THE FUTURE OF COMPUTER-ASSISTED REPORTING

COURSES IN UNIVERSITY JOURNALISM

PROGRAMS: A DELPHI STUDY

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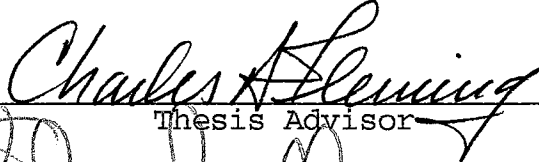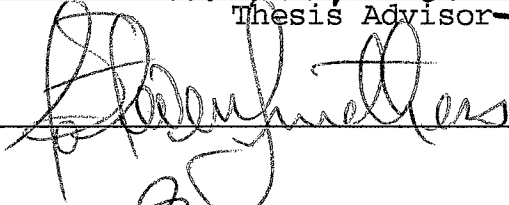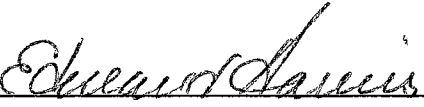
# THE FUTURE OF COMPUTER-ASSISTED REPORTING
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# PROGRAMS: A DELPHI STUDY

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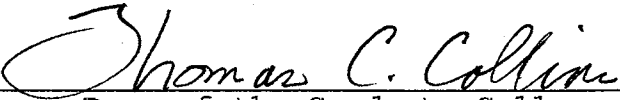
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CHAPTER I

INTRODUCTION

Introduction

As computer-assisted reporting (CAR) becomes more
prevalent, the number of newspapers seeking to hire CAR-
trained journalists will continue to increase. Students
seriously pursuing a career in journalism will search for a
college/university journalism program which provides
instruction and opportunities for skill development in CAR.

Journalism schools, in order to properly train the
reporters and editors of the future, must develop programs to
teach the principles of CAR to students.

Background

The use of computers to access and analyze data from
government and business databases by journalists has
increased dramatically in the last decade. This research is
referred to as computer-assisted reporting.

> Computer assisted reporting refers to the extraction of
> data, usually from government agencies, into relational
> databases for the purpose of producing information for
> stories.[1]

A rapidly increasing amount of public information from
government and business is being stored digitally by

computers. Some information is now being stored exclusively on computers. Journalists' livelihood and very reason for existence rest on their ability to access, digest and communicate information in a timely and accurate manner. An immense amount of national, state and local census data, crime statistics, health care records, audit reports, etc., are already contained in computer data banks, 9-track magnetic tapes, CD-ROMS and other digital storage systems.[2]

"For five years in a row, reporters have won Pulitzer Prizes for stories based on computer-assisted reporting," according to Bill Dedman, co-director, Investigative Reporters and Editors (IRE).[3]

IRE has been collecting examples of computer-assisted journalism stories since 1979. Their files contain abstracts of over 10,000 CAR projects ranging in difficulty from a reporter gaining access to one useful database to teams of reporters pouring over numerous nine-track tapes and accessing mainframe computers.[4]

Although CAR techniques have a number of applications across a broad spectrum of news gathering media, it has remained a predominantly print enterprise to date. Of the nearly 150 journalists who had attended NICAR seminars through July 1993, only four worked in television news operations. Broadcast reporters cite three reasons for the slow response to CAR among television news organizations: the visual element required for TV, the cost of the computer

technology, and the short length of most television news stories.[5]

A few journalism schools have begun to offer courses in CAR. The first to delve into this new arena include the University of Missouri, the University of Indiana-Indianapolis, Syracuse University and Columbia University in New York City. Journalism professionals, professors and students seeking to acquire knowledge and develop skills in CAJ have attended seminars offered by Missouri's National Institute of Computer-Assisted Reporting (NICAR), Indiana's National Institute for Advanced Reporting (NIAR), Columbia's CAR and The Poynter Institute for Media Studies CAR program.[6]

NICAR's seminar, "Training Reporters In Data Acquisition & Retrieval Technologies" (TRI/DART), covers basic skills necessary for computer-assisted reporting: negotiating with government agencies for access to electronic records, converting records to a usable form for personal computers, detecting whether the information has been altered, using database software to analyze the database information, transferring results of database analysis into software programs for further examination.[7]

Statement of the Problem

This study sought to address the following: What kinds of problems will university journalism programs face while

designing and implementing computer-assisted reporting courses? What kinds of benefits will emerge from that process? What are possible solutions to the problems?

Purpose of the Study

This study sought to identify the benefits and problems of future CAR courses in university journalism schools from the perspective of CAR experts in education and the news media. Additionally, possible solutions to the hypothesized problems were solicited from the expert panel.

Research Questions

This study sought to address the following questions: What problems will accompany the introduction of CAR courses in journalism schools? What will be the benefits of CAR courses? Which problems are most likely to occur? Which problems are greatest? What are some possible solutions?

Methodology

This study used the Delphi Technique to collect the opinions of experts regarding the future of CAR education. Predictions and comments were solicited from professional news journalists and journalism educators. The professionals consisted of print journalists who have utilized CAR to

produce award-winning or noteworthy news stories. The educators included instructors who teach CAR courses.

The standard Delphi study consists of three rounds of surveys. The first round focused on the predicted benefits and problems that CAR education programs in journalism schools will encounter. From the responses to the first round of questions, a list of the benefits and problems were compiled. In the second round, the expert respondents rated each item on the list to indicate their prediction of the likelihood of each problem occurring. In round three, the experts offered their solutions to the top problems identified from the previous round.

The analysis of the responses will help provide journalism schools a touchstone for assessing the potential advantages and challenges associated with the establishment of CAR programs in their institutions.

Significance

Answers to these questions will help educators and professionals to design and develop CAR programs and further their understanding of certain communication theories.

Scope and Limitations

This Delphi study included three rounds of surveys with professional and scholastic experts in computer-assisted

reporting to assess the predicted future of CAR education. Limitations inherent to the Delphi Technique include the selection and utilization a non-random sample. The experts were not randomly selected from the total population of journalism educators and professionals, but specifically selected based on their expertise in CAR. Therefore, the results cannot be projected to a larger population.

Selected expert respondents were asked to provide knowledgeable hypotheses regarding the future of CAR education. However, the accurate prediction of the future of any academic program is difficult. Therefore, the results consist of opinionated predictions of benefits, problems and solutions. The compilation and analysis of the experts' responses creates a broad portrait of the views of the panel, not a precise picture of the future.

## Outline of the Study

Chapter II is a review of the literature in computer-assisted reporting. It includes a description and history of CAR. Chapter III describes the Delphi Technique methodology used in this study. Chapter IV details the findings of the Delphi research. Chapter V includes a summary of the study, conclusions of the researcher, and recommendations for further study.

Chapter I References

[1]Brian Brooks, and Tai-En Yang, "Patterns of Computer Use in Newspaper Newsrooms: A National Study of U.S. Dailies," Association for Education in Journalism and Mass Communication Annual Convention, August 1993, 12.

[2]Mark Leff, "Psst! Want some data ... *cheap*?" Quill, September 1993, 21.

[3]"Harnessing computers to cover the news," Forum, September 1993, 7.

[4]Jonathan Schmid, and Andrew Scott, Selected Computer-Assisted Stories from the IRE Morgue (Columbia, Missouri: Investigative Reporters and Editors, 1992) i.

[5]Michelle Smawley, "Enthusiasm for computer-assisted reporting is keen, although broadcasters are leery of cost vs. return," Uplink, June/July 1993, 4.

[6]Jack Lail, "Computer Journalism," Quill, September 1993, 22.

[7]"The TRI/DART Seminar," Missouri National Institute for Computer-Assisted Reporting, brochure.

CHAPTER II

REVIEW OF THE LITERATURE

Overview

This chapter will begin with a discussion of the task of the journalist and the changes that computer technology have made and will make in the lives of news reporters and editors. A need for the study will be established based on the future growth of computer-assisted reporting courses in university schools of journalism.

Also included in this chapter is a review of the relevant literature, including a description of computer-assisted reporting, CAR education, and primary problems associated with the development of computer-assisted reporting courses.

Background of the Problem

The task of the journalist in a democratic society is to produce for the intended audience an accurate account of contemporary events in a timely, thorough, and objective manner. Newsworthy events and issues include those which impact the lives of the audience. They often focus on persons of prominence, topics of human interest, and incidents in physical proximity to the audience.[1] Journalists serve an additional function in the United States as the unofficial

"fourth estate" of government, providing a check and balance on the three official branches of government: executive, legislative, and judicial.

Careful review of the official actions of local, state and national government agencies and officials traditionally has meant scrutinizing documents on paper -- often in large volumes in government buildings and archives.

In contrast, technological developments have enabled the contemporary reporter to obtain computerized versions of print documents, photographs, audio messages and video footage not only from across the nation but also the other side of the earth instantaneously. Pictures and stories chronicling the Gulf War half a world away, for example, were transmitted rapidly via satellites and phone lines to newspapers in the United States in a matter of minutes. The technology is transforming the newspaper industry:

> The change in the way journalists acquire
> information for their reports has substantial potential
> both to influence news production and to change the
> character of news stories.[2]

The technological process which allows high-speed transmission of data globally is called digitization. It involves the conversion of standard print and picture documents from paper to a digital form computers can use. Digitization is the conversion of numbers and words into a sort of Morse code of signals that can be transmitted at incredible speeds on the backs of electrons. Once digitized,

a piece of information takes on properties entirely different from the properties of information in its printed form. ... In the computerized version, by way of contrast, each word swims around in a digital soup, ready to dipped out in accordance with almost any criterion the searcher wants to specify.[3]

The translation of information into digital form for computers has enabled private organizations and government agencies to store huge amounts of data. Much of that information is available to journalists. The entire contents of the 5,000 U.S. Yellow Pages, for example, are stored on one CD-ROM disk and are available at computer stores for $40.[4] A computer with a modem can use a telephone line to access the NEXIS online library of information -- the so-called "supermarket of databases" containing approximately 100 million documents (from Advertising Age to Xinhau, the Chinese News Agency) -- or Knight-Ridder's VU/TEXT, containing the Charlotte Observer, the Seattle Times, the Los Angeles Times, the "Encyclopedia of Associations," "Facts on File," and 800 additional magazines, trade journals and newsletters.[5] Also available over modem are the complete results of the 1990 U.S. Census from the CENDATA database, including additional information regarding federal programs for agriculture, housing, construction, manufacturing and foreign trade.[6]

According to Philip Meyer, professor of journalism at the University of North Carolina at Chapel Hill, every

journalist needs to acquire additional skills to adequately handle the plethora of digitally stored information which is now just a phone call or CD-ROM away from any newsroom. He argues that journalists in the computer age "must" learn and apply the three fundamental principles of information science to their profession: 1) how to find information; 2) how to evaluate and analyze it; 3) how to communicate it efficiently and effectively.[7]

For the reporter, finding the information in the past primarily involved contacting traditional news sources in government and industry, reviewing paper documents, and checking the newspaper's library for previous stories on the subject.[8] Today, journalists must be trained to find the needle of information they need for a story in a proverbial haystack of computerized data. According to Elliot Jaspin, founding director of the National Institute for Computer-Assisted Reporting (NICAR), proficiency with computer information retrieval and analysis has redefined the idea of literacy for the journalist. Reporters who lack the proper skills will resemble illiterate persons helplessly standing in the middle of a library. Crucial information could remain hidden from the media, and conversely, the public:

> Government and private industry are turning to computers
> instead of paper to store, analyze and retrieve
> information. Either newspapers will have a way of using
> this electronic information, or the computer will become
> a black hole for supposedly public information. This
> means that a computer-assisted reporting program needs
> to be an answer to all the barriers that stand between
> the newsroom and the electronic information it needs.[9]

Need for the Study


The world is turning rapidly to the storage of
information by computer much the same as earlier centuries
preserved oral stories on scrolls and handwritten documents
with the printing press. "In all likelihood, every important
piece of information will be maintained electronically by the
turn of the century."[10]

As public information is becoming more computerized,
computer-assisted reporting is rapidly becoming more
prevalent in the newspapers of the United States. Brian
Brooks and Tai-en Yang at the University of Missouri School
of Journalism found that 100 percent of the large newspapers
(100,000-plus circulation) responding to their fall 1992
survey "regularly" accessed at least one external database;
90 percent used computers to conduct research for
investigative reports.[11]

To date, most university journalism schools have not
even begun to meet the contemporary demand for reporters
skilled in computer research by offering courses in computer-
assisted reporting.

> The vast majority of journalism professors --
> indeed, the vast majority of all university educators --
> simply have not grasped the magnitude or specifics of
> the change now extant in information storage,
> management, and communications, the fundamental
> components for all teaching and all learning.[12]

Because only a relative handful of schools have offered CAR courses to date, the unique problems and solutions confronting the establishment of these courses have not been clearly identified. This Delphi examination of the problem by a panel of CAR experts in the fields of journalism and education will assist journalism schools seeking to develop CAR courses.

Review of the Literature

This review of the literature will provide a comprehensive definition of computer-assisted reporting, including the wealth of valuable information available to journalists through databases, online computer networks, and electronic bulletin board services. Research chronicling the growth of computer-assisted reporting in U.S. newspapers is also included.

Documents addressing CAR education -- past, present, and future -- will be examined. The review will close with an outline of several problems journalism schools are likely to face in the process of incorporating computer-assisted reporting course into their curricula.

Computer-Assisted Reporting

<u>Definition</u>

Computers have been used by newspapers over the last decade primarily to accomplish word processing and pagination tasks. Stories can quickly be written, edited and "pasted" onto the appropriate page electronically using computers. Additionally, the computer is now quickly beginning to take its place alongside the tape recorder and camera with many journalists as a routine piece of reporting equipment.

Computer-assisted reporting refers to the use of the computer as a primary research tool for conventional newspaper reporting. Jonathan Schmid and Andrew Scott describe the range of CAR activities, from simple information gathering to intricate data analysis, in the introduction of their collection of 9,000 computer-assisted news story abstracts:

> Some are simply examples of a reporter gaining access to a useful database. Others show reporters digging up information the old fashioned way and building their own databases. Still others are advanced projects involving nine-track tapes and mainframe computers.[13]

The contemporary journalist with a modem-equipped computer can swiftly access oceans of information from government databases, commercial electronic bulletin boards, and internationally networked academic data libraries. Insiders call the technique of using computers to do research

for news stories computer-assisted reporting. The right
software can help someone sort through 12,000 records from
the city building inspector's office, spot trends of crimes
in 1,000 or more police reports and build a resource for
tracking campaign contributions.[14]

According to Nora Paul, library director for the Poynter
Institute for Media Studies, CAR includes the use of
computers by reporters for gathering and processing
information in every phase of news story development:
obtaining story ideas from online bulletin board services;
collecting and analyzing information from databases;
verifying information received from human sources via online
news retrieval services; and providing data and statistics
needed for charts and graphics.[15]

Echoing Philip Meyer's contention that the computer is
just another tool for reporting, Paul argues that CAR is
actually more demanding because the new techniques are
utilized in addition to, rather than instead of, traditional
reporting techniques:

> Remember, the information you get from computer-assisted
> research is a complement to reporting, not a
> replacement. In fact, the ease with which you can find
> information and the amount of information that can be
> retrieved can make the reporting task more complicated.
> There is that much more for you to verify and determine
> how it applies to your story. But it can also help
> provide the detail perspective, and context that will
> make your story a compelling and important read.[16]

CAR Equipment


Nora Paul identifies three primary pieces of equipment a
journalist needs for computer-assisted reporting:
a computer, a modem ("the device that connects your computer
to a phone line"), and software.[17] In 1992 dollars, a
complete CAR workstation would cost approximately $10,000,
according to George Landau, reporter for the St. Louis Post
Dispatch:

> These days $6,000 can buy you a PC with more than enough
> storage capacity to handle files from most mainframes.
> Another $3,000 buys a nine-track tape drive to read the
> data from those mainframes. Finally, state-of-the-art
> software costs only about $800.[18]

Landau, a "CAR specialist," recommends four fundamental
types of software for computer-assisted reporting: database,
statistical, geographic, and mainframe-to-PC.[19]

1) Database -- (includes "high-end" software: FoxPro,
dBASE, XDB, Access, and Paradox; and "low-end": Q&A, Alpha
Four, and Approach) Using a "structured query language," SQL,
the software enables the journalist to search, sort and group
database information. SQL allows journalists to gather data
from a database "in a language approximating English."[20]

Searching: From a database of death certificates, for
example, in a matter of seconds the computer could identify
everyone who had died of brain cancer. Sorting: Using the

same database, the brain cancer victims could be listed by zip code. Grouping: Using the searched and sorted data, the zip codes with the most brain cancer victims could be listed in descending order of frequency.

