

MOVING BEYOND BROADCAST AND TRADITIONAL PEDAGOGY: MAKING
A CHILDREN'S DOCUMENTARY FOR THE NEW MEDIA LANDSCAPE

by

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DEDICATION

This thesis is dedicated to my husband, Mark. Without his love and support, I am not sure how I would have found the strength and inspiration to create my film, develop my thesis, and to dare to envision *PodclassTV*. I would also like to thank Jessie Lindquist for her friendship and educational guidance, and my academic advisor, Cindy Stillwell for her insight and desire to see me graduate. In addition, I want to thank Mom and Ace for all their encouragement and unwavering confidence. And finally, a big thank you to Dad, Linda, and Grandpa Smith for their love and gift of my video equipment.

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ABSTRACT

This thesis is a synthesis between the use of new media in the children's documentary, *Why don't we ride zebras?*, the use of technology in both formal and informal education, and the convergence of user-malleable media ideal for education-based documentaries

INTRODUCTION

Within this thesis, I will attempt to create a synthesis between my thesis film, *Why don't we ride zebras?* (a partially animated children's documentary about animal domestication) and three seemingly disparate fields: new media, education, and documentary. My intention is to blur the line between science and natural history filmmaking, formal and informal education, and technology so I may conceptually hone an emerging user-malleable documentary mode ideal for fluctuating pedagogies and the new media landscape.

The actual definition of documentary varies from filmmaker to filmmaker. John Grierson was the first to coin the word and define it as “the creative treatment of actuality”, yet the “father of documentary”, Robert Flaherty, believed documentary to be “the film of discovery and revelation” (Ellis 5). Even today’s Oxford dictionary definition, “a movie or a television or radio program that provides a factual record or report” is under debate because it does not include exceptions to the rule like experimental, poetic and reflexive modes of documentary. So for the purpose of this thesis, I believe documentary (including “science and natural history films” and “educational films”) to be a realistic form of fiction that viewers expect to be true.

On the surface, my film, *Why don't we ride zebras?* may appear similar to traditional children's documentaries. However, it was created with new media tools, designed specifically for the new media landscape, and shaped for an audience of Digital Native¹ learners. In addition, it is intended to move beyond broadcast by embracing user-malleable media², a new distribution model, and fluctuating pedagogies. The film itself is

only one part of what is to be a fully interactive learning experience for a web portal I am developing called *PodclassTV*³.

To date, I have spent many years studying documentary filmmaking and science. Recently, I have also begun immersing myself in the new media landscape, learning new tools and ideas so that I can take my films to the next level. At this time, much of the technology I need is not readily accessible to create all of the interactive experiences that will be available on *PodclassTV*. Therefore, for the purpose of this paper, I will discuss the user-malleable component of *Why don't we ride zebras?* conceptually. In addition, I will refer to my thesis film as “*Zebras*” to save time and avoid confusion since the title is in the form of a question.

SURVEY OF THE NEW MEDIA LANDSCAPE

New Media Tools

Just fifteen years ago, it would have been extremely difficult, if not impossible for any one person to shoot, edit, and animate a documentary similar to *Zebras*, both technically and financially. However, today it is possible for “one-man/one-woman band” filmmaking due to the proliferation of affordable prosumer technologies, new media tools, and online erudition. Currently, individuals can buy a broadcast quality HD video camera system and a personal computer with non-linear editing software for under \$10,000 whereas 10 years ago, broadcast-quality equipment and an editing system cost approximately 10 times more than it does today.

New media tools have also freed some filmmakers from time consuming and expensive classroom training. Recently, I downloaded inexpensive tutorial lessons to teach myself the skill of animation. This is a skill I thought would require years of formal education, but instead I utilized online training sites like *Cartoon Solutions*⁴ and *Cartoon Smart*⁵ to download drawing/animation tutorials, as well as animation “character packs⁶”. The character packs made it possible for me to add the pre-animated characters directly to my film without having existing knowledge of animation. This was instrumental to my editing/creative process. The pre-animated characters were only place-holders, but they allowed me lay out the scenes and figure out crucial timings. Consequently, within a few months, I learned to manipulate, customize, and animate the character packs, as well as learned to create my own characters from scratch.

In addition, I used online video portals like *YouTube*⁷ and *Flickr*⁸ to share my animation progress with other animators. Sites like these facilitate free distribution of content around the world. This revolution in distribution and content creation could be considered the metaphoric equivalent to the pencil. As a result, the average person can now create audio-visual media for very little monetary expense and can share their work for free. Broadcast producers no longer have sole power to determine what content gets seen and what does not.

Media Terminology

To define “new media”, I will start with today’s definition of “media” according to *Wikipedia*⁹, although the definition could change tomorrow, or in a few minutes.

media (Singular: **Medium**) are the storage and transmission tools used to store and deliver information or data. It is often referred to as synonymous with mass media or news media, but may refer to a single medium used to communicate any data for any purpose.

