DIFFUSION OF NONLINEAR EDITING SYSTEMS IN U.S. LOCAL TELEVISION NEWSROOMS

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CHAPTER I

INTRODUCTION

Television news has become the primary source of news and information for a majority of Americans. Local television news in particular has become a staple in the lives of millions of Americans (Greppi, 2006; RTNDF Survey, 2006). While the network nightly newscasts have lost substantial numbers of viewers over the last two decades, local television news has retained a larger percentage of its audience. Local television news also continues to be a major source of revenue for owners of the local stations. Indeed, local television news is an integral part of American life, and it holds a profitable place in the American economy (Allen, 2001; Downie & Kaiser, 2002; Henderson, 2004; Jacobs, 1990).

Technology has dominated the development and growth of local television news. Technological advance of news gathering equipment has played a key role in the amount of news gathered, where news can be gathered, and the time allowed to present that news to the viewers. History shows that major advances in local television news go hand-in-hand with advancements in news gathering technology (Allen, 2001; Jacobs, 1990; Lindekugel, 1994; McManus, 1998).

While subtle advances in news gathering technology frequently occur in broadcast journalism, history identifies several watershed moments. These watershed moments

include (a) the development of videotape, (b) the development of portable microwave transmitters, (c) the development of satellite video transmission, and, more recently, (d) the development of nonlinear editing (NLE) (Austerberry, 2005; Allen, 2001; Bliss, 1991; Keirstead, 2005; Luff, 2001; Williams, 1997). This study focuses on the most recent of these major advances – nonlinear editing. Through this study, the research will investigate (a) the adoption process of nonlinear editing by local television newsrooms and (b) the attributes of nonlinear editing which might affect the adoption process. This study will examine the implementation of NLE technology in television newsrooms in the United States through the theoretical perspective of diffusion theory.

There are several justifications for this study. One justification is that NLE may have a significant impact on what viewers see on their local newscasts. NLE can increase the speed with which editors can turn raw video into edited video stories, thus increasing the story count of local television newscasts.

A second justification is that NLE can improve the quality of video stories. NLE has given local television news personnel the ability to prepare stories in a more technical and creative manner than ever before. NLE also allows individual editors to quickly incorporate advanced production techniques that used to take a great deal of time and expertise.

A third justification is that NLE has a significant impact on how local television news personnel perform their daily duties. NLE can lead to reporters and producers taking on more video editing duties. This could lead to a reduction in the number of editor positions at local television stations. With more people available to edit in-house,

newsroom managers may assign reporters and photographers more daily story assignments to cover.

A fourth justification is that the cost savings which NLE offers can have a significant impact on the profitability of local television stations with news departments. While the initial purchase of NLE equipment can require a significant investment, some station managers expect long-term savings will justify that investment. NLE equipment does not require as much maintenance as tape-to-tape editing systems. Also, since NLE offers the option of storing video as digital files in a computer hard drive, station managers may be able to reduce the amount of videotape purchased for storing and playing back video stories.

A fifth justification is that a study of NLE can advance the knowledge of broadcast management. The academy should know how fast the rate of adoption is for NLE technology. An understanding of the diffusion rate of NLE can be compared to the diffusion rate of other technologies adopted by local television newsrooms. The academy can also advance the body of knowledge by discovering which attributes of NLE most affect the rate of adoption for NLE technology, thus possibly enabling the prediction of the adoption rate of other newsroom technologies.

The following chapters will consist of the literature review, the methodological framework employed in this study, findings and discussion, and conclusions. Chapter Two includes discussion of the development of local television news in the United States with emphasis on technologies employed in local television newsrooms. Chapter Two also will discuss diffusion theory. Chapter Three will detail the sampling methods, recruitment of participants, and the survey instrument used in this study of NLE systems

in local television newsrooms in the United States. Chapter Four will detail the findings of the study and discuss those findings in detail. Chapter Five will discuss conclusions and implications based on the findings as well as limitations of the study and suggestions for future research.

CHAPTER II

REVIEW OF LITERATURE

This chapter examines the literature to explain the historical development of local television news in the United States and the role that technology played in that development. The first part of this chapter examines the growth of local television news since the 1950s. The next section will consider technological advances in news coverage, including nonlinear editing. The remainder of the literature review will discuss diffusion theory.

Development of Local Television News

Early History of Local Newscasts

The history of local television news began with the emergence of the first local television stations in America in the late 1940s. While many of these pioneering stations had some sort of local news programming, station managers did not consider local news a priority (Roman, 1996). Thus, station managers did not devote much time, resources, or finances to local news production. In 1949, Miami's WTVJ-TV spent approximately $500 per week to produce local news. WTVJ employees of this early period reported that their film developing equipment consisted of a bucket and a clothes line (Matera, 1997). Most of these early local newscasts ran for only 15 minutes. This trend continued through the 1950s and into the 1960s (Allen, 2001). Bower (1985) found television

broadcasters allocated only 13% of their available airtime to news and public affairs in 1960.

Allen (2005) has chronicled two west coast stations that became the first to test the market for expanded local newscasts. Sacramento, California's KCRA-TV launched the first long format local newscast on February 20, 1961, with a 45 minute program. This venture caught the attention of managers at Los Angeles station KNXT-TV, who made the decision to try long format newscasts in their market. On October 2, 1961, KNXT launched the first hour-long local newscast known as *The Big News.* A year later *The Big News* was attracting an audience large enough for station managers to justify an increase in advertising rates double what they were charging when *The Big News* began. KNXT grossed $750,000 from advertising on *The Big News*, which proved that local news could be a profitable venture for local television stations (Allen, 2005). The success of *The Big News* came at a fortuitous time for KNXT and other local television stations. In 1963, the Roper Survey showed for the first time that most Americans were getting their news from television (Downie & Kaiser, 2002).

Impact of Consultants

As the local television audience grew, the Federal Communications Commission (FCC) became concerned about the quality of programming stations were offering the audience. This ultimate expression of this concern came in 1961 when FCC chairman Newton Minnow delivered a speech calling television "a 'vast wasteland'" (Allen, 2001, p. 22). The FCC's concern about low-brow entertainment and an apparent lack of news programming on television led to a requirement that local television station mangers survey their viewers. The FCC hoped this would force station management to listen to

viewers and make programming changes to meet the wants and needs of those viewers. The FCC's research requirement led directly, albeit inadvertently, to the rise of news consultants (Allen, 2001).

In 1962, Storer Broadcasting hired the consulting firm of McHugh and Hoffman to perform the newly-required FCC audience research. Philip McHugh and Peter Hoffman used in-depth interviews to study viewer attitudes about television in each of the markets where Storer Broadcasting had stations. McHugh and Hoffman researchers conducted personal interviews with hundreds of viewers in each city. Open-ended questions used in these interviews allowed participants to express their attitudes and opinions in detail. The researchers asked questions such as "Do you personally have any interests or needs that you would like television to give more attention to?" "Which local station seems particularly alert to the needs and problems of the community in which you live?" (Allen, 2001, p. 51). The study found that viewers watched local television news much more than anyone believed they did at the time, viewers wanted to see more local television news, and their liking or disliking of individual newscasters helped determine which local news station they watched. Viewers also said they wanted to see more coverage of topics such as crime and weather and less coverage of politics and international news (Allen, 2001).

The consultants used this research to create news formats that eventually would become common place in all parts of the country. McHugh and Hoffman developed the *Eyewitness News* format while rival consultant Frank Magid developed the *Action News* format. McHugh and Hoffman developed *Eyewitness News* in the late 1960s, and, with it, they broke the mold of local television newscasts up to that point. *Eyewitness News*

featured anchor teams instead of the traditional single male anchor. These anchor teams related to each other, and the audience, as friends having a conversation about the news. This cordial interaction led to the moniker "happy talk" being applied to *Eyewitness News* (Allen, 2001, p. 96) *Eyewitness News* stories looked at how issues affected the average person, and these stories emphasized visual story telling techniques (Allen, 2001). Frank Magid's research for Philadelphia's WFIL-TV led to the creation of *Action News,* which debuted in May 1970. Magid's plan for *Action News* was the audio-visual equivalent of skimming the newspaper. The newscast would have a high story count, thus individual stories would be shorter and soundbites (portions of interviews inserted in stories) would not run longer than 10 seconds. Stories with highly visual elements would take precedence, and like *Eyewitness News,* story telling strategies would focus on the average person instead of government officials (Allen, 2001).

Both *Eyewitness News* and *Action News* had a significant impact on ratings for the stations that adopted the formats. Broadcasters generally view ratings as two separate statistical measures of the television audience called rating and share. The term *rating* refers to the number of households tuned into a particular television program out of the total population of that television market. The term *share* refers to the percentage of households tuned into a particular television program out of the total number of households using television at the time the program airs (Webster, Phalen & Lichty, 2000). Therefore, if a news program received a 10 rating and a 12 share, it indicates that 10% of the total population in that television market watched the newscast and that 12% of the people actually watching television at the time were tuned into the newscast. McHugh and Hoffman's *Eyewitness News* produced significant ratings gains at every

station that adopted the format. WABC-TV in New York saw shares reach as high as 44 in the early years of *Eyewitness News*, and Cleveland's WJW-TV had shares as high as 52, thanks to the *Eyewitness News* format. Magid's *Action News* resulted in a significant ratings turn-around for Philadelphia's WFIL. The station began *Action News* with a 7 share, and 12 months later it had a 31 share, claiming first place in the market. McHugh and Hoffman established *Eyewitness News* at all five of ABC's owned and operated local stations during the early 1970s.

Revenue

The work done by these consultants made television news profitable for local stations. This caused local station managers to make the news department a priority (Allen, 2001; Downie & Kaiser, 2002; Jacobs, 1990). Local television advertising increased 150% between 1965 and 1972, partly due to the growing mass appeal of local television news (Jacobs, 1990). The first ownership group to employ consultants, Storer Broadcasting, saw profits increase by more than $10 million between 1962 and 1968 (Allen, 2001). By the end of the 1970s, local television news generated more than half of the profits earned annually by local television stations (Jacobs, 1990). By 1979, profits at ABC's owned and operated local stations reached more than $100 million dollars annually. That amount was greater than the combined annual profits of the NBC and CBS owned and operated local stations during the same time period (Allen, 1997). Allen (2001) found these ABC owned and operated stations took in $1 billion in profits between 1970 and 1983 with nearly 60% of those profits generated by the local *Eyewitness News* programs.

Not only did local television station owners earn tremendous profits, but also they could expect to retain a large amount of those profits. Downie and Kaiser (2002) offered a comparison between Ford Motor Company and the Tribune Company. The authors stated that while Ford might seek a profit of 5%, the Tribune Company would seek a profit of 30%. Roman (1996) stated that in the 1990s, news budgets at major market local stations reached as much as $40 million annually while revenues generated from the newscasts reached as much as $220 million annually. Some of those major market stations had an estimated worth of nearly $1 billion (Downie & Kaiser, 2002). Profitability examples such as these lead to a saying commonly heard in the broadcast industry that "…a broadcast license was a license to print money" (Goald, 1994, p. 1).

The cost of producing local television news also made news an attractive venture for local television station owners and managers. Local news did not cost as much to produce as other types of programming (Downie & Kaiser, 2002; Goald, 1994). Low production costs and high profit potential of local news encouraged many local station managers to add hour-long noon newscasts and expanded early evening newscasts in the 1980s (Bliss, 1991). In 1990, KCAL-TV in Los Angeles began producing five local newscasts each weekday (Roman, 1996). In the 2000s, some major market stations created four one-hour local news blocks in the late afternoon and early evening (Allen, 2001). When local stations convert to full digital, multi-signal transmission in the near future, many news directors expect local news will be one of the major sources of programming (Hickey, 2000). Local stations have dedicated a large amount of promotional efforts to these newscasts due to the importance of local news to the stations' image and budget, (Eastman, Ferguson & Klein, 2002; Goald, 1994).

Television News Technology

Technology is another aspect of the local television newsroom responsible for the growth of local television news in America. Television, along with local television news, has evolved with technology since its beginnings, and it continues to do so today (Roman, 1996). Early television news departments relied on 16 millimeter and even 35 millimeter film cameras to collect moving pictures from the field (Allen, 2001; Luff, 2001; Fox, 1997; Steinman, 2002). Later advances in videotape and Electronic News Gathering (ENG) equipment sped up the field production process. Electronic videotape editing systems improved the speed with which editors could make packaged stories ready for air (Allen, 2001; Goald, 1994; Luff, 2001; Rugg, 1980). Microwave and satellite transmission equipment allowed news teams to report live from news events at increasingly farther distances from the station location (Allen, 2001; Barkin, 2003; Bliss, 1991, Keirstead, 2005; Tuggle, 2001). Computers increased the speed of wire service browsing and script writing (Austerberry, 2006; Carr, 1990; Lambert, 1992). Computers also provided the hardware foundation for NLE systems (Austerberry, 2006; Goald, 1994; Goodman, 2001). Hard drive and optical disk ENG cameras have already come into use in some news departments, and videotape may soon become a relic of the past (Dickson, 2000; Kershbaumer, 2003; Rosado, 2005). History shows that technology and local television news have had a symbiotic relationship.

Era of Film. Technology has always imposed limits on both which stories local television news organizations could cover and how they could cover those stories (McManus, 1988). These limits were extremely restrictive for local television news organizations during the early years of the medium. Since film was the only means of

gathering moving pictures from a location outside of the studio, production techniques of the motion picture industry carried over into television news (Luff, 2001). In the 1950s, it took a crew of up to five people to shoot an on-location story for Chicago's WBBM-TV. This was because the station used standard motion picture industry 35 mm film cameras for local news gathering. Photographers at WCCO-TV in Minneapolis during the 1950s and 1960s adopted a strategy of using taxi cabs to shuttle film from remote locations back to the studio. This allowed editors to begin the film developing and editing process sooner than they could if they had to wait for the photographer to complete multiple assignments before returning (Fox, 1997; Neuzil & Nimer, 1997). Film would remain the industry standard for local and network news gathering into the 1970s (Allen, 2001; Steinman, 2002).

Emergence of Video ENG. The technological innovation that replaced film was videotape. Videotape first appeared on the television landscape in the mid-1950s. Quadraplex was the first generation of videotape widely used by television broadcasters. Quadraplex was a two-inch reel-to-reel tape format that required a 1,300 pound machine to operate (Goald, 1994). One of the first uses of this new format came during the inauguration of President Eisenhower on January 21, 1957. NBC and CBS used Ampex videotape machines to rebroadcast the ceremony in just minutes after it happened. Those who participated in the broadcast remember that the Ampex machine was approximately the size of an office desk and cost more than $45,000 (Edgerton & Rollins, 2001). Since videotape required no developing, it had a distinct advantage over film. However, since electronic videotape editing systems would not appear until the 1970s, editors had to cut and splice videotape in a fashion similar to film editing (Luff, 2001). WCCO-TV in

Minneapolis was one of the first local stations to invest in videotape technology. In 1958, the station purchased a black-and-white videotape machine for use in commercial production and in local news production. In 1964, WCCO improved its videotape technology by purchasing its first color videotape machine (Neuzil & Nimmer, 1997).

Advances in videotape technology during the late 1950s and into the 1960s led to smaller cassette packaged videotape formats and portable camera/recorder packages. This end result was electronic news gathering (ENG) which revolutionized local television news operations (Allen, 2001; Goald, 1994; Jacobs, 1990). The lineage of ENG includes several videotape formats. Helical scan formats began to replace the more expensive Quad format in the late 1970s. By the mid-1980s, the three-quarter inch U-matic format had become the industry standard for ENG. In 1981, Sony and JVC/Panasonic introduced the half-inch formats known as BetacamSP and M-II. Besides having a smaller tape than three-quarter inch equipment, BetacamSP and M II were true camcorders: camera and tape recorder were contained in the same unit. In the 1990s and 2000s, manufacturers began producing even smaller and more cost effective tape formats and camcorders such as S-VHS and Hi-8. While a Betacam camcorder would cost $45,000, broadcast quality S-VHS and Hi-8 units would cost as little as $10,000 (Goald, 1994).

Advances in the area of videotape editing also helped establish ENG in local television newsrooms. The development of cue tones first allowed electronic editing of videotape from one tape machine to another, but the edits were not precise. Precision improved with the advent of time code, which allowed for greater accuracy in frame-to-frame electronic edits (Luff, 2001).

In the early 1970s, a small group of CBS affiliates were the first to use ENG for daily news production (Allen, 2001). The CBS network had an interest in how ENG could enhance news coverage and enlisted several affiliates to test the new technology. In 1972, CBS affiliates WCAU-TV and KMOX-TV began using Phillips and Akai ENG cameras and equipment in the first of these experiments. CBS network engineer Joseph Flaherty monitored the ENG experiments. Flaherty eventually concluded that ENG could save American broadcasters $40 million annually since they could stop processing the 250 million feet of film their photographers shot each year (Allen, 2001). The cost effectiveness of videotape compared to film was a major factor in local station managers' decision to adopt ENG (Goald, 1994; Luff, 2002). ENG met with such success that by 1979, 83.3% of local television station news departments had adopted the technology (Rugg, 1980).

Lindekugel (1994) found that when ENG equipment began appearing in local newsrooms, some station managers thought they should hire employees with electronics experience to operate the new equipment. This apparently did not prove to be an accurate assumption. Lindekugel stated that photographers found ENG easier to use than film. With ENG, there was no need to take light readings and adjust shutter speed. Still some employees avoided ENG, stating that the electronic nature of it seemed too complicated for them. One of the few drawbacks to early ENG equipment was that it was somewhat cumbersome. The system consisted of a camera and a separate recording unit connected by a video and audio cable (Bliss, 1991; Lindekugel, 1994). Another criticism of ENG focused on the attributes that made it so initially appealing to local television news managers-- faster gathering and editing of pictures. Network news executive Reuven

Frank accused ENG of diminishing the power of pictures through repetitive use of file video (Frank, 2004).

Live Coverage. Another example of technology shaping local television news is the ability to broadcast events as they happen from a remote location. Some stations developed their own versions of portable microwave transmitting units early on. When the *New York Daily News* signed on independent station WPIX-TV in 1948, a homemade version of the modern microwave live truck was one weapon in its news arsenal (Allen, 2001). Philadelphia's WFIL-TV and Chicago's WBKB-TV also provided live broadcasts of major fires in 1948 (MacDonald, 1990). Allen (2001) credited KTLA-TV engineer Klaus Landsberg as the inventor of the first "truly mobile live transmitters" (p. 8). KTLA used one of Landsberg's mobile transmitters to cover an event that some have called a defining moment in local television news history. In April 1949, KTLA and KTTV-TV produced the first continuous live coverage of a breaking news event in American television history. The event involved a three-year-old girl named Kathy Fiscus, who had fallen down a well while playing in a field near Los Angeles, California. KTLA covered the rescue attempts for 25 hours while KTTV's coverage lasted 27 hours (Allen, 2001). A *Variety* article from 1949 called KTLA's coverage "…the greatest broadcast for the development, progress, and advancement of television" (MacDonald, 1990, p. 47). The Fiscus broadcasts "broke the mold" of early television news and foreshadowed what news would become in later years (Williams, 1997, p. 334).

Beginning in the mid-1970s, satellite news gathering (SNG) technology greatly expanded the live capabilities of local television news departments. Depending on the type of equipment involved, vehicles equipped with live technology can cost between

$250,000 and $500,000 (Goald, 1994; Seib, 2001). The first use of SNG by local television news departments covering an event happened during the kidnapping and trial of Patty Hearst in the early 1970s (Allen, 2001). The ability to transmit audio and video by satellite meant local reporters could report live from almost anywhere in the world (Goald, 1994; Jacobs, 1990). In time, local television news viewers could reasonably expect to see their familiar local reporters and anchors reporting live from the same national and international stories covered by network news (Barkin, 2003; Bliss, 1991).

Live remote technology has become standard equipment in nearly all of the 212 television markets in the United States (Tuggle, 2001). Microwave units allow reporters to cover live events up to 40 miles away from the station, while SNG equipment extends that reach to a global scale (Keirstead, 2005). In a survey of 24 television news departments in small, medium, and large television markets, Tuggle (2001) found stations aired more live shots than taped reporter packages. Tuggle's study showed the stations surveyed aired live shots 42% more often than they aired taped packages. Some news directors have said they feel pressure to use live shots to show station management that they are making use of live equipment, which costs the station a significant amount of money to purchase and maintain (Weaver & Wilhoit, 1991). Local news directors have reported that they feel pressured by upper management and news consultants to use live technology more often in their newscasts (Jacobs, 1990; Tuggle & Huffman, 1999).

Computers and Nonlinear Editing. As live technology gained a foothold in local television newsrooms during the 1980s, another revolutionary technology arrived: the computer. Kerschbaumer (2004) has argued that computer technology has impacted the newsroom more than any other division of the modern television station. Carr (1990)

studied what advantages computers could provide newsroom personnel. Carr found that less than 25% of local newsrooms in the United States had adopted computers between 1980 and 1989. This was despite the fact that computers offered several advantages including (a) the ability to capture wire service stories, (b) the ability to compose and rewrite scripts, (c) the ability to create lineups listing the order in which stories will air, and (d) the ability to control videotape playback all from a single computer terminal. Carr found that newsroom managers would adopt computers only when the budget allowed or only when the lack of computers became a competitive disadvantage.

Computer technology has advanced significantly since Carr's study in the late 1980s. Software designers have developed specific software packages for television newsroom use. These programs allow producers and editors to handle breaking news more easily. Programs now exist that allow producers to insert new stories while the newscast is taking place. The software can send the story for that new script to the teleprompter once it is entered, and the software can also adjust the timing in the rundown to keep the newscast on time (Lambert, 1992).