2) Statistical software -- (includes SPSS/PC+, SYSTAT) Allows the journalist to isolate relationships between two or more factors "in a sea of variables." For example, a database of court records could be analyzed for the relationship between the defendants' race and sentencing, independent of age, gender, judges, attorneys, etc.

Spreadsheet software (includes Lotus 1-2-3, Excel) may also be used to compare smaller amounts of data. Aleta Watson, education reporter for the San Jose Mercury News, loaded information from 50 school districts into her computer, sorted and analyzed the information using a spreadsheet program, and discovered a number of schools which had not removed asbestos from their buildings.[21]

3) Geographic Information Systems -- (includes various "GIS" software, such as Atlas GIS) Enables the journalist to map out visually any data with a geographic component. With real estate and census records, for examples, the reporter could instruct the computer to highlight in green all of the census tracts in a metropolitan area which increased in median income over the last decade, and those that declined in blue.

4) Mainframe-to-PC -- (includes NineTrack Express) Allows the journalist to transfer data from a mainframe

computer tape to a PC. Once converted from mainframe tape to personal computer disk drive, data can be searched, sorted and grouped with a database manager, analyzed with a statistical package, and mapped with GIS software.

Joel J. Smith, investigative reporter for the Detroit News, used nine-track tapes from databases from the Michigan departments of correction and education to search for school employees with criminal convictions. He found approximately 200 teachers and another 200 bus drivers with felony convictions they had not reported on their application forms.[22]

## Resources

Resources available for computer-assisted journalists are available in two broad categories, databases and bulletin board services (BBSs).[23]

Databases are "collections of texts or numbers that are stored on computers."[24] The primary purpose of the database is to organize masses of information into meaningful systems. A reporter can search these storehouses of data for information pertaining to a specific topic, such as the history of a person or news accounts of an incident. Journalists have always sought historical information and they have traditionally depended on the news "morgue" to provide it. Computerization makes instantly available a much richer body of historical material. The database creates a

sort of massive long-term memory that can spew out virtually

any data a researcher specifies. ... Because information in

its fluid digital form can be "piped" at the rate of hundreds

of words per second over ordinary telephone lines, it becomes

unimportant where an information source is located.[25]

Databases are quickly establishing themselves in many

newsrooms as routine sources of instantaneous information.

According to Tom Foster, reporter for The (Syracuse, N.Y.)

Post-Standard, databases heavily used by newspapers include

local and national telephone directories, voter registration

records, city and county assessment rolls, government

payrolls, federal/state/local campaign contribution records,

and 1990 census data. Stories appearing in nearly every issue

of the daily newspaper include information from these

computerized sources:

> A reporter scrambling to cover a late-night fatal fire,
> for example, can count on being able to quickly find a
> list of neighbors to call, identify the building's owner
> and its assessed value, and obtain a demographic profile
> of the neighborhood's housing values, rents and income
> levels from census data.[26]

Journalists may work with databases in any of four

different formats: online, nine-track tape, CD-ROM, and

create-your-own.

"Online" databases refer to storehouses of digital

information which are accessible to reporters over telephone

lines. Nora Paul calls them "the dynamite of the information

explosion."[27] In his book, Journalism for the 21st Century:

<u>Online Information, Electronic Databases, and the News</u>, Tom
Koch describes the ease with which journalists can simply
dial up the desired databases and access a veritable galaxy
of information using communications software and a modem in
the computer:

> Data available from online sources are so vast that it
> would take an expert months or years to search through
> them manually for the pertinent fact or the seminal
> article. But because these databases can be searched
> using specific key words and carefully crafted search
> phrases, the mass of accumulated literature in almost
> any field can be narrowed to the appropriate and crucial
> information within minutes by a competent data
> searcher.[28]

A great deal of data from the federal government is now
available online. According to Philip Meyer, online federal
data has surpassed the Government Printing Office as the
major source of current government information. "Data which
have time value are now routinely loaded into computers for
access by anybody with a PC, a modem, and a communications
software package."[29]

A number of private organizations also supply
information online. CompuServe, America Online, and Prodigy
-- the so-called Big Three -- are the largest of the type.[30]
Along with Lexis/Nexis, Vu/Text, DataTimes, GEnie, the Well,
Dialog, and dozens of others, these subscription online
services offer journalists instant access to newspaper
morgues, municipal real estate records, appellate court
rulings, Securities and Exchange Commission filings, research
journal articles, ad infinitum.[31]

Nora Paul identifies six categories of information available from these online databases, "the giant supermarkets of data": bibliographies and abstracts, books and directories, images, public records and information about individuals, articles and transcripts, and government documents.[32]

WTOL-TV's Bruce Maxwell used Nexis to conduct background research when Northwest Flight 255 crashed near Detroit. The Toledo, Ohio, reporter instructed the service's databases to search for newspaper, magazine and wire-service stories of aircraft of the same model and engine type. Within a few hours Maxwell had developed a story incorporating data from a dozen other crashes involving the same make of airplane. His report on the Flight 255 accident closely mirrored that of the "CBS Evening News." "My stock at the station went up about two thousand percent," Maxwell said.[33]

Database information stored by nine-track tapes on mainframe computers also offers a wealth of facts and figures for journalists:

> A 200-foot high stack of paper records easily fits on one reel of nine-track magnetic tape. More importantly, while it would take a reporter weeks, if not months, to read through that pile of information, the computer can search it in a matter of minutes.[34]

In comparison, a floppy disk can store up to 1.4 million characters of information, a nine-track tape 300 millon.[35] The nine-track tape is so named because nine parallel tracks run the length of the 1/2-inch wide magnetic computer tape.

Eight tracks store digitized "bits" of information. The ninth track is utilized as a parity check. "The heads for reading and writing the tape are perpendicular to the tracks and read one bit from each track at the same time, to make a byte."[36]

In 1990 Kansas City Star reporter Greg Reeves read information onto his personal computer from the Missouri Department of Motor Vehicles nine-track computer tape of four million driver's license records. Checking the data against a second database of Kansas City Fire Department personnel records, he discovered several fire engine drivers who were illegally operating the vehicles with licenses suspended or revoked for such offenses as drunk driving.[37]

A great deal of federal and state government records are stored on nine-track tape. Elliot Jaspin argues that the newer, more powerful personal computers allow journalists to access and analyze these tapes, continuing the press' traditional role as government watchdog:

> ... the brute force of the computer makes it possible to work with millions of records. Without having this kind of power, newspapers are often unable to monitor even the most basic government function, such as tax collection.[38]

Journalists may also access database records on CD-ROMs (compact disks -- read-only memory).[39] Unlike the $3,000-plus price for a nine-track tape drive, a CD-ROM drive for a PC can be purchased for under $400. Many moderate-priced personal computers now come equipped with a CD-ROM drive.

A problem that hastens the move to CD-ROMs is that nine-track tapes are sensitive to dust particles and can be creased and damaged.[40]

One-quarter of a million pages of building specifications for the United States government are available on three CD-ROM disks; the national property inventory of the Resolution Trust Corporation on one.[41] Many of the government records currently stored on magnetic tape or paper may be available on CD-ROM over the next decade. Mike Martin, data technologist for the Jet Propulsion Laboratory at the California Institute of Technology, believes CD-ROM is the most durable computer storage medium available.[42] Thomas Temin, editor of Government Computer News, predicts that by the year 2000 federal agencies will replace nine-track tapes with CD-ROMs.[43]

> What the metamorphosis means for journalists is that CD-ROM drives will become a necessity to access federal information. And the change could take place swiftly as the cost of CD-ROMs comes down.[44]

Sometimes large volumes of data for a news story are only available in paper form. In those instances, journalists have the option of creating their own databases. While working on a story regarding a possible serial murderer, Hartford (Conn.) Courant reporter Brant Houston collected dates, descriptions, times, places the bodies were found, and demographic information for all of the victims. He also secured a "significant amount" of data from the medical examiner's office and created his own databases from them.

After a few days of analyzing the information, Houston
established a possible pattern for the murders which prompted
the state to create an investigative task force for the
cases.[45]

In addition to various types of databases, online
resources called bulletin board services (BBSs) have proven
to be another valuable source of information for contemporary
journalists. Computer users can communicate over a modem with
a number of other computer users, individual and corporate,
through BBSs. Nora Paul contrasts BBSs with databases:
The information you connect with in a database service is
static; it is not interactive. Bulletin boards, on the other
hand, are interactive sources for information. You
communicate with people, and can elicit comment about the
information you've found.[46]

Paul identifies four functions of BBSs: as informal
electronic libraries, and for conferences, messages, and
electronic mail. Libraries are online forums where senders
"upload" lists, documents, articles, and software for
receivers to "download" and read. Conferences involve a group
of persons arranging to be online at the same time for a
"real-time" discussion of a topic. Messages are commentaries
posted on the BBS for reading and response by anyone.
Electronic mail is akin to postal service mail: personal mail
sent to a specific person or group, for their reading only.[47]

Types of BBSs include solo shops, publications,
associations, corporate, commercial, academic, and

government, according to Paul. Solo shop BBSs are operated by individuals on their home computers, often offering "shareware" (free software), games, and conferences. Publication BBSs include services from magazines and newspapers, including libraries of past stories and online reader forums, such as National Review's Town Hall.[48]

CompuServe offers subscribers the opportunity weekly to communicate via computer with some of the writers, readers, editors and newsmakers (including Vice President Al Gore) of U.S. News & World Report via a service called "U.S. News Online."[49] Following a Nov. 11, 1993, cover story on the renowned evangelist, Time magazine and America Online offered 300 of the 450,000 subscribers of the computer service network the opportunity to question Billy Graham during an hour-long "guest appearance."[50] Journalists can utilize information from such online forums with newsmakers for stories that may have otherwise been impossible.

Associations ranging from the environment-protecting Greenpeace to the media-monitoring Accuracy in Media also offer BBSs pertaining to their areas of expertise. Corporate BBSs include those operated by computer hardware, software, and peripheral suppliers which offer customers upgrades of software, online ordering, and the opportunity to ask questions about products. For a fee, commercial computer services networks (CompuServe, Prodigy, etc.) offer a variety of BBSs, including special interest group forums (SIGS) such as Journalism Forum.[51]

Calling it an "electronic press club," more than 10,000 print and broadcast newsgatherers have signed up use Journalism Forum, or JForum, since its inception in 1985. "Message sections" within JForum include Fast Breaking News, Comment/Controversy, Off the Record, Job/Stringers, Radio, Television, Video, Photo, Graphics, and Ethics.[52] Some reporters use the forum to "post messages" regarding problems or questions they are having with a story, such as how to determine who controls a local charitable organization, for example. A few hours later, the reporter can reconnect with the forum and read messages from journalists across the nation who have advice, suggestions, and solutions for the query: Contact the office of the state attorney general, or the secretary of state, which often has a charities department.[53]

Academic BBSs include services offered by many universities. Scholarly special interest discussion groups and library public access catalogs are available online. The University of Louisville, for example, created a BBS for working journalists called CARR-L, the Computer-Assisted Research and Reporting List.[54] Reporters can access the online forum for specific information related to the use of computers for research in journalism.

One of the most promising collections of academic BBSs for journalists can be found on the Internet, or "net," "a vast umbrella" of global computer networks.[55]

The mother of all networks is the Internet, the worldwide web

of thousands of computer networks linking research

institutions, academia, individuals and business. There you

can find just about anything you want -- and then some.[56]

> For whatever reason, when informed of the billions of
> pages of information available free over the Internet,
> most novice users want to know: What's the catch? There
> is no catch. A hoard of electronic riches awaits anyone
> who has access to an Internet connection.[57]

You might remotely access the City University of New York

library, the White Sands Missile Range library of computer

software, or a repository of pending legislation. There are

thousands of databases and information repositories on the

net, most of them free, in addition to thousands of topical

discussion groups, some of which include top experts.[58]

Beyond exploring the plethora of research information

from dozens of nations available on Internet, journalists

have used the meta-network to gain rapid access to

information about breaking news events in "closed" nations,

such as Russia and the People's Republic of China. During the

October 1993 siege in Moscow and the 1991 coup attempt, news

that would have been censored by tightly-controlled broadcast

media traveled quickly to the United States via the

Internet.[59]

> During the Soviet coup attempt, the hard-liners were
> savvy enough to seize television stations and newspaper
> offices, but the Internet escaped their notice, and it
> became an important organizational tool of the
> resistance.[60]

Shortly after Tiananmen Square, Chinese students in the United States formed the Independent Federation of Chinese Students and Scholars "which uses the Internet to spread news about what's going on in China."[61]

## Government Data

Whether accessed on tape, on disk, or online, government information is a primary raison d' etre for computer-assisted reporting. Reporters armed with computers can perform their function as watchdogs of government with a thoroughness never available in the era of strictly paper documents.

Steven Ross -- Columbia University journalism professor who teaches computer-assisted reporting, and author of the lone CAR textbook -- outlines five broad areas of national, state, and local government data available to reporters: 1) Regulatory - organizations which must comply with government regulations on everything from use of toxic substances to handicap access must file permit forms; 2) Contractual - records of government purchases from, and sales to, companies and individuals, including performance measurements; 3) Research - Approximately half of all U.S. research is government-funded; lists of researchers and final published results are kept; 4) Economic - Facts and figures from development and public works projects; 5) Individuals - Big Brother is watching; files are kept on a wide range of persons including stock brokers, beauticians, campaign

contributors, military personnel, schoolteachers, and convicts.[62]

Computerized federal government resources available to the journalist include:

* NUDOCS -- The Nuclear Regulatory Commission maintains a database of over 2 million records detailing medical radiation accidents, inspection reports, technical studies, special investigations, fines, and deaths.[63]

* OSHA DATA -- Analyses of records from the Occupational Safety and Health Administration are available; and OSHA violations, the Department of Labor's database of infractions for the entire nation from July 1972 to the present.[64]

* CENDATA -- The entire report of the 1990 U.S. Census is available online, including state, county, and city populations, demographics, housing statistics, and neighborhood profiles.[65]

* SEC reports -- The Securities and Exchange Commission collects annual reports from every publicly held U.S. corporation. The data is available on CD-ROM or online.[66]

* GSA reports -- The General Services Administration maintains a list of "parties excluded from federal procurement," that is, vendors of products and services who have violated various federal laws and regulations and, therefore, are restricted from conducting business with the U.S. government. The cause of action, the agency imposing the ban, and the date of expiration are included with each listing. Possible violations include safety standards,

pollution standards, equal opportunity guidelines, and previous government contracts.[67]

<u>Research</u>

In 1983, John Ullmann reported that 20 of the 54 newspapers with circulations of 100,000-plus which he surveyed subscribed to one or more database services.[68]

Tim Miller, a New York City writer and consultant, studied the use of databases by journalists during his year as a research fellow at the Gannett Center for Media Studies. He found that the number of newspapers conducting online database searches quadrupled from 1982 to 1986.[69]

In a study of 96 randomly selected general circulation daily newspapers with circulations of more than 25,000, Frederic F. Endres found that 21 of the publications utilized commercial computer service networks, such as Nexis and Dow Jones, to access databases and BBSs by 1985.[70]

Endres, associate professor of journalism at Kent State University, discovered that most of the papers had been using database services for a year or less. Regarding the future of database use, 18 of 21 said they would either continue with the current subscription or add more. Respondents said the database services were used to gather story information in several areas: facts on individuals and corporations, details of political events (survey conducted during 1984 presidential campaign), sports statistics, weather data,

business information, and background material on persons/companies/events.[71]

In 1987, Hansen, Ward, and McLeod found that 38 percent of the newsroom staff members they surveyed at one metropolitan daily with a circulation of 385,000 used electronic database sources. The sample population consisted of the newspaper's 195 reporters, editors, columnists and editorial writers. One hundred thirty six, 69.5 percent, responded.[72] Because the sample was non-random and was drawn from one newspaper, the rate of database use reported may not reflect that of newsrooms nationally.

