

*Knowledge of Digital Video Manipulation Techniques  
and its Effect on the Perceived Credibility of Television News*

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**Dissertation Proposal**

**Draft 4**

**November 14, 2006**

## **Introduction & Problem Statement**

This research project seeks to investigate the effects of technique on perception. By “technique” I mean the body of methods and progression of tasks that are executed in order to achieve a desired result. All human activity employs technique, but, in the context of this project, “technique” refers to the methods and knowledge—“know-how”—by which humans make artifacts out of raw material found in their environment. Specifically, this project is concerned with the diffusion and adoption of newly discovered techniques used to produce digital video content for mass media industries and specifically how knowledge of such techniques may affect the perceived credibility of television news among potential viewers. As image-making techniques evolve alongside the rapid adoption of digital media production tools and new media distribution channels, understanding the parameters of image manipulation is more important than ever. Additionally, these evolving techniques are widely unknown and they may be underemphasized in current media literacy education.

It is apparent that digital still imagery is vulnerable to manipulation by virtue of some famous visual alterations that sparked critical debate in the press and in public discourse. There are a host of classic examples. For example, in 1983, editors of *National Geographic Magazine* altered the positions of the pyramids at Giza in order to fit the vertical framing of the magazine cover. Another famous example occurred when, during the O.J. Simpson trial in 1994, *Time Magazine* altered Simpson’s mugshot to make the defendant appear more sinister when compared to the same mugshot published on the cover of *Newsweek*.



Figure 1 | Unaltered mugshot (left), altered mugshot (right) (source: wikipedia url)

Recent examples include a Reuters news service photograph of a city skyline in Lebanon during the recent Israeli–Lebanese conflict in 2006. Fany Farid, a digital image analysis researcher at Dartmouth College who creates software algorithms that detect digital image manipulation, characterized the public reaction to the Reuters photo as “one of outrage and anger,” and concluded that that the “manipulation was simply inexcusable.” (Farid 2006)



Figure 2 | Original photo of skyline in Lebanon (Farid 2006)



Figure 3 | Published doctored photo of skyline in Lebanon (Farid 2006)

In 2003 a freelance photographer was accused of doctoring a photograph of an American soldier interacting with Iraqi citizens in the current Iraq war. The published image is a composite of two digital images taken at the same scene at different points in time. It appeared on the cover of the *Los Angeles Times* that very year. (Farid 2006)



**Figure 4 | Original A**  
(Farid 2006)



**Figure 5 | Original B**  
(Farid 2006)



**Figure 6 | Published composite**  
(Farid 2006)

These examples and others with varying degrees of ethical deviation show how vulnerable the journalistic photograph is today.

Audience reaction to manipulated imagery differs depending on the context and circulation of the image. Between friends image manipulation can be humorous, and society accepts the incredulous behavior of photo editors who contribute to celebrity gossip tabloids. In contrast, when an image is circulated to a mass audience, and the subject matter is serious in nature, manipulation is hardly taken lightly.

Some critics and researchers have noted recent trends in graphical overlays, screen layout, and packaging techniques for television news, but have left out issues concerning direct video image manipulation. Fox, Lang, et al. (2004) investigated viewer comprehension of television news information as related to the superimposition of graphics over video. In addition, some research mapped and codified photographic and visual design conventions used in the packaging of television news in order to understand their effect on viewer activity. (Grabe, Zhou et al. 2001; Cooke 2003; Cooke 2005)

Other critics have briefly addressed real-time chromakey matting technique used to composite imagery behind reporters and interviewees. (Tobias 2004; Baym 2005) One common discussion here is that the chroma-key technique allows the news room to artificially extend its geographical presence thereby enhancing the validity of the news story. However, there is no classic example in broadcast television news that has caused as much public disturbance as found in the preceding examples of digital still imagery manipulation occurring in the “digital dark room”.

Several motion pictures in different genres of fiction have explored instances of video image manipulation used in television broadcasts. Examples include Paul Michael Glaser’s *The Running Man* (1987), Barry Levinson’s *Wag The Dog* (1997), and Jonathan Demme’s *The Manchurian Candidate* (2004). While these films show audiences the results of unethical practices in post-production video suites, they do not demonstrate the actual procedure or range of methods for altering video imagery. Furthermore, audiences may conclude that techniques used in such narratives are somehow “magical” because of the genres the films fall into. This is problematic because, as we will see, the actual techniques for manipulating the digital moving image are similar, if not more powerful, than those used for manipulating digital still imagery.

As such, a primary objective of this research is to explain the impact that knowledge and awareness of image-making techniques has on the perceived credibility of visual media content. Reaching this objective means answering the central proposed research question: does acquiring knowledge of video post-production techniques affect the perceived credibility of television news?

## **Significance of Research**

Even with the rising popularity of online news media, television is still considered a significant source of news—if not the most popular. In the United States, television is the most frequently used source of news, as is the case in the U.K. (Nguyen 2003; Morris 2005). This consumption trend may have developed simply because television transmits both visual and aural signals, thereby stimulating more than one sense and making television an appealing form of media (Ryan 1975). Further, it is functionally and mechanically easier for a person to consume television news as opposed to print, radio, or online news. Even though some media scholars have cautioned against labeling television consumption as merely passive (Connell 1979; Hall 1980; Barker 1988; Mittell 2000; Livingstone 2003; Newcomb 2005), it requires the least amount of physical or cognitive activity when compared to consuming content from print, radio, and especially online sources (Livingstone 2003). In the context of new media communication channels, television consumption is like going on holiday. This metaphor will likely change as new technologies converge with television, but now television viewers do not have to decide which hyperlink to click or if they want to “favorite” the content with which they are engaged. Neither does a television viewer type at length or navigate through complex information spaces. Furthermore, television viewing, unlike reading print, does not require a person to focus on the consistent decoding of abstract imagery such as the letterform. Essentially, work for television viewing is performed only to the extent that a viewer produces meaning, or decodes messages, from what they see and hear while watching television. People learn to decode television messages faster and developmentally earlier as compared to other media (Barker 1988). This means

television viewing demands the least amount of literacy to decode messages when compared to other media. In addition, the total volume of television news from different networks gives journalistic programming a significant presence and accessibility to audiences when compared to other media. Television also is simply more available to the population in general than is the case with online services. This may explain why television continues to be a leading source of news.