The presence of a growing number of computers in local television newsrooms led to the next major technology shift in television news production called nonlinear editing. Austerberry (2006) has called the move from tape-to-tape editing systems to NLE systems a "quantum shift" in the broadcast industry (p. 10). Goald (1994) made the claim that NLE would forever change the way video is collected and processed in the newsroom much like the transition from film to ENG in the 1970s. Shook (2005) found that NLE was an offshoot of a film editing technique called double-system film editing. Double-system film editing allowed editors to take two or more reels of film and audio

track and combine them in an unlimited number of sequences. Computers allowed the video editor to perform the same function via digital video files. The editor could upload video into the computer where it becomes a series of digital video files. The editor could then select any of the files and begin placing them in the order the script called for. If the script changed during the editing process, the editor could rearrange the video files quickly to make the video match the new script. The editor could also selectively change video scenes in the project without having to edit the entire project over again (Lindekugel, 1994). This ability to manipulate audio and video at any point during the editing process is not possible with linear editing systems that had commonly been used in electronic news gathering. Linear editing systems use electronic pulses to transfer video and audio from one video tape recorder to another video tape recorder. As the name suggests, this is done in a sequential, or linear, fashion. Linear editing does not allow the editor to change a video clip or audio in the middle of the sequence without having to change every piece of video and audio following that sequence (Goald, 1994; Lindekugel, 1994; Shook, 2005).

A company called Montage first developed NLE in the early 1980s (Goodman, 2001). The technology did not appear in a package conducive for commercial use until 1989 when Avid unveiled its first generation system called Avid/1 (Avid, 2006). As of 2006, there are several nonlinear editing packages available to local television newsrooms. Some of the more notable systems include Apple Computer's Final Cut Pro Series, Avid Technology's NewsCutter Family, Canopus's EDIUS systems, Leitch Technology's Velocity systems, and Quantel's Newsbox and sQ systems, all of which

were featured at the 2005 Radio Television News Directors Association convention (Apple, 2006; Avid, 2006; Canopus, 2006; Leitch, 2006; Quantel, 2006; Martin, 2005).

Implementing Nonlinear Editing. Nonlinear editing is one of several digital technology advances that broadcasters have accepted and recognized as being better in performance and cheaper to operate than tape based systems (Austerberry, 2005). Operational costs are the primary concern for broadcast managers considering NLE system upgrades (Turner, 2002). In making these technology transitions, some managers seek to test the new technology on a trial basis or observe its use at other facilities. This ability to test or phase-in a new technology may help news executives make the decision to adopt by letting them make a transition gradually instead of putting off that transition until it can be done all at once (Dickson, 1998). The rapid pace of technology change and tighter newsroom budgets have left engineers with three choices: (a) buy replacement parts well in advance of the equipment failure, (b) wait until the equipment becomes obsolete and then stock up on parts, or (c) wait until the equipment fails and replace it then. Goald (1994) found many broadcast engineers exercised the latter option due to financial constraints.

Turner (2002) interviewed several reporters and photographers who had used laptop computers equipped with NLE software in the field. He also interviewed the supervisors of those reporter/photographer teams. The field crews listed several characteristics they appreciated such as the equipment's light weight and the ability to run other programs such as word processing and e-mail on the laptops. Managers appreciated the low cost of the laptops and the minimal training it took to make crews proficient in using the units.

As of 2002, estimates of the NLE adoption rate from industry analysts range widely between 10% and 50% (Turner, 2002). Turner suggested many of the decision-makers involved in the NLE adoption process had little understanding of what the technology is and how it operated. Some news managers told Turner they did not know that "direct-to-the-timeline" editing options were available (p. 34).

Downie and Kaiser (2002) found the cost of new technology had a significant effect on adoption since adding new technology in the news department ate into the profits of station owners. Goald (1994) stated local television station managers cannot avoid changes in technology. Station managers must maintain at least a minimum level of adequate technology, and that requires a certain financial commitment. Goald stated, "Every consideration and strategy concerned with technology must originate from one basic tenet: All equipment will eventually fail or become obsolete" (p. 50). To that point, a Cox Communications executive examining NLE systems at the 2003 National Association of Broadcasters convention said, "We're tired of buying tape machines and maintaining them" (Kerschbaumer, 2003, p. 26).

Changes in television station ownership rules may have an impact on how and when stations adopt new technology such as NLE. The number of stations held by individual ownership groups has changed significantly since the FCC first implemented ownership restrictions in the 1950s. In 1954, the FCC created the "Seven Station Rule." This rule prevented any broadcast ownership group from owning "…more than seven AM radio stations, seven FM radio stations and seven television stations…" (Einstein, 2004, p. 17). In the late 1980s, the FCC loosened the television station ownership restrictions allowing a single owner to hold up to 12 stations. Via the

Telecommunications Act of 1996, Congress further relaxed ownership restrictions and directed the F.C.C. to undertake periodic reviews of the remaining restrictions imposed by regulation. However, in 2004 an appeals court decision prevented the F.C.C. from implementing regulations that further relaxed ownership rules, and the U.S. Supreme Court refused to review the lower court decision. As of 2007, the F.C.C. is in the process of reviewing its ownership rules in light of the Prometheus v. F.C.C. decision (Einstein, 2004; fcc.gov; Nolter, 2006). The example cited by Kerschbaumer (2003) suggests technology decisions may be made at the corporate level and passed down to individual stations in the group.

The literature indicates adoption of new technology in local newsrooms can also alter job duties and can affect staffing levels. The conversion to NLE at San Francisco's KGO-TV led to changes in job duties and some job losses in the news department. After the conversion, writers and producers began to get involved in the video editing process for the first time. The writers and producers primarily edited simple B-roll projects while the editors continued to put together long form pieces such as packages. KGO had 20 editors before the conversion to NLE, but after the conversion, station managers planned to cut the number of editors down to 12 (Maar, 1998). Nonlinear editing technology was a major element in a project aimed at producing more stories with fewer personnel at San Francisco's KRON-TV. The station created a video journalist (VJ) position. This single reporter served as photographer, reporter, writer, and editor. All of the VJ's equipment -- camera, tripod, small light kit, wireless microphone, and a laptop with NLE software -- could be contained in a backpack. The VJs reportedly were able to produce more stories

than traditional reporter/photographer teams since they could shoot and edit all of their stories in the field (*Reporter in a Backpack,* 2006).

The competitive nature of local television news and the 24-hour news cycle of the modern newsroom have necessitated improved technologies like NLE (Dwyer, 2003). Nonlinear editing has increased the number of stories produced inside the station for local newscasts. Several news department managers have claimed their personnel edit 75 to 100 stories on any given day using NLE systems. The number of stories produced daily in local newsrooms will likely increase when local television stations begin multi-channel digital broadcasting. Local news will likely become news on demand, necessitating around-the-clock updating of stories and video material (Hickey, 2000). News directors are aware of criticism that expanded newscasts have led to repetitious file video use. Some news directors blame this on the nature of linear editing and the time it takes to create new video stories using the linear process. Quite simply, editors are tempted to reuse video that is already edited than they are to edit a new set of sequences from scratch. Those news directors claim NLE's time saving abilities could help eliminate this problem (Silberg, 2004).

Beyond Nonlinear

Nonlinear editing systems appear to be forming a platform from which new news gathering technologies are emerging. Among these are video servers and tapeless cameras (Kerschbaumer, 2003; Dwyer, 2003). As of 2005, Avid, Grass Valley, Leitch, Pinnacle, and Quantel all offered computer units that double as nonlinear editing systems and video playback servers. These units could import video, edit that video, and play that video back to air (Neugeboren, 2005). Some local television news departments had

already begun using cameras that do not require videotape. These cameras are essentially a computer with a lens attached. They "record" video either onto Flash memory cards or optical disks similar to DVDs (Kershbaumer, 2003; Kershbaumer, 2005). In 2000, WTVJ-TV in Miami moved into new facilities with disk-based cameras and server technology. Everything the station airs comes from servers instead of videotape (Dickson, 2000). In 2004, KFMB-TV replaced all of its 21 Beta camcorders with Sony PDW-510 XD camcorders. Managers said the optical disk cameras worked well with their Grass Valley Vibrant editing systems (Careless, 2005). In 2000, the Media General Broadcast Group completed purchases of DVC P2 memory card cameras for all 19 of its stations with news departments. Managers claimed the tapeless cameras reduced camera maintenance costs (Careless, 2005). Eliminating the need for videotape could save news directors $5,000 per camera annually (Rosado, 2005).

The direction of nonlinear editing and nonlinear news gathering technology is toward systems that allow reporters and producers to edit video and write scripts at the same computer terminal. Dickson (1996) called this the "holy grail" of newsroom technology (p. 72). Avid and Newstar began testing such editing/writing systems in 1996. Avid's iNews and Associated Press' Electronic News Production System have achieved this goal thanks to the Media Object Server (MOS). The MOS interface links video servers with the individual script writing work stations to create the harmonious relationship of script writing and video editing from a single work station (Dickson, 2000).

The literature suggests local television news in the United States plays an important role in the lives of citizens and the economy. Local television news has

become a major source of news and information for individuals. Advertising revenues generated by local television news have become a significant part of the economy in the areas that those stations serve. The history of local television news in the United States shows that technological advancements have significantly impacted the news gathering process. Those technological advancements have also had a significant impact on the news and information product delivered to viewers. Some of those technological advancements, like ENG, had a rapid diffusion rate. Others, like newsroom computer systems, had a slower diffusion rate. The literature also suggests that NLE systems are dramatically changing the working environment of the local television newsroom in the United States. Nonlinear editing has provided a foundation on which product developers are building the next generation of news gathering technology. For these reasons, the diffusion of nonlinear editing systems in local television stations in the United States is an issue worthy of academic study.

Diffusion Theory

Diffusion theory provides an appropriate framework through which to examine the adoption of nonlinear editing systems by local television news departments in the United States. For nearly a century, researchers have used diffusion theory in numerous academic disciplines, including the communication field (Rogers & Shoemaker, 1971). Diffusion theory has often been employed in research focusing on technological innovations (Rogers, 1983; Mansfield, 1968). Diffusion theory seeks to identify the factors that encourage or inhibit the spread of a technology, idea, or practice among members of a social group over a period of time (Rogers, 1983). Rogers's (1983) oft-cited work, *Diffusion of Innovations,* offers the following definitions for diffusion and

innovations. Diffusion is defined as "…the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). An innovation is defined as "…an idea, practice or object that is perceived as new by an individual or other unit of adoption" (p. 11). Rogers suggested that it does not matter if "newness" can be proven by an objective measure of time between the discovery of the innovation and its first use. It only matters that the user perceives the innovation as new (p. 11).

Diffusion theory traces its roots back to the early 20th century and the work of a French judge named Gabriel Tarde (Rogers, 1983). At the turn of the century, Tarde became interested in what he termed "the laws of imitation" (Tarde, 1962, p. 140). He wanted to know why hundreds of inventions might come to the knowledge of the public, but only a handful of those inventions would ever become accepted and widely used. To this end, he identified the decision to adopt or reject an innovation as the primary research focus. Tarde recognized the S-shaped curve that tracks adoption rate over time. He further recognized that the up-turn in the diffusion curve happened when opinion leaders accepted the innovation and began using it. Tarde found that members of a society are more likely to adopt innovations which closely resemble previously accepted ideas than innovations which people view as radical (Tarde, 1962). Tarde's early observations would provide the foundation for many diffusion studies that would follow (Rogers, 1983; Rogers & Shoemaker, 1971).

Foundations of Diffusion Theory. Perhaps no diffusion study has received more notice and acclaim than the 1943 hybrid seed corn study of Bruce Ryan and Neil Gross.

Ryan and Gross sought to document the adoption rate of a particular type of hybrid corn grown by Iowa farmers. They also wanted to know what factors influenced individual farmers to adopt the hybrid variety. Researchers at Iowa State University developed the hybrid corn and released it to farmers in 1928. The hybrid's advantage was that it produced higher yield per acre, and it was more resistant to disease. The hybrid's disadvantage was that it would not pollinate on its own, thus farmers would have to purchase new seed and replant the crops annually. In 1941, Ryan and Gross interviewed 323 farmers in Grand Junction, Iowa, and Scranton, Iowa, about their use of the hybrid corn. Their questions focused on whether or not individual farmers had adopted the hybrid, when they adopted it (if at all), and what influenced their decision to adopt (if they chose to adopt) (Ryan & Gross, 1943).

The results showed that in the 13 years since the farmers first had access to the hybrid, all but two had adopted it. During the first 10 years farmers had knowledge of the hybrid, 40% chose to adopt it. This study of adoption rate over time followed the S-curve originally proposed by Tarde, which has become a standard feature of diffusion studies. Ryan and Gross also found that farmers who adopted the hybrid early cited the salesman as the most important channel of persuasion. Farmers who adopted later cited friends as the most important channel of persuasion (Ryan & Gross, 1943).

The Ryan and Gross study helped to establish innovator categories that subsequent studies have supported and have further defined. Those adopter categories include (a) *innovators*, (b) *early adopters*, (c) *early majority*, (d) *late majority*, and (e) *laggards* (Rogers, 1983). *Innovators* are venturesome and willing to experiment with new ideas. They are the first to adopt innovations despite the innovations' possible risks.

Often the innovator's interest in new ideas places him or her outside of peer networks. *Early adopters* are more tightly coupled to their peer network. They are also usually viewed as opinion leaders by other members of that network. Early adopters apply more caution to adoption decisions than innovators, but the early adopter's adoption decision will more likely influence other members of their social group. Members of the early majority are also tightly coupled to the peer network, but they seldom hold positions of leadership. *Early majority* members take longer to make an adoption decision and may consult an early adopter before making that decision. *Late majority* members make their adoption decisions slightly later than other members of the group. Late majority members harbor suspicions about the innovation, and they may require persuasion to make an adoption decision. They also make an adoption decision in response to social or economic pressures. *Laggards* are the last members of the group to make an adoption decision. Laggards are often loners in the social group, and they may be limited economically. Laggards may base current innovation decisions on innovation decisions made by past generations (Rogers, 1983).

Rogers and Shoemaker (1971) explained the statistical process used to establish these adopter categories. First, the researcher must establish the mean of the sample. Next, the researcher must calculate the standard deviation for the sample. Innovators lie farthest left of the mean, making up the first 2.5% of the sample. The innovator group is calculated by subtracting two standard deviations from the mean. The next group is the early adopter group. This group makes up the next 13.5% of the sample between the mean minus two standard deviations and the mean minus one standard deviation. The early majority makes up the final group left of the mean. Early majority members make

up 34% of the sample from the mean minus one standard deviation to the mean itself. The late majority is the first group to the right of the mean. The late majority, like the early majority, makes up 34% of the sample from the mean to the mean plus one standard deviation. The final group is the laggards. This group includes the remaining 16% of the sample, which includes anything greater than the mean plus one standard deviation. Rogers and Shoemaker (1971) noted that the dispersion of these groups along a bell curve is asymmetrical.

Lionberger (1960) identified the five-step adoption decision process including (a) *awareness*, (b) *interest*, (c) *evaluation*, (d) *trial*, and (e) *adoption*. *Awareness* is the first knowledge a person has about the new technology. *Interest* comes when a person begins actively gathering information about the new technology to learn whether or not it will be a benefit. *Evaluation* begins when a person begins studying the collected information to decide if the new technology will be helpful. *Trial* is the actual first use of the new technology in an effort to see how and if it will fit into the current operating environment. *Adoption* is the complete acceptance and integration of the new technology.

Diffusion Theory Research within Organizations. Other researchers have approached diffusion from a different direction, focusing not on individual innovators, but on the innovation itself and diffusion effects in organizations. Attewell (1996) explained the two major traditions in diffusion research: the focus on the flow of communication noted by Rogers and the cost function noted by Edwin Mansfield. The communication tradition highlights the influences of well-connected, well-informed innovators who pass information on to others, thereby influencing the rate of adoption. The economic or cost function tradition asserts that low cost innovations will spread

faster than higher cost innovations. Of these two traditions, the communication tradition has dominated the diffusion field (Rogers, 1983). Brown (1981) stated that because social scientists have traditionally viewed diffusion research as an "individual choice," most research has focused on the role of communication channels, social networks, and demographics (p. 50). However, Attewell (1996) makes an argument for expanding ideas about diffusion research because sometimes technology is so complex it cannot be understood or evaluated properly by just one person. Organizations can also be so large that no one person has individual decision-making power.

Some diffusion studies in the economic tradition have questioned the focus on communication channels in diffusion research. Equilibrium models of diffusion rooted in the economic tradition do this to varying degrees. Grubler (c.b. Ruttan, 2003) stated that equilibrium models define diffusion as shifting equilibrium levels expressed in fluctuating economic conditions such as costs or prices and fluctuating economic environments such as the current market structure. In the equilibrium model, "diffusion is seen not so much as a learning phenomenon, but as a result of the interaction of changes in the innovation and adoption environment (i.e., the interaction between suppliers and customers of an innovation)" (p. 26). Ruttan (2003) also noted the more extreme treatment of communication channels expressed by Lissoni and Metcalfe and Chari and Hopenhayn:

> The more radical applications of the equilibrium approach completely abandon the communication model. Diffusion takes time not because information is imperfect (or because contigation takes time) but because the new technology is initially not superior to existing technology for

> some potential adopters or uses. A second departure is that firms are assumed to behave optimally. Thus firms that have not adopted are not interpreted as ill informed or behaving irrationally but as simply waiting for the optimal timing for adoption (p. 187).

Approaching diffusion from an economic perspective, Mansfield (1968) identifies four factors that determine the rate of innovation diffusion in organizations: (a) the extent to which the innovation offers an economic advantage compared to the older technology it replaces, (b) the amount of uncertainty involved with a decision to adopt the innovation, (c) the level of commitment required to use the innovation on a trial basis, and (d) the rate at which initial uncertainty about the innovation can be reduced.

Mansfield (1968) reduced the innovation decision process to a lowest common denominator known as the cost function. Here organizations viewed an innovation in terms of its potential economic risks versus its potential economic benefits:

> If the expected returns from the introduction of the innovation do not exceed those obtainable from other investments by an amount that is large enough to justify the extra risks, the innovation should be rejected. If they do exceed those obtainable elsewhere by this amount, the profitability and risks involved in introducing the innovation at present must be compared with the profitability and risks involved in introducing it at various future dates (p. 105).

When examining diffusion in organizations, Rogers and Shoemaker (1971) stated that authority innovation-decisions were the most common type of innovation decision made in organizations such as large businesses. Rogers and Shoemaker defined authority

innovation-decisions as decisions "…forced upon an individual by someone in a superordinate power position" (p. 301). Distinguishing characteristics of authority innovation-decisions include (a) individuals have no choice regarding the adoption or rejection of the innovation, (b) the decision to adopt and the subsequent implementation of the innovation are the responsibilities of two separate groups or individuals, (c) the decision-making group holds an authority position over the adoption group, (d) since the decision-making group has authority over the adoption group, the decision-making group can force the adoption group to accept the innovation, and (e) authority innovation decisions are more common in formal organizations than in informal groups or informal social networks (Rogers & Shoemaker, 1971).

Rogers and Shoemaker (1971) also identified two stages in the authority innovation-decision process: the decision-making phase and the decision-implementation phase. The decision-making phase includes three steps: (a) the decision-making group must recognize a need for change and gain knowledge about the innovation, (b) the decision-making group must evaluate the innovation, and (c) the decision-making group must adopt or reject the innovation.

The knowledge function may have its roots in either the decision-making group or the adoption group. If employees (adoption group) bring knowledge of the innovation to management (decision-making group), this is known as the "upward flow of innovation" (Rogers & Shoemaker, 1971, p. 306). The persuasion function involves information seeking on the part of the decision-making group. Considerations in the persuasion function include (a) costs of adopting the innovation, (b) the feasibility of innovation, and (c) contingency plans that should be made concerning adoption. The decision function is

the point at which the decision-making group decides to either adopt or reject the innovation. Rogers and Shoemaker stated that a critical element of this function is how much, if any, input the adoption group has in the decision-making process. The adoption group's attitude toward the innovation and their satisfaction with the adoption decision are important dependent variables. Employees who hold poor attitudes toward the adoption decision may only go along with the decision begrudgingly, which may lead to problems in the organization (Rogers & Shoemaker, 1971).

If the decision-making group decides to adopt, the next step is implementation of the innovation. This involves two steps: (a) the decision-making group must inform the adoption group of the decision to adopt the innovation and (b) the adoption group must take action to implement the innovation. Rogers and Shoemaker (1971) noted that these functions are not mutually exclusive, and they do not always happen in the exact order listed. The communication function involves the decision-making group informing the adoption group that a decision to adopt has been made. This is known as the "downward flow of communication" (Rogers & Shoemaker, 1971, p. 309). The action function involves the implementation of the innovation. At this point, the organization will finally realize the benefits or adverse consequences of the decision to adopt the innovation (Rogers & Shoemaker).

An alternative to the authority innovation-decision is the collective innovation-decision. In a collective innovation-decision, all members of the group have an opinion which must be considered before making an adoption decision. Collective-innovation decisions may be more resistant to change because changing the decision would require

agreement by all members of the group. For these reasons, authority innovation-decisions are most common in industry (Rogers & Shoemaker).