In 1989, Jacobsen and Ullmann found that 71 percent of surveyed journalists said database searches were an "important" or "very important" component of their news reporting. Seventy six percent said their searches were "almost always" useful. The perceived benefits listed by the respondents included improved detail, depth, and perspective for stories, as well as access to a wider geographic range of coverage and improved "memory" of facts.

Potential problems related to database use seemed not to be a matter of great concern. The journalists responding were not generally worried about databases leading to homogenization of coverage, effects on reporting angles or loss of local perspectives in reporting. Nor were they very worried that database use would discourage original work or bury reporters in data.[73]

Jacobsen and Ullmann distributed questionnaires to librarians at the 235 U.S. newspapers with circulations of 50,000 or more. The librarians were asked to pass along questionnaires to reporters or editors who used databases. They yielded 80 responses.

In 1991, Ward and Hansen found that 90 percent of the 105 newspapers with circulations of 100,000-plus they surveyed subscribed to at least one database service, with a median number of four taken. In 60 percent of the newsrooms equipped with PCs and modems, reporters searched public records electronically.

> The results of this study show that electronic technologies have been adopted in a large majority of the nation's biggest dailies. These technologies are used for information search, selection and analysis. ... the use of the personal computer for "computer-assisted reporting" allows creation and analysis of information never previously available for news reports.[74]

The results of Ward and Hansen's study were based on responses collected from telephone interviews with news librarians and news managers at the newspapers.

In a July 1992 survey of the managing editors of 330 daily newspapers, Brian S. Brooks and Tai-en Yang, University of Missouri, found that 90 percent of the large newspapers (100,000-plus) and 55 percent of the medium-size papers (50,000 to 100,000) had conducted investigative reporting using a computer. One hundred percent of the large and 52 percent of the medium papers had used newsroom computers to "access external databases." Forty-one percent of large newspapers had use computers to read nine-track tapes. The

Nexis/Lexus database had been accessed "regularly" by 78 percent of the large papers, followed by DataTimes, 68, Vu/Text, 59, Dow Jones News, 41, and CompuServe, 39.[75]

Brooks and Yang mailed questionnaires to managing editors at 1,586 U.S. daily newspapers. Three hundred thirty, 20.8 percent, responded. Their low response rate is a concern when attempting to project results to the total population.

## CAR Education

The use of computers by journalists is not new. Ward, Hansen, and McLeod identify the introduction of video display terminals (VDTs) and electronic pagination software as major technological changes in the newspaper industry.
The adoption of VDT technology changed writing, editing and production processes, while the electronic pagination systems transferred much of the back-shop production work to the journalists' desks.[76]

Journalism schools followed the lead of the newspapers and rapidly began creating their own computer laboratories to train future reporters and editors with the new equipment. Most university newspapers and yearbooks, which provide publication experience for journalism majors, have made the transition from cut-and-paste production to electronic desktop publishing using pagination software.

In 1991, Bennett and Hightower surveyed 120 journalism professors responsible for their department computer labs.

Most sought to assist students in the development of technical skills as a "professional necessity" in preparation for newsroom jobs, the researchers found.[77] Responses addressing the necessity of computer skills included:

"You can't be a journalist without them."

"We must stay up-to-date or become irrelevant to our students and our profession."

"I don't see the role of the professor changing that much. The computer is a tool, just as the proportion wheel is a tool. Faculty must ... help students learn to use each."

"It's essential to teach all courses involving writing and editing on computers. It's simply the way things are done in the real world."[78]

In addition to editing and pagination functions, newspapers are now regularly utilizing their computers to access online databases, search computerized public records, and scrutinize government documents. Computer-assisted reporting is quickly becoming the norm for U.S. newspapers. If journalism schools continue the pattern they established following the introduction of VDTs and pagination systems, then questions regarding the development of CAR courses will focus on "When?" and "How?" rather than "If?"

One decade ago, the University of Oregon School of Journalism published the report of its comprehensive two-year study on "The Future of Journalism and Mass Communication Education." The researchers for "The Oregon Report," as it has become known, consulted an extensive list of journalists

and educators for the study: most of the nation's schools/departments of journalism, 100 leading journalism educators, 40 leading scholars in other disciplines, heads of professional and industry organizations, and 50 experts on new communications technology.[79]

In a chapter titled "Coping With the New Technology," the authors explain that responses on the topic of future computer courses in journalism were mixed -- some favoring a more traditional emphasis on writing and editing skills, some favoring a dramatic step into the computer era, and others staking out a middle ground. Donald Shaw, professor of journalism at the University of North Carolina, argued in favor of keeping in step with the new technologies: Journalism programs likely will always trail industry in modern equipment. Yet programs must try not to allow too large a gap to develop. While the world of practical journalism expects students to know how to write and edit ... we must allow students to work with more modern equipment. This makes the jump from school to work smoother.[80]

Even with its effort to strike a balance between the extremes, the Oregon Report recommended the teaching of primary CAR skills as a elementary function of future journalism school curricula: "Schools should especially give instruction in database use. A technology laboratory for computer-assisted instruction and other uses is proposed."[81]

Presently, only a few journalism schools offer courses in CAR. The first to move into this new arena include the

University of Missouri, the University of Indiana-

Indianapolis, Syracuse University, and Columbia University in

New York City. J.T. Johnson, professor of journalism at San

Francisco State University, believes the dearth of CAR

courses is a serious problem:

> With the exception of the Graduate School of Journalism
> at Columbia University, I have yet to find a department
> that seeks to fully integrate the analytic power of
> personal computers in the curriculum, to tap electronic
> information banks and introduce journalism students to
> statistical, geographic, or database analysis.
> Consequently, it appears a large majority of journalism
> students -- indeed, the great mass of all students in
> most universities -- are not being adequately prepared
> to cope with the information-retrieval and analysis
> environment that is used daily by government and
> business, and a steadily increasing number of print and
> broadcast companies. Our students, therefore, are being
> defrauded, bilked out of the skills vital to their
> intellectual and professional due.[82]

Students, educators, and journalists seeking to acquire

knowledge and develop skills in CAR have completed courses

offered by Indiana's National Institute for Advanced

Reporting (NIAR), Missouri's National Institute of Computer-

Assisted Reporting (NICAR), Syracuse's Transactional Records

Access Clearinghouse (TRAC), and Columbia's School of

Journalism. Additionally, the University of North Carolina at

Chapel Hill (home of Philip Meyer, author of The New

Precision Journalism), and the American University in

Washington, D.C., have offered occasional CAR workshops.[83]

NIAR, founded by Scripps Howard News Service's Andrew

Schneider in 1989, began offering CAR courses in the format

of an "intensive" 2 1/2 day institute. The instruction covers

accessing and analyzing computer tapes, building your own databases, and hands-on experience in a computer lab. More than 600 persons had completed the short course by the fall of 1993. NIAR, which boasts of being the first CAR program, also hosts an annual CAR conference.[84]

Shortly after the creation of NIAR, NICAR began offering courses at the University of Missouri. Focusing specifically on the use of nine-track tapes for investigative reporting, NICAR's week-long seminar titled Training Reporters In Data Acquisition & Retrieval Technologies (TRI/DART) is offered several times a year. Similar to NIAR institutes, promotional brochures for TRI/DART warn participants "Because the course is very intensive, participants should be highly motivated."[85]

In addition to relational database theory and electronic records law, NICAR's TRI/DART participants are given instruction in five skill areas: obtaining electronic records (includes strategies for negotiating with government agencies); converting tape records into a usable form for personal computers; detecting whether information has been tampered with; using database software to analyze information; and transferring the results of database analysis into other programs for further work. Like NIAR, NICAR's seminars offer hands-on time in a computer lab: "The exercises teach techniques for solving the inevitable pitfalls which every computer-assisted reporter encounters."[86]

Syracuse's TRAC serves a dual function for journalists: offering courses in CAR, and maintaining an extensive, user-friendly database of Nuclear Regulatory Commission statistics (available on disk for PC, or nine-track tape). David Burnham, former reporter for The New York Times, and Susan Long, professor of quantitative methods at the university, oversee TRAC. Workshops covering the use of NRC data as the basis for investigative reports are offered regularly.[87]

Columbia's Steven Ross offers the most comprehensive instruction in computer-assisted reporting, a beginning course in the fall and an advanced course in the spring. The introductory course begins with the basics. "We assume you know how to put a disk in the machine and that's about it," Ross explained. Teaching students the rudiments of CAR using spreadsheet software, Ross argues that computer-assisted reporting is more practical for the everyday story than the occasional Pulitzer-caliber effort:

> Indeed, it is the routine story, done better, that
> serves readers and listeners better than the occasional
> blockbuster -- and it makes all of journalism more fun
> for its practitioners.[88]

In addition to Columbia journalism students, New York-area reporters often take Ross' courses. He offers them free tuition on a space-available basis and a free copy of the world's only CAR textbook, which he authored. Columbia also offers summer seminars and on-site sessions for newspapers.[89]

Problems

Although looking into the future is an imprecise
exercise, institutions such as newspapers and journalism
schools often follow predictable patterns. Assuming a modicum
of stability, the challenges journalism schools are likely to
face while implementing computer-assisted reporting courses
include those associated with computer-assisted reporting in
general, as well as those associated with the introduction of
new courses in journalism schools.

Some of the hurdles which newspapers must clear in the
process of bringing computer-assisted reporting into their
businesses include a need for leadership, the challenge of
tradition, the cost of equipment, and the time involved.

Regarding leadership, Elliot Jaspin believes that
the success or failure of a newspaper's computer-assisted
reporting program pivots on the ability of someone in
authority to spearhead the project, define the goals, raise
support and involve talented people.[90] The same is true in
journalism schools.

Tradition and ritual in the newsroom is another problem.
According to Ward, Hansen, and McLeod, "The disruption of
traditional methods may result in staff anxiety or
distrust."[91] Steven Ross believes the "biggest barrier" for
journalists is overcoming their own unfamiliarity with the
computer and its operation.[92] Many reporters and editors may

harbor a somewhat nostalgic concept of print journalism. For

them, the transition from pounding the pavement chasing down

leads to countless hours in front of a computer screen has

proven to be a difficult one. Their mental black-and-white

picture of the paper trail does not translate easily into a

full-color vision of the digital superhighway:

> If reporters sit in the basement of city hall sifting
> through moldering stacks of public contracts, everyone
> agrees they are reporting. But put them in front of a
> computer going through the same records electronically,
> and suddenly a series of questions and objections are
> raised both in the newsroom and by other departments.[93]

Many academic institutions have also earned a reputation

for their reluctance to embrace innovations. Frank Beard of

the University of Oklahoma addressed the challenge of

tradition in academe when he applied the concepts

organizational change theory to the implementation of

computer labs in journalism schools:

> All people and organizations are, to a certain extent,
> resistant to change. ... Some educators view the
> learning of a new computer system or software package
> not as an exciting challenge, but as one more task piled
> upon an already full schedule of teaching, research, and
> service.[94]

A number of journalism educators contacted by the Oregon

Report researchers were "distressed and perplexed" by

technological changes in contemporary journalism, confessed

their inability to keep abreast of the changes, and expressed

an "inability" to identify the computer skills and concepts

students needed. Consequently, computer-assisted reporting

had not been an educational priority for most.

There is relatively little computer-assisted instruction in

the journalism schools, almost no concern with access to

databases.[95]

For lean-budget newspapers in difficult financial times,

cost is another major obstacle to the launching of CAR

programs. Computers, software, commercial online services,

and database CDs/tapes must be purchased. Even after the

initial investment, computer hardware and software can

quickly become obsolete and require upgrading. Nora Paul

warns that online database research "can quickly become a

black hole into which you dump money."[96] Gale Wiley, director

of the University of Texas' Clearinghouse for Computer-Based

Education in Journalism, echoes the concern: "Using an online

database can be expensive for those who don't know what

they're doing."[97]

The financial climate at most American universities is

no sunnier than that of newspapers. Oregon Report respondents

indicated a reserved approach to acquiring capital for

upgrading computer equipment for journalism courses:

> ... because most journalism/mass communication programs
> are financially strapped, they rarely speculate about
> "ideal" laboratory facilities: They know their budgets
> will not permit them.[98]

For a business that perpetually operates under deadline

pressure, time is a sparse commodity for newspapers.

Computer-assisted reporting skills are challenging and

require time and effort to master. Jerry Uhrhammer, reporter for the <u>Morning News-Tribune</u> in Tacoma, Washington, compared acquiring CAR skills with learning a foreign language. "You don't learn it in two weeks; you need to immerse yourself in it and speak it constantly."[99] Rae Davidson, reporter for <u>The (Toledo, Ohio) Blade</u>, said several reporters at her paper were interested in learning CAR skills, but the newspaper could not afford the time and personnel investment: "We may be in the age of technology, but we're also in the age of doing more work with fewer reporters."[100]

Journalism educators face similar time constraints, according to Beard. Most have had no formal computer training, few have used the personal computer as an instructional tool, and often journalism teachers in computer labs must "learn along with their own students."[101]

In addition to addressing industry-based concerns detailed above, journalism schools must brave the proverbial professional-versus-scholar debate when initiating CAR courses. Two questions in the ongoing debate pertain to CAR instruction: 1) Should journalism schools focus their attention on theory, professional skills, or a combination of the two?; 2) Should journalism educators focus their professional development attention on scholarly research, improvement of journalism skills, or a combination of the two?

Edward Pease, editor of The Freedom Forum's <u>Media Studies Journal</u> and former journalism educator at St.

Michael's College, addresses both questions. Regarding the
first, he writes:

> On the one hand, if the journalist is the ultimate
> generalist who needs a wide range of many topics in
> order to write and report about the range of issues
> covered by a mass medium, then the broadest possible
> liberal education is essential. On the other hand, those
> who would become communicators also require both
> understanding of communication processes and specific
> professional and technical skills for effective
> communication of that broad knowledge.[102]

Pease grapples with the second question when commenting
on his recent survey of nearly 1,500 journalism educators.
The results, he said, demonstrate that "the classic, divisive
tension between the `chi-squares' and the `green eye-shades`
is far from dead."[103]  He concludes that professional
experience (such as CAR skills) acquired by journalism
instructors is perceived by them to improve teaching, but is
not credited by administrators toward tenure and promotion.
Because of pragmatic concerns for job security and
advancement, Pease laments that even journalism educators
desiring to advance the teaching of professional skills among
students may instead pursue academic research avenues
instead.