Within mass communication studies, the agenda-setting function of the mass media was first proposed as a hypothesis in an influential study by McCombs and Shaw. (McCombs and Shaw 1972) To explain the agenda setting hypothesis succinctly, the researchers cited Cohen (Cohen 1963):

Perhaps this hypothesized agenda-setting function of the mass media is most succinctly stated by Cohen, who noted that the press ‘may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think *about*.’

In their study, McCombs and Shaw found that what their subjects said were key issues in a presidential election campaign matched the actual content of the mass media used during the campaign. If this is the case, the agenda-setting function has some influence on social interactions. Salient issues discussed by the mass media fill public forums with debate and magnetize interpersonal conversations eventually leading people to form an opinion on the topic in question. Once opinions are developed, a stance is taken which leads to action.

Since the introduction of this study, communication researchers have developed an area of inquiry examining contingent conditions that affect the agenda-setting function of the mass media. (Wanta and Hu 1994) For example, Young investigated how fearful television news content related to its level of importance as perceived by audiences. (Young 2003) Other researchers examined whether news media credibility plays a critical role in the agenda-setting process—and thus social interactions as well. (Wanta and Hu 1994; Hantz and Diefenbach 2002)

Only through demonstrations of credibility can news media influence choices people make in their lives. And since television news reaches millions of people at different points in a day, its producers should be responsible for maintaining a high degree of credibility. If the perceived credibility of television news diminishes, the consequences result in a misinformed mass audience that can gradually distrust all journalistic information. This ultimately causes various types of strife on a large scale. Avoiding this outcome allows peace to ensue.

As we will see in the literature review, several factors that contribute to audiences' perceived credibility of television news have been duly noted. However, this study is particularly concerned with the relationship between the creation of the broadcasted moving image, and its interpretation by television news audiences. The production technique of television news' visual dimension is important to study because it acts as an apparatus that attempts to deliver the highest degree of verisimilitude to the natural environment. (Barker 1988) Furthermore, the visual dimension of television is an additional persuasive component in message delivery—not only does one hear an expert or journalist speaking, but they can make judgments about the experts' words based on

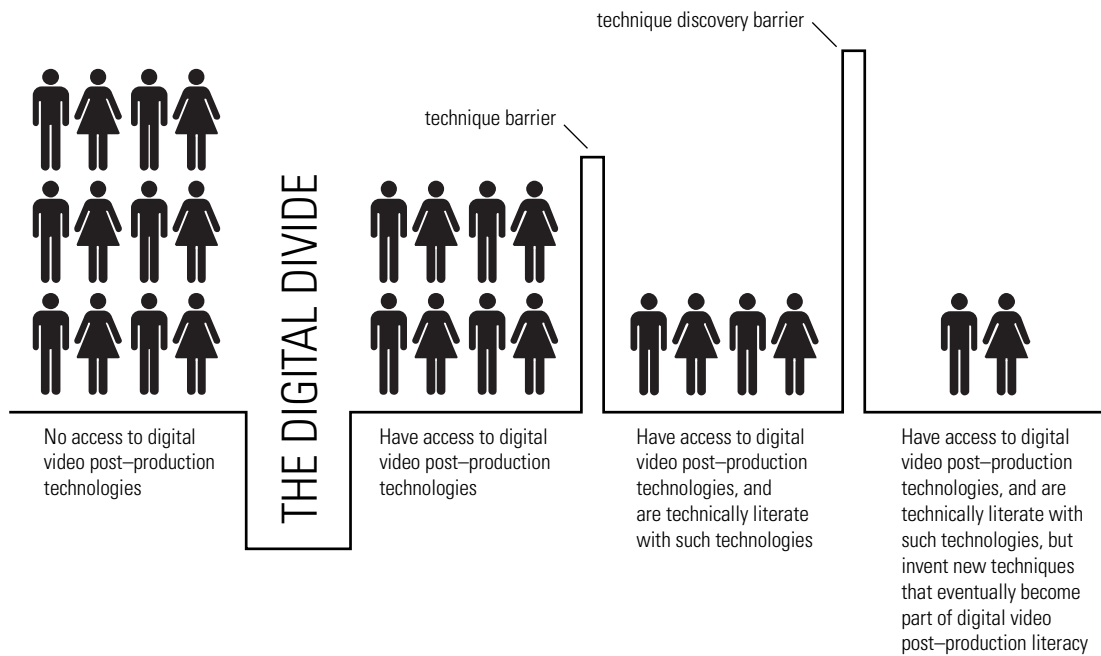


their visual appearance. (Ibelema and Powell 2001) Additionally, visual stimulation is typically what gives evidence to aural stimulation in documentary or journalistic communication, while the opposite is true of narrative fiction: aural gives evidence to visual. This may explain why in television news broadcasts, when reporting from a geographically remote place, a unique visual is created to support the broadcasted audio. Until another of the five senses is simultaneously stimulated with sight and sound, television news' visual dimension will play the role of proof maker.