Historian, Lisa Gitelman, author of *Always Already New: Media, History, and Data of Culture*, defines media in part “as socially realized structures of communication, where structures include both technological forms and their associated protocols, and where communication is a cultural practice, a ritualized collocation of different people on the same mental map, sharing or engaged with popular ontologies of representation” (7). Media Scholar, Henry Jenkins, author of *Convergence Culture: Where Old and New Media Collide* distinguishes media from the actual “delivery technologies” (e.g., television sets, phonographs, computers, etc.). “Delivery technologies” include CD’s, MP3s, and 8-track tapes, whereas the recorded sound is the actual medium. Jenkins goes

on to say “delivery technologies become obsolete and get replaced; media, on the other hand, evolve” (13).

So what exactly is new media? Today’s *Wikipedia* authors define new media simply as “a term meant to encompass the emergence of digital, computerized, or networked information and communication technologies in the later part of the 20th century”. Yet, a more elaborate definition from media scholars, Jay David Bolter and Richard Grusin defines new media as:

...refashioned and improved versions of other media. Digital visual media can best be understood through the ways in which they honor, rival, and revise linear-perspective painting, photography, film, television, and print. No medium today, and certainly no single media event, seems to do its cultural work in isolation from other media, any more than it works in isolation from other social and economic forces. What is new about new media comes from the particular ways in which they refashion older media and the ways in which older media refashion themselves to answer the challenges of new media (15).

History teaches that new media will inevitably become old media as new technology emerges. Jenkins claims, “old media never die—and they don’t even necessarily fade away. What dies are simply the tools we use to access media content—the 8 track, the beta tape” (13).

New Media Landscape

A 2005 Kaiser Foundation Report entitled *Generation M: Media in the Lives of 8–18 Year-Olds* points out that a mere 50 years ago,

...the US media landscape included TV, radio and records, movies, and print media. Fewer than five years into the 21st century, the media landscape encompasses broadcast, cable, and satellite TV, the TV remote control, the VCR, the DVR, print media (books, magazines, newspapers), various audio media (broadcast, satellite, and cable radio, tapes, CDs, digital recordings – all of which

are now highly portable), personal computers and the various on-line activities they allow (e.g., World Wide Web, e-mail, instant messaging, gaming, music and video streaming), video games (both TV-based and handheld), and portable telephones that connect to the Internet and do most of what any digital screen will do (Roberts et al. 1).

While creating *Zebras*, I attempted to utilize many facets of today's new media landscape by incorporating cloud computing¹⁰, online media resources, emerging delivery technologies (e.g., blogs, wikis, video portals, etc.), and online social networks. Cloud computing helped me share multiple rough cuts remotely and in near real-time with advisors by uploading versions of the whole film to a password protected site. I also utilized online resources like *iStockphoto*¹¹ and *Pond5*¹² to provide free low-resolution stock footage files for my rough cut. Once my film was approved, I was able to purchase and download the full resolution files instantaneously. Additionally, I worked with peers to create/maintain a wiki¹³ on education and interactivity. I also created a *PodclassTV Blog*¹⁴ to share my ideas on new media, education, and interactivity. My blog also housed all my animation attempts and clips from *Zebras*. This has been extremely beneficial for both my thesis research and the creation of my film because my family, friends, and peers have read my posts and seen parts of my film, which resulted in feedback/support. My blog also serves as a universally accessible storage receptacle for links to everything I find on education and new media. I have found many of these important links by utilizing social networks like *Twitter*¹⁵ and *Facebook*¹⁶. The social networks have been instrumental to sparking ideas for the creation of *PodclassTV*. Finally, I embraced the new media landscape by keeping *Zebras* brief enough to be viewed on *YouTube* and by recording alternative narration for the interactive versions that will be available on the *PodclassTV* website.

Interactivity

The World Wide Web can be considered the core of what is today called new media and it also seems to be evolving its own set of ambiguities. Many refer to the current Web model as Web 2.0, while Web 1.0 reined before the “Dot Com Bubble” burst¹⁷. *Wikipedia*’s definition is as follows:

Web 2.0: a living term describing changing trends in the use of World Wide Web technology and web design that aims to enhance creativity, information sharing, collaboration and functionality of the web. Web 2.0 concepts have led to the development and evolution of web-based communities and hosted services, such as social-networking sites, video sharing sites, wikis, blogs, and folksonomies¹⁸.

With all these terms aside, I believe the key concept to what is currently called “new media” and “Web 2.0” is user interactivity. In 1984, scholar R. E. Rice explains new media as “communication technologies...that allow or facilitate interactivity among users or between information (Rice 35). Media scholars, David Croteau and William Hoynes, authors of *Media Society: Industries, Images and Audiences* further elaborate by saying:

...the line between producer and receiver is blurred. Such as Internet replaces the "one-to-many" model of traditional mass communication with the possibility of a "many-to-many" web of communication. Any individual with the appropriate technology can now produce his or her online media and include images, text, and sound about whatever he or she chooses (303).

The first actual interactive television program aired in the 1953. It was called *Winky Dink and You*. This series starred a boy and his dog that were forever getting into trouble. As a result, the narrator implored the television viewers to come to Winky’s rescue by drawing simple objects like a set of stairs or a raft so he and the dog could escape evil villains. Yet, in order to interact with the television without damaging it,

parents needed to purchase a kit of special crayons, a “magic eraser”, and a plastic screen so the children could draw directly over the television screen (Jones 239).