Rogers (1983) and Rogers and Shoemaker (1971) stated that perceptions of an innovation's characteristics could help to explain the adoption rate of that innovation. Those innovation characteristics include (a) *relative advantage*, (b) *compatibility*, (c) *complexity*, (d) *trialability*, and (e) *observability*. *Relative advantage* is the way in which a potential adopter views the innovation as being better than the technology it will replace. It does not matter whether or not the innovation can be proven to provide any of these relative advantages. It only matters that the user perceives such a benefit coming from adoption of the innovation. Rogers and Shoemaker (1971) stated that relative advantage accounts for between 49 and 87 percent of the variance in adoption rate. *Compatibility* is the way in which a potential adopter views the innovation as being compatible with older technology, existing social norms, and the current needs of the organization or individual. If an innovation is not compatible with the existing norms of a group, the innovation will likely not be adopted (Rogers & Shoemaker, 1971). *Complexity* is the way in which a potential adopter views the innovation as being simple or difficult to understand. Innovations that do not require the potential adopter to gain special knowledge or more education before adoption are more likely to be adopted (Rogers & Shoemaker, 1971). *Trialability* is the way in which a potential adopter may experiment with or test the innovation before deciding to adopt or reject the innovation. Innovations that can be tested by potential adopters on a trial basis are more likely to be adopted than innovations that require immediate and wholesale adoption (Rogers & Shoemaker, 1971). *Observability* is the way in which a potential adopter may observe

and evaluate the effects of an innovation. If the potential adopter can see results of the use of an innovation, the potential adopter is more likely to adopt. This characteristic is sometimes referred to as divisibility (Rogers & Shoemaker, 1971). Other variables that help to explain the adoption rate are (a) the type of decision making process employed (i.e. authority innovation decision, collective innovation decision, or individual choice), (b) the type of communication channels used to gain information about the innovation, (c) the type of social system the potential adopter operates in, and (d) the degree to which change agents have been involved in promoting the innovation (Rogers, 1983). Rogers (1983) stated that the type of innovation-decision employed affects the speed of adoption. The fewer individuals involved in making the decision to adopt, the faster that decision will be made. The channels of communication used to spread information about an innovation can affect the speed of adoption. Rogers stated that reliance on interpersonal communication channels may slow the diffusion process. Ryan and Gross (1943) found this to be the case with laggards. The nature of the social system can also have an effect on the speed of adoption. One must consider the norms of the social system in which the potential adopter operates. Rogers (1983) stated it is important to note whether members of the social system are tightly coupled or loosely coupled. The efforts of change agents can also affect the speed of adoption. Rogers found that measuring the effects of change agents can be difficult because the results of those efforts may not be immediately obvious. Change agents usually have the most impact on adoption decisions when between 3% and 16% of the population is in the process of adopting. This is when the opinion leaders of the group have decided to adopt and when their decisions are most likely to influence others.

Rogers (1983) and Rogers and Shoemaker (1971) stated that little research has been done on the properties, or perceived attributes, of innovations which might help explain the adoption rate. The authors suggested that studies of this type might help change agents craft their messages more effectively, and such studies might help businesses better predict the diffusion rate of specific innovations. The authors also suggested that factor analysis of the five innovation characteristics (relative advantage, compatibility, complexity, trialability, and observability) could help identify which of the five is most relevant.

Use of Diffusion Theory

Diffusion theory has a rich history that has crossed into many disciplines. Anthropologists have used diffusion theory to study the transfer of technologies between societies. One of the earliest examples of diffusion study in anthropology was Wissler's (1914) study of the diffusion rate for horses among various Native American tribes. Sociologists have also applied diffusion theory in the study of technology transfer. Bower's (1937) study on the diffusion of amateur radio equipment was one of the first diffusion studies to use survey research. Rural sociologists have employed diffusion theory to examine the adoption of new farming technologies and practices (Ryan & Gross, 1943; Lionberger, 1960; Lionberger & Hastings, 1954). Education researchers have used diffusion theory to examine the adoption of new teaching techniques (Carlson, 1965). Geographers have used diffusion theory to examine the effects of spatial separation on the adoption of new technologies (Hagerstrand, 1967). Marketing researchers have used diffusion theory to examine why consumers accept and purchase some products, but reject other products (Fourt & Woodlock, 1960).

Public Health and Medical Sociology

Researchers have used diffusion theory to examine advances in medical technology. Coleman, Katz and Menzel (1966) applied diffusion theory to prescription drug practices among physicians. Rogers (1983) lists this study second to Ryan and Gross (1943) in its importance to the body of knowledge in diffusion theory. Coleman, Katz, and Menzel (1966) helped explain the up-turn in the S-curve as the point at which most opinion leaders had adopted and had begun to encourage their friends to do the same. Other diffusion studies in the public health and medical tradition have examined (a) the diffusion of information regarding condom use to protect against sexually transmitted diseases in under-developed countries (Ssali, Butler, & Kabatesi,, et. al., 2005), (b) educational programs designed to improve the professional practices of nurses (Shirey, 2006), and (c) the diffusion of medical technology within the medical community (Hashimoto, Noguchi, & Heidenreich, et. al., 2006).

Use of Diffusion Theory in Mass Communication

Mass communication researchers have employed diffusion theory in numerous studies over the years. These studies have mainly focused on the diffusion of communication technologies and the use of mass media in the diffusion of technological knowledge and information. Greenberg (1964) examined the diffusion of information through the news media following the assassination of President John F. Kennedy. Greenberg found that the diffusion of news follows the same S-curve as the diffusion of technology. The study also found that news has a much faster diffusion rate than other types of messages. Greenberg (1964) found that less than 30 minutes after Kennedy's assassination, nearly 70% of America's adults had learned of the event.

Schuster, Valente, Skara, et. al. (2006) used diffusion theory to study the effect anti-tobacco advertising had on opinion leaders in several California communities. The researchers decided to study opinion leaders because the literature has established the influence opinion leaders have on the adoption decisions of others in their social groups (Carlson,1965; Coleman, Katz and Menzel,1966). Schuster, Valente, and Skara (2006) were able to categorize opinion leaders by the four stages of the innovation decision process identified by Rogers (1983): (a) knowledge, (b) persuasion, (c) implementation, and (d) confirmation. Schuster, Valente, and Skara found that while media ads may have increased knowledge, inter-personal discussions played a more important role in getting a person to act on those messages.

Other studies have examined communications technology such as e-mail. Sung (1995) studied factors that influence the adoption of e-mail by individuals in a business environment. The application of diffusion theory showed that the perception of relative advantage was the most significant predictor of e-mail adoption. Llie, Van Slyke, Green, and Lou (2005) studied whether gender differences had an effect on the adoption of communication technologies such as e-mail, instant messaging, and the internet. The study applied diffusion theory, and the researchers found perceptions of relative advantage differed between male and female subjects.

DeFleur and Davenport (1994) compared the diffusion rate of computer-assisted reporting practices in the newspaper industry with the diffusion rate of computer-assisted reporting education in U.S. universities. The specific computer-assisted reporting practices studied were the use of computers to access public records and the use of computers to analyze government documents. DeFleur and Davenport used diffusion

theory to identify the location of each entity along the adoption curve. The study found a greater number of newsrooms had adopted computer-assisted reporting practices than had universities. The universities were still in the *innovator* (accessing public records) and *early adopter* (analyzing government records) stages, while newsrooms had progressed to the *late majority* (accessing public records) and *early majority* (analyzing government records) stages.

The first study to apply diffusion theory to adoption of technology in the local television news room was conducted by Carr (1990). Carr conducted a study of the diffusion of computers in local television newsrooms following the diffusion theory course of study suggested by Rogers and Shoemaker. Carr (1990) sought to answer the question "…why have some stations adopted computers and swear by them and other stations avoided adoption or swear at them?" (p. 23). Carr surveyed 64 news directors in the top 139 U.S. television markets. Carr used diffusion theory to determine if early adopters had different perceptions of newsroom computers than late adopters. The study applied diffusion theory in an attempt to identify the relative contribution of five variables (perceived attributes, decision-making process employed, communication channels used, nature of social system, efforts of change agents) on the rate of newsroom computer adoption. Carr's study also attempted to determine if the perceived attributes variable made the greatest contribution to the rate of adoption for newsroom computers. Carr found that perceived attributes of newsroom computers made the greatest contribution to the adoption decision. Carr's research showed that while almost everyone in the television industry knew about computers by 1990, less than 25% of local television station newsrooms had adopted computers. This contradicted Rogers's

assertion that once awareness exceeds 30% the adoption rate will significantly increase (1983). Carr determined that despite industry-wide awareness of newsroom computers, newsroom managers would only adopt computers in two instances: (a) when the newsroom budget provided enough money to buy computers or (b) when the absence of computers put the newsroom at a competitive disadvantage. This supports Mansfield's (1968) economic tradition assertion that in organizations, clear economic benefits of new technology and the ability to test new technology prior to purchasing it positively influence the adoption decision.

Summary

The literature shows that diffusion theory is a useful theoretical framework through which to study the adoption process of nonlinear editing systems in local television newsrooms in the United States. Diffusion theory has established adopter categories which help to explain the adoption decision process (Ryan & Gross, 1943; Rogers, 1983). Application of diffusion theory to the study of NLE could help identify the location of individual local stations along the adoption curve in regard to NLE. Such a study could also help identify differences between early adopters and late adopters in their perceptions of NLE. Rogers (1983) and Rogers and Shoemaker (1971) detailed the perceived attributes of an innovation which affect the adoption decision: (a) relative advantage, (b) compatibility, (c) complexity, (d) trialability, and (e) observability. Rogers (1983) also explained four other variables that influence the adoption decision: (a) the type of decision-making process employed, (b) the type of communication channels used to gain information about the innovation, (c) the type of social system the potential adopter operates in, and (d) the degree to which change agents have been

involved in promoting the innovation. Carr (1990) found that examination of these attributes and variables were helpful in understanding the diffusion process of newsroom computers. An examination of these attributes and variables can also be used in the study of influences on the adoption process for NLE. Rogers (1983) and Rogers and Shoemaker (1971) have identified the need for more studies that focus on the perceived attributes of innovations which help to explain the adoption process. A study of the characteristics of NLE systems would help to fill these gaps in the literature. Mansfield (1968) outlined the four economic tradition factors which affect an organization's adoption decision: (a) the extent to which the innovation offers an economic advantage compared to the older technology it replaces, (b) the amount of uncertainty involved with a decision to adopt the innovation, (c) the level of commitment required to use the innovation on a trial basis, and (d) the rate at which initial uncertainty about the innovation can be reduced. Carr found evidence that these economic factors may play a critical role in the adoption process for local television station managers. These factors may prove more critical in the early 2000s as local station managers find themselves facing the approaching deadline for digital signal conversion. Local station managers may face a capital expenditure decision that weighs NLE adoption versus the impending mandate of digital compliance. Thus, the literature shows diffusion theory is an appropriate theory to apply to the study of NLE in local television newsrooms, and such a study could add significantly to the body of knowledge concerning the adoption of television newsroom technology.

Hypotheses and Research Questions

The literature shows technology has played an important role in the development of local television news. The literature also shows diffusion theory is an appropriate theoretical framework through which to examine the adoption of new technologies. Thus, diffusion theory is appropriate for the research questions and hypotheses offered in this study of nonlinear editing systems in local television newsrooms in the United States.

The first research question will explore adoption of nonlinear editing within local television newsrooms. The literature has indicated that adopters can be classified along the asymmetrical adoption curve according to the date of adoption. This classification may help identify adoption trends, such as the possibility that large market stations will adopt NLE before small market stations. Classification will also allow the researcher to conduct statistical tests associated with other research questions and hypotheses. Thus, the first research question deals with this issue.

RQ1: How can respondents be classified as to their implementation of NLE (innovator, early adopter, early majority, late majority, laggard)?

The second research question seeks to identify the extent to which five communication tradition variables influence the adoption of NLE.

RQ2: To what extent do the adoption variables perceived attributes, decision-making process employed, communication channels used, nature of social system, and efforts of change agents influence the adoption of nonlinear editing in local television newsrooms.

The third research questions seeks to identify the extent to which four economic tradition variables influence the adoption of NLE.

RQ3: To what extent do the adoption variables economic advantage, amount of uncertainty, level of commitment required for trial usage, and rate of reducing uncertainty influence the adoption of nonlinear editing in local television newsrooms.

The literature has indicated that early and late adopters have different perceptions of innovations. Early adopters generally view new technology as something that could be beneficial, while late adopters view new technology with more suspicion. Early adopters are more willing to accept the risk involved with adopting new technology, while late adopters will wait to see how others achieve success or failure with the new technology before making an adoption decision (Rogers, 1983; Ryan & Gross, 1943). Therefore, it is suggested that news directors who adopted nonlinear editing soon after it first became available will have a different perception of nonlinear editing than news directors who waited several years to make the decision to adopt.

H1: Early adopters of nonlinear editing systems will have different perceptions of nonlinear editing than late adopters of nonlinear editing systems.

Carr (1990) was able to show that perceived attributes of newsroom computers made the greatest contribution to the adoption decision. Therefore, it is suggested that the perceived attributes of nonlinear editing systems will have the greatest effect on news directors' decisions to adopt.

H2: The independent variable perceived attributes of nonlinear editing accounts for the greatest percentage of relative contribution to the rate of adoption for nonlinear editing.

CHAPTER III

METHODOLOGY

The goal of this study is to examine the diffusion of nonlinear editing systems in local television newsrooms in the United States. For this study, the researcher employed a survey approach to data collection. The researcher collected data through an online survey distributed to local television news directors and operations managers in the top 201 U.S. television markets as identified by Nielsen. Scientific survey research has allowed researchers to study a small portion of a population and generalize the results to apply to the whole of that population (Weisberg, 2005; Buddenbaum & Novak, 2001). Surveys, including those submitted by e-mail, have allowed researchers to collect large amounts of data regarding attitudes and beliefs without spending large amounts of money. (Orcher, 2007; Weisberg, Krosnick & Bowen, 1996). Surveys have also presented researchers with fewer ethical concerns than other types of research involving human subjects (Buddenbaum & Novak, 2001).

Mass media researchers have established survey research as an effective tool for exploring the use of technology in the television industry. Rugg (1980) used survey research to study the adoption of electronic news gathering equipment by local television stations in the U.S. Tuggle and Huffman (1999) used survey research to study the use of live reports broadcast by local television news departments in the U.S. Carr (1990) used

survey research to study the adoption of newsroom computer systems by local television news departments in the U.S.

The remainder of the method chapter will cover (a) the selection and recruitment of subjects, (b) the consent form presented to each subject, (c) the instrument employed in data collection and the process by which data was collected, (d) reliability and validity, and (e) data analysis procedures.

Subjects

The sample for this study was drawn from U.S. network affiliated (ABC, CBS, Fox, NBC) local television stations. The targeted total sample size was 200 subjects. Each station was required to have a news department to be included in the sample since this study focused on the adoption of NLE for newsroom use.

Sample selection was done through purposive and snowball sampling. The snowball sample began with seven local television news directors whom the researcher knew personally. The researcher contacted each of these individuals by e-mail and asked them to participate in the study. They were asked to recruit other local television news directors for the study. Contact information for these additional subjects was e-mailed to the researcher for inclusion in the sample. The researcher also selected one station from each of the top 200 television markets in the United States as identified by Nielsen. The researcher used the *Broadcasting and Cable Yearbook to* identify the ABC, CBS, Fox, and NBC stations in each of these markets. After selecting each station, the researcher checked the *Broadcasting and Cable Yearbook* to confirm that the selected station had a news department. In the event that the selected station did not have a news department, a new station was selected. Once the researcher had selected a station from each of the top

200 markets, the researcher contacted each station by phone to confirm the name and e-mail address for each news director (*Broadcasting & Cable Yearbook, 2003-2004*).

The researcher contacted each participant via e-mail. This initial solicitation e-mail contact presented each subject with a form letter (see Appendix A). The letter identified the researcher, explained the purpose of the research project, and provided a hyperlink to the online instrument. Subjects who had not accessed the instrument 14 days after receiving the initial solicitation e-mail received a follow-up solicitation letter via e-mail (see Appendix B).

Consent

Participants who chose to take part in the study clicked on the hyper-link contained in the solicitation letter. At that point, participants were presented with an online consent form. The consent form included information about (a) the title of the project, (b) the researcher's name and contact information, (c) the purpose of the study, (d) an estimate of time required to complete the survey, (e) an explicit statement that participation is voluntary, (f) a detailed statement explaining that participation in the study involved minimal risk, and (g) a detailed description of steps taken to ensure subject confidentiality (See Appendix C). The consent form explained that subjects would be asked for their names, their job titles, and their station's call letters; however, the researcher would not publish this identifying information in the final report. The consent form explained that the researcher would only use this information for the following purposes: (a) to keep track of which subjects participated in the study and (b) to contact individual subjects if the researcher needed clarification of their responses. After reading the consent form, subjects had to click on an icon that permitted them to

advance to the online survey instrument. They also had the option of declining to take the survey at which time they would exit the Web site.

Instrument

Data were collected through an online survey crafted by the researcher. The survey was modeled after Carr's (1990) survey on newsroom computer adoption. The Web site containing the survey for this study was constructed and maintained by the Bureau for Social Research at Oklahoma State University. The survey was available to participants for a four-week period.

The survey instrument consisted of 47 items total (see Appendix D). The first question, "Do you use nonlinear editing to prepare newscasts?" was used to classify subjects as adopters or non-adopters. Since this study focuses on adopters of nonlinear editing, only basic identification information was collected from subjects who indicated they had not adopted NLE. The second question, "What year did you begin using nonlinear editing to prepare newscasts?" was designed to identify the adoption date of nonlinear editing. This allowed the researcher to classify adopters as early adopters or late adopters. The third question, "What nonlinear editing system are you currently using?" identified the type of system or systems utilized by each subject.

The next 38 items explored subjects' perceptions of, and experiences with, the nonlinear editing adoption process. Responses to each of these items were recorded through a five-point Likert scale with an additional frame of no value labeled "Decline to Answer." The "Decline to Answer" frame allowed subjects to preserve their autonomous right to decline certain questions while completing the rest of the survey. Response options in the scale were strongly agree, agree, neutral, disagree, and strongly disagree. The survey

which was submitted to subjects listed response items on a scale from 1 to 6 with 1 being "strongly agree," 5 being "strongly disagree," and 6 being "decline to answer." Prior to analysis, the researcher recoded the scale in reverse order. The recoded scale ranged from 5 "strongly agree" to 1 "strongly disagree" with 0 being "decline to answer."

The questions preceding the first five groups of response items were designed to operationalize the five independent variables contained in RQ2: (a) perceived attributes of nonlinear editing, (b) type of decision-making process employed, (c) type of communication channels used, (d) the nature of the social system, and (e) efforts of change agents in the nonlinear editing adoption process.

The question, "How do you feel about nonlinear editing systems in the newsroom?" operationalized the *perceived attributes* variable. Examples of response items for this question included (a) "they are profitable," (b) "they are inexpensive," and (c) "they save time."

The question, "What kind of decision was made about nonlinear editing adoption?" operationalized the *adoption decision-making* variable. Response items for this question included (a) "it was an individual decision," (b) "it was a consensus decision by the group using the nonlinear editing system," and (c) "it was a decision handed down from above."

The question, "How did you find out about nonlinear editing systems for the newsroom?" operationalized the *communication channels* variable. Examples of response items for this question included (a) "trade magazines," (b) "face-to-face talks," and (c) "information gathered from outside the broadcast industry."

The question, "How would you describe the broadcast industry?" operationalized the *nature of the social system* variable. Response items for this question included (a) "information is shared a great deal within the industry" and (b) "the broadcast industry accepts innovations readily."

The question, "How would you describe the promotional efforts of nonlinear editing system vendors?" operationalized the *change agent participation* variable. Examples of response items for this question included (a) "vendors offer direct payments to adopt nonlinear editing systems," (b) "vendors offer deals, discounts or other indirect payments as incentives to adopt," and (c) "vendors use positive incentives to promote adoption (how they will improve newsgathering, storage, retrieval, etc.)."

The next question and response items were designed to operationalize the four independent variables contained in RQ3: (a) economic advantage offered by nonlinear editing, (b) amount of uncertainty regarding nonlinear editing, (c) the level of commitment required for trial usage of nonlinear editing, and (d) the rate of reducing uncertainty regarding nonlinear editing. The question, "Before you adopted nonlinear editing, how did you feel about the technology?" was followed by response items such as (a) "nonlinear editing offered economic advantages" and (b) "we were uncertain of nonlinear editing's usefulness."

The final eight items were free-answer questions seeking identification information and qualitative data. The identification information included (a) station call letters, (b) network affiliation, (c) area of dominant influence designation, (d) station ownership information, (e) name of the subject, (f) job title of the subject, and (g) the year in which the station adopted nonlinear editing technology. The last question, "Do

you have any additional comments regarding nonlinear editing?" allowed subjects to provide qualitative data concerning their attitudes about and experiences with nonlinear editing systems.

Reliability and Validity

Reliability and external validity were supported by using an established research procedure and by replicating Carr's survey on the adoption of computers in local television newsrooms. Carr (1990) conducted pre-test/post-test analysis in development of the survey. Internal validity was supported by a direct relationship between questions and response items in the instrument to the variables being studied. The researcher also used Cronbach's alpha to check for consistency in responses given.

Analysis

Once the data collection period ended, the Bureau for Social Research provided the researcher with an SPSS file of the data and a code book. The researcher used this data file and code book to conduct data analysis. The researcher used chi-square, t-tests, and regression analysis.

CHAPTER IV

FINDINGS & DISCUSSION

Sample

Market Size. The researcher contacted 203 potential subjects for this study. From that population, 33 subjects responded for a response rate of 16%. The sample was distributed across the range of the 210 U.S. television markets as identified by Nielsen. The sample included 7 stations from the top 50 markets, 10 stations from markets 51 through 100, 6 stations from markets 101 through 150, and 10 stations from markets 151 through 210 (see Table 4.1). Market-8 was the largest market represented in the sample, and market-201 was the smallest.

Job Title. Persons filling out the survey were asked to identify their job title. A majority of the responses (25) came from respondents who identified their position as News Director. There were two respondents who listed their position as Director of News Operations and two respondents who listed their job title as Chief Photographer. Other job titles listed included Assistant News Director, Manager of Technical Operations – News, Operations Manager, and Vice President – News.