Understanding the role of video post-production techniques as related to television news credibility is useful for both producers and audiences. For example, television news producers may be better suited to select post-production techniques that ensure their content is perceived as credible. Some television industry professionals already choose post-production tools equipment based on “how [they] are trying to define the station” (Anderson 1999; Anderson 1999). The equipment a television station chooses has some influence on the choice of post-production techniques. In fact, many national news broadcast networks in the United States including FOX, NBC, and CNN utilize the same software and hardware tools owned by Hollywood visual effects studios. (Suydam 1999; Autodesk 2005; Autodesk 2006) If the technology to effect imagery in fictional narratives is the same used in television newsrooms, then it is most likely the choice of technique—or the way an operator uses that technology—that can maintain the station's credibility.

Findings stemming from this investigation may be used to further develop media literacy education. While the “digital divide”— a term referring to the division between those who have access to digital media technologies and those who do not—continues to

narrow, it should be noted that those who *do* have access still face a barrier to the acquisition of new techniques. This barrier is ever present in the world of digital video post-production. For example, there is a barrier between those who have access to video manipulation software and those who *know how to use* video manipulation software to meet particular needs. Furthermore, another barrier exists between those who know how to use video manipulation software, and those who *invent methods for video manipulation* that eventually become part of a specific literacy. The following diagram attempts to explicate these divisions further:



With this notion, media literacy education may be able to emphasize the critical analysis of moving imagery from a technical standpoint. Therefore, not only should literal video image manipulation techniques be taught within media literacy curricula, but technique development and choice should be emphasized.

## Literature Review

In recent years, a significant amount of scientific and technical research has gone into optimizing image-making techniques without regard to its social impact. (Agarwala, Dontecheva et al. 2004; Li, Sun et al. 2004; Rother, Kolmogorov et al. 2004; Jia, Sun et al. 2006) For example, one research project boasts “intuitive user interface tools designed and implemented to provide flexible control and editing” for people who work with digital still images. (Li, Sun et al. 2004) Another group of researchers designed an algorithm that “is used to simplify substantially the user interaction needed for a given quality of result” for compositing digital images. (Rother, Kolmogorov et al. 2004) The field of computer vision has also contributed to image-making in its ability to assist users in finding and tracking contours of moving foreground subjects against backgrounds. (Agarwala, Hertzmann et al. 2004) In contrast to these image-making algorithms, other technical research demonstrates algorithms designed to detect tampering of digital still imagery and the duplication of compressed video. (Farid 2006; Wang and Farid 2006) Clearly, this field of technical research is moving forward, and will continue to move forward. It is, therefore, crucial to understand the sociological consequences of the applications of this research in specific contexts. Video post-production facilities employ hardware and software that draw upon of this type research.

In a different field, a number of media studies from the last few decades have been largely concerned with perceived credibility as related to either the source of media content, media use, or characteristics of the medium itself (Rimmer and Weaver 1987; Gladney and Ehrlich 1996; Akehurst, Kohnken et al. 2001; Kiouisis 2001; Greer and Gosen 2002; Kensicki 2003). Studies that examine credibility as related to the source of a message “involve examining how different communicator characteristics can influence

the processing of messages.” (Kiouisis 2001) In this case a researcher may investigate how audience’s perceive the credibility of a message coming from one television network as opposed to another network. (Morris 2005) Another line of study investigates credibility as related to audience consumption and preference of media channels. A researcher here may want to understand the way individuals perceive credibility depending on how frequently they engage with or are exposed to a particular medium (Wanta and Hu 1994). Another set of research concerns itself with the way audiences perceive credibility as related to properties found in the media channel. For example, a researcher may measure perceived credibility of messages delivered online as opposed to print, radio, or television, as found in Flanagin and Metzger (Flanagin and Metzger 2000).

While researchers have briefly mentioned the role of new digital production technologies in relationship to credibility (Reaves 1995; Baym 2005) what is now missing is an investigation into production technique itself and its role within context of past findings. Past studies have pointed to research opportunities for dissecting and analyzing techniques used to create and render digital images (Rimmer and Weaver 1987; Reaves 1995; Johnson and Kaye 1998). Furthermore, a majority of these studies have employed only static imagery in their methodology while “there is little survey data and practically none related to digital manipulation of moving images” (Gladney and Ehrlich 1996). For example, researchers have referred to the increasing ease of interfacing with photo retouching tools as a result of digital imaging software development (Reaves 1995; Hantz and Diefenbach 2002; Baym 2005). This project will take these past studies into consideration while examining techniques for manipulating digital video.

Since the moving image is a series of still images, it follows that any technique employed in the manipulation of one still image can be re-employed on an entire series of images. More succinctly, in the domain of the digital medium, anything that can be done to the still image can be done to the moving image. Here is why it is important to study digital video compositing: digital still images are more vulnerable to manipulation. As this is the case, it may now be appropriate to introduce a study of the technical manipulation of moving images to the field of media credibility.

Some media credibility studies that have used moving imagery in their methodologies have focused primarily on the effect of producers' editorial and framing decisions on audiences' perceived credibility (*Authors & Studies*). These studies were concerned with the careful juxtaposition of moving images and sound bites, or the episodic and packaged nature of the moving image (*Authors & Studies*). While this project recognizes digital video editing techniques as a major component in determining how television news may be judged by an audience, it is not concerned with the technique of editing alone. Instead, this study focuses on the technique of digital video compositing as related to media credibility. Therefore, it is crucial to understand the discipline of digital video compositing including its foundational roots.

### **Digital Video Compositing and Editing Overview**

When a motion picture or television news story is in production, the chronology of shots recorded on-set will typically be rearranged for the final product viewed by audiences. The rearrangement of shots is the discipline of editing. In many cases, some of the original recorded shots will be left out of the final product of shots is Rubin

describes digital video editing as “horizontal”, in that it is a process of determining how video sequences should be arranged temporally. (Rubin 2000)

This is in opposition to what he terms “vertical editing” whereby different video sequences are stacked one atop the other thereby producing a single integrated result—the final moving image. (Rubin 2000) Digital video compositing is a discipline of “vertical” editing.