Since the 1950’s, the world has seen progress with the “many-to-many” interactive models for video games and interactive websites, but little improvement has occurred with interactive television. Interactive television (iTV) is sometimes described as "lean back" interaction (McPherson 199). This is in contrast to the computer-oriented "lean forward" experience of a keyboard, mouse, and monitor (Bedigian). Currently, iTV ranges from low interactivity (e.g., using the remote to change volume/channels), moderate interactivity (e.g., utilizing Digital Video Recording Devices, Video on Demand, etc.), to high interactivity (e.g., viewers casting votes for characters in reality TV programming, using “enhanced viewing” options, etc.).

Interactivity also occurs when viewers choose to participate with television programs. Younger children (3-7 years) are usually avid participants during their favorite programming (i.e., singing along with *Sesame Street* characters, dancing with the *Wiggles*¹⁹, etc.). A successful Nickelodeon program, *Blue’s Clues*, employs a similar method. Older children with more developed problem solving skills typically find this program too repetitive, but it is ideal for pre-school or younger children. The program stars a young man and his animated dog, Blue. In each show, the young man encourages the viewers to help solve a mystery by revealing three clues. Upon first viewing, most children do not actively participate. But upon subsequent viewing, most call out the answers to the clues earlier and earlier with building enthusiasm (Crawley et al. 275).

Several cable channels, like *CNN* and *Current TV* are starting to move past the “one-to-many” model of interactivity by offering “enhanced viewing” and “user-generated-content” options. With a click of the remote, a *CNN* viewer is taken to an “enhanced viewing” screen. The newscast is still available, but it is smaller, and now there are options to see still images and read breaking news, sports, and entertainment stories. Another version of the “many-to-many” model of interactivity on television takes place on *Current TV*. This channel/website appeals to a much younger base than *CNN* and encourages user-generated-content and user-generated-advertising. Viewers shoot their own documentaries/news stories/advertisements then upload the clips to the *Current TV* website. Then the shows and advertisements with the highest ratings are broadcast on the *Current TV* television station. The advertisement creators receive monetary compensation for their ads, and the documentary/news filmmakers get exposure for their issue and/or career. This user-generated content makes up 30% percent of the televised programming (Peck 17).

The most exciting moment I witnessed on *Current TV* occurred during the 2008 presidential election. It was called “Hack the Debate”. *Current TV* and the microblog site, *Twitter*²⁰ teamed up to make it possible for text comments from *Twitter* users to appear on the *Current TV* channel in real time during the debate. For example, when Obama spoke of education in the second debate, he made a disparaging remark about video games. As a result, the bottom portion of the screen was inundated with *Twitter* users texting examples of pro-educational video games.

Video Games

Thus far, video games seem to have the most potential for interactivity. In 2002, the US video game industry made over \$10.3 billion, and the profits are steadily increasing (RocSearch). Part of the success may be attributed to the fact video games can be developed for almost any visual delivery technology:

- **television:**

game consoles: *Nintendo Wii*, *LeapFrog*²¹, *Microsoft Xbox* etc.

satellite/cable interfaces: games available on most DVR/*TiVo*²² menus

- **personal computers:**

Software based games: *Sims*, *Civilization*, *Mavis Beacon Typing*, etc.

Massively Multiplayer Online Role-Playing Game (MMORPG²³): (requires software, a subscription, and online connection): *World of Warcraft*, *Second Life*, *Dungeons and Dragons*, *Spore*²⁴, etc.

Internet browser games: (requires plugins like *Flash* and *Java* to run games straight from browsers like *Network Explorer* or *Firefox*): *NeoPets*, *Club Penguin*, *Webkinz*, *Freerice*, etc.

Online application games: (requires an account within social network sites like *Facebook*, *Myspace*, etc.) *TopFriends*, *Zombies*, *Causes*, *iLike*, etc.

- **portable devices:**

iPhone cellphone applications: (many available for free or nominal fee) *iBeer*, *Flick Fishing*, *Ocarina*, *UrbanSpoon*, *Topple*, etc.

Mobile games for SmartPhones: *MySims*, *Spider Solitaire*, *Clue*, etc.

Games for portable media players like *iPod Touch*, the *Amazon Kindle*, etc.

Handheld Games: *Nintendo Gameboy*, *Playstation PSP*, etc.

GPS Navigation System Games: *Garmin Games*

To date, the computer has the most interactive experience options available. Video games can run off computer software, the Internet, or a combination of both. They can also run directly from web browsers like *Firefox* and *Internet Explorer*. In addition, game developers can design open source games, called “applications” using SDKs (software development kits) and offer the applications to social networking sites like *Facebook*, *Myspace*²⁵, and *Flickr*. These applications are usually free, but users have to tolerate advertisements.