Network Affiliation. The sample included stations affiliated with the ABC, CBS, Fox, and NBC broadcast networks. NBC affiliates (11) made up the largest percentage of the sample at 33.3%, followed by ABC affiliates (10), which made up 30.3% of the

sample. CBS affiliates (9) made up 27.3% of the sample, and Fox affiliates (3) accounted for 9.1% of the sample (see Table 4.2). No CW affiliates or independent stations were included in the sample.

Type of Nonlinear System Used. All but two of the respondents indicated they had adopted nonlinear editing for use in the production of daily newscasts. The data showed 9 different models of nonlinear editing systems in use among the 33 stations. One respondent reported his news department had used four different models of nonlinear editing equipment. No other respondents claimed to have used more than one type of nonlinear editing system. The most used systems were produced by Avid (16) and Adobe (7) (see Table 4.3).

Station Ownership. The sample included stations owned by 21 separate ownership groups. To ensure confidentiality of the subjects, ownership information was not reported in the findings. Eight station groups had two or more stations represented in the sample. Of those eight ownership groups, four had stations using the same nonlinear systems while the other four left the choice of nonlinear systems up to individual stations. Three of the station groups with multiple stations in the sample reported their smaller market stations had adopted nonlinear editing before their larger market sister stations. In all of these cases, the larger market stations later adopted a different nonlinear editing system than the smaller market, early adopting stations.

Data Screening

Data were screened prior to analysis. Because of the small sample size, it was necessary to preserve as many cases as possible. In the few instances where subjects

Table 4.1

Range of Market Size in Sample (N=33)

Market Range	Number in Sample	Percentage of Sample
8 -- 50	7	21.1%
51 – 100	10	30.0%
101 – 150	6	18.2%
151 – 201	10	30.0%

Table 4.2

Network Affiliation of Stations in Sample (N =33)

Network Affiliation	Number in Sample	Percentage of Sample
NBC	11	33.3%
ABC	10	30.3%
CBS	9	27.3%
FOX	3	9.1%

Table 4.3

Type of Nonlinear Editing System Used by Subjects (N=33)

Type of Nonlinear System Used	Number in Sample	Percentage of Sample
Avid	16	48.5%
Adobe	7	21.2%
Final Cut Pro	3	9.0%
Sony Vegas	3	9.0%
Edit Star	1	3.0%
Grass Valley	1	3.0%
Leitch Newsflash	1	3.0%
Panasonic NewsByte	1	3.0%
Quantel	1	3.0%
Not Using Nonlinear	2	6.0%

* Percentages do not add up to 100% due to multiple systems in use at one station.

declined to provide an answer to an item, a substitution was made using the series mean. In the few instances where outliers were identified, transformations were made. Both of these procedures can cause problems with analysis, but preserving as much of the data as possible for each response item was a necessity.

Reliability Analysis

Cronbach's alpha was generated to assess the reliability of the survey instrument. The initial assessment indicated an alpha below the desired level of .70. Item analysis indicated that alpha would increase if nine response items were eliminated. These response items were (a) "Nonlinear editing systems are more work than tape-to-tape editing systems"; (b) "Nonlinear editing systems make little change in the workplace"; (c) "There was a delay in setting up a work routine with nonlinear editing"; (d) "We were able to try out the system before putting it in the newsroom"; (e) "It is hard to describe nonlinear editing applications"; (f) "Nonlinear editing systems offered economic advantages"; (g) "We were uncertain of nonlinear editing's usefulness"; (h) "Trial of nonlinear editing required too much commitment"; and (i) "Any questions we had about nonlinear editing's usefulness were quickly reduced." The correlation of these items to the rest of the items in the instrument was weak, and the correlation matrix indicated these items had mostly low and non-significant correlations with the other items, thus the researcher deleted them. The deletion of response items (f), (g), (h), and (i) eliminated all four of the response items designed to test the economic diffusion variables referred to in Research Question 3. The deletion of these nine items increased alpha to an acceptable .70. The deletion of these response items left 28 response items available for analysis.

Adopter Categories

The purpose of Research Question 1 was to discover if adopters of nonlinear editing could be classified using the five diffusion theory adopter categories. This was not possible, but the researcher was able to divide adopters into two general categories – early adopters and late adopters. Respondents were asked to identify the year in which they adopted nonlinear editing at their station. Two respondents reported they had not yet adopted nonlinear editing to use in the production of daily newscasts. Since this study focused on adopters of nonlinear editing, those subjects who had not adopted were excluded from the sample. This reduced the sample from 33 subjects to 31 subjects.

The years of adoption identified by the stations ranged from 1997 to 2007. There was one year (1999) in this range when there was no adoption reported. The early years of the observed period showed the smallest number of adopters, which was consistent with diffusion theory (Rogers, 1993; Ryan & Gross, 1943). In 1997, two stations adopted nonlinear editing, followed by one station in 1998 and one in 2000. In 2001, three stations adopted nonlinear editing, followed by one in 2002, and three in 2003. The percentage of the sample that adopted between 1997 and 2003 was 35.5%. In 2004, six stations adopted nonlinear editing, followed by five in 2005, eight in 2006, and one in 2007. The percentage of the sample that adopted between 2004 and 2007 was 64.5% (see Table 4.4). After 2003, the number of adopting stations increased significantly. This was the upward turn of the diffusion S-curve, which theory suggested should occur once knowledge of the innovation reached approximately 30% of the population (Carr, 1990; Rogers, 1983) (see Figure 4.1).

Table 4.4

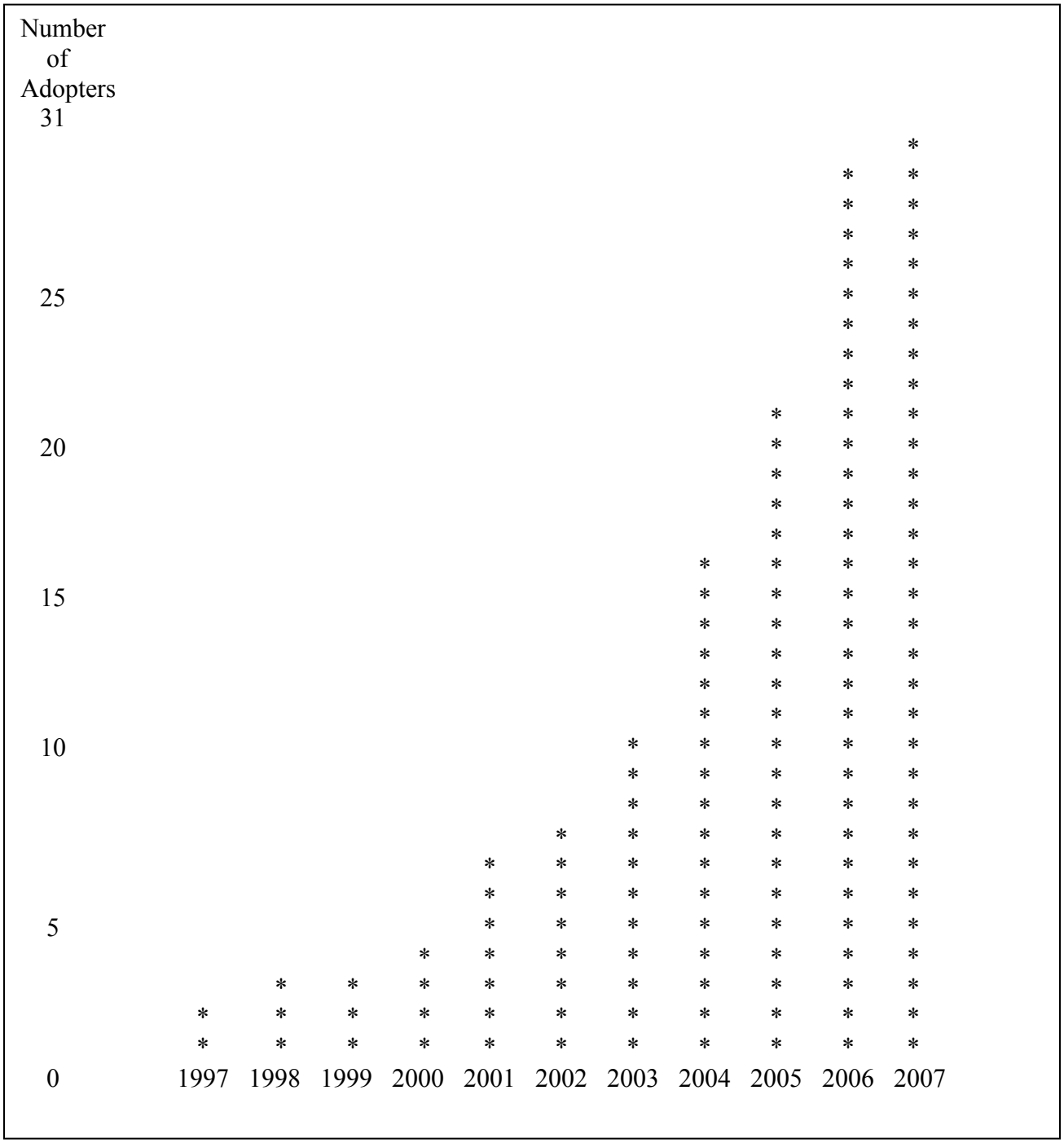
Year of Nonlinear Adoption (N=31)

Year of Adoption	Number of Adopters	Percentage of Sample
1997	2	6.5%
1998	1	3.2%
2000	1	3.2%
2001	3	9.7%
2002	1	3.2%
2003	3	9.7%
2004	6	19.4%
2005	5	16.1%
2006	8	25.8%
2007	1	3.2%

Figure 4.1

S-Curve of Adoption for Nonlinear Editing (N=31)

Cumulative Adoption of Nonlinear Editing from 1997 to 2007



There were two factors which made it difficult to divide subjects into the five adopter categories identified by Rogers (innovators, early adopters, early majority, late majority, and laggards) (1983). First, the small sample size meant that each station represented 3.2% of the sample. Therefore, a single station assigned to the innovator category would exceed the innovator category standard of 2.5% of the population. Second, respondents reported only the year in which they adopted nonlinear editing. They did not provide additional details such as the quarter or month in which they adopted. Thus, it was not possible to determine which adopters in a given year may have adopted early in that year and which adopters may have adopted later in that year. Any attempt to divide the six adopters of 2004 between the early majority category and the late majority category would have been purely speculative on the part of the researcher. Thus, the researcher was not able to answer Research Question 1. However, Carr (1990) provided a guide for classifying adopters in two generalized categories: early adopters and late adopters. Carr suggested the upward turn of the diffusion S-curve can be used as a point of division between early adopters and late adopters. Rogers (1983) stated this upward turn should occur when knowledge of the adoption reaches approximately 30% of the population. The upward turn should have occurred after opinion leaders (innovators and early adopters) had adopted the innovation. The data for this study showed the upward turn had occurred after 2004 when adoption had reached 35.5%, which was consistent with theory. Thus, for the purposes of this study, early adopters can be classified as those stations who adopted nonlinear editing from 1997 through 2003 (n=11). Late adopters can be classified as those stations who had adopted nonlinear editing from 2004 through 2007 (n=20).

Chi-Square

The researcher conducted a Chi-Square test to see if there was any association between market size and date of adoption. For this test, adopters were divided into two categories by market size. Large market stations were those in Nielsen markets 1 through 100. Small market stations were those in Nielsen markets 101 through 210. Adopters were categorized as early adopters and late adopters by the criteria described earlier – early adopters were those stations that adopted nonlinear editing from 1997 through 2003 while late adopters were those stations that adopted nonlinear editing from 2004 through 2007. There were 5 large market early adopters and 6 small market early adopters. There were 12 large market late adopters and 8 small market late adopters (see Table 4.5). The Chi-square test ($X^2 = (1, N=31) = 0.61$, $p > .05$) showed that adopters of nonlinear editing did not vary by market size.

Test of Means

Hypothesis 1 proposed early adopters would have different perceptions of nonlinear editing than late adopters. To test this hypothesis, the researcher conducted t-tests to compare the means of responses given by the early and late adopter groups. T-tests showed significant differences between early and late adopters for three response items. These items and their related variables were (a) "The decision to adopt nonlinear editing was made by an individual at our station" *Decision-making Process*; (b) "Face-to-face meetings" *Communication Channels*; and (c) "Office meetings" *Communication Channels*. Each response item will be discussed individually.

Decision-making Process. The first diffusion theory variable examined was the *adoption decision-making* variable. The four response items for this variable were

examined individually to explain the differences between early adopters and late adopters in the type of decision-making process utilized in making the decision to adopt nonlinear editing (see Table 4.6).

Early adopters and late adopters had significantly different responses when asked if adoption was an individual decision. Early adopters (M=3.91) gave a response trending toward agreement with the statement "The decision to adopt nonlinear editing was a made by an individual at our station." Late adopters (M=1.90) showed disagreement with this statement. This finding was significant ($t(29) = 5.79$, $p = .0005$). An analysis of association ($\eta^2 = .368$) indicated an individual decision to adopt explains 36.8% variation in the adoption decision-making process. Diffusion theory suggests most innovation decisions in organizations are authority innovation decisions (Rogers, 1983). This appears to be the case for early adopters of nonlinear editing systems, but it does not appear to be the case for late adopters of nonlinear editing systems. Two subjects gave statements illustrating the use of different adoption decision processes. The first came from an early adopter in market-164 who utilized an authority innovation decision.

> We originally started out four years ago using a Sony PD150 camera and Studio 8 editing software. We shot stories, ingested the video on our reporters' PCs and then dubbed the video back to DVC Pro digital tape. This project convinced our corporate folks that nonlinear editing and smaller cameras were the way to go. Ninety-eight percent of the time, our reporters are shooting and editing their own stories. In the fall of 2005, our [name redacted] corporate folks decided to [implement]

nonlinear across the board using Avid Newscutters at all of our stations.

This subject cited several qualities that diffusion theory has identified as innovator qualities (Rogers, 1983). The subject was apparently venturesome and was apparently willing to experiment with new technology. The statement indicates that this subject's station was the first in the ownership group to adopt nonlinear editing, which would place this innovator outside his peer network. This decision to adopt placed the innovator in the position of being an opinion leader since his decision to adopt led to the ownership group's decision to implement nonlinear editing at all group owned stations.

Early adopters (M=3.18) gave a generally neutral response to the statement that the decision to adopt was made by the station employees responsible for editing. Late adopters (M=2.65) indicated disagreement trending toward neutrality for this statement. Diffusion theory classifies this type of decision-making process as a collective innovation decision. One late adopter in market-92 stated that a collective innovation decision was made at his station:

> We researched several different kinds of systems before making a purchase. We brought our final three candidates into our newsroom so photographers and editors could get a close up look at each and everyone. They are the ones who made the final choice…selecting Quantel as the most user friendly. That's the system we purchased.

In this case, the newsroom employees who would end up using the nonlinear editing system most often were the final decision makers regarding which nonlinear system to purchase. This is an example of a collective innovation decision. Diffusion theory states that collective innovation decisions are not as common in organizations as authority

Table 4.5

Cross-tab Results of Comparing Adoption Date with Market Size

	Early Adopters	Late Adopters	Total
Small Market	6	8	14
Large Market	5	12	17
Total	11	20	31

Table 4.6

Decision-Making Process Test of Means
Early Adopters (< 2003)
Late Adopters (2004 >)
Scale: 5 = Strongly Agree to 1 = Strongly Disagree

Variable	Adopter Category	n	Mean	S.D.	*p*	Eta-Sq.
It was a Decision Made by an Individual at our Station	Early	11	3.91	1.221	.000**	.368
	Late	20	1.90	.718	.	
It was a Consensus Decision Made by the Employees Responsible for Editing	Early	11	3.18	.982	.215	
	Late	20	2.65	1.182		
It was a Decision Made by Station Management	Early	11	3.00	1.414	.246	
	Late	20	2.40	1.314		
It was a Decision Handed Down from our Station Ownership Group	Early	11	3.00	1.844	.926	
	Late	20	2.95	1.146		

* $p < .05$, ** $p < .01$

innovation decisions. Even so, diffusion theory suggests that collective innovation decisions may be more resistant to change since changing the decision to adopt would require agreement by all members of the decision making group. (Rogers & Shoemaker, 1971).

The responses from these two subjects related above clearly show the use of two different types of adoption decision-making processes. Both of these responses are consistent with diffusion theory. The early adopter who employed the authority innovation decision showed attributes of an innovator. Diffusion theory has shown innovators to be the earliest of adopters as was the case here (Ryan & Gross, 1943). Diffusion theory also has shown innovators are willing to adopt innovations regardless of what others in their peer network may think about the innovation (Rogers, 1983). This is taking a position of leadership. The early adopter in this case obviously took a leadership role in his peer network and employed the authority innovation decision to adopt nonlinear editing at his station. The late adopter employed a collective innovation decision. The late adopter's statement indicates that ease of use and satisfaction of the editing staff with the new nonlinear equipment were key elements in the decision making process. Diffusion theory shows that collective innovation decisions are more resistant to change since change may often require agreement by all members of the adoption group (Rogers & Shoemaker, 1971).

Early adopters (M=3.00) gave a neutral response to the statement "The decision to adopt was made by station management." Late adopters (M=2.40) disagreed with this statement. Early adopters (M=3.00) gave a neutral response to the statement that the

decision to adopt was handed down from our ownership group. Late adopters (M=2.95) trended toward a neutral response for this statement.

Communication Channels. The next variable examined was the *communication channels* variable. The five response items for this variable were examined individually to explain the differences between early adopters and late adopters in the type of communication channels utilized in making the adoption decision (see Table 4.7).

Analysis of two response items for *communication channels* had significant findings. These two response items were "face-to-face meetings" and "office meetings." Early adopters (M=2.82) were generally neutral with the statement that they found out about nonlinear editing through "face-to-face meetings", while late adopters (M=4.15) showed agreement with this item. This finding was significant ($t(29) = -4.749$, $p = .0005$). An analysis of association ($\eta^2 = .430$) indicated face-to-face meetings explain 43% of the variation in the communication channels used in the adoption process. Late adopters (4.00) agreed with the statement that they learned about nonlinear editing through "office meetings," but early adopters (M=3.09) gave a generally neutral response. This finding was significant ($t(29) = -3.949$, $p = .0005$). An analysis of association ($\eta^2 = .350$) indicated office meetings explain 35% of the variation in the communication channels used in the adoption process. Diffusion theory has shown that later adopters rely more on interpersonal communication channels than early adopters. These interpersonal channels have often been found to be personal acquaintances or opinion leaders in the social system (Ryan & Gross, 1943; Rogers, 1983). This study is consistent with diffusion theory in that respect.

Table 4.7

Communication Channels Test of Means
Early Adopters (< 2003)
Late Adopters (2004 >)
Scale: 5 = Strongly Agree to 1 Strongly Disagree

Variable	Adopter Category	n	Mean	S.D.	*p*	Eta-Sq.
Trade Magazines	Early	11	2.91	.831	.655	
	Late	20	3.10	1.252		
Fact-to-Face Talks	Early	11	2.82	1.079	.000**	.430
	Late	20	4.15	.489		
Office Meetings	Early	11	3.09	.831	.000**	.350
	Late	20	4.00	.459		
Information Gained from Outside the Broadcast Industry	Early	11	2.73	.786	.159	
	Late	20	2.20	1.056		
Information Gained from Inside the Broadcast Industry	Early	11	3.91	.701	.103	
	Late	20	4.30	.571		

* $p < .05$, ** $p < .01$

Early adopters (M=2.91) were generally neutral with the statement that they found out about nonlinear editing through "trade magazines." Late adopters (M=3.10) gave a generally neutral response for this item. Early adopters (M=2.73) trended toward neutrality with the statement that they found out about nonlinear editing through "Information gained from outside the broadcast industry." Late adopters (M=2.20) generally disagreed with this statement. Early adopters (M=3.91) generally agreed with the statement that they found out about nonlinear editing through information gained from inside the broadcast industry. Late adopters (M=4.30) also agreed with this statement.

Perceived Attributes. The next variable examined was the *perceived attributes* variable. After reliability analysis eliminated 5 weak response items, there were 11 response items left for analysis. Those eleven items were examined individually to explain the differences between early adopters and late adopters (see Table 4.8).

While there were no significant findings between early and late adopters, several items did approach significance. The response item "Nonlinear editing systems are inexpensive" approached significance ($p = .057$). Early adopters (M=3.27) offered a neutral response to this item while late adopters (M=2.25) disagreed with this statement. The response item ""Nonlinear editing software is easy to describe" approached significance ($p = .061$). Both early adopters (M=3.36) and late adopters (M=3.15) gave a generally neutral response to this statement. The response item "Anyone is able to troubleshoot nonlinear editing systems" also approached significance ($p = .065$). Both early adopters (M=2.27) and late adopters (M=1.70) generally disagreed with this statement. One late adopter from market-11 stated, "Managing the system is not

easy…and troubleshooting is even more difficult for the engineers because it's all computers and not traditional broadcast hardware they now need to fix."

