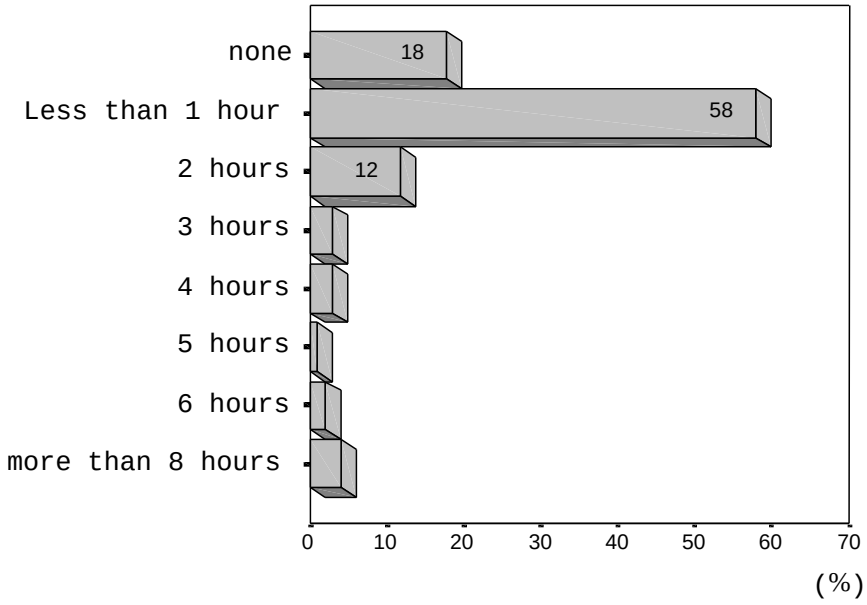

Figure 8. Average time spent viewing on-line video per WEEK

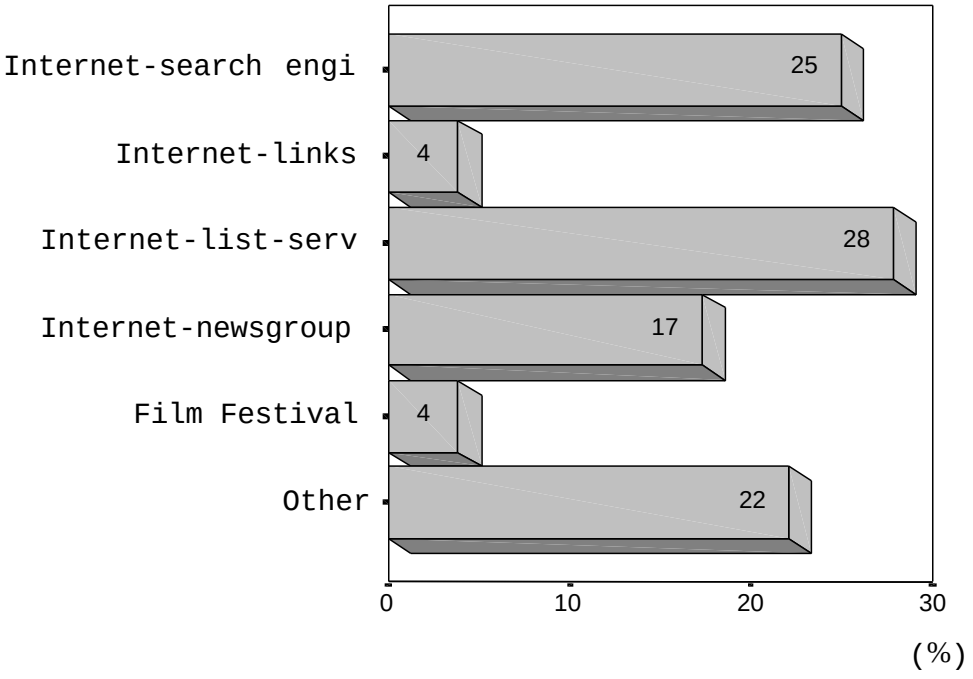

Figure 9. Where did you learn about GLOVE?

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