The most exciting growth of the interactive game industry is happening on cell phones. For years, games like *Solitaire* and *Hearts* have been available, but it is only recently that the more graphically intense games could be played on cell phones. The advent of the SmartPhone²⁶ (e.g., *iPhone*, *Zune*, *Blackberry*, etc.) has revolutionized how people interact with mobile phones. Now people can listen to music, take pictures/video, browse the Internet, use GPS navigation, check email, and play games all on one device. *Apple* also followed *Facebook* and *Myspace*'s example and allowed independent developers access to the *iPhone*'s SDK. This has resulted in an explosion of new games available for the iPhone. Many are free, but most of the in-depth games range from 0.99 cents to \$9.99. I personally have an *iPhone* and am in awe of the extraordinary capabilities of these games. The games can have intricate story lines and gaming levels, amazing graphics, sensory cues (ie. vibrations, buzzes, etc.), and the actual positioning and tilting of the physical *iPhone* drives many of the games. *Ocarina*, is the most popular application on the *iPhone* right now, but it is more than a game; it turns the *iPhone* into an actual musical instrument. Users blow into the microphone like they

would blow into a real *Ocarina* instrument. They can compose songs and allow people around the world to listen live while they are playing. In essence, *Ocarina* has blurred the line between music and video games.

Another brilliant media-blurring game can be found at www.freerice.com. This free game is an example of synergy between a video game, education, and a prosocial²⁷ mission. It combines the need to have fun, the need to improve vocabulary skills, and the need to feed starving people. Most online games like *Scrabulicious*²⁸ may improve vocabulary, but these games are huge time-sinks. I usually end up feeling slightly guilty for playing, but *Freerice* offers users a clear conscious. The object of the game is to answer vocabulary questions correctly, but with every question the player gets right, he or she is awarded 20 grains of rice. After a year's time since the site was launched, millions of users, and the advertising revenue, these virtual grains have added up to over 50 billion grains of real rice (2.3 million pounds) for the UN World Food Program (www.freerice.com).

Many humanitarian efforts have seen the success of *Freerice* and have followed suit. For example, there is a www.freekibble.com site that tests pet trivia and donates dog food to the Oregon Humane Society, and a www.freepoverty.com site that uses a “cup of water” metaphor to donate water to third-world countries while players test their geography skills. Besides these worthwhile imitations, there are real innovations being made in the prosocial and educational video game front. Two sites that list some of the best “serious games” are www.gamesforchange.com and www.socialimpactgames.com. A paramount example of a science education game takes place on a site called

www.sodaplay.com. *Sodaplay* teaches adolescents about engineering by encouraging them to build moving stick creatures. They learn the fundamentals of engineering through the trial and error of trying to keep their creatures from collapsing.

The movement for prosocial gaming is building and shows promise, but authors Palfrey and Gasser believe, “In reality, most of the games invented so far with a socially oriented purpose have been less than compelling” (249). Combining prosocial and educational missions with an emphasis on entertainment will need to be core to designing future “serious games²⁹”, or children/adolescents will continue to choose games like *Grand Theft Auto* and *God of War*³⁰. But with the proliferation of open source software, SDKs, and funding sources like Apple’s iFund (who donate money to prosocial/ educational game developers) there will be more and more opportunity for creative minds to create a whole genre of serious games. If we continue converging games, education, and prosocial missions, we could potentially reach a generation born in the digital era. These children and young adults live in a reality few people over 30 can comprehend (Yelland 1).

DIGITAL NATIVE LEARNERS

Digital Natives

John Palfrey and Urs Gasser, authors of *Born Digital: Understanding the First Generation of Digital Natives*, use the term “Digital Natives” to describe a generation born after 1980 (1). Other theorists (Howe et al. 2) refer to them as “The Millenials” (born after 1985). These terms mainly refer to a subset of the population who has access to networked technology. There is a great “digital divide” going on today between the world’s developed and undeveloped nations (Palfrey and Gassar 14). This massive issue is enough to fill many theses, many times over. For the purpose of my thesis and the educational innovations that can be applied with the use of technology, I will be focusing on the Digital Native generation, not the digitally divided population as a whole. Hopefully, concepts from this thesis can be applied to future discourses on the digital divide.

Currently, Digital Natives are the first generation of children and young adults to have the chance to live their entire lives in the digital era. This makes them unique because they did not have to relearn anything. Authors Palfrey and Gassar explain,

They learned in digital the first time around; they only know a world that is digital.... (4) They are joined by a set of common practices, including the amount of time they spend using digital technologies, their tendency to multitask, their tendency to express themselves and relate to one another in ways mediated by digital technology, and their pattern of pursuing the technology to access and use information and create new knowledge and art forms.... Digital Natives are tremendously creative.... They express themselves in ways that are very different from the way their parents did at their age. Many Digital Natives perceive information to be malleable; it is something they can control and reshape in new and interesting ways. That might mean editing a profile on *Myspace* or

encyclopedia entries on *Wikipedia*, making a movie, or online video, or downloading a hot music track.... Whether or not they realize it, they have come to have a degree of control over their cultural environment that is unprecedented (6).

With this generation of young so ready to embrace new technology, and innovation accounting for more than half the economic growth in the US and Britain (McCreeedy 1) it is unfortunate that most public school systems are running off a pedagogy that was developed in the 1800's (Yelland 7).