In a general sense, the very act of compositing implies a bringing together of disparate elements in order to form a whole, while editing implies the reviewing and correcting of an existing whole. For example, a journalist writes a story for a print publication. An editor reviews the content of the story and makes changes as necessary. Next, a compositor manually fits metallic letterform blocks into a gullet which acts as a “template” for the press. (Craig 1974; Johns 1998) Finally, paper is then impressed with ink in a form the compositor originally made and is then distributed and read widely. It should be noted that compositing tasks come directly before any mass reproduction or distribution of a message. Since this is the case, “the compositor must not only reconstruct authorial meaning, but also anticipate readership.” (Johns 1998) [More about the role of the compositor to come]

With digital technology, the line between editing and compositing is constantly becoming more blurred (Brinkmann 1999). [Sentence about the division of labor as a function of post-production machinery]. Editors’ digital toolsets now include many new compositing functions that were previously available only to separate digital compositing programs. Even the most basic of video editors face compositing tasks in routine jobs. Since these techniques are pervasive in the field of video production, compositing

techniques must now be thoroughly examined in order to understand perceived credibility of moving images more accurately, and this study will do it.

### **Conceptualization And Operationalization Of Credibility**

By opening this investigation, additional metrics for evaluating the credibility of media may be added to an already existing set developed by previous researchers. In past studies, researchers have defined and measured credibility in various ways. Therefore, it is crucial to conceptualize the notion of credibility: how should it be defined within the context of this study?

In conceptualizing credibility, it is important to realize that “there is still no widely agreed upon definition” for what credibility means within the community of its researchers (Meyer 1988). Most likely, the lack of a precise definition will continue because of the very nature of the term. Dictionaries vary in their definitions of “credibility”. According to the American Heritage dictionary, being credible refers to something “having a capacity for belief”, while the Webster’s New Collegiate dictionary defines something to be credible if it has “reasonable grounds for being believed.” What characterizes this “capacity”, and what are the “grounds” these definitions speak of? These definitions become glaringly inaccurate when examining the credibility of specific media content. For example, Meyer notes that credibility for a newspaper includes “maintaining harmony in and leadership status with the newspaper’s community.” West places the source of information as a conduit for distinguishing the amount of credibility. He conceptualizes credibility as possessing “the qualities of an information source which cause what it says to be believable beyond any proof of its contentions.” (West 1994) Some researchers claim that credibility can also rest on the mere act of “seeing” media

content as it results in “believing”—we have all heard the adage of “seeing is believing.” (Slattery and Tiedge 1992; West 1994) Generally, the body of literature regards the act of *believing* as a key tenet to understanding what credibility means.

On a deeper level, however, one could ask what factors are needed for a person to believe in something. One would have to break apart the notion of believing into smaller components. For example, faith is trusting in something that can not be proven, and is therefore easy to characterize, but belief involves the complex definition of truth. For anything to be true a proof must be sought or made available. For example, other principles needed to conceptualize the notion of credibility, as identified by several researchers, are *public trust* and *truthfulness* of media content. (Akehurst, Kohnken et al. 2001) These principles can act as a springboard to operationalize the notion of credibility. Ultimately, believing in something is a subjective choice that is actively made by a person as a result of several different factors.

Journalism ethics exists at the center of credibility research. This is probably due to the fact that it is the task of the journalist task to tell stories about events occurring in physical reality—the public wants to *believe* what they are being told. The core of their discipline is the delivery of truth. Measuring credibility with regards to journalistic products is not as simple as asking a subject whether or not they believe what they see or read, and should be noted that credibility “is typically measured as a multi-dimensional construct.” (Johnson & Kaye, 1998)

Researchers have operationalized credibility according to some key studies in the field. In particular, one prominent study conducted by Gaziano and McGrath (1986), provided 15 discrete variables a researcher could use to determine story credibility. Two



years later, Philip Meyer examined a number of studies utilizing this model of operationalization and found a good deal of redundancy in several variables proposed by Gaziano and McGrath. For example, the Gaziano/McGrath includes the following scales of measurement:

1. Can't be trusted
2. Separates fact from fiction
3. Factual
4. Tells the whole story
5. Accurate
6. Unbiased
7. Fair
8. Respect's people's privacy
9. Concerned mainly about the public interest
10. Reporters are well trained
11. Watches out for your interests
12. Patriotic
13. Concerned about the community's well-being
14. Immoral
15. Sensationalizes

Through a good deal of statistical analysis, Meyer (1988) eliminated several items and shortened the list to five items. These include scales measuring:

1. Fair – Unfair
2. Unbiased – Biased
3. Tells The Whole Story – Doesn't Tell The Whole Story
4. Accurate – Inaccurate
5. Can Be Trusted – Can't Be Trusted

With more scrutiny, Mark West, in a 1994 examination of previous studies, wanted to validate Meyer's work. He found that "the Meyer modification of the Gaziano-McGrath scales appears to validly and reliably measure credibility per se." Hence, much of the current research surrounding media content credibility uses a variation on the McGrath/Gaziano scales or the Meyer scales. (Greer & Gosen, 2002; Johnson & Kaye,

1998; Slattery & Tiedge, 1992; Rimmer & Weaver, 1988) However, other researchers have ventured to use their own models of operationalization. For example, one study compared the credibility of live and video presentations using “Criteria-Based Content Analysis (CBCA) [that] focuses on specific content characteristics which, if present in a statement, support the hypothesis that an account is based on personal experience (i.e. that it is truthful).” (Akehurst, Kohnken & Hofer, 2001) Another study examined credibility of witnesses for judicial purposes and asked participants to complete sentences based on a seven point scale. Specifically, one sentence on the questionnaire read “Her testimony appeared . . .,” followed by a scale from “plausible” to “implausible”. (Kaufman, Drevland, Wessel, et. al., 2003)