The response item "Nonlinear editing hardware is easy to describe" approached significance (p = .082). Early adopters (M=3.27) gave a neutral response to this statement, as did late adopters (M=3.10). Early adopters (M=4.00) agreed with the statement "Nonlinear editing systems are profitable." Late adopters (M=3.65) generally agreed with this statement as well. Both early adopters (M=4.09) and late adopters (M=4.25) agreed with the statement "Nonlinear editing systems save time." One late adopter from market-11 noted time savings were not as anticipated before adopting nonlinear editing, stating, "The workflow issues are the most difficult to predict when switching to a nonlinear system. Efficiencies we thought we would have did not pan out, but we also found we saved time in areas we didn't predict." Both early adopters (M=4.18) and late adopters (M=4.00) agreed with the statement "Nonlinear editing systems offer immediate rewards." One late adopter from market-61 stated, "One week after converting, almost everyone in the newsroom said they wouldn't go back." Both early adopters (M=4.27) and late adopters (M=4.10) agreed with the statement "Nonlinear editing systems meet work needs felt in the newsroom." One late adopter from market-200 stated, "We enjoy the many special effects that do not require the time consuming A/B rolls and other post production…it's very versatile." Early adopters (M=3.00) offered a neutral response to the statement "We knew a lot about nonlinear editing for the newsroom before purchasing our own." Late adopters (M=3.40) gave a generally neutral response for this statement. Early adopters (M=3.73) and late adopters (M=3.70) generally agreed with the statement "Nonlinear editing systems are easy to

Table 4.8

Perceived Attributes Test of Means
Early Adopters (< 2003)
Late Adopters (2004 >)
Scale: 5 = Strongly Agree to 1 = Strongly Disagree

Variable	Adopter Category	n	Mean	S.D.	*p*	Eta-Sq.
Nonlinear Editing Systems are Profitable	Early	11	4.00	.775	.227	
	Late	20	3.65	.745		
Nonlinear Editing Systems are Inexpensive	Early	11	3.27	1.421	.057	
	Late	20	2.25	1.164		
Nonlinear Editing Systems Save Time	Early	11	4.09	.701	.580	
	Late	20	4.25	.786		
Nonlinear Editing Systems offer Immediate Rewards	Early	11	4.18	.603	.408	
	Late	20	4.00	.562		
Nonlinear Editing Systems Meet Work Needs Felt in the Newsroom	Early	11	4.27	.467	.224	
	Late	20	4.10	.308		
We Knew a lot about Nonlinear Editing for the Newsroom Before Purchasing our own	Early	11	3.00	1.265	.325	
	Late	20	3.40	.940		
Nonlinear Editing Systems are Easy to Use	Early	11	3.73	.467	.912	
	Late	20	3.70	.733		
Anyone is able to Troubleshoot Nonlinear Editing Systems	Early	11	2.27	.786	.065	
	Late	20	1.70	.801		
We had a Chance to See Nonlinear Editing Systems in use before Purchasing our own	Early	11	3.09	1.136	.839	
	Late	20	3.20	1.542		
Nonlinear Editing Software is Easy to Describe	Early	11	3.36	.674	.529	
	Late	20	3.15	.988		
Nonlinear Editing Hardware is Easy to Describe	Early	11	3.27	.647	.643	
	Late	20	3.10	1.119		

* $p < .05$, ** $p < .01$

use." Both early adopters (M=3.09) and late adopters (M=3.20) gave neutral responses to the statement "We had a chance to see nonlinear editing systems in use at other stations before purchasing our own." Overall, early adopters and late adopters appear to have similar perceptions of nonlinear editing's perceived attributes. Some slight differences in the means were noted, but none was found to be statistically significant

Nature of Social System. The next variable examined was *nature of the social system*. The two response items for this variable were examined individually to explain the differences between early adopters and late adopters in their perceptions of the nature of the social system in the broadcast industry, but none was statistically significant (see Table 4.9).

Early adopters (M=3.91) and late adopters (M=3.65) both generally agreed with the statement "Information is shared a great deal within the broadcast industry." One late adopter from market-201 suggested that stations considering adopting nonlinear should seek out information from stations that have already adopted, "…stations contemplating it should talk more to others to avoid natural pitfalls in making change." Early adopters (M=3.55) and late adopters (M=3.60) also trended toward agreement with the statement "the broadcast industry accepts innovations readily." One early adopter from market-139 expressed the opinion that larger market stations have been slower to adopt nonlinear editing. This subject stated, "I am always surprised when I hear about the number of large market stations still not using nonlinear editing. I think the culture there is hard to change, and there are misconceptions about the costs." Overall, differences between early adopters and late adopters regarding the nature of the social system appear to be slight and not significant.

Table 4.9

Nature of the Social System Test of Means
Early Adopters (< 2003)
Late Adopters (2004 >)
Scale: 5 = Strongly Agree to 1 = Strongly Disagree

Variable	Adopter Category	n	Mean	S.D.	*p*	Eta-Sq.
Information is shared a Great Deal within the Broadcast Industry	Early	11	3.91	.302	.352	
	Late	20	3.65	.875		
The Broadcast Industry Accepts Innovations Readily	Early	11	3.55	1.036	.886	
	Late	20	3.60	.995		

* $p < .05$, ** $p < .01$

Efforts of Change Agents. The final variable examined was the variable *efforts of change agents*. These six response items were examined individually to explain the differences between early adopters and late adopters in their perceptions of the efforts of change agents in the adoption process. but none was statistically significant (see Table 4.10).

Both early adopters (M=1.64) and late adopters (M=2.10) both disagreed with the statement "Vendors offer direct payments to encourage nonlinear adoption," though early adopters showed slightly stronger disagreement with this statement. Early adopters (M=3.55) trended toward agreement with the statement "Vendors offer deals, discounts, or other indirect payments as incentives to adopt." Late adopters (M=3.15) gave a neutral response to this statement. Early adopters (M=3.55) and late adopters (M=3.75) both trended toward agreement with the statement "Vendors use positive incentives to promote adoption." One late adopter from market-92 reported a positive incentive that did not prove to be correct:

> We purchased Quantel with the express purpose of having it ready when our new P2 digital cameras arrived. Quantel promised the two would interact. To date, they do not. This has been a source of major frustration. Instead of being able to zip video into the system, we have had to download it real time. So what should have been a money saving, time saving system is costing us both ways. Would we have still made a decision to move to nonlinear editing? Yes. But we might have asked if the licensing agreements between our two providers had been secured in writing.

Table 4.10

Efforts of Change Agents Test of Means
Early Adopters (< 2003)
Late Adopters (2004 >)
Scale: 5 = Strongly Agree to 1 = Strongly Disagree

Variable	Adopter Category	n	Mean	S.D.	*p*	Eta-Sq.
Vendors Offer Direct Payments to Adopt Nonlinear Editing Systems	Early	11	1.64	1.027	.337	
	Late	20	2.10	1.373		
Vendors Offer Deals, Discounts, or other Indirect Payments as Incentives to Adopt	Early	11	3.55	1.036	.443	
	Late	20	3.15	1.496		
Vendors use Positive Incentives to Promote Adoption	Early	11	3.55	.688	.500	
	Late	20	3.75	.851		
Vendors Negative Incentives to Promote Adoption	Early	11	2.09	.701	.399	
	Late	20	1.75	1.209		
Vendors use Immediate Rewards as Incentives to Adopt Nonlinear Editing Systems	Early	11	3.45	.934	.217	
	Late	20	2.85	1.424		
Vendors use Delayed Rewards as Incentives to Adopt Nonlinear Editing Systems	Early	11	2.64	1.206	.978	
	Late	20	2.65	1.348		

* $p < .05$, ** $p < .01$

Early adopters (M=2.09) and late adopters (M=1.75) both disagreed with the statement "Vendors use negative incentives to promote adoption," though late adopters showed stronger disagreement with this statement. Early adopters (M=3.45) gave a generally neutral response to the statement "Vendors use immediate rewards as incentives to adopt." Late adopters (M=2.85) trended toward a neutral response for this item. Both early adopters (M=2.64) and late adopters (M=2.65) indicated disagreement trending toward neutrality for the statement "Vendors use delayed rewards as incentives to promote adoption."

Hypothesis 1 predicted early adopters of nonlinear editing systems would have different perceptions of nonlinear editing than late adopters. Hypothesis 1 was not supported as only 3 of the 28 response items showed significant differences between early and late adopters. The three items (and their associated variables) which did show significant differences between the two adopter groups were (a) "The decision to adopt nonlinear editing was made by an individual at our station" *Decision-making Process*; (b) "Face-to-face meetings" *Communication Channels*; and (c) "Office meetings" *Communication Channels*. Each response item will be discussed individually.

Regression Analysis

Research Question 2 sought to identify the extent to which the five adoption variables identified in the communication tradition of diffusion theory influenced the adoption of nonlinear editing. The five adoption variables include (a) *perceived attributes*; (b) *type of decision-making process employed*; (c) *type of communication channels used*; (d) *nature of the social system*; and (e) *efforts of change agents*. For this analysis, all of the adopters in the sample were treated as one group, and the researcher

employed regression analysis. The researcher generated a correlation table to determine which response items representing each of the five adoption groups showed the strongest correlation to the dependent variable *date of adoption*. The correlation table produced four response items with significant correlations to the dependent variable. Those response items (and the variable each is associated with) include (a) "Individual Decision" *Decision-Making Process* (-.458); (b) "Face-to-Face Meetings" *Communication Channels* (.411); (c) "Anyone is Able to Troubleshoot Nonlinear" *Perceived Attributes* (-.359); and (d) "Information Gained from Outside the Broadcast Industry" *Communication Channels* (-.389). The researcher added the response item "Office Meetings" *Communication Channels* (.302) to this group since it had produced a significant result in the earlier t-test. The correlation table did not produce any significant relationships for the adoption variables *Nature of the Social System* or *Efforts of Change Agents*.

Since this was an attempt to test theory, the researcher chose to conduct a sequential regression. Response items were entered in order of their correlation to the dependent variable from highest to lowest. The response item "Individual Decision" was entered first. "Individual Decision" was a significant predictor for "Date of Adoption," $R^2 = .210$, $R^2_{adj} = .183$ $F(1,29) = 7.708$, $p < .05$, accounting for 21.0 % of the variation. "Face-to-Face Talks" was entered second, but it did not significantly contribute to the model. "Anyone is Able to Troubleshoot Nonlinear Editing" was entered third. The result was significant, $R^2 = .376$, $R^2_{adj} = .306$ $F(3,27) = 5.415$, $p < .05$, accounting for an additional 10.3% of the explained variance, resulting in an overall explained variance of 37.6 %. "Information Gained from Outside the Broadcast Industry" was entered fourth,

but it did not significantly contribute to the model. "Office Meetings" was entered fifth, but it did not add significantly to the model. After analyzing each of these variables and their individual effects on overall explained variances, it was determined that "Individual Decision" (*Decision-Making Process*) and "Anyone is Able to Troubleshoot Nonlinear Editing" (*Perceived Attributes*) added to the model, whereas "Face-to-Face Talks" (*Communication Channels*), "Information Gained from Outside the Broadcast Industry" (*Communication Channels*), and "Office Meetings" (*Communications Channels*) did not add to the model (see Tables 4.11 & 4.12).

It should be noted that the regression equation includes negative Betas indicating an inverse relationship to the associated response item. In this study, a negative Beta associated with a positive statement indicates an earlier adoption date. Likewise, a positive Beta associated with a negative statement would indicate an earlier adoption date.

Regression analysis was not able to answer Research Question 2 in total because two of the adoption variables (*Nature of the Social System* and *Efforts of Change Agents*) were not included in the analysis. The correlation matrix of response items did not show that any response items for *Nature of the Social System* and *Efforts of Change Agents* were significantly correlated with the dependent variable *Date of Adoption*. Thus the relative contribution of those two adoption variables could not be assessed. Those response items that did have significant correlations with the dependent variable were low, -.458 or less, which can also cause problems with regression analysis. Model summaries generated during analysis showed large gaps between R^2 and Adjusted R^2 suggesting that the data may not be representative of the sample. This is often a problem

Table 4.11

Correlations and Descriptive Semantic Variables and Date of Adoption

Variables (DV)	Date of Adoption	Office Meetings	Face-to-Face Meetings	Individual Decision	Trouble Shooting	Outside
Office	.30					
Face	.41	.73				
Individual	-.50	-.70	-.40			
Trouble	-.40	-.10	-.03	.10		
Outside	-.40	.11	.07	.08	.60	
Means	4.45	2.32	2.35	3.65	4.06	2.32
S.D.	2.73	.748	.950	1.25	.814	.995

Table 4.12

Sequential Regression of Semantic Variables and Date of Adoption

Variable	B	β	sr^2 (incremental)	R^2 (model)	Adjusted R^2 (model)	R (model)
Model 1						
Individual	-1.12*	-.51	.21*	.21	.18	.50*
Model 2						
Individual	-1.12	-.51	.06	.27	.22	.52
Face	1.53	.53				
Model 3						
Individual	-1.12*	-.51	.10*	.40	.31	.61*
Face	1.53*	.53				
Trouble	-.72*	-.21				
Model 4						
Individual	-1.12	-.51	.06	.44	.35	.70
Face	1.53	.53				
Trouble	-.72	-.21				
Outside	-.60	-.21				
Model 5						
Individual	-1.12*	-.51	.05	.48	.40	.70
Face	1.53*	.53				
Trouble	-.72*	-.21				
Outside	-.60	-.21				
Office	-1.60	-.43				

* $p < .05$, ** $p < .01$

when attempting to test a large number of variables using a small sample as is the case in this study (Mertler & Vannatta, 2005). Thus, this regression analysis should not be viewed as a definitive answer to questions concerning the relative contributions of the five variables to the rate of adoption.

Research Question 2 sought to determine the extent to which five adoption variables (*perceived attributes, decision-making process employed, communication channels used, nature of the social system,* and *efforts of change agents*) influence the adoption of nonlinear editing in local television newsrooms. Regression analysis showed the response items "Individual Decision" (*Decision-Making Process*) and "Anyone is Able to Troubleshoot Nonlinear Editing" (*Perceived Attributes*) added to the model, thus the researcher was able to answer Research Question 2 in part.

The researcher was not able to conduct regression analysis for Research Question 3 due to the earlier deletion of variables. Cronbach's alpha analysis led to the deletion of all four variables designed to test research question three.

The researcher was not able to test Hypothesis 2 through factor analysis due to the small sample size. Factor analysis with sample sizes as small as the one in this study can produce unreliable results (Mertler & Vannatta, 2005). Thus, Hypothesis 2 was not tested.

CHAPTER V

IMPLICATIONS & CONCLUSION

The purpose of this study was two-fold. The first objective was an investigation of the adoption process of nonlinear editing by local television newsrooms in the United States. The second objective was an investigation of the attributes of nonlinear editing which might affect the adoption process for nonlinear editing by local television newsrooms in the United States. Since this study focused on the adoption of an innovation, diffusion theory served as the theoretical framework for the study.

This study demonstrated the usefulness of diffusion theory for examining the adoption of technological innovations. The adoption rate for nonlinear editing followed the classic S-shaped adoption curve established by previous diffusion research. The upward turn in the adoption curve occurred after knowledge of nonlinear editing surpassed 30%, which was consistent with previous diffusion research. These findings support key elements of diffusion theory, and, as such, this study contributes to the diffusion research tradition.

Research Question 1 asked if the adopters of nonlinear editing could be classified in adopter categories as defined by diffusion theory. Because of the small sample size, it was not possible to use standard deviations to place adopters into the five adopter categories defined by diffusion theory. However, the data showed a significant increase

in adoption once awareness of the innovation reached 30% of the sample population. This finding is consistent with diffusion theory, and it provided a basis for categorizing adopters in the general categories of early adopters and late adopters (Carr, 1990; Rogers, 1983).

Hypothesis 1 stated that early adopters and late adopters would have different perceptions of nonlinear editing. The researcher conducted t-tests, which indicated only 3 of the 25 response items examined showed significant differences in the perceptions of early adopters and late adopters. The significant differences were discovered in the types of communication channels used to make the adoption decision and in the type of adoption decision made. Late adopters reported learning about nonlinear editing through face-to-face talks and office meetings. Early adopters said the adoption decision was made by an individual. Since only three of the 28 response items were found to be significant, Hypothesis 1 was not supported.

Research Question 2 sought to determine the extent to which five adoption variables from the communication tradition of diffusion theory influenced the adoption of nonlinear editing. Regression analysis was used to answer this research question. The analysis showed the response item "Individual Decision" (*Type of Decision Making Process*) was the significant predictor of adoption. The response item "Anyone is able to Troubleshoot Nonlinear Editing" (*Perceived Attributes*) was also found to be a significant predictor of adoption.

Regression analysis showed "Individual Decision" had a significant effect on adoption. This suggests an authority innovation decision, which Rogers and Shoemaker (1971) stated is the most common type of innovation decision utilized in organizations.

Regression analysis showed the response item "Anyone is Able to Troubleshoot Nonlinear Editing" had a significant effect on adoption. This statement came from the group of response items which measured perceived attributes. Past research suggested perceived attributes would make the greatest relative contribution, but that was not shown in this model (Rogers, 1983; Carr, 1990).

Implications

This study shows almost total adoption of nonlinear editing among the sample population. Only 2 of the 33 subjects responding to the survey said their stations had not adopted nonlinear editing for the preparation of daily newscasts. The largest station in the sample was from market-8, and the smallest station in the sample was from market-201. While it is not possible to generalize the findings of this study, the demographic information collected through it suggests nonlinear editing has penetrated a vast majority of the local television markets in the United States.

The data show an almost equal number of small and large market stations in the early and late adopter groups. This suggests that the stations in this sample had equal opportunity to adopt nonlinear editing regardless of market size. So it appears that large market stations, which may have larger newsroom budgets, do not have an advantage over small market stations in their ability to purchase nonlinear editing systems. Similarly, it appears that small market stations, which may have fewer editing stations to replace, do not have an advantage over large market stations in their ability to purchase nonlinear editing systems.

This study shows Avid is the most widely used system among stations in the sample. Of the 31 subjects who reported their stations used nonlinear editing, 16 said

they used an Avid nonlinear system. This represents 51.6% of the sample using nonlinear editing. Adobe was the second most used system with 7 stations reporting use of this system. This represents 22.5% of the sample using nonlinear editing.

The finding concerning the type of adoption decision-making process used when adopting nonlinear editing is significant. Early adopters strongly agreed with the statement "It was a decision made by an individual at our station." These findings suggest that there may be an innovator, possibly in a management position, at these stations who is willing to accept new technology. Furthermore, that innovator may have made the adoption decision before being told to do so by the station ownership group. Support for this was found in the early adopters' neutral response to the statement that the decision to adopt was handed down from an ownership group. One early adopter stated that his station's successful adoption of nonlinear editing convinced the ownership group to implement nonlinear editing at all of its other stations. Diffusion theory defines this as the "upward flow of innovation" (Rogers & Shoemaker, 1971, p. 306). The literature shows multiple station ownership has greatly increased since 1996 due to the relaxing of governmental regulation. The literature also provides evidence of these multi-station owners seeking to purchase a common nonlinear editing system for use in all their stations. Despite these industry trends, this study suggests there remains some presence of individual innovators who make technology adoption decisions for their respective stations independent of the ownership group.

Late adopters in this study agreed with the statements that they found out about nonlinear editing through "face-to-face meetings" and "office meetings." This suggests interpersonal channels of communication are most important for later adopters. Diffusion

theory has stated that later adopters often learn of innovations through interpersonal communication channels. In many cases, these individuals whom the later adopter looks to are opinion leaders who have already adopted the innovation. This may be the case with nonlinear editing.

Overall, it appears adopters of nonlinear editing have positive perceptions of the technology. Both early and late adopters said that nonlinear editing meets the work needs of their newsrooms and the technology offers adopters immediate rewards. Survey responses showed agreement with almost all positive statements about nonlinear editing. Qualitative responses were also mostly positive. Thus it appears these nonlinear adopters are happy with their adoption decision.

The few negative perceptions about nonlinear editing discovered in this study concern what diffusion theory has defined as *compatibility* and *complexity*. *Compatibility* is the way in which a potential adopter views the innovation as being compatible with older technology. *Complexity* is the way in which the potential adopter views the innovation as being simple or difficult to understand (Rogers & Shoemaker, 1971). The response item, "Anyone is able to troubleshoot nonlinear editing systems," generated qualitative responses suggesting nonlinear editing may not be compatible with other equipment used by some newsrooms. One subject pointed out the problems which can arise when trying to merge a nonlinear editing system with an incompatible digital camera system. This indicates a need for television station managers to investigate compatibility issues before making equipment purchases related to nonlinear editing. Other responses suggested that the complexity of nonlinear editing may present challenges for engineering staffs responsible for maintaining the system. One subject

stated explicitly that television engineers trained to repair electronic/mechanical broadcast equipment do not have the skills to deal with the computer hardware and software that is nonlinear editing. This suggests future broadcast engineers should develop information technology skills in addition to traditional broadcast engineering skills if they are to keep up-to-date with changing newsroom technology such as NLE.

This study suggests nonlinear editing systems may change the daily job duties of local television reporters and producers in the future. Qualitative data collected in this study indicate nonlinear editing has increased the speed with which reporters and editors can produce stories, and nonlinear has improved the production quality of those stories. One subject stated that nonlinear editing and smaller cameras made it possible for reporters to shoot and edit more of their own stories. The implication appears to be that nonlinear editing may lead to fewer reporter/photographer teams in local television news departments and more single person video journalist positions in local television news departments. Information from broadcast industry trade magazines has shown that some stations have already begun experimenting with the video journalist, or VJ, position. This single person serves as photographer, reporter, and editor filing reports from the field due in large part to nonlinear editing systems that can be operated on a laptop computer. This could lead to a reduction in newsroom staff if managers see profit potential in the ability to cover the same amount of news with fewer personnel. The literature also has shown that technology changes, such as the change from film to ENG, led to a reduction in the number of people required to gather news in the field. This could also be the case with NLE.

Reductions in newsroom staff could have negative consequences for the local television news department. Reducing the number of employees, while trying to produce the same amount of news material, could increase the workload for those employees who remain in the newsroom. This could lead to problems such as employees not having enough time to double check facts or employees relying too much on file video. Both of these problems could result in factually incorrect or poor quality stories making it to air. This could be costly for local station managers and owners. Attempts to reduce staff or alter job duties might also cause problems with union negotiated contracts which cover specific personnel at some local stations.