Formal Education Pedagogies

Digital Natives in America are going to schools that were modeled after factories of the industrial revolution. In the 1800's there was a sudden urban growth surge. With this surge came chaos, riots, and lots of children. Schools needed to be able to keep order and teach children from all nationalities and languages to conform to an industrialized era.

Traditionally, curricula in schools prepared students for an era in which they had to perform mechanistic tasks and learn routines for application. Such methods have long been outmoded, but the back to basics movement has been powerful in lobbying for curricula based on specific content and industrial modes of learning.... What remains is a system created in a previous era with little relevance to the lives of the young people who exist in it (Yelland 91).

If the US is to have a competitive edge in a digital age, schools will need to inspire creativity, build on children's out-of-school experiences (Dede 178), teach critical thinking skills, and stress the importance of innovation, "rather than land, labor and capital" (Yelland 123). This movement for a more progressive pedagogy requires a radical shift away from rote learning and tokenistic busy work. Progressive pedagogies

stress that higher learning is best achieved when children are actively engaged in learning skills that are relative to their lives (Berube 2). They also advocate for “student led” curricula instead of “teacher led”. For example, they believe that “real understanding occurs only when children participate fully in the development of their own knowledge” (Berube 10) and “Things are better remembered when they are discovered and “worked out,” rather than being passively received” (Berube 11).

Both traditional and progressive pedagogies are still in use, but with the age of educational standards and “No Child Left Behind³¹”, traditional pedagogy often wins out because learning through progressive pedagogy is harder to measure on a standardized test. With much of a school’s funding tied to standardized test scores, many teachers do not devote enough classroom time to preparing youth for a non-standardized world (Berube 59).

New technology could help children learn the basics and engage children’s creativity and curiosity in ways never seen before. These technologies include:

...computers, digital camera and televisions, MP3 players, mobile telephony, electronic white boards, scanners, electronic musical instruments (keyboards), and laser printers....the software that enables children to experience the process of education in new ways, such as the Internet, communications software such as *Skype* and *Messenger*, video editing programs such as *iMovie* and *MovieMaker*, *Gargeband*, *Kid Pix* and the suite of *Microsoft* programs that includes *Powerpoint*, *Word*, and *Excel* (Yelland 2).

But incorporating technology into today’s fluctuating pedagogy offers many challenges.

Author, Nicola Yelland of *Shift to the Futures: Rethinking Learning with New Technologies in Education* explains that resistance to incorporating new media in classrooms can stem from a multitude of reasons. For example, some educators fear

technology, while others feel pressure from school boards and parents wanting to “go back to the basics³²”. Even teachers who have embraced technology now face limitations due to censorship issues (i.e., schools blocking *Google Image Search*, etc.) (16).

One of the biggest challenges facing an upgraded pedagogy is changing how technology is used in school. Most teachers have yet to embrace new technology in a way that impacts their style of teaching. Instead, many use technology peripherally, or simply apply it to old curriculum developed in a non-computer age. For example, many teachers are using computers to teach traditional “drill and practice” lessons. Computers do very little, if anything to improve these repetitive tasks. This particular use of technology is not conducive to innovative thinking (23) and might dampen a child’s curiosity/enthusiasm for technology.

There needs to be a beneficial purpose for using technology as a teaching tool. A study conducted by Yelland (108) revealed some innovative teachers using stop-motion animation and “minibeast” clay creatures to teach 6 and 7-year old children about the natural history of animals. Not only did the children learn characteristics, life cycles, and dietary needs of different animals (required by the state’s education science syllabus), but also the children extended their skill-base by learning about foreground, background, composition, and the proper way to take a digital picture. In addition, they worked in groups teaching themselves different ways of creating animals with clay and how best to move the animals that looked the most life-like. The teachers embraced progressive pedagogy methods by encouraging each group to work out problems themselves, and then to share their innovations with the class as a whole.

This proved to be invaluable—for example, one group realized early on that if they moved the clay animal too far in each step and took only a limited number of digital photos, the animation became disjointed and uneven. Another group had the good idea of using fishing line to move their minibeast so that they could do it in small enough steps for the animation to flow smoothly (109).

And as a result, the new technology acted as a medium that allowed children to learn from and share their own learning processes with peers. It also illustrated how new technology can contribute to children's knowledge-building processes (Yelland 110).

The use of technology itself can even inspire better academic performance. An extreme example is *The Million*³³. This is the world's first education-incentive cell phone. The phones are provided for free to inner-city students, but the minutes and number of texts are dependant upon the student's attendance, behavior, and grades. Seventy-five percent of the teachers and parents of the children who were involved in this case study said the incentive program was working, and that their children's overall performance had improved (www.droga5.com).

Media and Informal Education

Informal education is another avenue that improves Digital Native learning. Informal education includes educational television, after-school groups, educational video games, magazines, museums, etc. (Falk 4). "It appears that young people are learning in more innovative and powerful ways out of school than in" (Hutchinson and Gee xvii). Informal education also competes with children's other uses of technology (e.g., entertainment, socializing, etc.). The Kaiser Family Foundation found American children (8-18) spend an average of 6 to 6 1/2 hours a day using media in 2005, and none

of this occurred in school (Roberts et al. 37). Yelland believes, “The sheer amount of time young people spend with media makes it plain that potential for media to influence significant aspects of their lives should not be ignored” (3).