To be sure, all operationalizations of credibility attempt to reconcile a representation of an event to a physical occurrence of that event by means of specifying distinct units of measurement. In other words, if a story is measured to be credible, then a one-to-one mapping exists between its representation and physical reality. This is emphasized because it is much different than measuring a perception of reality. After watching a television news story about police officer abuse, a child viewer may ask “did that really happen in our neighborhood?” This is a question of credibility. As such, the child’s parent may respond with “the news checks their references, so it could very well have occurred in our neighborhood, and I heard our next door neighbor talking about it the other day.” However, after watching a television drama about police officers abusing citizens, the same child may ask “is that what happens in our world?” This is a question of perceived reality. The parent could then respond with “what you saw on television

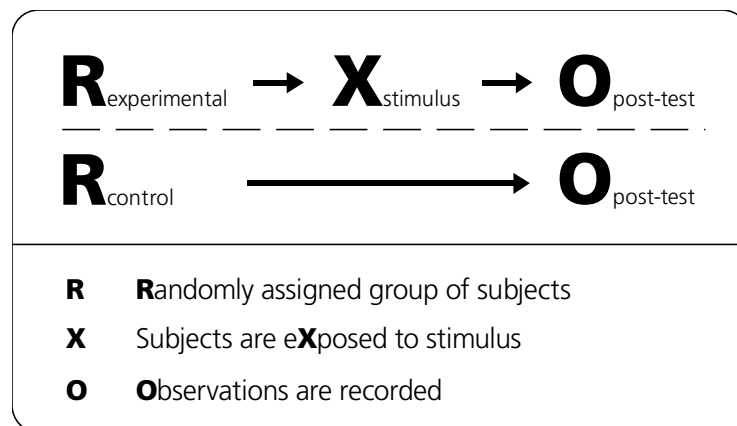
occurred on a set put together by producers of a television show, and they are showing you a part of what could very well happen in our world.”

## Methodology

In this work, I will argue that the perceived credibility of imagery is partially dependant on the degree to which an image-making technique is diffused throughout a society. More succinctly, if an image-making technique is widely known then it may have an effect on how audiences perceive images. To support this argument I will conduct an experiment built around a central research question: does acquiring knowledge of post-production techniques for digital video affect the perceived credibility of television news? The working hypothesis is that acquiring knowledge of post-production techniques causes audiences to perceive television news as less credible.

The intended experiment follows a classic, post-test only, control group design. Following is a diagram that represents the experimental design setup. (Campbell and Stanley 1963; Babbie 2004) Since both groups are created by random selection and assignment of subjects, it will suffice to compare a post-test only.

### Experimental Design



This diagram shows that an experimental and control group are created by randomly selecting and assigning subjects from a sampling of the population. Two methodologies, for acquiring empirical data for this experiment will be conducted. In this way, it will be possible to compare the two methodologies.

### *Physical Setting Methodology*

The first research method requires lab space that can host one researcher and one participant at different intervals of time during the course of a day. However, this methodology requires that experimentation lasts for at least a couple of weeks. It would be preferable for this lab space to be a quiet space so that participants do not get distracted during their time in the lab. A television monitor with an attached video tape player and a computer with internet connectivity will be necessary instrumentation in the lab space. Participants will register for time slots, determined by the researcher, to come into the lab for participation. This registration process will be handled through an online web form. A preview of the online registration form for this project is available at [www.stavchansky.net/research/registration.php](http://www.stavchansky.net/research/registration.php). After registering, the participant will be assigned to the control or experimental group. Then the participant will meet the researcher in the lab space during their assigned time slot. Before beginning their duties as participant, they will be provided an informed consent document that releases the researcher and The University of Texas System from any liability and explains participants' rights to privacy and confidentiality. If a participant does not wish to sign this document, they will be asked to end participation. This consent document is at the end of this proposal as "Attachment A".

Experimental group participants will watch a video, the stimulus, that will screen for three to five minutes. After viewing this video, participants fill out a post-test questionnaire that will be submitted online at the computer terminal in the laboratory. A draft of this online post-test questionnaire may be found at in this document under the section “Questionnaire”. The actual post-test questionnaire format can be found at [www.stavchansky.net/research/questionnaire.php](http://www.stavchansky.net/research/questionnaire.php) . Control group participants will fill out the online post-test questionnaire at the computer terminal in the lab without watching the stimulus video. To increase the internal validity of the acquired data, the experimental design will not use a “placebo” stimulus. If such a “placebo” was used, it could have an influence on the way a participant answers the post-test questionnaire. This study is concerned with the consequences of acquiring specific knowledge of digital video post-production techniques. Any other acquired knowledge outside this domain could influence the way a participant chooses to answer questions related to the actual stimulus.