Summary

Computerized information storage and transmission have
forever changed the world about which journalists report.
Computer-assisted reporting involves the acquisition and

analysis of digital records much the same as traditional reporting required journalists to locate and appraise paper documents. The contemporary newspaper reporter must master CAR skills in order to fulfill the responsibilities of the fourth estate.

In the process of developing computer-assisted reporting courses to train contemporary news reporters, journalism schools will face a number of obstacles. However, many similar challenges were met and surmounted during the widespread implementation of computer writing labs. The future fitness of university journalism programs depends on their ability to positively address the new challenges and incorporate quality computer-assisted reporting courses into their curricula.

Chapter II References

[1]Marlan D. Nelson, and George R. Rhoades, Basics of Writing for the Mass Media 2nd ed. (Dubuque, Iowa: Kendall/Hunt Publishing, 1986) 15.

[2]Jean Ward, Kathleen A. Hansen, and Douglas McLeod, "Effects of the Electronic Library On News Reporting Protocols," Journalism Quarterly, Winter 1988, 845.

[3]Tim Miller, "The database revolution," Columbia Journalism Review, September/October 1988, 36.

[4]Steven S. Ross, Exercises in Computer-Assisted Reporting 4th ed. (New York: Steven S. Ross, 1993), 5.

[5]Dorothy Bland, "Computers Can Turn Ordinary Reporters into Super Sleuths," ASNE Bulletin, January/February 1991, 15.

[6]Mary Ann Chick Whiteside, "Census Connection," Editor & Publisher, 2 November 1991, 6pc-7pc.

[7]Philip Meyer, The New Precision Journalism, (Bloomington: Indiana University Press, 1991), 2.

[8]Ward, Hansen, and McLeod, "Effects," 846.

[9]Elliot Jaspin, "Just Do It," ASNE Bulletin, December 1991, 5.

[10]Elliot Jaspin, and Mark Sableman, "News Media Access to Computer Records: Updating Information Laws in the Electronic Age," St. Louis University Law Journal, Winter 1991, 350.

[11]Brian Brooks, and Tai-en Yang, "Patterns of Computer Use in Newspaper Newsrooms: A National Study of U.S. Dailies," Association for Education in Journalism and Mass Communication Annual Convention, August 1993, 16-19.

[12]J.T. Johnson, "The Unconscious Fraud of Journalism Education," Quill, June 1992, 31.

[13]Jonathan Schmid, and Andrew Scott, Selected Computer-Assisted Stories from the IRE Morgue (Columbia, Missouri: Investigative Reporters and Editors, 1992) iv.

[14]Mary Ann Chick Whiteside, "Computers -- just another reporting tool," Editor & Publisher, 2 November 1991, 1pc.

[15]Nora Paul, Computer-Assisted Research: A Guide to Tapping Online Information (St. Petersburg, Florida: The Poynter Institute, 1993), 1.

[16]Ibid., 22.

[17]Paul, Computer-Assisted, 18.

[18]George Landau, "Quantum Leaps: Computer Journalism Takes Off," Columbia Journalism Review, May/June 1992, 61.

[19]Ibid, 63-64.

[20]Ross, 235.

[21]Dianna Borsi, "Taking bytes out of the education apple," Uplink, February 1993, 4.

[22]Ibid.

[23]Paul, Computer-Assisted, iv.

[24]Miller, 36.

[25]Ibid.

[26]Tom Foster, "Bringing computer-assisted reporting to every reporter's repertoire," Uplink, April/May 1993, 3.

[27]Paul, Computer-Assisted, 2.

[28]Tom Koch, Journalism for the 21st Century: Online Information, Electronic Databases, and the News (New York: Praeger, 1991) 65.

[29]Meyer, 191-192.

[30]William F. Allman, and Vic Sussman, "A Baedeker for the electronic tourist," U.S. News & World Report, 6 December 1993, 71.

[31]Landau, 62.

[32]Paul, Computer-Assisted, 2.

[33]Miller, 37.

[34]Jaspin and Sableman, 351.

[35]Ibid., 359.

[36]Ross, 221-222.

[37]Ibid., 362.

[38]Ibid., 362.

[39]Meyer, 187.

[40]Deidre Fleming, "CD-ROM may be the future, but don't give up your tape drive yet," Uplink, April/May 1993, 2.

[41]Ross, 5.

[42]Fleming, 2.

[43]Fleming, 2.

[44]Ibid.

[45]Alison Boggs, "Quick hits! Writing a computer-assisted story in less than a week," Uplink, October 1992, 2.

[46]Paul, Computer-Assisted, iv.

[47]Ibid., 12.

[48]Ibid., 14.

[49]"Brave New World," U.S. News & World Report, 6 December 1993, 6.

[50]Gustav Spohn, "Billy Graham Goes 'Online' ... and Likes It," The Baptist Messenger, 6 January 1994, 4.

[51]Paul, Computer-Assisted, 12-13.

[52]Mark Lecesse, "Electronic 'corner tavern' connects you to journalists' sources around the world," Quill, January/February 1993, 12.

[53]Ibid., 22.

[54]"Bits, bytes and nibbles," <u>Uplink</u>, October 1992, 6.

[55]Ibid., 15.

[56]Allman and Sussman, 71.

[57]David L. Wilson, "Electronic Riches Are Free on the Internet, but Some Worry About the Consequences," <u>The Chronicle of Higher Education</u>, 28 July 1993, A18.

[58]Joe Abernathy, "Casting the Internet," <u>Columbia Journalism Review</u>, January/February 1993, 56.

[59]William F. Allmann, "Pioneering the Electronic Frontier," <u>U.S. News & World Report</u>, 6 December 1993, 63.

[60]Joe Abernathy, "Casting the Internet," <u>Columbia Journalism Review</u>, January/February 1993, 56.

[61]Ibid.

[62]Ross, 3.

[63]Dave Davis, "Acquiring information from the Nuclear Regulatory Commission," <u>Uplink</u>, February 1993, 2.

[64]"Bits, bytes and nibbles," <u>Uplink</u>, November 1992, 6.

[65]Whiteside, "Census," 6pc.

[66]Ross, 3.

[67]Meyer, 192.

[68]John Ullmann, "Tapping the Electronic Library," <u>IRE Journal</u>, Summer 1983.

[69]Miller, 36.

[70]Frederic F. Endres, "Daily Newspaper Utilization of Computer Databases," <u>Newspaper Research Journal</u>, Fall 1985, 31.

[71]Ibid., 32.

[72]Kathleen A. Hansen, Jean Ward, and Douglas M. McLeod, "Role of the Newspaper Library In the Production of News," <u>Journalism Quarterly</u>, Winter 1987, 715.

[73]Thomas L. Jacobsen, and John Ullmann, "Commercial Databases and Reporting: Opinions of Newspaper Journalists and Librarians," <u>Newspaper Research Journal</u>, Winter 1989, 20.

[74]Jean Ward, and Kathleen A. Hansen, "Journalist and Librarian Roles, Information Technologies and Newsmaking," <u>Journalism Quarterly</u>, Fall 1991, 496-497.

[75]Brooks, and Yang, 16-19.

[76]Ward, Hansen, and McLeod, 846.

[77]David Bennett, and Paul Hightower, "Computerizing Visual Journalism: Lessons from the Writing Labs," <u>Journalism Educator</u>, Spring 1991, 46-49.

[78]Ibid.

[79]<u>Planning for Curricular Change</u> (Eugene, Oregon: School of Journalism, University of Oregon, 1984) v.

[80]Ibid., 58.

[81]Ibid., 2.

[82]Johnson, 32.

[83]Jack D. Lail, "Computer Journalism," <u>Quill</u>, September 1993, 22.

[84]Lail, 22.

[85]"The TRI/DART Seminar," Missouri Institute for Computer-Assisted Reporting, brochure.

[86]Ibid.

[87]David Burnham, and Susan Long, "'TRAC'ing more complete NRC data," <u>Uplink</u>, February 1993, 3.

[88]Ross, 2.

[89]Lail, 22.

[90]Jaspin, "Just do it!," 4.

[91]Ward, Hansen, and McLeod, 846.

[92]Ross, 2.

[93]Ibid., 5.

[94]Frank Beard, "Implementing PC Technology with Organizational Change," <u>Journalism Educator</u>, Spring 1991, 72.

[95]"Planning," 31.

[96]Paul, <u>Computer-Assisted</u>, 23.

[97]Gale Wiley, "Databases and PCs," <u>Journalism Educator</u>, Autumn 1991, 76.

[98]"Planning," 53.

[99]William Syken, "What they didn't teach you in school," <u>Uplink</u>, August 1992, 6.

[100]Ibid.

[101]Beard, 71.

[102]Edward C. Pease, "Defining Communication's Role and Identity in the 1990s: Promises and Opportunities for Journalism and Communication Studies," <u>Insights: Journal of the Association of Schools of Journalism and Mass Communication</u>, Summer 1992, 8.

[103]Edward C. Pease, "Professional Orientation Equals Second-class Status in Academe," <u>Journalism Educator</u>, Autumn 1993, 38.

CHAPTER III

METHODOLOGY[1]

Overview

Chapter III describes the use of the Delphi Technique in this study as a method for assessing the predicted future of computer-assisted reporting education in college and university journalism schools. The chapter includes descriptions of the data collection method, research questions, subject selection, rounds of questionnaires, data analysis and limitations of the study.

Research Methodology

The Delphi Technique is a research methodology designed to solicit expert opinions regarding the predicted future of a particular domain. Allen outlines the steps for the process: develop the Delphi question, select the panel of experts, develop and administer the questionnaires, analyze the results, prepare a final report.[1]

The Delphi study "usually involves iterative questionnaires administered to individual experts in a manner protecting the anonymity of their responses."[2] The Delphi method, a type of futures research, "seeks to avoid the psychological pitfalls of face-to-face discussions among the

experts by employing sequential interrogations in which respondents, at each stage, are provided with a feedback of the panel's distribution of opinions obtained at the previous stage of inquiry."[3]

The Delphi Technique was developed and refined during the 1950s and 1960s by the Rand Corporation to help the United States military develop long-range strategies. Since that time Delphi has been used widely in business, science and government.[4]

A primary strength of the Delphi approach is anonymity of the expert panelists. Each respondent is free to offer his or her opinions without the persuasive influence of a face-to-face peer environment. The leverage of dominant personalities and the sway of majority attitudes are avoided. Furthermore, in the second and third rounds of questionnaires, predicted benefits and problems are presented without the names of the experts who generated them. In these rounds, therefore, peer ideas are evaluated solely for their intrinsic value.

The Delphi Technique was identified as the best method for describing the potential future of CAR programs in journalism schools. A purposive sample of experts in computer-assisted reporting is preferred to a wider survey of randomly selected journalists and educators because CAR is still in its infancy.[5] Randomly selected respondents from a larger population might be unfamiliar with CAR and therefore unable to generate knowledgeable questionnaire responses.

Selection of Subjects

The Delphi Technique utilizes a non-random sample of expert subjects. From a master list of 53 potential respondents, a panel of 29 journalists and academicians in the United States who have noteworthy experience with, and/or knowledge of, computer-assisted reporting agreed to serve as respondents. The panelists were selected based on their depth and span of experience with CAR as professional journalists or as university journalism instructors. Nominations were collected from personal interviews, articles in scholarly and trade publications, professional and academic credentials, and participation in CAR seminars and conferences. Some respondents have primarily professional experience with CAR, some primarily academic, and some a blend of the two.

An introductory letter was sent to the 53 individuals on the master list requesting their participation among the panel of experts. Thirty three returned a completed reply form agreeing to participate in the Delphi panel. Three of the 33 dropped out of the study before the first round. One dropped out after the first round. Brief profiles of the 29 panelists who participated in all three rounds of the Delphi are included in Appendix A.

Research Instrument

Three rounds of questionnaires served as the research instruments for the Delphi Technique. The first and third rounds consisted of open-ended questions designed to foster a free flow of opinions from the panelists. In the second round, experts rated and ranked the responses culled from the first round.

Round I sought the unrestricted opinions of experts on the projected benefits and problems associated with the introduction of computer-assisted reporting courses in university journalism programs. See Appendix E for a copy of the Round I survey instrument.

Round II presented the panelists with a series of 26 problem statements collected from the first round. The panelists responded to each statement in Round II using a five-point semantic differential scale with endpoints ranging from "unlikely" to "likely". The panelists also numbered what they believed to be the "top five biggest problems" in the list with "1" designating the problem of greatest magnitude, "2" designating the problem second in magnitude, etc. A copy of the Round II instrument is included in Appendix G.

Round III sought the unrestricted opinions of the experts regarding solutions to the top five problems of likelihood and magnitude, based on the data collected in Round II.

A cover letter was used to introduce each round of the survey to the respondents. The Round I letter explained the purpose of the study, the promise of anonymity among panelists during the survey, the guidelines for completing Round I, the response deadline, the address and phone number of the researcher, and a statement of appreciation. Cover letters for the second two rounds thanked the respondents for completing the previous round, stated the purpose of the particular round, gave the response deadline, and included the address and phone number of the researcher. The Round III letter included a request for a biography/resume from the panelists and a final statement of appreciation for participating in the study. Copies of the letters used in Rounds I, II, and III are included in Appendices D, F, and H, respectively.

## Pilot Studies and Drafts

The advice of professional journalists and journalism educators was requested during the development of the first two rounds of questionnaires. Participants in the Round I pilot study were Dr. John DeSanto, associate professor of mass communication, University of Central Oklahoma; Rebecca Tallent, public relations associate, Oklahoma Medical Center; and Mitch Bettis, senior account executive, Southern Newspapers, Inc. Proofreaders for the Round II survey instrument included Jeffrey Rinkel, assistant professor of

communication, West Virginia Wesleyan College; Sandra Presar, interm chair, department of communication, West Virginia Wesleyan College; and Dr. Charles A. Fleming, professor of journalism and broadcasting, Oklahoma State University.

## Research Design

In this Delphi study, a panel of 29 (30 in Round I) experts generated predicted benefits, problems, and solutions related to the future of computer-assisted journalism education.

Experts were defined as persons with noteworthy professional and academic experience with, or knowledge of, CAR. A benefit was defined as anything that would make a positive contribution to computer-assisted reporting education. A problem was defined as any situation, dilemma or difficulty that would have a negative impact on computer-assisted reporting education.

Data was collected in three rounds of mail questionnaires.

## Round I

Experts were asked to list and/or briefly describe up to five predicted benefits of future CAR courses. They also were asked to identify and describe up to five potential problems related to the future of CAR courses. Open-ended

questions were used to encourage unrestricted responses. The instructions for Round I asked panelists to list and describe any pertinent predictions. They were not asked to arrange the predictions in any type of priority order.

## Round II

Each response from Round I was recorded and categorized anonymously as a predicted benefit or a predicted problem. In Round II, the panelists were asked to rate the potential likelihood of occurrence of each prediction on a five-point semantic differential scale ranging from "unlikely" to "likely," and rank the top five problems according to magnitude.

## Round III

Data from Round II was collected and analyzed. The top five problems in both likelihood and magnitude from Round II were the subject of open-ended questions in Round III. Respondents were asked to suggest possible solutions to the problems. The panelists also were asked to provide biographical information.

Data Collection

Letters requesting participation in the Delphi study were mailed in late March of 1994. A deadline for reply in late April was set. Round I, II and III questionnaires were mailed in August, October, and November of 1994 with deadlines for reply similarly set.

Data Processing and Analysis

From Round I, responses from experts were compiled in two master lists as nominal data -- one for benefits and the other for problems. Similar statements were consolidated. Problem statements from Round I were used for the Round II questionnaire.

From Round II, the likelihood ratings and the magnitude rankings of the problem statements were compiled as score data. Means and standard deviations were tabulated for each of the statements rated and ranked by the respondents. Problem statements were also grouped into broader categories. Mean scores were calculated for the problem categories.