This study indicates nonlinear editing may have an effect on the number and production quality of stories seen on local television newscasts. Both early and late adopters agreed with the statement "Nonlinear editing systems save time." This implies a possible improvement in efficiency, which could lead to more video stories in local newscasts. Qualitative responses suggest nonlinear editing systems have made it easier to place advanced production techniques such as dissolves in video stories. This suggests nonlinear editing might improve the production quality of video stories shown on local television newscasts. There is reason to be cautious about these perceived positive contributions to the news product made by nonlinear editing. Reuven Frank (2004) criticized ENG for diminishing the power of pictures in local television news through the repetitious use of file video. This same criticism could be leveled against nonlinear editing unless local news managers set policies against the repetitious use of file video and monitor their news product to enforce that policy. The use of advanced production techniques such as dissolves and fades could also present problems for local news

managers. If these techniques are used without careful thought, they could lead to legal and ethical problems.

This study indicates nonlinear editing systems may provide the platform for the next innovation in news gathering technology – tapeless cameras. Some qualitative responses make direct reference to establishing nonlinear editing at the station in preparation for later tapeless camera purchases. The literature has shown local station managers are trending toward tapeless cameras and video servers. Eliminating the need for videotape and camera maintenance would save stations money. The literature has shown cost savings have had an influence on the adoption of news gathering technology. One example was the adoption of Electronic News Gathering equipment. The literature has shown the cost savings of videotape compared to film influenced the adoption of ENG.

The literature has shown how technology has played a major role in the development of local television news. Local television news managers have long shown an interest in technology that provides for faster gathering of pictures and sound and faster broadcasting of pictures and sound at the most economical price. Film was replaced first by two-inch Quadraplex videotape, then by ¾" videotape, followed by Beta and M-II, S-VHS and Hi-8 cameras. Soon videotape will disappear completely as video playback servers, optical scan disk cameras, and hard drive cameras become more affordable and practical. Editing has evolved from darkrooms and film processors, to electronic videotape editing systems, and now nonlinear editing systems. It appears that innovations in news gathering technology have a significant impact on how local news workers perform in their jobs.

Limitations

This study had several limitations. The study had an extremely low response rate, which resulted in an extremely small sample. The small sample size was the most significant limitation. The small sample size meant that the results can not be generalized. Also, the small sample caused the researcher to make substitutions and transformations during data screening in an effort to preserve as much of the data as possible. These data preservation efforts caused problems with regression analysis as evidenced by the large gaps between R^2 and adjusted R^2. These problems could also be due to the use of a large scale with a small sample (Mertler & Vannatta, 2005). Due to time constraints, the researcher was not able to make additional subject solicitations in an effort to increase sample size.

The scale for this study suffered from reliability problems. Cronbach's alpha identified nine response items on the 37 item scale as problematic. Eliminating these items brought alpha up to an acceptable standard, but it eliminated some key response items. Specifically, all of the items designed to test adoption variables from the economic tradition of diffusion research were lost.

Future Directions for Research

This study of nonlinear editing adoption by television newsrooms in the United States indicates adopters of nonlinear editing view the technology as a benefit to their news operations. Future researchers should consider studying the impact adoption of nonlinear might have on the adoption of other digital broadcast technologies such as hard drive and optical disc cameras. This study suggests nonlinear editing may be changing the work routine and job requirements of some newsroom employees. Future studies

should examine what effect nonlinear editing and other digital technologies might have on the number of stories reporters produce on a daily basis. A similar topic for study could be potential changes in the number and type of newsroom employees after adoption of nonlinear editing and other digital news gathering technologies. The literature suggests some station managers are asking reporters to take on the responsibilities of reporter, photographer, and editor due in large part to nonlinear editing. A final suggestion for future research involves the equipment purchasing practices of large television ownership groups. Future researchers might consider examining whether corporate owners assume more authority in making capital purchases or if they leave those decisions to individual station managers. These suggestions show the field of television news technology provides fertile ground for future academic research.

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APPENDIX A

Recruitment Letter

Attention: News Director

My name is Chad Nye. I am a mass communication graduate student at Oklahoma State University. I am conducting research on the adoption of nonlinear editing systems in local television newsrooms in the United States. It would be most helpful if you could take a few minutes to complete my survey regarding your experience with nonlinear editing. The survey should take less than 15 minutes to complete. The hyperlink provided below will take you to the survey. The on-line survey will only be available for 30 days, so a prompt response will be greatly appreciated.

I am interested in examining local television news directors' perceptions of, and attitudes about, nonlinear editing technology and how those perceptions and attitudes may affect the adoption rate of nonlinear editing technology. This is academic research conducted in preparation of my master's thesis. This IS NOT marketing research designed to benefit any corporation, manufacturer, or broadcast industry group.

Thank you for contributing to this research project. Results should be ready by May, and I will send you a summary copy. I hope you will find this information useful.

Thank You,

Chad Nye
Graduate Teaching Assistant
Paul Miller School of Journalism
Oklahoma State University
chadfn@okstate.edu
(580) 774-8299

***** LINK TO SURVEY HERE *****

APPENDIX B

Follow Up Letter

Attention: News Director

My name is Chad Nye. I previously sent you a letter seeking your participation in my research project on the adoption of nonlinear editing systems in local television newsrooms in the United States. If you have already linked to my survey and filled it out, I sincerely thank you. If you have not done so, I would like to remind you that the survey is still accessible, and I would greatly appreciate your participation. The survey should take less than 15 minutes to complete. The hyperlink provided below will take you to the survey.

I am interested in examining local television news directors' perceptions of, and attitudes about, nonlinear editing technology and how those perceptions and attitudes may affect the adoption rate of nonlinear editing technology. This is academic research conducted in preparation of my master's thesis. This IS NOT marketing research designed to benefit any corporation, manufacturer, or broadcast industry group.

Thank you for contributing to this research project. Results should be ready by May, and I will send you a summary copy. I hope you will find this information useful.

Thank You,

Chad Nye
Graduate Teaching Assistant
Paul Miller School of Journalism
Oklahoma State University
chadfn@okstate.edu
(580) 774-8299

***** LINK TO SURVEY HERE *****

APPENDIX C

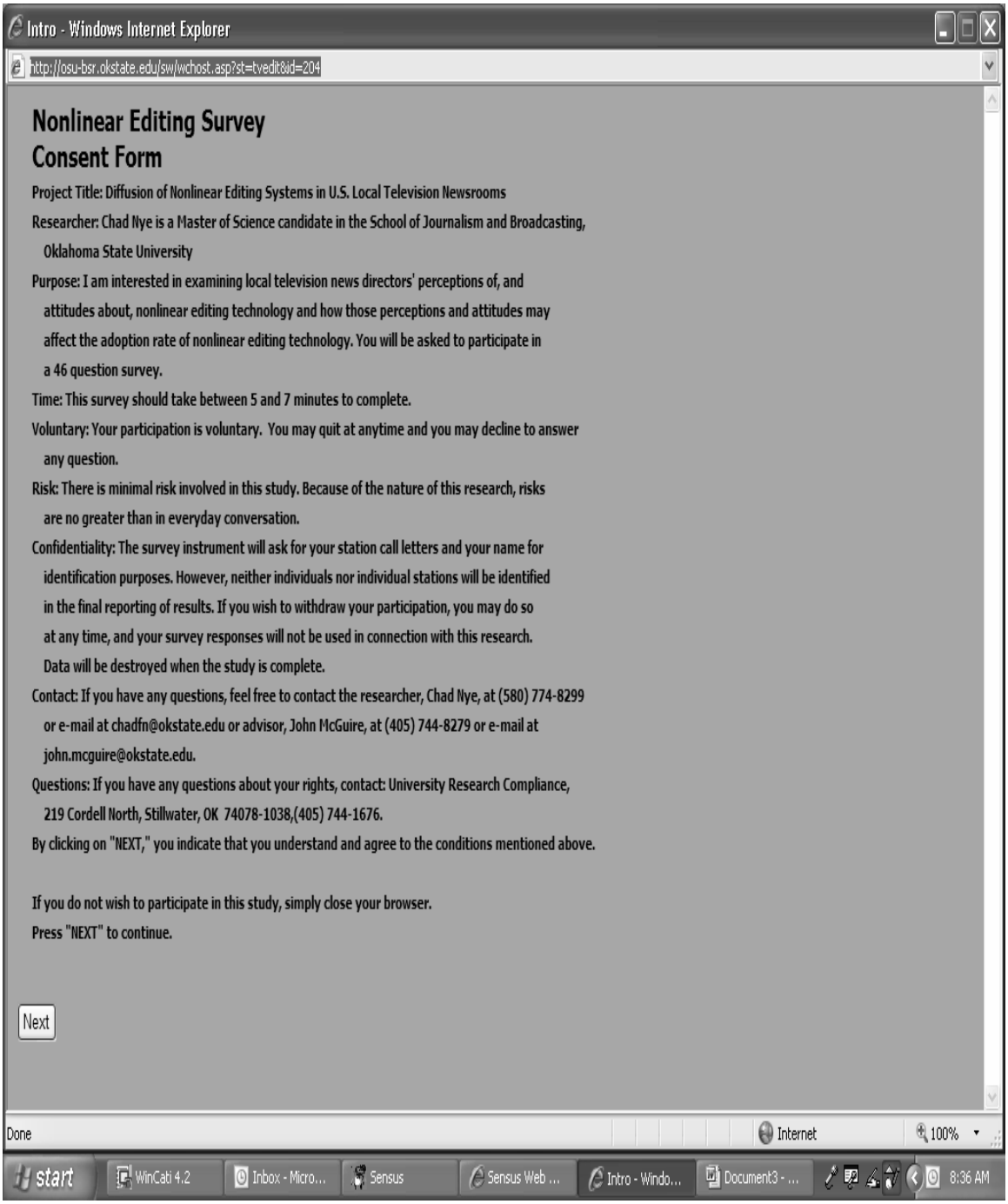
Consent Form

Project Title:	Diffusion of Nonlinear Editing Systems in U.S. Local Television Newsrooms
Researcher:	Chad Nye is a Master of Science candidate in the School of Journalism and Broadcasting, Oklahoma State University
Purpose:	I am interested in examining local television news directors' perceptions of, and attitudes about, nonlinear editing technology and how those perceptions and attitudes may affect the adoption rate of nonlinear editing technology. You will be asked to participate in a 45 question survey.
Time:	This survey should take less than 15 minutes to complete.
Voluntary:	Your participation is voluntary. You may quit at anytime and you may decline to answer any question.
Risk:	There is minimal risk involved in this study. Because of the nature of this research, risks are no greater than in everyday conversation.
Confidentiality:	The survey instrument will ask for your station call letters and your name for identification purposes. However, neither individuals nor individual stations will be identified in the final reporting of results. If you wish to withdraw your participation, you may do so at any time, and your survey responses will not be used in connection with this research. Data will be destroyed when the study is complete.
Contact:	If you have any questions, feel free to contact the researcher, Chad Nye, at (580) 774-8299 or e-mail at chadfn@okstate.edu or advisor John McGuire at (405) 744-8279 or e-mail at john.mcguire@okstate.edu.
Questions:	If you have any questions about your rights, contact: University Research Compliance 219 Cordell North Stillwater, OK 74078-1038 (405) 744-1676

By clicking on "I Wish to Participate," you indicate that you understand and agree to the conditions mentioned above.