Even with the recent growth of new media, the majority of a Digital Native’s time is actually spent watching television (Roberts et al. 37). An average US child spends more time watching television than they do any other activity except sleeping (Huston et al. 409). Children’s media scholar, Shalom Fisch, author of *Children's Learning From Education: Sesame Street and Beyond* claims:

At its best, educational television can provide children with enormous opportunities. Educational television can serve as a window to new experiences, enrich academic knowledge, enhance attitudes and motivation, and nurture social skills.... (1) Educational television is not intended to replace formal education in school. Rather, it is intended to supplement formal education in several ways:

1. By exposing children to topics that they might not encounter otherwise (or that might only be introduced formally in later grades).
2. By providing compelling experiences that coax children into spending additional time exploring concepts that they are learning about in school.
3. By encouraging positive attitudes toward academic subjects (particularly among populations that are typically less likely to pursue these subjects on their own).
4. By motivating children to engage actively in learning both in and outside the classroom (10).

There are critics that believe exposure to television (even educational television) leads to shorter attention spans, unsustainable interests in formal learning, and the creation of passive “couch potatoes” (Medved and Medved 1). However, there has been little empirical data to support such accusations, whereas there is over 30 years of research that points to long term benefits of educational television on children’s performance in school (Fisch and Truglio 233).

The most successful and the most studied educational television program in the world is *Sesame Street*. Since its inception in 1969, there have been over 1,000 studies devoted to determining the educational impact/detriment of *Sesame Street's* effect on attention spans and on children's literacy, numeracy, and prosocial behavior (Meilke 7). For example, Ball and Bogatz in 1970 performed a study in which they interviewed teachers and asked them to rate their preschoolers' behavioral and academic performance. The researchers then measured how much if any *Sesame Street* programming each child watched. The results showed that preschoolers who were avid *Sesame Street* viewers "were not bored, restless, or passive when they entered a formal classroom experience. Rather, frequent *Sesame Street* viewers were rated as better prepared for school than their non or low-viewing classmates" (Fisch 21). The longest-ranging study on the effects of *Sesame Street* showed that high school students who frequently watched *Sesame Street* in preschool had significantly higher grades in English, mathematics, and science than those that either watched little to no *Sesame Street* programming when they were young (Anderson et al. 151).

There have also been a number of studies on the techniques *Sesame Street* uses to make its shows successful. Numerous studies have determined that the key to successful educational programming is appeal. If educational programming bores children, they will not be motivated to tune in. Today, most Digital Natives have their choice of hundreds of television shows, ranging from *SpongeBob* to *South Park*. In addition, appeal and comprehension appear to be reciprocal (Fisch and Truglio 235). Fisch has found, "children will only attend to a (and, thus, comprehend) a television program if

they enjoy it, they are also likely to enjoy a program more if they find its content to be comprehensible and not over their heads” (31).

One important way to appeal to children is through humor. Humor is the first of a series of elements that proves to consistently appeal to young people. Yet, what is funny to one age group may not necessarily be funny to another. Preschoolers continually find incongruity and surprise, slapstick, adult errors, and silly wordplay humorous, while puns and double meanings prove unappealing (Fisch 31).

Other elements that appeal to young children and subsequently improve comprehension include visual action (animation or slapstick as opposed to interviews), the use of appealing characters (children, animals, animation, etc.), clear and child-centered presentations (simple and direct narratives that focus on children’s issues), use of music and sound effects (i.e., sound cues that announce characters), and the use of repetition and reinforcement (Fisch 32).

A study in 1974 pointed to an interesting phenomenon in regards to repetition and reinforcement, called the “James Earl Jones Effect”. Researchers discovered a strange pattern in the data whenever children repeatedly watched a particular *Sesame Street* segment starring the actor, James Earl Jones. His manner of slow speech while he recited the alphabet included lengthy pauses in between letters. As a result, the upcoming alphabet letter appeared on screen slightly before Jones said the letter’s name. The first time children watched this segment, they generally said the name of the letter along with the actor, but in subsequent viewings, children raced to say the letter before Jones (Lesser 1). This repetition and reinforcement enhanced comprehension levels and was

applied to future segments. It is also emulated in many educational programs today (e.g., *Blue's Clues*, *Super Why*, etc.).

MOVING BEYOND BROADCAST

User-Malleable Media

When educators and the documentary world finally awaken to the creative potential of Digital Natives, I believe a new mode of user-malleable media will flourish. There have been attempts, but through my survey of the new media landscape, I have found few that are easy to interact with, fun, and science-based. Here are two non-science-based documentaries that serve as an example of user-malleable documentary:

- The documentary, *Diamond Road* is available as a three-part linear documentary series. But it also has a website (www.diamondroad.tv) that allows viewers to change the *Diamond Road* narrative, by choosing what order to view the story via an interactive world map of *Diamond Road* segments.
- Filmmakers from www.opensourcecinema.org have shot 6 years worth of video for a documentary about “remix” culture (re-use of copy-right media), and made the material available on their website for other artists to use to create new documentary versions.