From Round III, responses from experts regarding solutions to problems were collected as nominal data.

## Summary

For the Delphi study, a panel of professional journalists and journalism educators with CAR experience were selected to hypothesize the future benefits, problems and solutions of computer-assisted journalism programs in college and university journalism schools.

In the first round of the Delphi, respondents were asked to list potential benefits and problems associated with future CAR programs. In the second round, the expert panel rated the likelihood of occurrence for each problem statement on a five-point Likert-type scale ranging from "unlikely" to "likely." They also ranked the top five problems in magnitude. In the third round, respondents suggested possible solutions to the top problems of likelihood and magnitude from the second round.

Chapter III References

[1]T. Harrell Allen, <u>New Methods in Social Science Research: Policy Sciences and Futures Research</u> (New York: Praeger, 1978) 123-125.

[2]Harold Sackman, <u>Delphi Critique: Expert Opinion, Forecasting, and Group Process</u> (Lexington, Mass.: Lexington Books, 1975) xi.

[3]Olaf Helmer, <u>Looking Forward: A Guide to Futures Research</u> (Beverly Hills, Calif.: Sage Publications, 1983) 105.

[4]Allen, 120.

[5]Michele Ward, acting director/secretary, National Institute of Computer-Assisted Reporting, interview by author, Columbia, Missouri, 18 October 1993.

CHAPTER IV

ANALYSIS OF DATA

Respondents

From a master list of 53 potential respondents, 33 journalists and journalism educators completed a reply form (see Appendix C) agreeing to participate in the Delphi study of computer-assisted reporting. Each of the 33 was sent a Round I questionnaire. Thirty returned completed questionnaires, yielding a return rate of 91 percent. One university professor returned an unanswered copy of the questionnaire and requested that he be dropped from the study. He said he had "not kept up with" computer-assisted reporting enough to knowledgeably answer the questions. One journalist returned the questionnaire too late to be included in subsequent rounds. Two persons did not return Round I questionnaires or respond to follow-up phone calls, facsimile letters or e-mail messages.

All 29 of the remaining panelists completed the Round II questionnaire, a 100 percent return rate. All 29 also completed Round III, a 100 percent return rate.

Round I

In Round I (see Appendix E) each Delphi participant was asked to list up to five statements for each of two open-ended questions: "List the most important **problems** that you believe university journalism programs will encounter during the process of introducing computer-assisted reporting courses," and "List the most important **benefits** that you believe university journalism programs will realize from the introduction of computer-assisted reporting."

Verbatim responses from the panelists to the Round I questions are recorded in Appendix J

Potential Problems

The panel of computer-assisted reporting experts listed 108 problems that university journalism programs potentially will encounter during the process of introducing CAR courses. There was a good deal of consensus among the panelists. Similar answers were consolidated into 26 problem statements for use in the Round II questionnaire (see Appendix G). The problem statements fell into five broad categories: equipment-related, institution-related, curriculum-related, student-related, and cost-related. A few of the problems were placed in more than one category.

The problem statements are listed below in the order they appeared in the Round II questionnaire followed by their category/categories, number of respondents, and quotes.

Problem 1. Resistance of faculty. Institution-related.

Seven respondents listed faculty resistance to CAR as a problem. One noted that journalism professors from the "previous generation of news gathering" are "uncomfortable with the new world and view it with suspicion or fear." Another wrote that CAR is "an intimidating idea for people who may be excellent traditional researchers and engaging writers but who are afraid of computers." A third said "Many faculty will not be able to reinvent themselves in this new electronic era." A fourth predicted "a significant backlash from a segment of faculty who will argue that there is nothing particularly important in using computers in the reporting process."

Problem 2. Lack of qualified faculty to teach CAR courses. Institution-related.

Eleven of the 29 respondents noted that scarcity of experienced/trained instructors for university CAR courses was a problem. One commented, "Journalism schools may find it difficult to find qualified

journalism teachers who possess cutting-edge skills in data analysis. The real stars in this field are few in number and expensive to hire."

Problem 3. For purposes of promotion and tenure, faculty will devote time to research rather than learning new CAR skills for teaching. Institution-related.

Two panelists listed this problem. One wrote "There is little or no professional or financial support for journalism educators to participate in [CAR] training. It is costly and time consuming."

Problem 4. Faculty who misunderstand economic importance of CAR. Institution-related.

One person listed this as a potential problem, noting the important financial implications of "the new era of computer-assisted journalism."

Problem 5. Resistance of university administrators. Institution-related.

Two respondents listed this problem. One noted "administrations' perceptions that its a fad, not worth funding." The other wrote of "resistance from university administrators to anything new, anything they don't understand."

Problem 6. Cost of equipment, computer hardware and software. Cost-related and equipment-related.

Nine respondents listed this problem. One wrote about the "exceedingly high costs of equipping labs."

Problem 7. Maintenance of equipment, hardware and software. Equipment-related.

Two panelists noted the problem of maintaining CAR equipment.

Problem 8. Class sizes limited because of equipment costs. Equipment-related and cost-related.

One respondent listed the problem of constraints on class size caused by the expense of CAR equipment.

Problem 9. Cost of online time. Cost-related.

Two participants listed this problem. One noted the difficulty of creating a "budget for online access" when journalism schools have limited financial resources. The other noted that it was easier to procure funding for computer "toys" than for "data access."

Problem 10. Offering sophisticated computer services such as Lexis-Nexis, Internet, and databases simultaneously to large numbers of students. Equipment-related.

One respondent noted the logistical problem of offering online resources "to <u>large</u> numbers simultaneously." (emphasis in original)

<u>Problem 11</u>. Lack of standard computer hardware for CAR. Equipment-related.

The panelist who listed this problem stated, "Some reporters are Mac-oriented; others are PC-oriented; some (like me) have a foot in both camps. And those are just the platforms."

<u>Problem 12</u>. Lack of standard computer software for CAR. Equipment-related.

Two panelists listed this problem. One wrote, "The journalism industry itself appears to be pretty evenly split between FoxPro and Paradox. Now a new database software, Access, has come into use. The university will first have to choose and then keep up with changes in the industry."

<u>Problem 13</u>. Computer hardware becoming obsolete quickly. Equipment-related.

Three respondents listed this problem. One noted the continuing challenge to "keep equipment up to date."

<u>Problem 14</u>. Computer software becoming obsolete quickly. Equipment-related.

Three respondents noted this problem. One wrote,
"You must choose among dozens of communications,
spreadsheet, database and other programs, many of which
may become obsolete by the time graduation comes."
Another noted, "An SQL software package called XDB was
state-of-the-art for PCs in 1989. By 1992, most
newsrooms that used SQL had switched to FoxPro for its
far superior speed. And now in 1994, some of us are
starting to use Microsoft Access in applications that
benefit from its more sophisticated database engine and
far friendlier user interface."

Problem 15. CAR techniques becoming obsolete
quickly. Equipment-related.

Two panelists listed this problem. One panelist
wrote that "rapidly changing technology" has caused
contemporary CAR techniques to become "obsolete
quickly."

Problem 16. Meeting expectations of incoming
students who have been exposed to new technology in high
school and home. Student-related.

One respondent noted the problem of high
expectations from students who have "already been
exposed" to technology in school and at home.

Problem 17. Students who are apathetic about CAR.
Student-related.

Two panelists listed this problem. One said,
"Students who don't comprehend the notion of
enterprising reporting may have a difficult time with
computer-assisted reporting."


Problem 18. Students intimidated by computers.
Student-related.

The respondent who listed this problem stated
"Students are often intimidated by computers, which can
lead to low enrollment and high drop rates."


Problem 19. CAR taught as a replacement for, not a
complement to, traditional reporting. Curriculum-
related.

Five respondents listed this problem. One noted,
"Students will be computer-smart and news-dumb if
universities aren't careful." Another said, "Dependency
on technology should never be encouraged over
historically and professionally valid approaches." A
third stated, "CAR is a complimentary tool for
traditional reporting, not a substitute for it." A
fourth wrote of "too much emphasis upon technology" at
the expense of "attention to qualities of excellence in
reporting."

Problem 20. CAR skills segregated in separate courses rather than taught across the journalism curriculum. Curriculum-related.

The panelist who listed this problem wrote of the "desire of many to segregate CAR as a separate course" rather than "embedding" it in all journalism courses.

Problem 21. Curriculum revision necessary for CAR courses. Curriculum-related.

Two panelists listed this problem. One wrote, "Fitting computer-assisted courses into the curriculum may be difficult. Many professors say they don't have enough time to teach traditional skills, much less digital skills."

Problem 22. Scarcity of CAR teaching materials. Curriculum-related.

The respondent who listed this problem noted that the lone published text devoted to computer-assisted reporting was written because "there wasn't anything else" available.

Problem 23. Developing substantive student assignments. Curriculum-related.

Two respondents noted this problem. One wrote of the challenge to develop "adequate assignments which are meaningful."

Problem 24. Developing new courses in statistical analysis for journalism students. Curriculum-related.

Six panelists listed this problem. One noted the failure to emphasize "analysis, not just number crunching." Another said it was "dangerous" to teach journalism students computer techniques without a grounding in statistical analysis. A third wrote that students "have entered journalism programs because they like to write, photograph, etc. Now they find they have to understand numbers ... it will be a shock for some."


Problem 25. The quality of retrieved data not being assessed. Curriculum-related and equipment-related.

Two respondents listed this problem. One wrote, "Journalism programs must avoid the gee-whiz tendencies and fully explore the shortcomings of computerized data -- such as the fact that the data are 'dirty'." The other said, "Given the amount of information available over networks -- some 6,000 gigabytes on the Internet -- there is a real difficulty in filtering this information to find the right story, the correct fact."


Problem 26. The limited number of student internships available in CAR-equipped newsrooms. Student-related and curriculum-related. One panelist

noted the shortage of internships for aspiring CAR journalists.

Potential Benefits

In Round I, the panelists listed 123 potential benefits university journalism programs would realize from the introduction of computer-assisted reporting. As with the problem statements, there was a good deal of consensus among respondents. Similar answers were consolidated into 35 benefit statements listed below. The benefits fell into four broad categories: benefits #1-13 are student-related; #14-20 are graduate-related; #21-24 are faculty-related; and #25-35 are journalism program-related.

Benefit 1. Students will acquire knowledge vital to their future jobs.

Four listed this benefit. One wrote, "If students want to get jobs, and if they want to be good reporters, they will need to know this." Another noted CAR courses will "keep students current with industry practices." A third said, "Students must be exposed to the methods of CAR to be consistent with what they should be able to do when they enter the job market."

Benefit 2. Students will develop statistical and analytical proficiencies.

Six listed this benefit. One noted the potential for "enhanced student understanding of data analysis and consequent reduction of math phobia common to j-students." Another wrote, "The courses provide a natural bridge to much-needed training in scientific method." A third said, "CAR makes journalists more comfortable with numbers, which is something that has got to happen if media are to remain intelligent, valuable providers and FILTERERS of information." (emphasis in original)

Benefit 3. Students will develop computer reporting skills.

Fourteen respondents listed this benefit. One wrote that students would become "comfortable with required technical skills." Another noted such skills were "essential and basic" for effective journalism. A third said, "CAR teaches valuable research tools."

Benefit 4. Students will be equipped to access and evaluate large quantities of important information.

Four panelists listed this benefit. "Students will learn the importance of distilling large amounts of information for busy readers." Another said, "CAR allows examination of an entire data set, not just a sample." A third noted, "Students will improve the management of

information by using CAR methods no matter what their
area of emphasis: public relations, photojournalism,
graphics, and all forms of word reporting for any
medium."

Benefit 5. Students' learning environment will
improve.

Two respondents listed this benefit. One said CAR
"will engage the brightest students who enjoy the sheer
intellectual challenge of applying new technologies to
old problems."

Benefit 6. Students will broaden their perspective
of available news sources.

Four respondents listed this benefit.

Benefit 7. Students will benefit from an increased
emphasis on journalistic inquiry.

Three respondents listed this benefit. One said CAR
"offers journalists a chance to return to their roots as
skeptical members of society who don't just report what
others say, but find out what is true." Another noted
the value of "less reliance on others' interpretation of
events."

Benefit 8. Students will benefit from an increased emphasis on facts associated with issues rather than personalities associated with issues.

Two respondents listed this benefit. One wrote, "I trust that experience with CAR
will help students avoid the limitations and perils of 'anecdotal' reporting."

Benefit 9. Students will benefit from increased access to diverse viewpoints.

The respondent who listed this benefit noted that CAR opens avenues to data representing "wide segments of society not covered in typical media outlets now."

Benefit 10. Students will develop connections with news professionals.

The respondent who listed this benefit noted the potential for enhanced student-professional networking nationally and internationally.

Benefit 11. Students will have an increased awareness of the importance of access to public records.

Two respondents listed this benefit. One noted students would "understand the difficulties in public access to electronically stored public records."

Benefit 12. Students will have an increased awareness of First Amendment and privacy issues.

One respondent listed this benefit.

Benefit 13. Students will find CAR knowledge/skills helpful in other university courses.

One respondent listed this benefit.

Benefit 14. Graduates will have an easier time securing jobs in journalism.

Six listed this benefit. One noted, "Beginning reporters who have these skills will stand out in the job pool. And instead of starting in neighborhood-zone jobs, they are likely to land plum positions." Another stated that graduates will be "qualified for a wider range of new jobs" in the field.

Benefit 15. Graduates will be able to make the transition to other computer-related jobs, should they choose.

The respondent who listed this benefit wrote, "Computer literacy will give students an introduction to other career fields if they decide to bail out of journalism."

Benefit 16. Graduates will see computers as more than just tools for word processing.

Six panelists listed this benefit. "Those graduates who had regarded a computer as merely a writing and editing device will now respect it as something with a multitude of uses, many of which are as yet unpredicted."

Benefit 17. Graduates will have a better understanding of the contemporary world of computer communication.

Two respondents listed this benefit. One noted an "improved overall orientation of students to the new media world." The other wrote, "Graduates with CAR will be more at home in cyberspace, an important recreational and educational territory."

Benefit 18. Graduates will be able to perform investigative reporting which will help inform the public.

Two respondents listed this benefit. One wrote, "I trust that students will recognize the importance of the media as a genuine provider of useful information typically unavailable to citizens."

Benefit 19. Graduates will be able to use CAR methods to generate story ideas.

Six respondents listed this benefit. One said CAR program alumni will gain a better understanding of "how data suggest stories."

Benefit 20. Graduates will be able to introduce CAR to news operations that have not used it.

The respondent who listed this benefit noted the potential for graduates to "impress the hell out of the employer."

Benefit 21. Faculty will be compelled to stay current with developments in the profession.

Three panelists listed this benefit. One wrote, "The [CAR] courses force faculty to keep learning new things." Another said, "It may, just possibly, encourage journalism faculties to lead rather than follow." The third said it would "improve faculty skills."

Benefit 22. Profession-oriented faculty and research-oriented faculty will find common ground.

Two respondents listed this benefit. One wrote, "CAR can bridge the gap between green eye shades and chi squares." The other stated, "CAR can raise the intellectual level of discourse among the faculty, especially if more come from the green eye shade side of the profession."

Benefit 23. Faculty will develop new connections with colleagues in other departments/programs.

Two respondents listed this benefit. One noted, "Professors at the university will benefit from the excitement, challenge and exchange of ideas."

Benefit 24. Faculty will be able to utilize CAR databases for academic research.

One respondent listed this benefit.

Benefit 25. Journalism programs will be more attractive to the students.