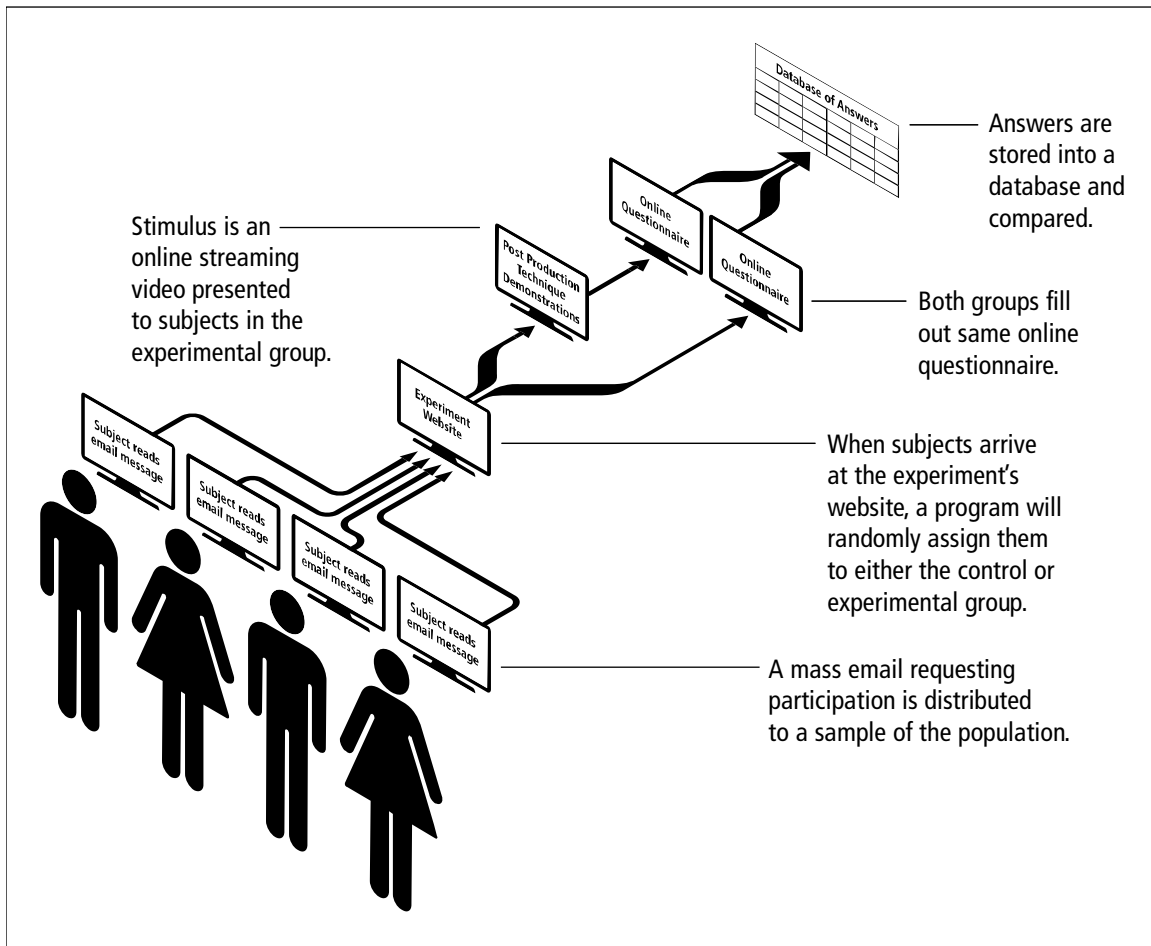
The scope of the population for this methodology will be considered the undergraduate student body in the Introduction to Media Studies (RTF305) course at The University of Texas at Austin. There are approximately four hundred enrolled students in this course. Due to the controlled setting with which the experiment takes place, it will suffice to have a sample of approximately twenty-five to thirty participants in each group.

#### *Online Experiment Methodology*

The second methodology for acquiring data will take place online via a website interface. The experimental design remains the same as stated above, but instead of

participants coming to a physical setting, they point their World Wide Web browser to a website that randomly assigns the visitor to a control or experimental group. After this, the subject proceeds through the online flow of the experiment as shown below.

### Online Pathway For Experiment



The random assignment of an online subject is based on a computational algorithm that determines if a randomly selected number is odd or even. The computer randomly selects a number between the inclusive range of one through ten. After the random number is selected, the algorithm divides the number in half to determine if the number is odd or even. If odd, the subject is part of the experimental group. If even, the

subject is part of the control group. All this activity occurs in the background once the user lands on the website's page.

Once grouped, a subject will see some text asking for consent to participate in the study. The language used in this text will match the consent document found in Attachment A at the end of this document. However, instead of acquiring a signature from the participant, a button that states "I Agree" will be positioned below the text of the consent document. Clicking the "I Agree" button will ensure the participant has given consent to the researcher to proceed with the study.

After consenting to participation, control group participants will land on the post-test questionnaire web page and submit their answers. Experimental group participants will proceed to a page that contains a streaming video of the same stimulus as used in the physical setting methodology. Participants must watch the video in its entirety in order to proceed to the post-test questionnaire. After the stimulus is finished screening, the web browser is directed to the post-test questionnaire for submittal.

In this methodology, the scope of the population will be the entire undergraduate population at The University of Texas at Austin. A mass email will be sent, via a private mass emailer, to approximately sixty percent of all officially registered undergraduate students. Only a portion of all the individuals who are sent the email will actually receive the message due to spamming filters. Fewer people will actually open the email after reading the subject line. Even fewer will actually take the time to visit the website. Even so, with such a large undergraduate student population, the sample for this experiment should exceed that of the physical setting methodology.

### *Confidentiality and Anonymity of Participants*

Participants will not be asked for any personal information during data acquisition. However, for the purposes of conducting the physical setting experiment in an orderly and timely fashion, the name of the participant will be recorded during registration. This registration information will be used to ensure participants obtain extra credit points for their final grade in the Introduction To Media Studies (RTF305) course. The names of participants will be made available to the appropriate administrators of RTF305, and will not remain in control by the researcher. Also, the consent form that participants sign will contain their signature and printed name. These consent documents will be kept by the researcher and will not be shared with any other entity or person unless required by law.

Captured data will be stored in a database that exists on servers at the stavchansky.net domain. This database of answers will be taken offline after all experimentation activity is conducted. This will ensure that all data is confidential after the experiment has been conducted.

### **The Stimulus**

The video stimulus will have a duration of between three to five minutes.