I am in the process of creating my own web portal (*PodclassTV*) for user-malleable media, which converges the Internet, science and natural history documentary, differing pedagogies, video games, and prosocial issues. The portal itself will house the traditional one-to-many model of short natural history/science documentaries that can be watched/downloaded in their entirety on computers, cell phones, and other portable devices. At the same time, it will also facilitate the “many-to-many model” of

interactivity by offering fun, participatory experiences with the documentary media. The seminal documentary will be *Zebras*, but I have immediate plans for several other short, partially animated films. For example, one film will examine the differences between the great apes (including man), and the other film will focus on the science behind “passing gas”.

The site will be divided into age-appropriate participatory experiences, and will allow children the chance to interact with science and natural history programming, effectively asserting creative control on the production and post-production stages of documentary development. Many children will come to the site wanting to learn what it is like to be a wildlife filmmaker for *Animal Planet*, *BBC*, and/or *National Geographic*.

The participatory experiences will mostly be divided into two age groups, 3-7 years old and 8-18 years old. Younger children will be able to access the older category, but the material might be over their heads. Similarly, the older children/adolescents will probably find the younger category tedious because the materials will be repetitious and slower paced. One of the core activities will involve students using *PodclassTV*'s extensive stock footage library to edit together animal clips, music, and sound effects to match different online narrated stories. *National Geographic*³⁴ offers a simplified version of this experience, although there are only a handful of clips/audio files to choose from.

New Distribution Model

Games and activities created in conjunction with a documentary are nothing new. Most government and Non Government Organization's (NGOs) media grants (i.e.,

National Science Foundation, The David and Lucile Packard Foundation, etc.) require or encourage producers to spend a portion of the grant money to develop educational outreach materials. Outreach typically involves creating interactive websites based on the film, developing lesson plans, and coming up with educational online games. However, the outreach is usually supplemental and takes shape around the documentary.

With the evolution of the web and the possibility of user-malleable documentary, a different distribution model could emerge. Documentaries could be designed for the outreach itself. Supremacy would then be placed on effective, long-lasting outreach, instead of ephemeral broadcast documentaries, and with the power of *YouTube* and other online video portals, documentary would not need television to reach millions.

Documentaries designed for the web could also offer an improved model of educational content due to the fact that films would be available all in one place and could be watched any time, sequentially, whereas broadcast documentary is limited in this regard. Author Fisch explains:

...the series' educational approach must be designed to fit the constraints of informal education. For example, unlike classroom instruction, the educational content of a television series typically cannot depend on being presented in a particular sequence over a period of days, weeks, or months. Although there is a great educational value to structuring classroom instruction to begin with simple concepts and subsequently build on previous lessons as more complex concepts are introduced, this typically is not feasible in educational television because there is no guarantee that the episodes will be broadcast in order or that children will see every episode (9).

In addition, broadcast educational programming usually cannot cater to different demographics. Each program is normally limited to one age group, due to the monetary costs; whereas web-based media is typically much more cost-effective. One web-based

program can be made into different versions for much less than broadcast media. For example: it is possible to make age appropriate versions of *Zebras* simply by changing the narration and some simple editing.

Embracing Fluctuating Pedagogies

Formal education faces a paradox: governments want children to learn skills that will allow them to advance science and medicine, create innovative products and technologies, and stay competitive in the digital era; but many of these same governments require schools to follow an industrialized pedagogy of rote learning and standardized thinking/testing. With US funding linked to test scores in an era of “No Child Left Behind,” and a digital world that demands innovative thinkers, there is a need for more informal education that goes beyond broadcast, a need for schools to adopt beneficial technology, and a need for educational media to embrace both traditional and progressive pedagogies.

I have kept these themes as central premises while creating *Zebras* and planning *PodclassTV*. Keeping in mind that television is the most popular delivery technology for informal education, I have made a stand-alone children’s documentary that can be broadcast through traditional distribution methods. *Zebras* will be able to move beyond television broadcast through online video portals and outreach materials, as well as through the power of play. Children spend more of each day playing video games, and that rate of use is only increasing. As a result, I believe it is critical for educators/

filmmakers/innovators to create engaging educational games for both informal and formal education.

PodclassTV will add to informal education's arsenal by offering appealing media for the digital era, but it will also provide content and lesson plans for formal education that satisfies traditional and progressive pedagogies. On one hand, there will be games and outreach materials that embrace a child's need to have fun, explore, learn, think, and play, and on the other hand, *PodclassTV's* documentaries will be a new tool to teach many of the basics in science and have specific lesson plans that will revolve around the National Science Standards.