Seven respondents listed this benefit. One noted the potential for attracting "better and brighter" students. Another wrote of "better and more aggressive" students. A third said CAR would attract "students who are more interested in their programs." Another wrote, "Universities who get out in front on this will have a definite advantage on student recruiting over their competitors."

Benefit 26. Journalism programs will attract students interested in computers who might not otherwise have considered the field.

One panelist listed this benefit.

Benefit 27. Journalism programs will attract non-traditional students.

The respondent who listed this benefit said non-traditional students will be drawn to such programs when they "discover that the university j-school is teaching modeming, database analysis and other computer-research topics."

Benefit 28. Journalism programs will attract mid-career professionals seeking CAR training.

Three panelists listed this benefit. One wrote that CAR courses "might lead to seminars or professional development classes for working journalists. And that would benefit both the university and journalism."

Benefit 29. Journalism programs will develop new connections with news professionals.

Three respondents listed this benefit. One noted the "higher visibility for programs teaching CAR." Another said, "Journalism programs that develop expertise in computer-assisted reporting will find their stock soar among news organizations." The third noted the potential for "more interaction between school and industry."

Benefit 30. Journalism programs will acquire funding from organizations supporting CAR.

The panelist who listed this benefit noted the potential for donations from "companies, both media and computer-related, who are interested in being a part of the future of journalism."

Benefit 31. Journalism programs will have the opportunity to become more contemporary.

Five panelists listed this benefit. One noted the chance for programs "to get ahead of the industry they serve instead of always trailing behind." Another said, "It will make the university current with the way the profession is being practiced." A third stated, "Such journalism programs will have entered the modern world." A fourth noted the importance of a "perception that the program is not lagging behind in technology." A fifth noted the importance of each journalism program "keeping its education relevant and up to date" for training 21st Century journalists.

Benefit 32. Journalism programs will help ensure their survival.

The respondent who listed this benefit said journalism schools which develop expertise in "cutting-edge skills" can safeguard their future "at a time when many universities are cutting back."

Benefit 33. Journalism programs can use computer-
assisted reporting as a marketing/public relations tool
for their universities.

One respondent listed this benefit.


Benefit 34. Journalism programs will attract better
instructors.

Two respondents listed this benefit. One said, "The
university will attract better professors because they
will see it as a place on the cutting edge of
journalism."


Benefit 35. Journalism programs will acquire a
better reputation among faculty in other disciplines.

Four respondents listed this benefit. One noted the
potential for "improved opinions about journalism
programs in our universities." Another said CAR will
"serve as an `equalizer' for smaller departments." A
third wrote, "It will improve interdepartmental
relations."


Round II


For Round II the 29 panelists were asked to rate
each of the 26 problem statements, generated from Round
I, by means of a semantic differential scale. The
respondents checked one of five blanks between the

bipolar adjectives "unlikely" and "likely" for each statement. All 29 participants rated the problems statements. The blank closest to "likely" was scored a five, the next closest four, the center blank three, the next closest two, and the blank closest to "unlikely" one.

In Round II, the panelists were also asked to rank "the top five biggest problems you believe university journalism programs will encounter during the process of introducing computer-assisted reporting courses." The respondents were asked to write "1" in the left hand margin of the list next to the biggest problem, "2" next to the second biggest problem, "3" next to the third, etc. All 29 respondents ranked the problem statements.

## Problem Statement Rating

Table I lists the problem statements in descending order from "likely" (5.0) to "unlikely" (1.0) based on their overall rating by respondents in Round II. When the means of two problem statement ratings are the same, the statement with the lower standard deviation is listed first.

TABLE I

LIKELIHOOD RATINGS OF PREDICTED PROBLEMS FOR

UNIVERSITY JOURNALISM PROGRAMS INTRODUCING

COMPUTER-ASSISTED REPORTING COURSES

N = 29

| Problem | Mean | SD |
|---|---|---|
| Cost of equipment, computer hardware and software | 4.138 | 1.145 |
| Lack of qualified faculty to teach CAR courses | 4.0 | 1.225 |
| Maintenance of equipment, hardware and software | 3.862 | 1.167 |
| Class sizes limited because of equipment costs | 3.586 | 1.350 |
| Curriculum revision necessary for CAR courses | 3.586 | 1.427 |
| CAR skills segregated in separate courses rather than taught across the journalism curriculum | 3.483 | 1.353 |
| Computer hardware becoming obsolete quickly | 3.310 | 1.491 |
| Resistance of university administrators | 3.241 | 1.431 |
| For purposes of promotion and tenure, faculty will devote time to research rather than learning new CAR skills for teaching | 3.207 | 1.256 |
| Students who are apathetic about CAR | 3.138 | 1.457 |
| Scarcity of CAR teaching materials | 3.069 | 1.361 |
| Faculty who misunderstand economic importance of CAR | 3.034 | 1.017 |

TABLE I (Continued)

| Problem | Mean | SD |
|---|---|---|
| Offering sophisticated online computer services such as Lexis-Nexis, Internet, and databases simultaneously to large numbers of students | 3.034 | 1.426 |
| The quality of retrieved data not being assessed | 2.966 | 1.163 |
| Resistance of faculty | 2.966 | 1.322 |
| Computer software becoming obsolete quickly | 2.931 | 1.438 |
| Developing new courses in statistical analysis for journalism students | 2.896 | 1.291 |
| Cost of online time | 2.862 | 1.356 |
| Lack of standard computer hardware for CAR | 2.862 | 1.633 |
| Lack of standard computer software for CAR | 2.793 | 1.449 |
| The limited number of student internships available in CAR-equipped newsrooms | 2.759 | 1.544 |
| CAR taught as replacement for, not complement to, traditional reporting | 2.621 | 1.347 |
| Students intimidated by computers | 2.621 | 1.449 |
| Meeting expectations of incoming students who have been exposed to new technology in high school and home | 2.586 | 1.211 |
| CAR techniques becoming obsolete quickly | 2.103 | 1.263 |
| Developing substantive student assignments | 2.069 | 1.113 |

Problem Statement Ranking

Table II lists the problem statements in descending order based on their overall ranking by respondents in Round II. First-place rankings were scored with five points, second-place with four, third with three, etc. When the point totals of two or more problem statements are the same, the statement with the greatest number of high rankings (# of 1st places or next highest) is listed first.

TABLE II

MAGNITUDE RANKINGS OF PROBLEMS

UNIVERSITY JOURNALISM PROGRAMS WILL ENCOUNTER

DURING THE PROCESS OF INTRODUCING

COMPUTER-ASSISTED REPORTING COURSES

N = 29

| Problem | Points | #1 Rankings |
|---|---|---|
| Cost of equipment, computer hardware and software | 97 | 11 |
| Lack of qualified faculty to teach CAR courses | 67 | 9 |
| Maintenance of equipment, hardware and software | 30 | |
| Resistance of faculty | 27 | 3 |
| Resistance of university administrators | 27 | 1 |
| Class sizes limited because of equipment costs | 26 | |

TABLE II (Continued)

| Problem | Points | #1 Rankings |
|---|---|---|
| Students who are apathetic about CAR | 18 | 1 |
| Cost of online time | 15 | |
| CAR skills segregated in separate courses rather than taught across the journalism curriculum | 15 | |
| Students intimidated by computers | 14 | |
| Curriculum revision necessary for CAR courses | 14 | |
| CAR taught as a replacement for, not complement to, traditional reporting | 11 | 1 |
| Scarcity of CAR teaching materials | 10 | |
| For purposes of promotion and tenure, faculty will devote time to research rather than learning new CAR skills for teaching | 8 | |
| Computer hardware becoming obsolete quickly | 8 | |
| CAR techniques becoming obsolete quickly | 7 | 1 |
| The quality of retrieved data not being assessed | 6 | 1 |
| Lack of standard computer hardware for CAR | 5 | |
| Lack of standard computer software for CAR | 5 | 1 |

TABLE II (Continued)

| Problem | Points | #1 Rankings |
|---|---|---|
| Developing substantive student assignments | 5 | |
| The limited number of student internships available in CAR-equipped newsrooms | 5 | |
| Offering sophisticated online computer services such as Lexis-Nexis, Internet, and databases simultaneously to large numbers of students | 3 | |
| Computer software becoming obsolete quickly | 3 | |
| Faculty who misunderstand economic importance of CAR | 2 | |
| Meeting expectations of incoming students who have been exposed to new technology in high school and home | 2 | |
| Developing new courses in statistical analysis for journalism students | 1 | |

Top Five Rated and Top Five Ranked Problems

Table III lists the top five most "likely" problems from the Round II bipolar scale ratings with the top five "biggest" problems from the Round II rankings.

TABLE III

TOP FIVE PROBLEMS BY LIKELIHOOD SCALE RATING

AND TOP FIVE PROBLEMS BY MAGNITUDE RANKING

N = 29

| Problem | Scale Pts. | Ranking Pts. |
|---|---|---|
| Cost of equipment, computer hardware and software | 120 (#1) | 97 (#1) |
| Lack of qualified faculty to teach CAR courses | 116 (#2) | 67 (#2) |
| Maintenance of equipment, hardware and software | 112 (#3) | 30 (#3) |
| Class sizes limited because of equipment costs | 104 (#4)tie | 26 (#6) |
| Curriculum revision necessary for CAR courses | 104 (#4)tie | 14 (#11) |
| Resistance of faculty | 86 (#14) | 27 (#4)tie |
| Resistance of university administrators | 94 (#8) | 27 (#4)tie |

Problem Category Likelihood and Magnitude Scores

Table IV lists the five problem categories in alphabetical order followed by their mean likelihood and magnitude scores.

TABLE IV

PROBLEM LIKELIHOOD AND MAGNITUDE SCORES

FOR THE FIVE CATEGORIES

OF PROBLEM STATEMENTS

N = 29

| Problem Category | Likelihood Mean Rating Pts. | Magnitude Mean Ranking Pts. |
|---|---|---|
| Cost-Related | 3.517 | 46.0 |
| Curriculum-Related | 2.953 | 8.4 |
| Equipment-Related | 3.165 | 19.0 |
| Institution-Related | 3.283 | 26.2 |
| Student-Related | 2.784 | 9.8 |

Round III

Round III asked panelists to offer possible solutions to the top five most "likely" problems and the top five "biggest" problems from the Round II ratings and rankings (see Table III). Because three of the top five rated problems in likelihood were also three of the top five ranked problems in magnitude, the Round III survey instrument consisted of seven questions (Appendix I). For each problem statement, respondents were asked

to "provide a possible solution or a way CAR educators and/or professionals might address the problem." Panelists were also instructed, "If you believe little can be done about a problem, state that. If you believe that the problem is not a substantial one, state that."

All 29 panelists completed Round III questionnaires. Answers from respondents were consolidated and abbreviated for the following list. Verbatim responses are listed in Appendix L. The problem statements are listed below as they appear in Table III, beginning with the highest rated and ranked problem.

## Solutions to Problem Statements

### A. Cost of equipment, computer hardware and software.

Solution 1. Seek financial donations.

Seven listed this solution. Respondents suggested seeking funds from traditional supporters of higher education including corporations, foundations and businesses. Two persons noted the possibility of funding/partnership arrangements with computer companies.

Solution 2. Purchase used/inexpensive equipment.

Six listed this solution. One suggested buying "demo" models. Several advised journalism programs to obtain older computers unwanted by other departments on campus, such as business. Two said hardware and software "a generation or two behind state-of-the-art" is very affordable. However, one respondent cautioned, "If you buy cheap, second-rate equipment, it'll break."

Solution 3. Persuade administration to invest in CAR equipment.

Five listed this. One said, "Tell administration either spend or become obsolete in five years." Another wrote, "You ask 'em for $200,000 and expect them to give you $30,000. Then you spend the $30,000 and ask for another $200,000 next year; bit by bit you get what you need." A third said, "I see now way around this. Either you support the program or you don't."

Solution 4. Share equipment within the university.

Five listed this. Two suggested using computer labs of other departments, such as business, during off hours.

Solution 5. Seek equipment donations.

Four offered this solution. One suggested approaching private companies for hardware/software

donations. Another wrote, "Try to get a local PC vendor (or national manufacturer) to donate or deeply discount some hardware."

Solution 6. Charge special student fees.

Three mentioned this as a solution. One wrote, "A student technology fee is a very good way to raise money for equipment and software."

Solution 7. Borrow to lease/buy equipment.

Three suggested this. One said, "You get all the equipment you need now but can pay for it in installments over three to five years."

Solution 8. Students buy their own equipment.

One offered this solution.

## B. Lack of qualified faculty to teach CAR courses.

Solution 1. Train existing faculty in CAR.

Sixteen listed this solution. One said, "Send a willing faculty member to training sessions." Two mentioned having local news professionals with CAR knowledge teach faculty. Eight specifically suggested faculty train at the University of Missouri's IRE/NICAR or the  University of Indiana-Indianapolis' NIAR

computer-assisted reporting seminars. One noted the possibility of having "NICAR come to the school to 'train the trainers.'" Another mentioned training available at the AEJMC annual convention. One said university library personal could assist with "online training."

Solution 2. Hire knowledgeable adjuncts.

Nine listed this solution. Several suggested using professionals from nearby print and broadcast news operations on a part-time basis. One said, "Be flexible about hiring adjunct faculty with hands-on, practical experience -- they make the best teachers." Another said, "Partner will local newspapers/TV stations and have them help in the teaching (at the same time increasing the knowledge of the faculty)." A third said, "There are now dozens of working journalists throughout the United States that can teach these courses and are doing so." A fourth noted the potential for a mutally beneficial relationship: "Working journalists ... will benefit from teaching for a year or two and the university will benefit from the fresh blood."

Solution 3. Hire full-time faculty with CAR expertise.

Three offered this solution. One said, "People are out there -- though they may not have traditional

academic credentials." Another said, "I'm available for the right price."

Solution 4. Offer incentives for faculty CAR training.

Three listed this. One suggested "release time from teaching" and funding for seminars.

Solution 5. Journalism faculty unwilling to learn CAR should be encouraged to leave university teaching.

Three offered this solution. One said, "Faculty who are unprepared to learn more about computing should be encouraged to pursue other careers."

Solution 6. "Borrow" instructors from other departments in the university.

Two listed this. Neither cited specific departments.

Solution 7. Lack of qualified faculty is not a substantial problem.

Two listed this.

Solution 8. Raise salaries.

One person suggested this.

## C. Maintenance of equipment, hardware and software.

Solution 1. Maintenance is not a substantial problem.

Although "maintenance of equipment" was number three in both the ratings and the rankings, Seven questioned the magnitude of the problem. One wrote, "Absolutely not a problem. (How'd this get in here?)" Another said, "No more difficult than for reporting and editing labs." A third noted that equipment "requires much less now" than in past.

In contrast, four respondents specifically noted the presence of the problem. One said maintenance "is often overlooked." Another wrote, "This is ALWAYS a problem in the journalism department, whether you're talking typewriters and PCs or photo labs and video editing equipment." A third said, "This is a major problem. Departments don't have money for maintenance." A four wrote, "Major problem."

Solution 2. Hire full-time or part-time person(s) to oversee maintenance.

Five mentioned this solution. One proffered the ratio of one full-time maintenance person for every 50 computers. Another noted that their journalism school's 160-plus computers were maintained by "one full-time,

brilliant, overworked individual and lots of work-study types."

Solution 3. Budget for equipment replacement.

Three listed this. One suggested journalism programs "budget and purchase equipment known for quality of manufacture." Another said, "Labs must be replaced every 3-5 years. In other words, they become obsolete before maintenance becomes a problem."

Solution 4. Train students/faculty.

Three listed this. Several suggested training/using what one respondent called "technically capable and interested" students. Another said, "Get a techie type from the student body to be on-call." One noted that the training process should include a "formal process by which technical knowledge gets passed on from year to year."