"I WISH TO PARTICIPATE" **"I DECLINE"**

APPENDIX D


Intro - Windows Internet Explorer
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Nonlinear Editing Survey
Consent Form
Project Title: Diffusion of Nonlinear Editing Systems in U.S. Local Television Newsrooms
Researcher: Chad Nye is a Master of Science candidate in the School of Journalism and Broadcasting, Oklahoma State University
Purpose: I am interested in examining local television news directors' perceptions of, and attitudes about, nonlinear editing technology and how those perceptions and attitudes may affect the adoption rate of nonlinear editing technology. You will be asked to participate in a 46 question survey.
Time: This survey should take between 5 and 7 minutes to complete.
Voluntary: Your participation is voluntary. You may quit at anytime and you may decline to answer any question.
Risk: There is minimal risk involved in this study. Because of the nature of this research, risks are no greater than in everyday conversation.
Confidentiality: The survey instrument will ask for your station call letters and your name for identification purposes. However, neither individuals nor individual stations will be identified in the final reporting of results. If you wish to withdraw your participation, you may do so at any time, and your survey responses will not be used in connection with this research. Data will be destroyed when the study is complete.
Contact: If you have any questions, feel free to contact the researcher, Chad Nye, at (580) 774-8299 or e-mail at chadfn@okstate.edu or advisor, John McGuire, at (405) 744-8279 or e-mail at john.mcguire@okstate.edu.
Questions: If you have any questions about your rights, contact: University Research Compliance, 219 Cordell North, Stillwater, OK 74078-1038,(405) 744-1676.
By clicking on "NEXT," you indicate that you understand and agree to the conditions mentioned above.
If you do not wish to participate in this study, simply close your browser.
Press "NEXT" to continue.
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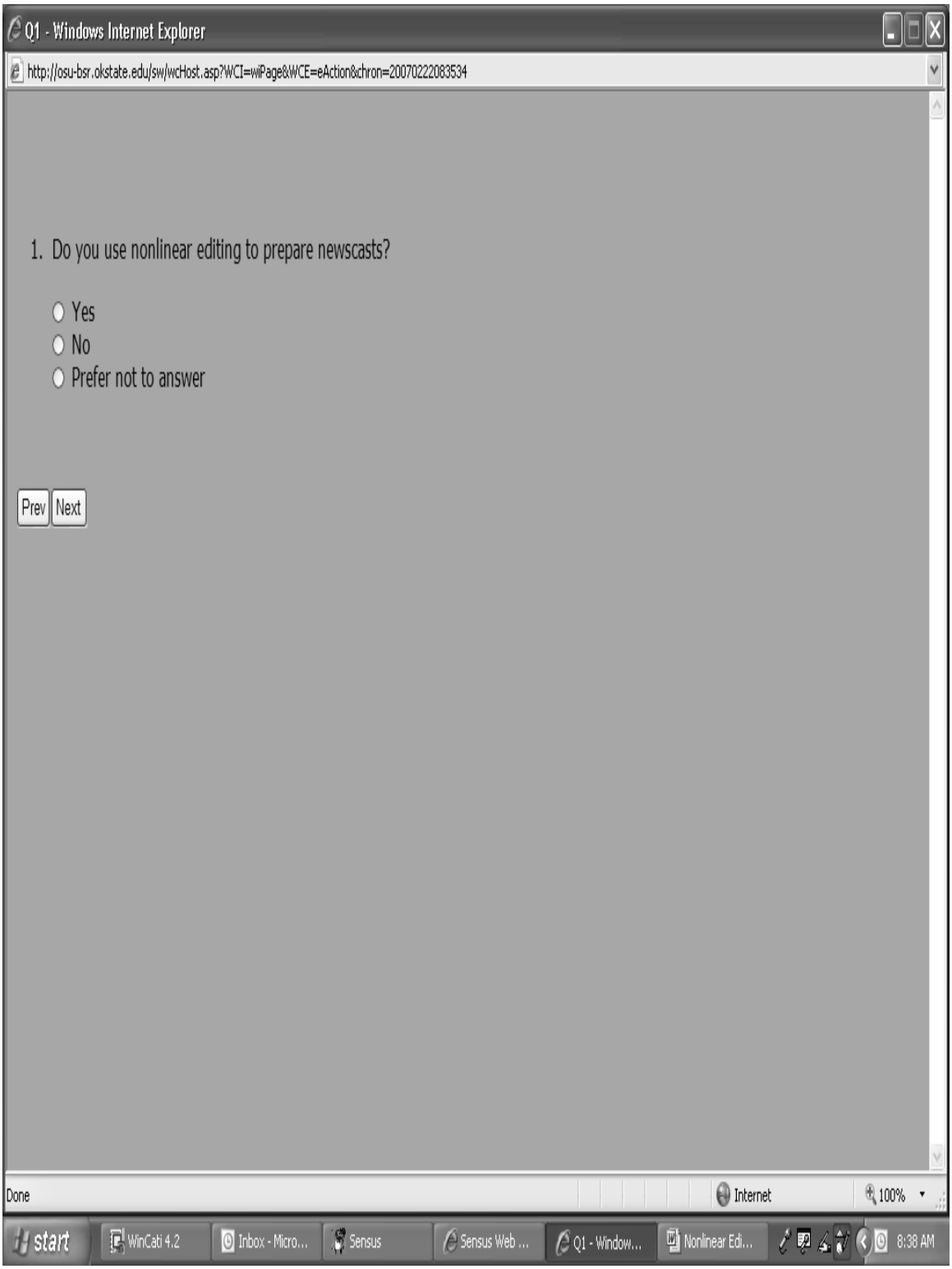
Q1 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083534
1. Do you use nonlinear editing to prepare newscasts?
Yes
No
Prefer not to answer
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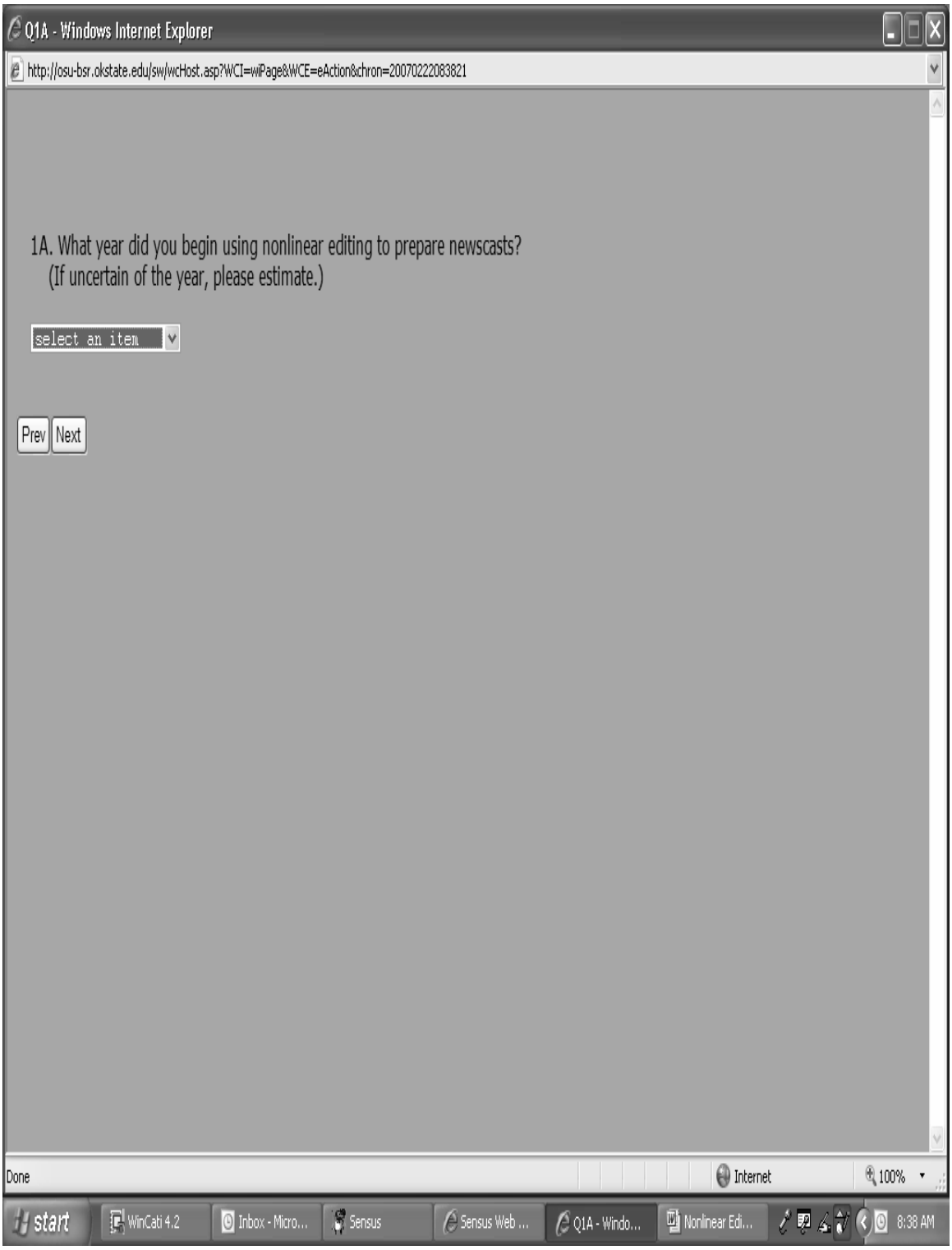
Q1A - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083821
1A. What year did you begin using nonlinear editing to prepare newscasts?
(If uncertain of the year, please estimate.)
select an item
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Q1B - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083840
1B. What nonlinear editing system are you currently using?
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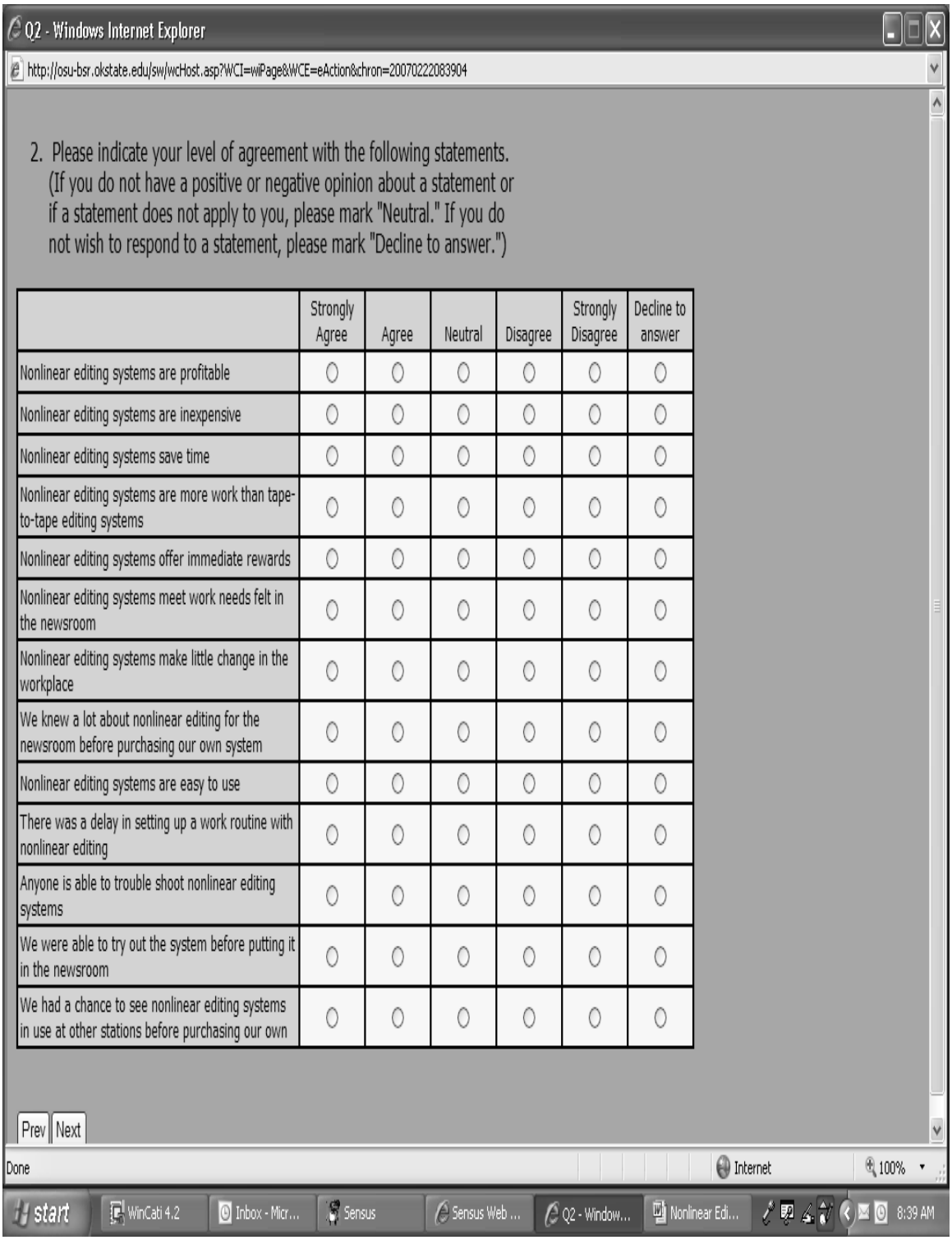
Q2 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083904
2. Please indicate your level of agreement with the following statements. (If you do not have a positive or negative opinion about a statement or if a statement does not apply to you, please mark "Neutral." If you do not wish to respond to a statement, please mark "Decline to answer.")
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
Nonlinear editing systems are profitable
Nonlinear editing systems are inexpensive
Nonlinear editing systems save time
Nonlinear editing systems are more work than tape-to-tape editing systems
Nonlinear editing systems offer immediate rewards
Nonlinear editing systems meet work needs felt in the newsroom
Nonlinear editing systems make little change in the workplace
We knew a lot about nonlinear editing for the newsroom before purchasing our own system
Nonlinear editing systems are easy to use
There was a delay in setting up a work routine with nonlinear editing
Anyone is able to trouble shoot nonlinear editing systems
We were able to try out the system before putting it in the newsroom
We had a chance to see nonlinear editing systems in use at other stations before purchasing our own
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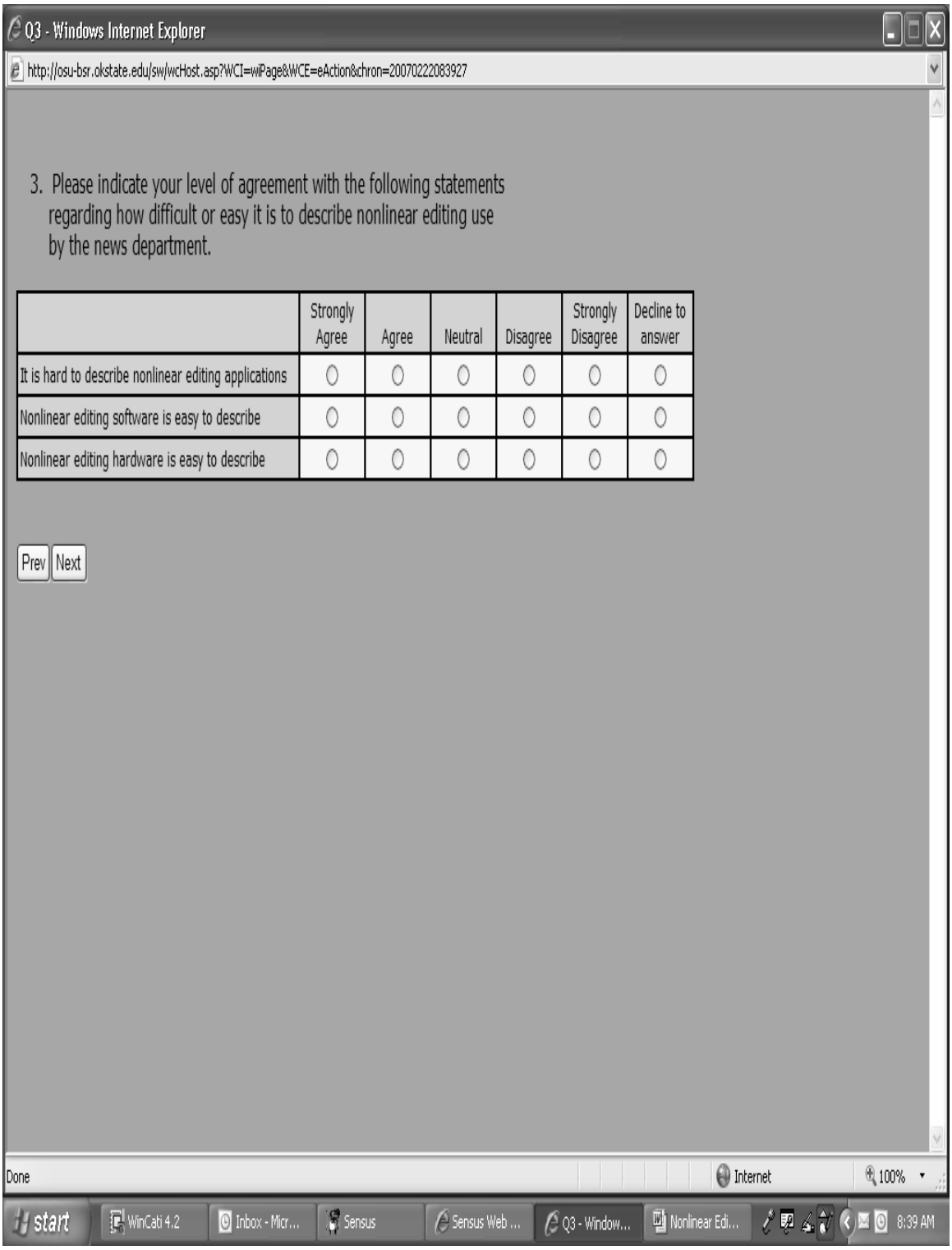
Q3 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083927
3. Please indicate your level of agreement with the following statements regarding how difficult or easy it is to describe nonlinear editing use by the news department.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
It is hard to describe nonlinear editing applications
Nonlinear editing software is easy to describe
Nonlinear editing hardware is easy to describe
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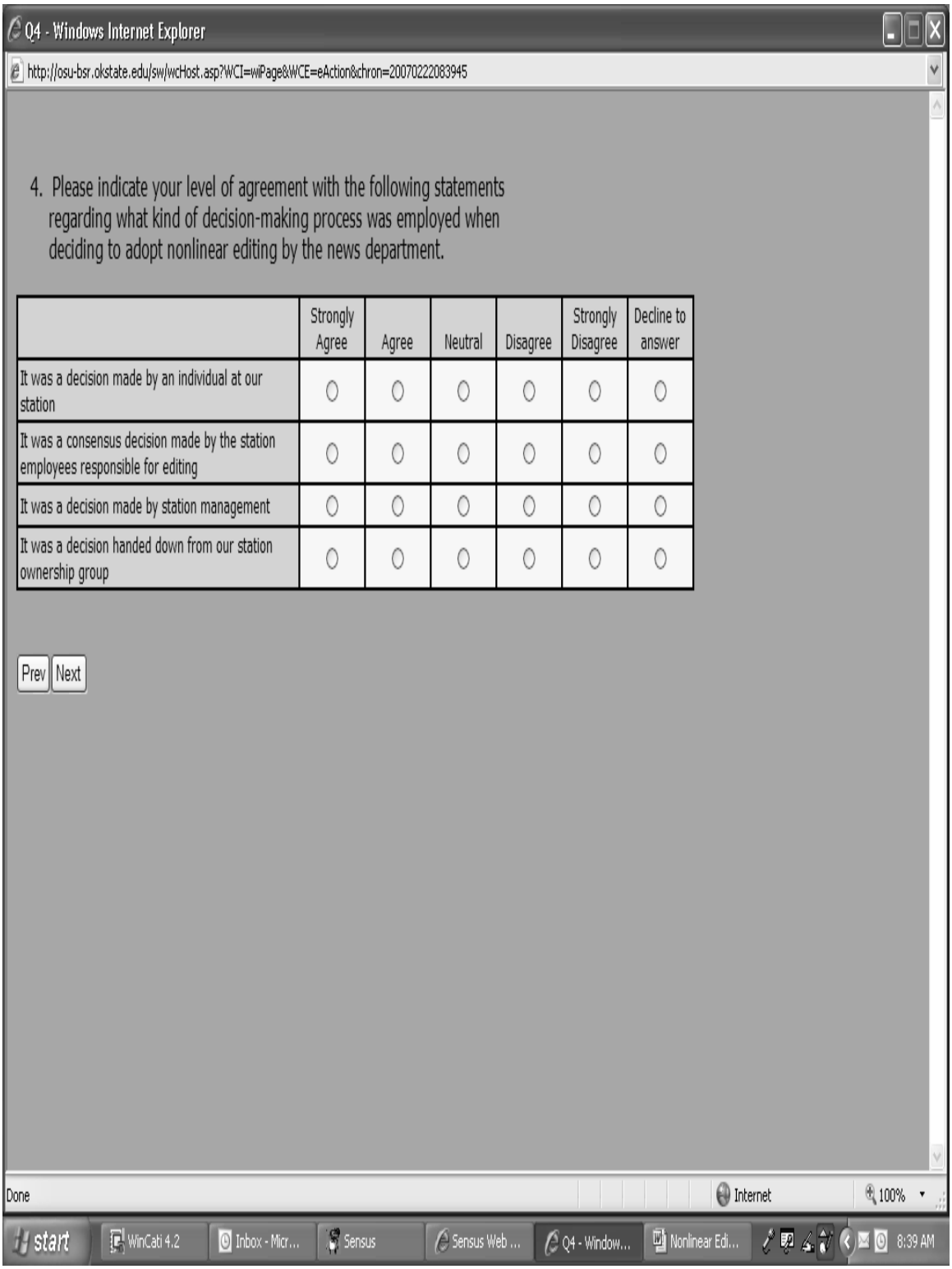
Q4 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083945
4. Please indicate your level of agreement with the following statements regarding what kind of decision-making process was employed when deciding to adopt nonlinear editing by the news department.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
It was a decision made by an individual at our station
It was a consensus decision made by the station employees responsible for editing
It was a decision made by station management
It was a decision handed down from our station ownership group
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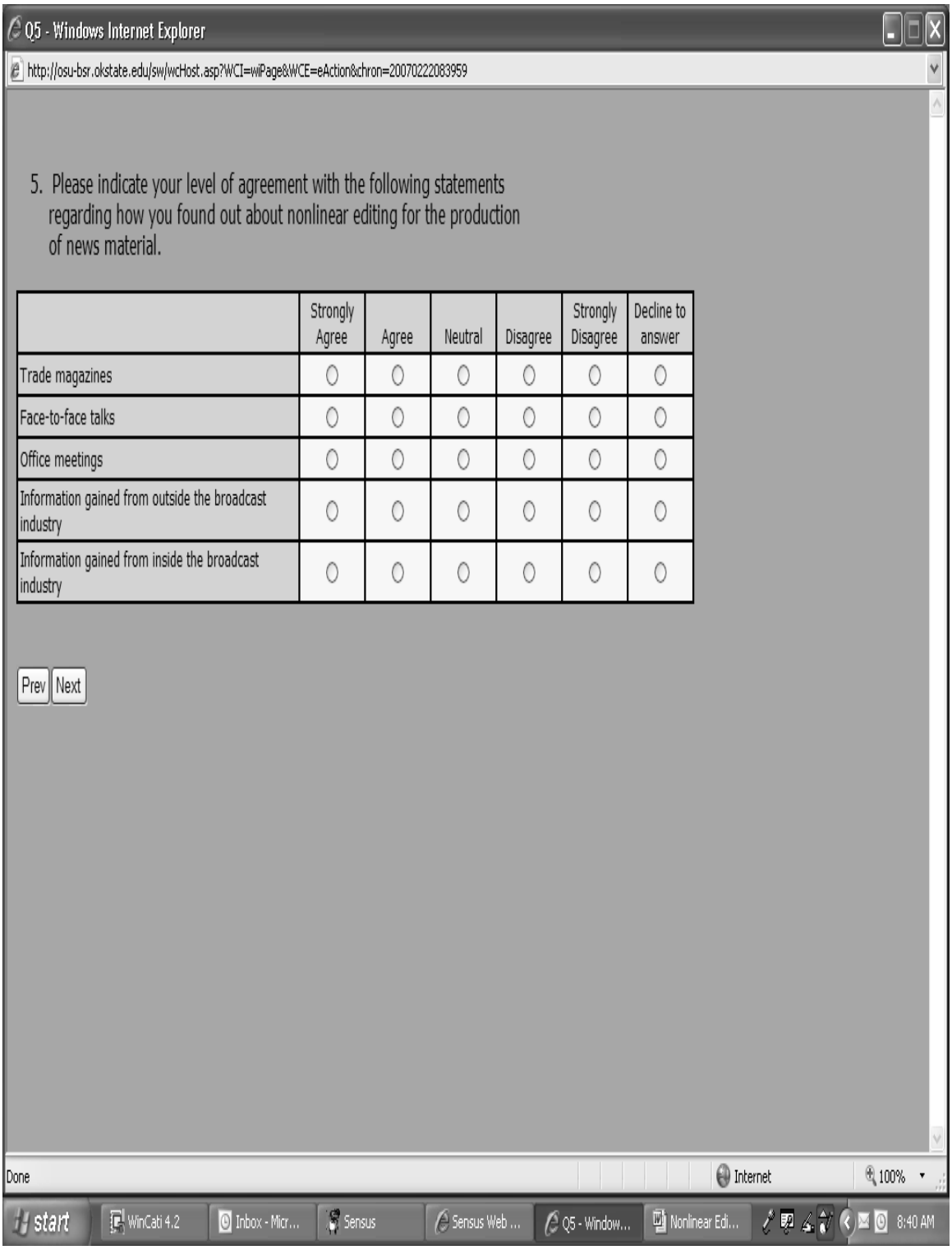
Q5 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222083959
5. Please indicate your level of agreement with the following statements regarding how you found out about nonlinear editing for the production of news material.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
Trade magazines
Face-to-face talks
Office meetings
Information gained from outside the broadcast industry
Information gained from inside the broadcast industry
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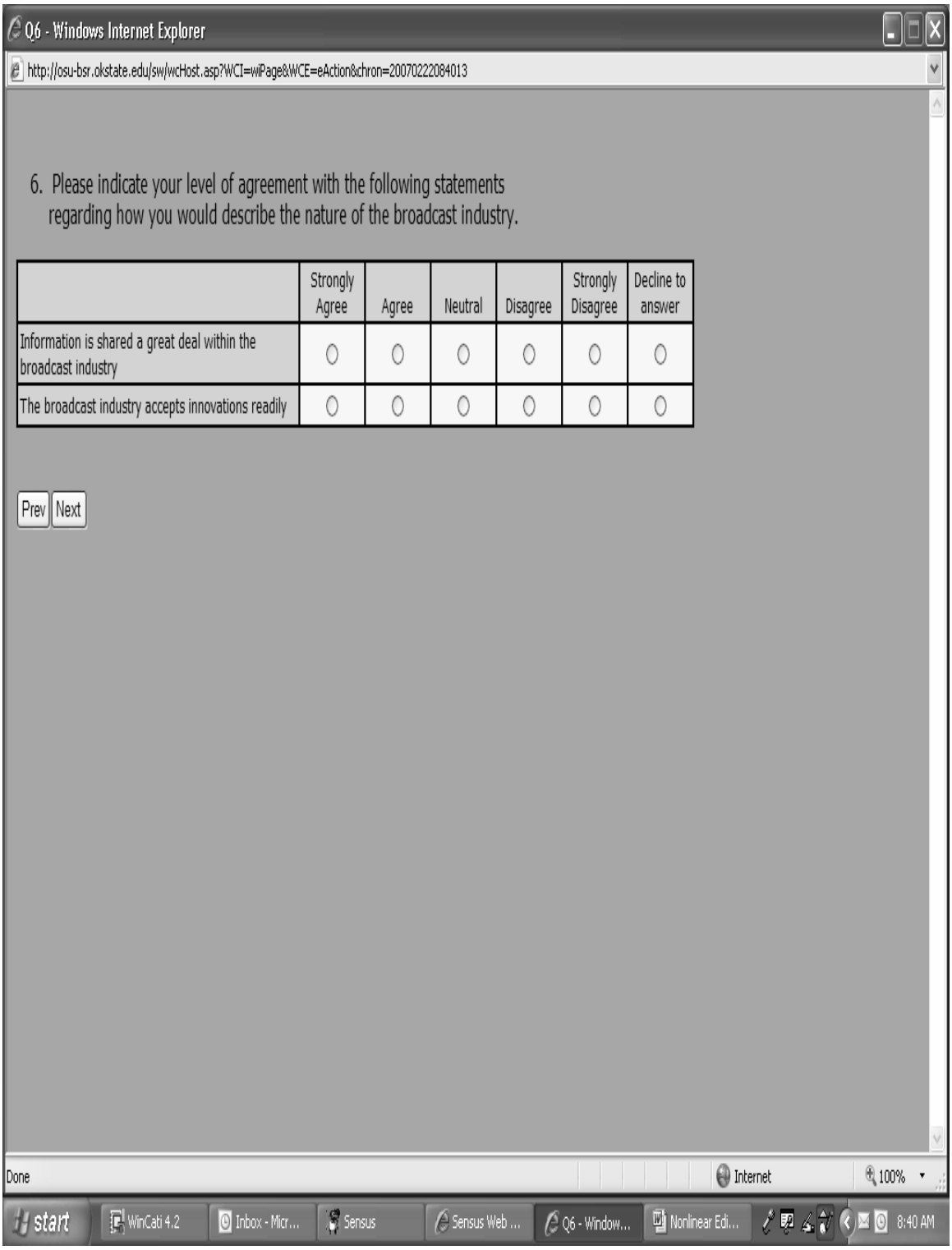
Q6 - Windows Internet Explorer
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6. Please indicate your level of agreement with the following statements regarding how you would describe the nature of the broadcast industry.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
Information is shared a great deal within the broadcast industry
The broadcast industry accepts innovations readily
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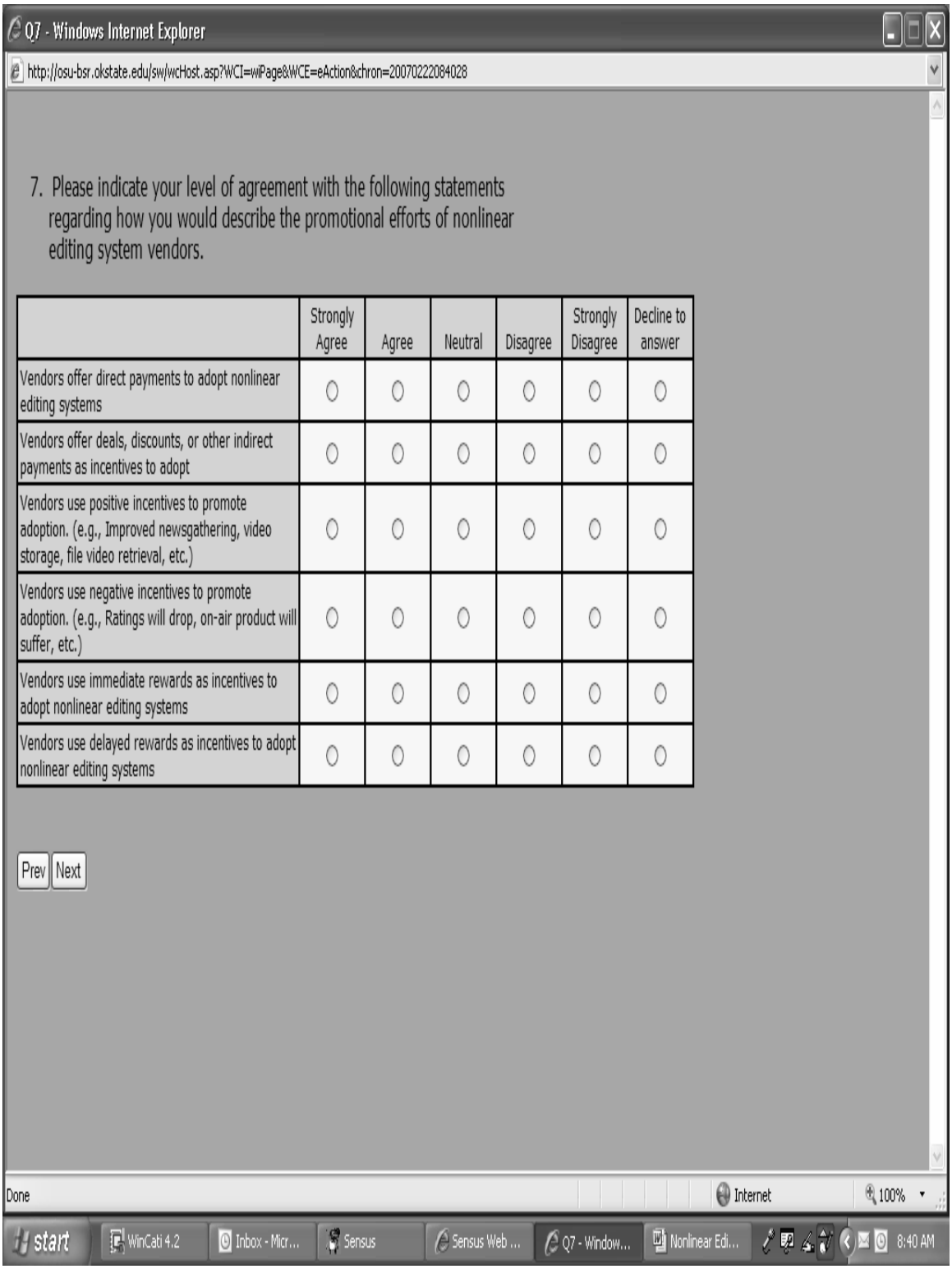
Q7 - Windows Internet Explorer
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7. Please indicate your level of agreement with the following statements regarding how you would describe the promotional efforts of nonlinear editing system vendors.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
Vendors offer direct payments to adopt nonlinear editing systems
Vendors offer deals, discounts, or other indirect payments as incentives to adopt
Vendors use positive incentives to promote adoption. (e.g., Improved newsgathering, video storage, file video retrieval, etc.)
Vendors use negative incentives to promote adoption. (e.g., Ratings will drop, on-air product will suffer, etc.)
Vendors use immediate rewards as incentives to adopt nonlinear editing systems
Vendors use delayed rewards as incentives to adopt nonlinear editing systems
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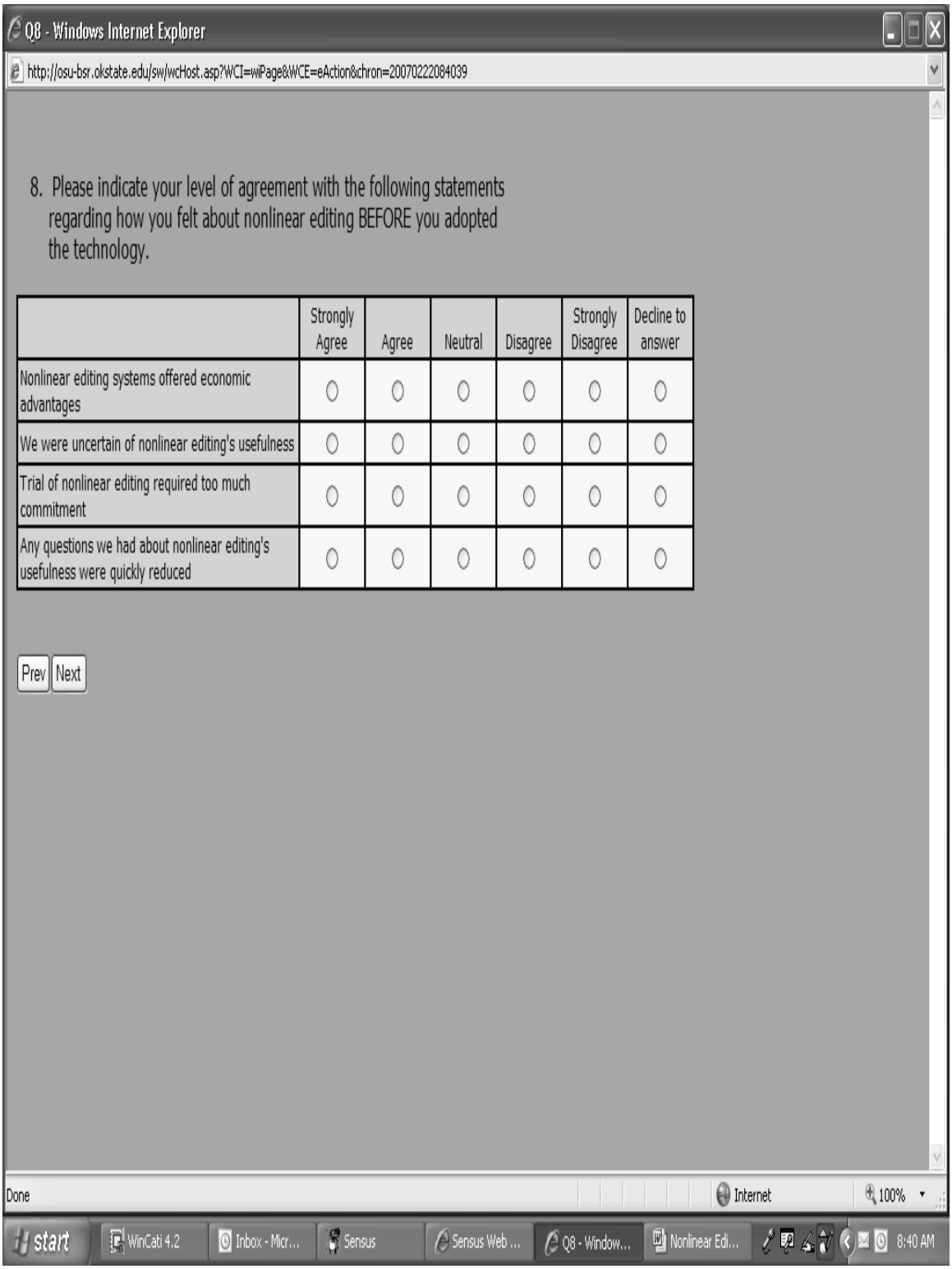
Q8 - Windows Internet Explorer
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8. Please indicate your level of agreement with the following statements regarding how you felt about nonlinear editing BEFORE you adopted the technology.
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Decline to answer
Nonlinear editing systems offered economic advantages
We were uncertain of nonlinear editing's usefulness
Trial of nonlinear editing required too much commitment
Any questions we had about nonlinear editing's usefulness were quickly reduced
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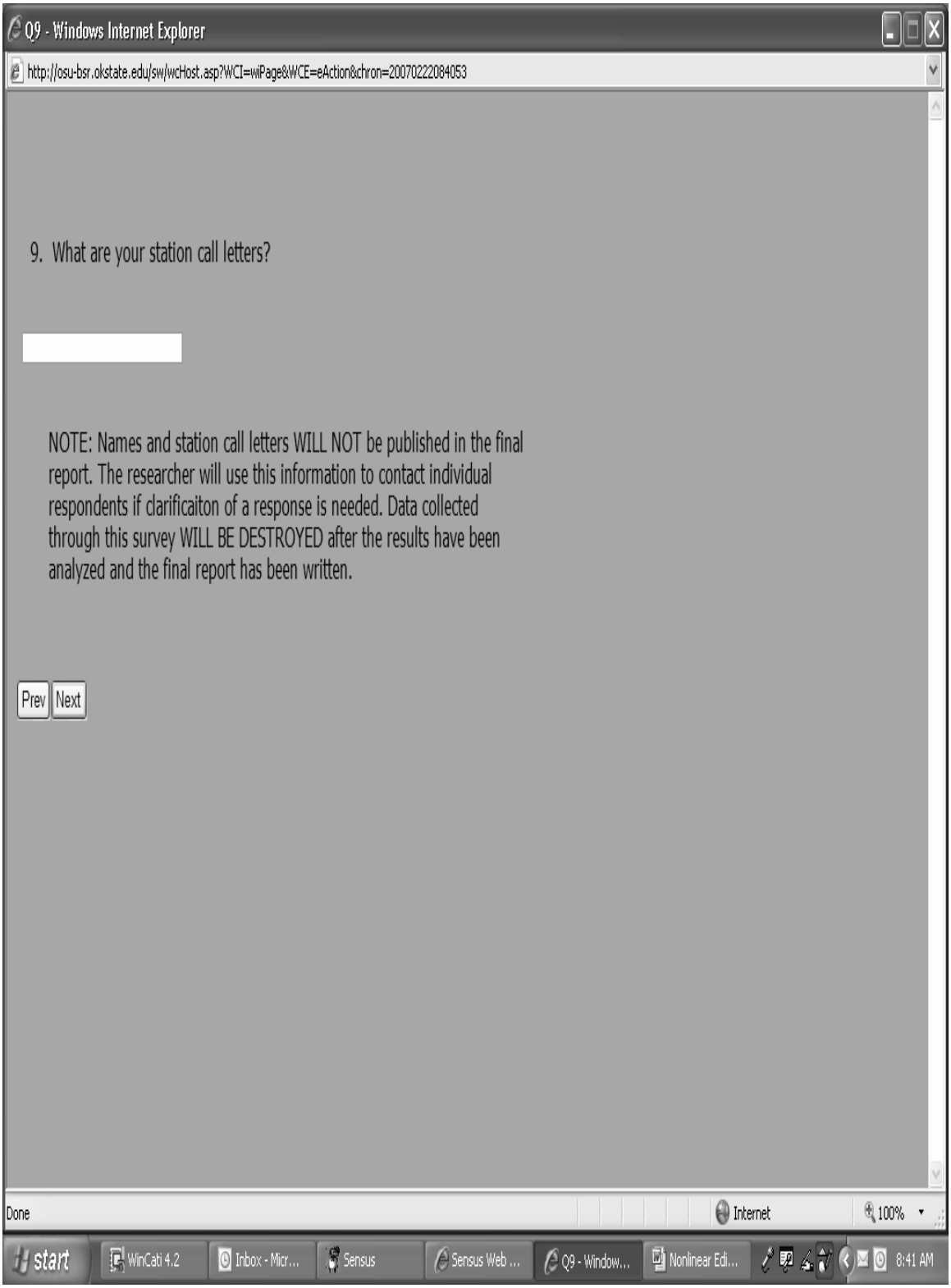
Q9 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222084053
9. What are your station call letters?
NOTE: Names and station call letters WILL NOT be published in the final report. The researcher will use this information to contact individual respondents if clarificaiton of a response is needed. Data collected through this survey WILL BE DESTROYED after the results have been analyzed and the final report has been written.
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Q10 - Windows Internet Explorer
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10. What is your network affiliation?
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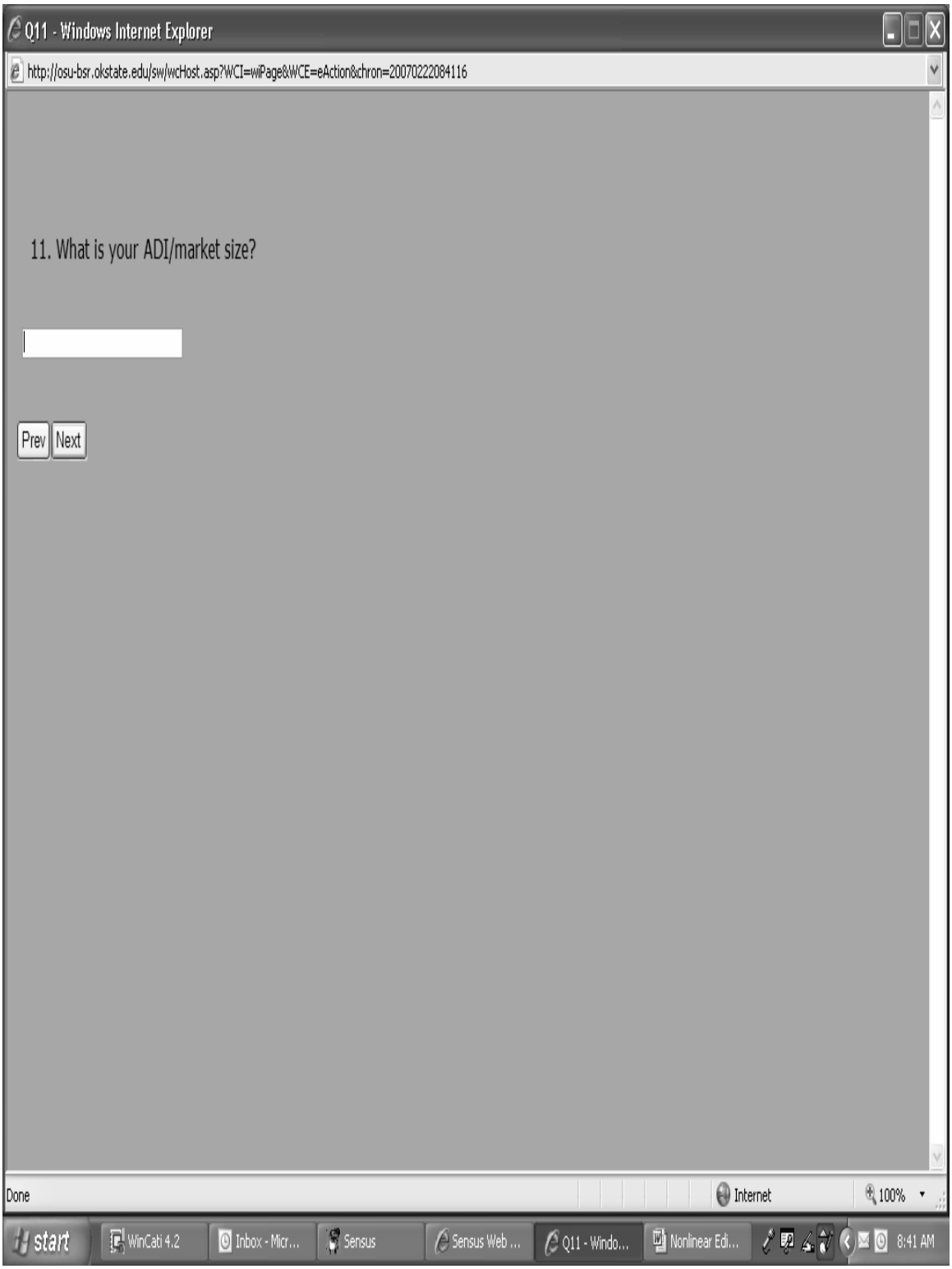
Q11 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222084116
11. What is your ADI/market size?
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Q12 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222084127
12. Please identify the owner/ownership group of your station.
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Q13 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222084135
13. Please provide your name.
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Q13 - Windo...
Nonlinear Edi...
8:41 AM