CONCLUSION

At this stage, *PodclassTV* exists only on paper, but in the coming months, I will be creating a prototype site, and applying for grants to make a fully interactive site possible. However, whether or not I am successful, the technology to make user-malleable media is a reality, and a new mode of documentary is at our doorstep. *YouTube* and *Jumpcut*³⁵ have started allowing people to edit other users' media online. People are also applying this concept to music. Currently, there is a storm of copy-right controversy over "mash up" music, where artists create new songs out of pieces of popular music, while sites like *Kerpoof* and *Toondoo* are already embracing the fact that existing media can and should be used as an art medium. They encourage children to create with palettes of existing media as if they were dollops of paint. I plan to apply this metaphor to documentary. Video footage, music, sound effects, and animation could all be artistic media for emerging filmmakers/learners to paint with, and if layered within an educational portal of games and lesson plans, user-malleable documentary could serve as a new mode to help stimulate higher learning levels, and help bring formal education into the 21st Century.

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END NOTES

¹ Author of *Convergence Culture* refers to young people born after 1980 as “Digital Natives”.

² User-malleable-media is an emerging mode of filmmaking that allows viewers/users to create new media from media created by others (e.g., pieces of existing documentary or animations).

³ *PodclassTV* will be an interactive documentary site created by Hannah Smith Walker. For more go to:
<www.podclasstv.com>.

⁴ *Cartoon Solutions* can be found at
<www.cartoonsolutions.com>.

⁵ *Cartoon Smart* can be found at
<www.cartoonsmart.com>.

⁶ A character pack is a pre-made set of illustrations that can be imported into an animation software program.

⁷ To visit my *YouTube* Channel, go to:
< <http://www.youtube.com/user/smithwalker13> >.

⁸ To visit my *Flickr* page, go to:
< <http://www.flickr.com/photos/smihan13/2980764578/> >.

⁹ *Wikipedia* is an online social encyclopedia. To visit, go to:
<www.wikipedia.com>.

¹⁰ Cloud computing according to *Wikipedia*: a general concept that incorporates software as a service (SaaS), Web 2.0 and other recent, well-known technology trends, in which the common theme is reliance on the Internet for satisfying the computing needs of the users. For example, *Google Apps* provides common business applications online that are accessed from a web browser, while the software and data are stored on the servers.

¹¹ *iStockphoto* is an online stock footage resource where the public can buy and sell rights-managed footage/still photographs for a nominal fee. For more go to:
<www.istockphoto.com>.

¹² *Pond5* is an online stock footage resource where the public can buy and sell rights-managed footage for a nominal fee. For more go to:
<www.pond5.com>.

¹³ I led a talk at the New York Web 2.0 Conference in September 2008 on interactivity and education. As a result, one of the attendees created a wiki for of the information I provided and encouraged everyone at the talk to continue contributing ideas. To view the wiki visit:

<<http://kidslearning20.pbwiki.com/>>.

¹⁴ Hannah Smith Walker's blog. To visit, go to:
<www.podclasstv.blogspot.com>.

¹⁵ *Flickr* is an online photo/video sharing site. To visit, go to:
<www.flickr.com>.

¹⁶ *Facebook* is a popular online social networking site: To visit, go to:
<www.facebook.com>.

¹⁷ The term Web 2.0 became notable after the first O'Reilly Media Web 2.0 conference in 2004. See:
<<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>>.

¹⁸ Folksonomies are also called “collaborative tagging”. This is the practice of a group creating and managing tags to annotate and categorize content.

¹⁹ The *Wiggles* is a children's musical group and television show from Australia. For more visit: <<http://www.thewiggles.com.au/>>.

²⁰ *Twitter* is an n online social network site that facilitates short blog writing:
<www.twitter.com>.

²¹ *Leapfrog* is a popular children's education company that makes learning games/software.

²² DVR stands for Digital Video Recorder and is used to record live television digitally. *TiVo* is a brand name of a DVR service provider.

²³ MMORPG is a genre of computer role-playing games where many players interact in a virtual world.

²⁴ *Spore* is a popular video game loosely based on the evolution of organisms.

²⁵ *Myspace* is a popular social networking site. To visit, go to:
<www.myspace.com>.

²⁶ A Smartphone is a cell phone that is able to access the Internet.

²⁷ Lowery and DeFleur define prosocial as that which is “socially desirable and which in some way benefits other persons or society at large (354).

²⁸ *Scrabulicious* was a popular application on *Facebook* that operated and looked like the boardgame, *Scrabble*. In 2008, it was removed from *Facebook* in the US because of copy-right infringement.

²⁹ *Wikipedia* defines “series games” as a term used to refer to software or hardware application developed with game technology and game design principles for a primary purpose other than pure entertainment. Serious games include games used for educational, persuasive, political, or health purposes.

³⁰ *Grand Theft Auto* and *God of War* are two of the most popular and violent video games.

³¹ “No Child Left Behind” is an Educational Act proposed by President George W Bush in 2001.

³² The “Back to Basics” is an educational movement that encourages schools to focus on the fundamentals of learning.

³³ *The Million* cell phone was created by droga5 and Roland Fryer. For more, click on “case studies, Million” at <www.droga5.com>.

³⁴ *National Geographic's* Wildlife Filmmaker website:
<<http://animals.nationalgeographic.com/animals/article/filmmaker.html>>.

³⁵ For more visit:
<www.jumpcut.com>.