Solution 5. Share equipment costs with another department.

Two listed this, suggesting departments with similar equipment needs share costs.

Solution 6. Buy/lease equipment with maintenance agreements.

Two offered this solution. One suggested CAR programs "negotiate better guarantees and service contracts."

Solution 7. Have the university computer center assist with maintenance.

One suggested this. Another countered, however, warning that the "department cannot wait for the Computer Center folks to provide support....must look after its own survival."

Solution 8. Charge a student lab fee.

One suggested this.

## D. Class sizes limited because of equipment costs.

Solution 1. Divide larger classes of students into smaller groups for lab work.

Eight offered this solution. One noted that students working in pairs on a computer were "sometimes quite productive." Another said, "Not every student needs a personal CPU to do assignments!" A third suggested converting classes into "study groups where each group of X number of students has access to only one module." Another suggested scheduling sessions with large numbers in traditional classrooms for

"informing/educating about use of the tools" and scheduling separate lab time for smaller groups. A fifth said overhead projectors could be used in the classroom to introduce the technology, followed by assignments for outside-of-class lab work.

Solution 2. "Class sizes limited because of equipment costs" is not a substantial problem.

Six listed this. One wrote, "I don't see this as a problem. You need to have a small class size in order to give the proper amount of individual attention to students who are trying to use this new technology."

Solution 3. Schedule additional sections of CAR courses/labs.

Five listed this. Several suggested using computer labs during "off" hours. One said, "Hold classes at non-traditional times: Saturdays, 7:30 a.m. weekdays, 8 p.m. weekdays, etc."

Solution 4. Encourage use of students' personal equipment.

Five offered this solution. Two suggested laptops. One said schedule a class specifically for those with their own computers: "a laptop computer with modem, software, etc." Another said the university "should

offer students opportunity to buy their own computers on the installment plan as part of their tuition and fees."

Solution 5. Share computer labs with other departments at the university.

Five mentioned this. One said, "Barter services or use after hours." Another suggested "collaboration" with computer science or library science programs.

Solution 6. Seek donations to buy more equipment.

Four suggested this. One wrote, "Schools must be aggressive about fund raising through corporate and foundation sources." Another said, "Seek grants from computer vendors."

Solution 7. Design intensive short courses.

Three listed this solution. One respondent proposed "a 16-hour weekend workshop, for example, on spreadsheet, or BBSs or database join -- some well-defined, sharply focused topic." Another said, "One solution is to have students take those short courses for practical knowledge of how to use software so that the journalism professor could concentrate on what a journalist should do with that knowledge." A third suggested one-week courses during semester breaks.

Solution 8. Link existing computers in labs together using a local area network (LAN) and load CAR software on file server.

Two offered this suggestion. One wrote, "If you have everyone practicing the relational database portion of the course by using a terminal connected to a LAN, that will allow the class to be considerably larger." Another said, "Most j-schools have PCs. LAN them. Load Lotus 1-2-3. Problem solved."

Solution 9. Use teaching assistants to assist with lab sections.

Two suggested this.

Solution 10. Limit enrollment by student interview.

One suggested interviewing all the students requesting a CAR course and selecting only the top students for admission.

**E. Curriculum revision necessary for CAR courses.**

Respondents' answers to this problem could be divided into two categories. Several offered suggestions on types of changes which should be made in the curriculum, solutions #1-5.

Several others offered suggestions on how to initiate process of curriculum change, solutions #6-9.

One panelist wrote, "I see this as a very significant problem. A significant number of faculty have to want to change to accomplish the necessary changes. This usually requires years of study and debate."

Solution 1. Integrate CAR into existing courses.

Six listed this. In contrast to Solution 3, one said, "This gets at the larger issue: CAR is not a one-shot, 'there-now-you-know-it' deal. It has to be a building process. As such, to be successful, it has to be integrated throughout the curriculum." Another wrote, "I'd rather see CAR techniques incorporated into regular journalism classes. Who teaches note-taking classes?" A third suggested a process of "weaving the concept/techniques of CAR into the fabric of a number of existing courses." However, three respondents suggested both an integrated program and "standalone" CAR courses.

Solution 2. Consult professional and academic CAR experts regarding curriculum changes.

Four suggested this. One said, "IRE/NICAR can provide curriculum used to teach CAR at other journalism schools. These can be tailored to individual school needs." Another said, "Departments across the country should share plans via the Internet." A third suggested consultation with "special projects teams in print and broadcast news organizations."

Solution 3. Add CAR courses to existing curriculum.

Four suggested this solution. One said, "Use intensive short courses."

Solution 4. Curriculum change should focus on methods rather than specific software.

Two listed this. One suggested continuity of student assignments even as software is improved: "That way you can perform the same analyses with the best and latest software. A course that works in FoxPro should work even better in Access, with little revision required of the source material."

Solution 5. Curricula changes need to focus on small-group learning.

One argued that journalism-school curricula need to "focus on team learning where students work in groups on specific projects. Need to dump the model of teaching from one expert to one student."

Solution 6. Curriculum revision is not a substantial problem.

Six listed this. One said, "We have developed a more than adequate curriculum ... that we are constantly improving."

Solution 7. Curriculum revision will occur as a natural by-product of introducing CAR in journalism courses.

Four listed this. One said curriculum change would happen "more or less naturally as teachers begin to teach" CAR. Another gave a personal testimony: "I ... just started teaching what I believe to be important. The students seem to voting positively with their feet and the faculty are coming to face reality."

Solution 8. Promote CAR as progressive journalism.

Three listed this. One wrote, "CAR can easily be sold as new 'cutting edge journalism.'" Another said, "As more faculty realize that the major stories are done with the aid of a computer analysis, they will perceive the need to change."

Solution 9. Persuade those in charge of curriculum that CAR is a necessity.

Two listed this solution.

**F. Resistance of faculty.**

Solution 1. Replace faculty with no interest in CAR.

Seven listed this. Several offered a good deal of commentary. One wrote, "This stuff is essential to

modern journalism. Any j-school instructor who is unwilling to learn it and teach it ought to find another line of work. I mean this." Another said, "As many people have said, universities are full of former professional journalists who want to wait out their careers in the safety of the university after seeing so much computer use in their newsrooms. They will try to protect themselves." A third said, "Faculty who do not understand what is happening in the media today, and refuse to teach it, may be doing an enormous disservice to their students and to the profession."

Other panelists were more succinct. One said, "Dump the faculty that have no interest in the future." Another advised, "Be patient. Dinosaurs will become extinct in time." A third wrote, "If faculty continue to resist, they will simply become obsolete." A fourth said, "Shoot 'em. Seriously, if faculty want to turn out employable journalists, they will have to come around."

Solution 2. Demonstrate to faculty the usefulness of CAR.

Five listed this. The importance of CAR in "today's journalism job market" and its "career-enhancing and lengthening" value were mentioned. One said CAR "should help attract students and enhance the school's name in journalism circles." Another wrote, "Educate them as to

the growing role of computers in the information business."

Solution 3. Bring in experienced CAR professionals and instructors for presentations.

Five offered this solution. One wrote, "Bring in a program from a university with a successful CAR program to explain how it works. Bring in local reporters who have done CAR stories to explain them and show why they are on the cutting edge." Another suggested hosting a CAR seminar.

Solution 4. Promote an unhurried transition into CAR for faculty.

Two listed this, suggesting "Ease people into the technology by requiring the use of e-mail for faculty communication." Another argued for a "subtle change, universal introduction of the topic."

Solution 5. Encourage administrators to promote CAR among faculty.

Two suggested deans and department heads provide leadership from the top. One said, "Our dean is not only computer literate, he is committed to inspiring others on the faculty and staff."

Solution 6. Resistance of faculty is not a
substantial problem.

Two wrote this.


Solution 7. Distribute CAR-produced and CAR-related
articles among faculty.

One offered this solution.


Solution 8. Emphasize public relations
opportunities afforded by CAR.

One said CAR offers journalism schools
opportunities for marketing, promotion and
"salesmanship."


Solution 9. Institute a reward system for CAR
training.

One listed this.


Solution 10. Gather student support.

One suggested conducting student surveys and
circulating petitions among students.


## G. Resistance of university administrators.

Respondents suggested several solutions for this
problem which paralleled solutions given for the problem
of resistance of faculty.

<u>Solution 1</u>. Demonstrate to administrators the usefulness of CAR.

Eleven listed this. Several mentioned utility in the contemporary job market. One wrote, "Get more news organizations to communicate their need for journalists with these skills -- if administrators can see direct line between training/education and jobs, and use it to attract students, it should make it an easier sell." Another said focus on the "marketability of the future graduates and the distinction they would bring the program." A third suggested educating administrators using reports from the Freedom Forum and other journalism institutes.

<u>Solution 2</u>. Resistance of administrators is not a substantial problem.

Five wrote this. One said, "I don't think the resistance is as great as it was. Because of the excitement over the Internet and revenue sources from private industry for development work, administrators will undoubtedly become excited about these programs."

<u>Solution 3</u>. Bring in experienced CAR professionals and instructors for presentations.

Four listed this.

Solution 4. Emphasize public relations opportunities afforded by CAR.

Three offered this solution. One said, "Publicize your achievements widely. Administrators like good press." Another said administrators should be convinced that "the investment will enhance the STATUS and the quality of the program."

Solution 5. Garner support from regents/trustees and/or legislators.

Two mentioned this. One said their university had created a Provost for Technology position, and noted this individual was "a key driving force in our modernization."

Solution 6. Seek support from university computer systems administrator.

One offered this solution, suggesting the development of "interdisciplinary electronic projects."

Solution 7. Persistently present CAR plans to administrators.

One suggested this, noting "when money becomes available administrators will think of you."

Solution 8. Gather data on quality and quantity of students at CAR versus non-CAR journalism programs.

One offered this solution.


Solution 9. Move to another university.

One listed this.


Solution 10. Gather student support.

One listed this.


Solution 11. Enlist faculty support.

One listed this.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

There is little question that budding journalists with training in computer-assisted reporting (CAR) will have an edge in the job market. U.S. News & World Report recently noted that journalists qualified to fill CAR jobs are in high demand. "Computer-assisted reporting specialist for print media" was listed as one of 20 "hot job tracks" in the magazine's October 31, 1994 Career Guide, page 120.

> Journalists can improve the odds of breaking in and moving up by mastering computer-assisted reporting techniques. Pros who have analyzed voluminous computerized records have won Pulitzers every year since 1989 by uncovering patterns in medical malpractice, waste at the U.S. Department of Agriculture and discrimination in lending practices by local banks, for example. Dozens of papers have trained or hired specialists in computer-assisted reporting in the last few years, and more will as the costs of equipment drop and databases become available through online services. As newspapers look for new ways to sell information electronically, too, the computer savvy will have the edge.

However, only a relative handful of j-schools currently teach CAR skills. To meet the demand, many more will have to initiate CAR programs.

This study utilized a Delphi technique to seek consensus among a panel of CAR experts regarding the benefits, problems and problem solutions associated with introduction of these high-tech courses at j-schools. Panelists included

professional journalists working for numerous newspapers, a wire service, a newspaper conglomerate, a national news magazine, and a broadcast network news program. Some are Pulitzer-Prize winners or finalists. Several of these individuals hold newly created CAR positions with titles such as "database reporter," "systems analyst," "computer specialist," and "new media manager." The panel of experts also included faculty members in higher education journalism programs at institutions ranging in size from large state universities to small colleges. Other participants included the directors of two independent CAR institutes and library directors for a large journalism school and a national media institute.

## Summary

This study was designed to identify benefits and problems that university journalism programs will encounter during the process of introducing computer-assisted reporting courses. Solutions to the top problems were also sought.

A panel of 29 journalists and journalism educators participated in the three-round Delphi study of the future of computer-assisted reporting courses in university journalism programs. The research included a progressive series of three questionnaires. The Round I instrument presented two open-ended questions soliciting the predicted benefits and problems associated with the introduction of CAR courses in

university journalism programs. Round II included a series of problem statements collected from the master lists of Round I responses. The panelists rated each statement on a five-point semantic differential scale ranging from "unlikely" to "likely," and ranked the top five biggest problems. Round III solicited solutions from panelists to the top five most likely problems and the top five problems in magnitude.

This study sought to collect the opinions of individuals with knowledge and experience in computer-assisted reporting. No attempt was made to divide the panel of experts into "professionals" and "educators." Many of the panelists who work primarily in education have extensive print and/or broadcast news backgrounds. A number of them continue to contribute to news story production through part-time, freelance, summer, or sabbatical venues. Additionally, some of the journalists have returned to the newsroom after a season of teaching. Other panelists who might be placed in a "professional journalist" category regularly teach, or have taught, in part-time or adjunct capacities.

In Round I, the 29 panelists listed 108 potential problems. One journalist, who left for a month on an overseas assignment, returned the Round I questionnaire too late for inclusion in the Round I master lists or in subsequent rounds. His answers are included at the end of the verbatim responses of Round I (Appendix J). Similar answers were consolidated into a master list of 26 problem statements for use in the Round II questionnaire. In Round I, the panelists

also listed 123 potential benefits. Similar answers were consolidated into a master list of 35 benefit statements. Problem statements and benefit statements were included in the master lists even if only one respondent listed them.

The panelists problem statements were grouped into five broad categories: equipment-related, institution-related, curriculum-related, student-related and cost-related. A few of the problems were placed in more than one category.

Equipment-related problems included "cost of equipment," "maintenance of equipment," "class sizes limited because of equipment costs," "offering online services to large numbers simultaneously," "lack of standard computer hardware," "lack of standard computer software," "computer hardware becoming obsolete quickly," "computer software becoming obsolete quickly," "CAR techniques becoming obsolete quickly," and "the quality of retrieved data not being assessed."

Institution-related problems included "resistance of university administrators," "curriculum revision necessary for CAR courses," "resistance of faculty," "lack of qualified faculty," "faculty who misunderstand economic importance of CAR," and "for purposes of promotion and tenure, faculty will devote time to research rather than learning new CAR skills for teaching."

Curriculum-related problems included "CAR taught as a replacement for, not complement to, traditional reporting," "CAR skills segregated in separate courses rather than taught across the journalism curriculum," "curriculum revision

necessary," "scarcity of CAR teaching materials," "developing substantive student assignments," "developing new courses in statistical analysis," " the limited number of student internships," and "the quality of retrieved data not being assessed."

Student-related problems included "students who are apathetic about CAR," "students intimidated by computers," "meeting expectations of incoming students who have been exposed to new technology in high school and home," and "the limited number of student internships." The first three deal with student attitudes, the fourth with opportunities for students.

Cost-related problems included "cost of equipment," "class sizes limited because of equipment costs," and "cost of online time."

In Round II, the panelists rated the likelihood of each problem statement on the list of 26 procured from Round I. Additionally, each respondent ranked the top five "biggest" problems on the list. See Appendix K.

According to the scale ratings, the most likely problems (see Table I) university journalism programs will encounter in the process of introducing CAR courses -- beginning with highest rated -- are:

* cost of equipment, computer hardware and software

* lack of qualified faculty to teach CAR courses

* maintenance of equipment, hardware and software

* class sizes limited because of equipment costs

* curriculum revision necessary for CAR courses

According to the rankings, the problems of greatest magnitude (see Table II) university journalism programs will encounter -- beginning with the highest ranked -- are:

* cost of equipment, computer hardware and software

* lack of qualified faculty to teach CAR courses

* maintenance of equipment, hardware and software

* resistance of faculty

* resistance of university administrators

Round II responses pointed to a good deal of consensus among panelists regarding the most likely problems. "Cost of equipment" and "lack of qualified faculty," the top two rated problems, both posted an average score of four or more out of a possible five. Both were also consistently rated high: the majority of the respondents rated them within 1.2 points of the average score. The third most likely problem, "maintenance of equipment," averaged a 3.8 score and also varied only 1.2 points among most panelists.