Q14 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222084142
14. Please provide your job title.
Prev
Next
Done
Internet
100%
start
WinCati 4.2
Inbox - Micr...
Sensus
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Q14 - Windo...
Nonlinear Edi...
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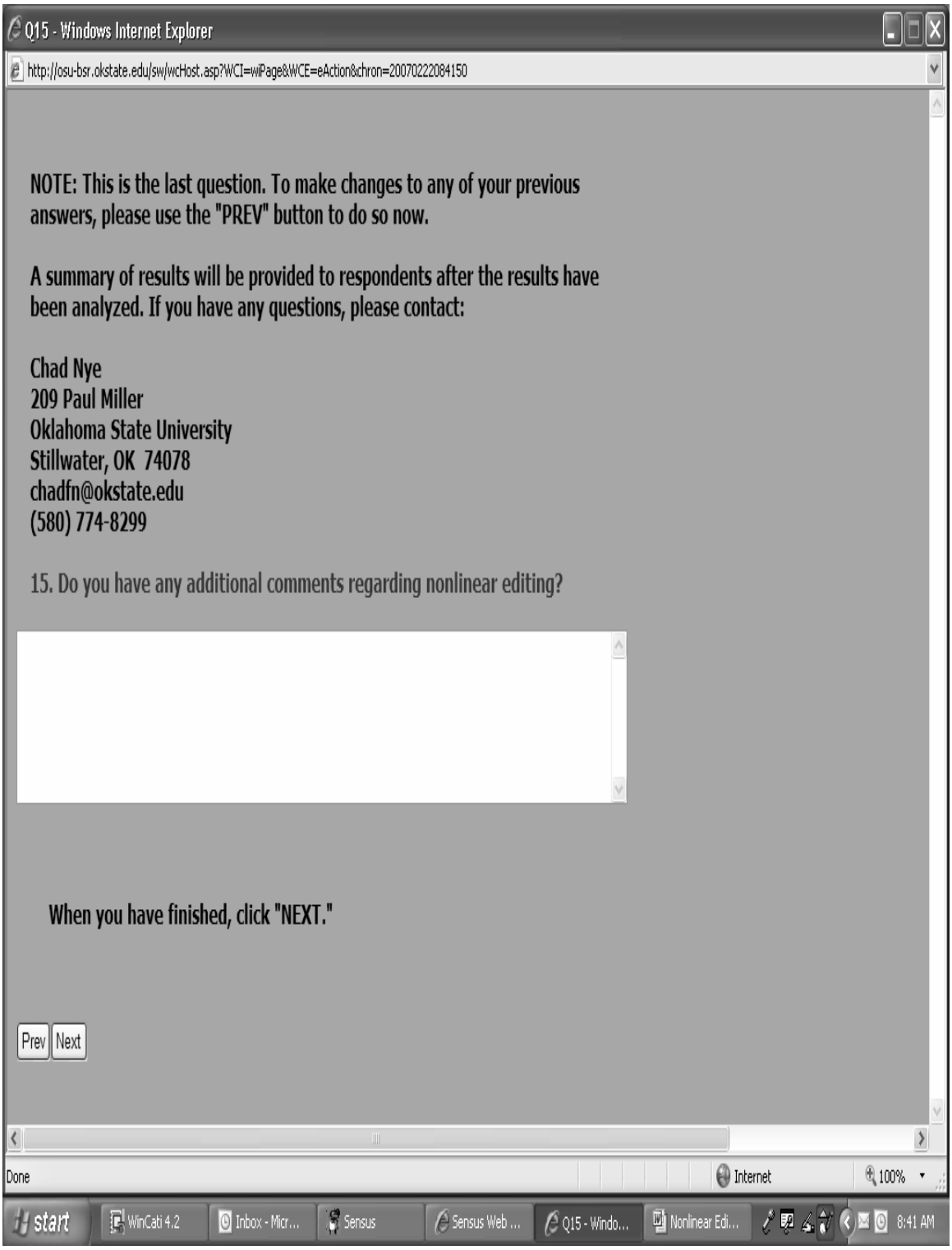
Q15 - Windows Internet Explorer
http://osu-bsr.okstate.edu/sw/wcHost.asp?WCI=wiPage&WCE=eAction&chron=20070222084150
NOTE: This is the last question. To make changes to any of your previous answers, please use the "PREV" button to do so now.
A summary of results will be provided to respondents after the results have been analyzed. If you have any questions, please contact:
Chad Nye
209 Paul Miller
Oklahoma State University
Stillwater, OK 74078
chadfn@okstate.edu
(580) 774-8299
15. Do you have any additional comments regarding nonlinear editing?
When you have finished, click "NEXT."
Prev
Next
Done
Internet
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WinCati 4.2
Inbox - Micr...
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Q15 - Windo...
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IRB APPROVAL

Oklahoma State University Institutional Review Board

Date:	Wednesday, December 20, 2006
IRB Application No	AS06140
Proposal Title:	Diffusion of Nonlinear Editing Systems in U.S. Local Television Newsrooms
Reviewed and Processed as:	Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 12/19/2007

Principal Investigator(s

Chad Nye
245 N. Univ. Pl. Apt. 203
Stillwater, OK 74078

John McGuire
311 Paul Miller
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☑ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Sue C. Jacobs, Chair
Institutional Review Board

VITA

Chad Flynn Nye

Candidate for the Degree of

Master of Science

Thesis: DIFFUSION OF NONLINEAR EDITING SYSTEMS IN U.S. LOCAL TELEVISION NEWSROOMS

Major Field: Mass Communication

Biographical:

Personal Data: Chad Flynn Nye (8/22/1970 -)

Education: Bachelor of Journalism emphasis in Broadcast News
University of Missouri, Columbia, Missouri, 1993

Completed the Requirement for the Master of Science degree at Oklahoma State University in May 2007

Experience: Reporter, Anchor, Producer, KJRH-TV, Tulsa, Oklahoma, 1996 – 2005

Assistant News Director, KVII-TV, Amarillo, Texas, 1993 – 1996

Reporter, Anchor, Producer, KOMU-TV, Columbia, Missouri, 1992 – 1993

Reporter, Anchor, KBIA-FM, Columbia, Missouri, 1992 – 1993

Reporter, Anchor, Disc Jockey, KWEY-AM/FM, Weatherford, Oklahoma, 1988 -- 1990

Professional Memberships: Radio Television News Directors Association

Kappa Tau Alpha

Name: Chad Flynn Nye Date of Degree: May, 2007

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: DIFFUSION OF NONLINEAR EDITING SYSTEMS IN U.S. LOCAL TELEVISION NEWSROOMS

Pages in Study: 116 Candidate for the Degree of Master of Science

Major Field: Mass Communication

Scope and Method of Study: Scope of the study is the adoption and use of nonlinear editing systems by local television news departments at network affiliated television stations in the United States. Method of the study is quantitative and qualitative data analysis. Data were collected using an online survey.

Findings and Conclusions: This study applied diffusion of innovations theory to examine the adoption process of nonlinear editing systems by local television news departments. Data analysis showed the adoption rate between 1997 and 2007 followed the classic S-curve of diffusion theory. Tests of means between early and late adopters showed significant differences between early and late adopters for the variables Type of Decision Making Process Employed and Communication Channels Used. Early adopters indicated the decision to adopt nonlinear editing was made by an individual. Late adopters indicated they learned about nonlinear editing through face-to-face meetings and office meetings.

ADVISER'S APPROVAL: Dr. John McGuire