Demonstrations of post-production techniques for manipulating digital video will be shown in a step-by-step fashion. Each demonstration will begin with a “source” footage element that will be played back a few times. Subsequent loops of the same footage will be played back, only they will demonstrate the result of the video manipulation. The “final” manipulated footage will be played back, as will a side-by-side comparison of



“source” to “final”. A high resolution video is capable of being viewed at [www.stavchansky.net/research/video.php](http://www.stavchansky.net/research/video.php).

Three technique demonstrations will be selected according to their relevance to documentary and journalistic storytelling. *Digital masking and keying* techniques used to add and subtract subjects from digital video captured by a camera are directly related to television news imagery. *Artifacting* digital video so that it is perceived to be of a certain era or transmission quality is also relevant to moving imagery found in television news. *Matchmoving*, or the seamless integration of computer generated imagery into the apparent perspective in a video image, can be easily used, or abused, in documentary media texts.

## The Questionnaire

The questionnaire will acquire data relevant to the operationalization of credibility. The following is the introductory text, questions, and concluding text that will appear on the online questionnaire.

*Thank you for participating in this study. Your time while answering the following questions is greatly appreciated. By answering these questions as truthfully as possible, this study will give insight into the nature of media reception.*

### 1. Where have you learned about the news during the past week?

*Please check all that apply.*

- television
- magazines
- newspapers
- radio
- online
- other

### 2. Approximately how many hours of television news did you watch last week?

I watched about  hours of television last week.

### 3. Please enter how much you agree or disagree with the following statements.

Once I learn about a news story, I actively seek more information about it from multiple news sources.



SA



A



N



D



SD

I trust city-wide government officials.

SA       A       N       D       SD

I trust federal government officials.

SA       A       N       D       SD

I trust TV news.

SA       A       N       D       SD

TV news gives the complete overview of a story.

SA       A       N       D       SD

TV news is not very accurate.

SA       A       N       D       SD

TV news is plausible.

SA       A       N       D       SD

TV news is biased.

SA       A       N       D       SD

TV news is fair.

SA       A       N       D       SD

I am familiar with software programs like Adobe Photoshop or Adobe After Effects.

SA

A

N

D

SD

I am familiar with chroma keying and green screen techniques used in video production.

SA

A

N

D

SD

I am familiar with computer vision tracking techniques used in video production.

SA

A

N

D

SD

I am familiar with quantum projection compositing used in video production.

SA

A

N

D

SD

**4. Which national television network(s) do you actively watch to learn about the news?**

*Please check all that apply.*

NBC

CBS

ABC

FOX

CNN

MSNBC

C-SPAN

Comedy Central

other

**5. Which genre of film do you enjoy the most?**

*Please select one.*

- science fiction
- comedy
- romance / romantic comedy
- drama
- suspense / thriller / horror
- mystery
- documentary
- other

**6. If a student, which college are you enrolled in.**

*Note: If cross enrolled, please select one you would like to declare affiliation to.*

**7. Classification**

- freshman
- sophomore
- junior
- senior
- graduate student
- other

**8. Gender**

- male
- female

**9. Age**

*Please enter your age*

## References

- Agarwala, A., M. Dontecheva, et al. (2004). "Interactive Digital Photomontage." ACM Transactions on Graphics (TOG) **23**(3): 9294-302.
- Agarwala, A., A. Hertzmann, et al. (2004). "Keyframe-Based Tracking for Rotoscoping and Animation." ACM Transactions on Graphics (TOG) **23**(3): 584-591.
- Akehurst, L., G. Kohnken, et al. (2001). "Content credibility of accounts derived from live and video presentations." Legal and Criminological Psychology **6**: 18.
- Anderson, K. (1999). Image Consultants. Broadcasting & Cable. **129**: 52
- Anderson, K. (1999). Super Bowl heats up with Frost. Broadcasting & Cable. **129**: 52
- Autodesk (2005). Turner Studios Realizes Collaborative HD Finishing with Autodesk Solutions, Autodesk, Inc.:  
2. <http://usa.autodesk.com/adsk/servlet/item?siteID=123112&id=6521486&linkID=5572508> October 30, 2006
- Autodesk (2006). Broadcasters Worldwide Turn to Autodesk's Graphics Solutions to Differentiate Themselves, Autodesk, Inc. Investor Relations. [http://investors.autodesk.com/phoenix.zhtml?c=117861&p=irol-newsArticle\\_Print&ID=845986&highlight=](http://investors.autodesk.com/phoenix.zhtml?c=117861&p=irol-newsArticle_Print&ID=845986&highlight=) October 30, 2006
- Babbie, E. (2004). The Practice Of Social Research, 10th Edition, Thomson Wadsworth.
- Barker, D. (1988). "'It's Been Real": Forms of Television Representation." Critical Studies in Mass Communication **5**: 42-56.
- Baym, G. (2005). "The Daily Show: Discursive Integration and the Reinvention of Political Journalism." Political Communications **22**: 259-276.
- Brinkmann, R. (1999). The Art And Science Of Digital Compositing. San Diego, CA, Morgan Kaufmann.
- Campbell, D. T. and J. C. Stanley (1963). Experimental and Quasi-Experimental Designs For Research. Chicago, Rand McNalley College Publishing Company.
- Cohen, B. C. (1963). The Press and Foreign Policy. Princeton, N.J., Princeton University Press.
- Connell, I. (1979). "Ideology / discourse / institution." Screen **19**: 129-134.
- Cooke, L. (2003). "Information Acceleration and Visual Trends in Print, Television, and Web News Sources." Technical Communication Quarterly **12**(2): 155-181.
- Cooke, L. (2005). "A visual convergence of print, television, and the internet: charting 40 years of design change in news presentation." New Media & Society **1**(22): 22-46.
- Craig, J. (1974). Production For The Graphic Designer. New York, NY, Billboard Publications, Inc. (USA)  
Pitman Publishing, Ltd. (UK).
- Ernst, W. (2002). "Between Real Time and Memory on Demand: Reflections on / of Television." The South Atlantic Quarterly **101**(3): 625-637.
- Farid, F. (2006). "Digital Doctoring: How to tell the real from the fake." Significance **In press at time of reference**: 5.
- Flanagin, A. J. and M. J. Metzger (2000). "Perceptions of Internet Information Credibility." Journalism & Mass Communication Quarterly **77**(3): 515-540.

- Gladney, G. A. and M. C. Ehrlich (1996). "Cross-Media Response to Digital Manipulation of Still and Moving Images." Journal of Broadcasting & Electronic Media **40**: 496-508.
- Grabe, M. E., S. Zhou, et al. (2001). "Explicating Sensationalism in Television News: Content and the Bells and Whistles of Form." Journal of Broadcasting & Electronic Media **45**(4): 635-655.
- Greer, J. D. and J. D. Gosen (2002). "How Much Is Too Much? Assessing Levels of Digital Alteration as Factors in Public Perception of New Media Credibility." Visual Communications Quarterly.
- Hall, S. (1980). Encoding/Decoding. Culture, Media, Language: Working Papers in Cultural Studies, 1972-79. S. Hall, D. Hobson, A. Lowe and P. Willis. New York London, Routledge: 128-138.
- Hantz, A. M. and D. L. Diefenbach (2002). Digital Image Manipulation, Communication Theory, and the Public Trust. Annual Conference of The International Visual Sociology Association, Petros M. Nomikos Conference Center Santorini Island, Greece.
- Ibelema, M. and L. Powell (2001). "Cable Television News Viewed As Most Credible." Newspaper Research Journal **22**(1): 41-51.
- Jia, J., J. Sun, et al. (2006). "Drag-And-Drop Pasting." ACM Transactions on Graphics (TOG) **25**(3): 631-637.
- Johns, A. (1998). The Nature of the Book: Print and Knowledge in the Making, University of Chicago Press.
- Johnson, T. J. and B. K. Kaye (1998). "Cruising Is Believing? Comparing Internet and Traditional Sources On Media Credibility Measures." Journalism & Mass Communication Quarterly **75**(2): 325-340.
- Kensicki, L. J. (2003). "Building Credibility for Non-Profit Organizations through Webpage Interface Design." Journal of Visual Literacy **23**(2): 139-162.
- Kiousis, S. (2001). "Public Trust or Mistrust? Perceptions of Media Credibility in the Information Age." Mass Communication & Society **4**(4): 381-403.
- Li, Y., J. Sun, et al. (2004). "Lazy Snapping." ACM Transactions on Graphics (TOG) **23**(3): 303-308.
- Livingstone, S. (2003). The changing nature of audiences: from the mass audience to the interactive media user. Blackwell Companion to Media Studies. A. Valdivia. Oxford, UK, Blackwell Publishing: 337-359.
- McCombs, M. E. and D. L. Shaw (1972). "The Agenda-Setting Function of Mass Media." The Public Opinion Quarterly **36**(2): 176-187.
- Meyer, P. (1988). "Defining and Measuring Credibility Of Newspapers: Developing and Index." Journalism Quarterly **65**: 567-574.
- Mittell, J. (2000). "The Cultural Power of an Anti-Television Metaphor." Television & New Media **1**(2): 215-238.
- Morris, J. S. (2005). "The Fox News Factor." Press / Politics **10**(3): 56-79.
- Newcomb, H. (2005). "Studying Television: Same Questions, Different Contexts." Cinema Journal **45**(1): 107-111.
- Nguyen, A. (2003). "The Current Status and Potential Development of Online News Consumption: A Structural Approach." First Monday: 10.

- Reaves, S. (1995). "The Vulnerable Image: Categories of Photos as Predictor of Digital Manipulation." Journalism & Mass Communication Quarterly **72**(3): 706-715.
- Rimmer, T. and D. Weaver (1987). "Different Questions, Different Answers? Media Use and Media Credibility." Journalism Quarterly **64**: 28-36, 44.
- Rother, C., V. Kolmogorov, et al. (2004). "'Grab Cut': interactive foreground extraction using iterated graph cuts." ACM Transactions on Graphics (TOG) **23**(3): 309-314.
- Rubin, M. (2000). Nonlinear 4. Gainesville, FL, Triad Publishing Company.
- Ryan, M. (1975). "The Impact of Television News Film on Perceived Media Credibility." Journal of Applied Communication Research **3**(2): 69-75.
- Slattery, K. and J. T. Tiedge (1992). "The Effect Of Labeling Staged Video On The Credibility Of TV News." Journal of Broadcasting & Electronic Media **36**(3).
- Suydam, M. (1999). Graphics get high-tech look. Broadcasting & Cable. **129**: 46
- Tobias, J. (2004). "Truth To Materials: Modernism and US Television News Design since 1940." Journal of Design History **18**(2): 179-190(12).
- Wang, W. and H. Farid (2006). Exposing Digital Forgeries in Video by Detecting Double MPEG Compression. ACM Multimedia and Security Workshop, Geneva, Switzerland.
- Wanta, W. and Y.-W. Hu (1994). "The Effects of Credibility, Reliance, and Exposure on Media Agenda-Setting: A Path Analysis Model." Journalism Quarterly **71**(1): 90-98.
- West, M. D. (1994). "Validating A Scale For The Measurement of Credibility: A Covariance Structure Modeling Approach." Journalism Quarterly **71**(3): 159-168.
- Young, J. (2003). "The Role of Fear in Agenda Setting by Television News." American Behavioral Scientist **46**(12): 1673-1695.