Round II produced an even more pronounced consensus regarding the two problems of greatest magnitude. Eleven respondents -- over one-third of the panelists -- cast their first-place votes for "cost of equipment, computer hardware and software." This top-ranked "biggest" problem accumulated 97 points, more than three times the number of votes of any other problem statement, with the exception of number two. "Lack of qualified faculty to teach CAR courses," the second biggest problem, also earned a substantial number of first

place votes, nine. This problem statement attracted 67 total ranking points.

The third-, fourth- and fifth-ranked problems of magnitude accumulated similar point totals. "Maintenance of equipment, hardware and software," the third-ranked problem, amassed 30 points -- despite the fact that it attracted no first-place votes. The fourth-ranked problem, "resistance of faculty," was awarded 27 points and received three first-place votes. "Resistance of university administrators," the fifth-ranked problem, also earned 27 points and attracted one first-place vote.

Interestingly, the top three most likely and the top three biggest problems were the same on both lists. Panelists communicated that "cost of equipment," "lack of qualified faculty," and "maintenance of equipment" -- in that order -- are both very likely to occur and very likely to be formidable problems for university journalism programs implementing CAR courses.

The combined list of top five most likely and top five biggest problems (see Table III) produced a total of seven because of the analogous top three on the two lists. The top problem, "cost of equipment," is both a cost-related and equipment-related one. The second, "lack of qualified faculty," is institution-related. The third, "maintenance of equipment," is an equipment-related problem. On the combined list, the fourth problem, "class sizes limited because of equipment costs," like the first, is both equipment- and

cost-related. The fifth, "curriculum revision necessary," is the only curriculum-related problem on the list. "Resistance of faculty," number six, and "resistance of university administrators," number seven, are institution-related.

Problems which the panelists deemed "unlikely" to occur or having less magnitude included "developing substantive student assignments," "CAR techniques becoming obsolete quickly," and "developing new courses in statistical analysis for journalism students." One problem statement placed in the bottom five of both lists: "meeting expectations of incoming students who have been exposed to new technology in high school and home."

Panelists generally see cost-related, equipment-related, and institution-related problems as most likely to occur and as having the greatest magnitude.

Respondents focused little attention on problems addressing student shortcomings or needs. None of the student-related problems appeared in the top five problems of likelihood or magnitude. The student-related problem with the highest likelihood rating was "students who are apathetic about CAR," number 10, with an average score of 3.1 out of a possible 5 points. It was also the student-related problem with the highest magnitude ranking, number seven, with 18 points and one first-place vote. "Students intimidated by computers" was ranked 10th in magnitude with 14 points and no first-place votes. Among the 26 problem statements rated for likelihood, the three other student-related problems were

21st, 23rd and 24th. In the magnitude rankings, the bottom two student-related problems were 21st and 25th.

In addition to the problem statements, in Round I respondents listed 123 potential benefits. Similar answers were consolidated into 35 benefit statements, which fell into four broad categories: student-related, graduate-related, faculty-related, and journalism program-related.

The Delphi respondents forsee a plethora of benefits for students in CAR programs. According to the panel, students will acquire knowledge vital to their future jobs and beneficial in other university courses; develop statistical, analytical, and computer-reporting proficiencies; enjoy an improved learning environment; and have a broader perspective of available news sources.

Additional predicted student-related benefits include an increased emphasis on journalistic inquiry and on facts rather than personalities; increased access to diverse viewpoints; development of connections with news professionals; heightened awareness of First Amendment and privacy issues; and realization of the importance of access to public records.

According to the panel, graduates of CAR-enhanced journalism programs will also reap a harvest of benefits, including an easier time securing journalism jobs; an easier transition to other computer-related jobs; an understanding of computer capabilities beyond word processing; and a

clearer perspective of the contemporary world of computer communication.

The respondents also listed graduate-related benefits that will profit others. These include an ability to use CAR for investigative reporting to inform the public; an ability to use CAR methods to generate story ideas for print and broadcast news organizations; and an opportunity to introduce CAR to news operations that have not used it.

Panelists also foresee university journalism professors as re-energized beneficiaries of CAR-enhanced programs. Faculty-related benefits include the motivation to stay current with developments in the profession; the development of more common ground between profession-oriented and research-oriented faculty members; the ability to utilize CAR databases for academic research; and the development of new connections with colleagues in other departments/programs.

Looking at the bigger picture, the respondents noted several benefits journalism programs will enjoy. These include an overall increased attractiveness to better professors and students; increased attractiveness to computer-oriented students, older non-traditional students, and mid-career professionals seeking CAR training; development of new connections with news professionals; and procurement of funding from organizations supporting CAR.

Journalism school benefits also will include the opportunity for programs to become more contemporary; an increased chance of "survival" in the university; the

opportunity to use CAR as a marketing/PR tool; and a better reputation among faculty in other disciplines.

In Round III, panelists were asked to suggest possible solutions to the top five problems in likelihood and magnitude from the Round II rating and ranking data. The top three in both lists were the same, resulting in a list of seven problem statements. Many of the panelists listed more than one solution for some of the problems. Each solution was considered separately when developing a master list.

Respondents generated eight separate solutions to the problem "cost of equipment, computer software and hardware." The solution most frequently listed was to seek financial donations from corporations and/or foundations. The next most frequent suggestion was to purchase used/inexpensive equipment, peripherals and software. Other solutions included leasing equipment, sharing equipment within the university, using student-owned equipment, and charging students an equipment fee.

Panelists offered eight distinct solutions to the problem "lack of qualified faculty to teach CAR courses." The solution most often cited was training existing journalism faculty in CAR techniques. Training suggestions included sending faculty to CAR institutes/seminars and bringing in news professionals for training programs. The second most popular solution was hiring knowledgeable adjuncts -- particularly CAR-savvy journalists from print and broadcast operations in the vacinity of the university. Additional

suggestions included hiring full-time faculty with CAR expertise, raising salaries to attract those persons, borrowing instructors from other university departments, and replacing journalism school faculty unwilling to learn CAR.

Regarding the problem "maintenance of equipment, hardware and software," panelists suggested eight different solutions. Several said full-time or part-time persons should be hired to service the hardware/software -- the top answer. Others suggested students and/or faculty could be trained to maintain equipment. Three said replacement equipment should be budgeted for. One respondent said the university's computer center could assist. However, another warned that journalism programs "cannot wait for the Computer Center folks to provide support ... must look after its own survival." Seven respondents said equipment maintenance would not be a substantial problem.

Ten solutions were suggested for the problem of "class sizes limited because of equipment costs." The most frequent answer was dividing larger CAR classes into smaller groups for lab work. Several suggested scheduling additional sections of CAR courses. Two respondents suggested linking existing lab computers together via local area network (LAN) then loading the file server with CAR software. Other suggestions included sharing computer labs with other departments, using teaching assistants to help with lab sessions, and designing intensive CAR short courses in contrast to semester-long ones. Six panelists said "class

sizes limited because of equipment costs" would not be a substantial problem.

The nine solutions for the problem of "curriculum revision necessary for CAR courses" were offered in two realms. Additionally, six said curriculum revision would not be a substantial problem.

Regarding _types_ of curriculum changes they would like to see, several panelists advised integrating CAR into existing journalism courses. Another group suggested adding CAR courses to the existing journalism school curricula. Three respondents said programs should do both: integrate CAR into a number of existing courses as well as offer a "standalone" class. Other solutions were consulting professional/academic CAR experts regarding curriculum revision, changing curriculum to focus on small-group learning, and changing curriculum to focus on CAR methods rather than specific software.

Regarding _how_ to implement a curriculum change, respondents suggested persuading "those in charge" that CAR is a necessity, promoting CAR as "cutting edge" journalism, and waiting for revision to occur as a natural by-product of successful CAR courses.

Ten different solutions were offered for the problem "resistance of faculty." The suggestion offered most frequently was to replace faculty who have no interest in CAR. Several said to demonstrate the usefulness of CAR (in job market, computer communications, etc.) to faculty. Others

said bring in journalism professionals/educators for CAR presentations. One suggested circulating CAR-produced or CAR-related articles. Other solutions included devising a reward system for faculty CAR training, and emphasizing the public relations opportunities afforded by CAR programs. Two panelists said faculty resistance would not be a substantial problem.

Respondents suggested 11 different solutions for the problem "resistance of university administrators." The most popular solution was demonstrate to administrators the usefulness of CAR, particularly in the contemporary job market. Panelists also suggested hosting presentations by news professionals/educators with CAR expertise. Several suggested gathering support for CAR from other groups: regents/trustees, faculty, computer systems administrators and students. One said, if all else fails, move to another university. Five panelists said resistance from administrators would not be a substantial problem.

## Conclusions

This research sought to address the following questions: 1) What kinds of problems will university journalism programs encounter while implementing computer-assisted reporting courses? 2) What kinds of benefits will emanate from the process? and 3) What are possible solutions to the problems?

Although predicting the future precisely is impossible, the panel of CAR experts did reach a good deal of consensus regarding benefits, problems, and problem solutions associated with the introduction of CAR courses in university journalism programs. Journalism educators and professionals seeking to bring computer-assisted reporting education into their classrooms and laboratories should find the information in this study useful.

Journalism schools should note that the expert respondents see students as the primary beneficiaries of CAR. Conversely, they do not regard students as a major stumbling block in the process of implementing CAR programs. The three problems they listed in Round I related to student attitudes were rated and ranked near the bottom in Round II.

According to the panel, young journalists-in-training will acquire much-needed skills in online information access, statistical analysis, and computer reporting in CAR courses. Additionally, CAR's increased emphasis on inquiry will help journalists "return to their roots as skeptical members of society," as one put it.

Journalism schools desiring to upgrade the preparedness of their graduates should consider computer-assisted reporting, the panel agreed. First of all, CAR-program alum will enjoy an enormous advantage over non-CAR graduates in an increasingly tight journalism job market. CAR grads will also have the ability to use computers for investigative reporting and generation of story ideas -- a benefit for all of

society. The future graduates will also have a better overall grasp of the contemporary world of computer communication. As ambassadors of database reporting, some of these graduates will introduce CAR techniques to news operations that have yet to use them.

University journalism schools should also take note of the panel's predicted benefits for oft-criticized journalism faculty members. One overarching benefit will be the continuing incentive for academics to stay current with the profession. CAR involvement also will help them develop new connections with news professionals. Additionally, a heightened level of computer literacy should lead to enhanced dialogues with colleagues in other academic departments with similar interests. With its emphasis on statistical analysis of data, CAR also is seen by several panelists as an instrument within journalism schools to "bridge the gap between the green eye shades and the chi squares." CAR databases can also be used by faculty for academic research.

In an era of increased competition for tuition-paying students, administrators will be interested in the panelists' predictions regarding the increased attractiveness of journalism programs. The CAR-enhanced journalism schools are likely to draw more and better students, as well as better instructors. The revitalized programs will be in a position to obtain funding from CAR-supporting organizations, and gain an enhanced reputation inside and outside the university.

The panel also reached a noteworthy level of agreement regarding the problems journalism schools will have to address in the process of introducing CAR programs. However, for each of the top problems, a handful of respondents argued either that it was not a major problem or that it was readily solvable. Their solutions often involve additional responsibilities for faculty members, and cooperation with other parties -- academic and professional.

Journalism educators should note that the problem of greatest likelihood <u>and</u> magnitude predicted by the experts was the cost of computer hardware and software. A related problem of limited class sizes because of equipment costs was also high on the problem lists. Computer-assisted reporting programs require computers and software that are capable of accessing and analyzing large quantities of data. Pooling resources to purchase them requires a substantial effort on the part of the university. So does maintaining them, according to the panel.

The panelists offered a number of solutions to the equipment funding problem. Interestingly, the traditional university strategy of seeking donations from a variety of sources led the list. University journalism programs serious about bringing in CAR can tap into many of the same sources other departments have. Other suggestions for equipment acquisition included leasing, borrowing to buy, and purchasing used/second-generation equipment. Some respondents favored passing along the responsibility to the learners:

charging special student equipment fees, or requiring students to purchase and use their own equipment.

The dilemma of class sizes limited because of equipment costs could be solved by scheduling additional sections of CAR courses, or offering computer labs during non-traditional times: early mornings, late evenings and weekends. Panelists also suggested larger classes be divided into smaller groups for lab work: "The best possible solution is a combined lecture/lab type course, much like science." The development of intensive CAR short courses was another option.

Maintenance could be handled by students/faculty trained for the task, panelists said. Other possibilities include hiring a full-time maintenance person, and sharing equipment costs with another department. Several noted the improved reliability of computers over the years and argued that maintenance should not be a major problem. Schools should budget for replacement every three to five years, one wrote, because the equipment becomes obsolete before it requires extensive repairs.

Another problem emphasized by the panel was the difficulty of finding faculty with the ability to teach CAR. One third of the panel suggested current faculty members take advantage of training seminars offered by IRE, NICAR, NIAR or other journalism schools. Several others suggested hiring knowledgeable adjuncts from the ranks of working journalists to teach the students and "train the trainers." One said, "Be

flexible about hiring adjunct faculty with hands-on practical experience -- they make the best teachers."

What about the problem of resistance from some faculty and administrators? Panelists suggested selling the idea to the skeptical: bring in professionals and educators with CAR expertise for presentations, emphasize the public relations potential of CAR, circulate CAR-produced articles, develop a reward system for faculty CAR training, and gather student support. Several respondents reasoned that existing faculty with no desire for CAR training should be replaced: "Dump the faculty with no interest in the future," one wrote. "Any j-school instructor who is unwilling to learn it and teach it ought to find another line of work," another said.

Another problem journalism programs will have to deal with is curriculum revision for CAR, panelists agreed. However, they divided into two camps regarding the direction those revisions should take. One group promoted the idea of CAR techniques being integrated in courses throughout the curriculum. The other, smaller, group of respondents advanced the concept of separate CAR courses alongside the standard journalism curriculum. One panelist noted that this debate "gets at the larger issue" of defining the future role of CAR in schools of journalism.

It is curious that no panelist made a specific reference to any of the ethical concerns which might be raised by CAR, such as plagiarism, documentation of sources, and gatekeeping agendas. Perhaps this is a professional blind spot.

Recommendations for Further Research

The future viability of computer-assisted reporting in journalism programs will in large measure serve as a reflection of the fitness of the journalism schools themselves. The world of information, journalists stock and trade, has already entered the digital age. If student journalists are not prepared to readily tap into it and accurately analyze the data, then they have not truly been prepared for reporting in a contemporary global society.

What are the benefits and problems associated with introducing CAR courses into journalism schools? How can the biggest problems be overcome? The panel of experts who participated in this study produced answers based on several centuries of collective experience as news professionals and educators with CAR expertise. Their predictions are, of course, only the collected hypotheses of a non-random sample of CAR experts. But futures research is an imprecise science. The information from this study can be used as a launching pad for other exploration into the future of CAR in higher education.

If the goal of future research is clarification and delineation of the problems and corresponding solutions identified by this Delphi study, then a focus group could generate more useful information. Educators and professionals attending national/regional conferences could be contacted

beforehand to secure their participation. Questions could be generated from this Delphi and other CAR research. A CAR expert with experience in both newsroom and classroom might serve as moderator. Assuming the media-savvy group would not be camera shy, one option would be to openly videotape the session for later analysis.

If the goal of future research is to pinpoint the most effective solutions to some of the problems identified by this study's panel of experts, a case study would be a viable option. Researchers could locate a journalism school, or schools, that successfully implemented a CAR program and study their experience in depth. Assuming the list generated by this Delphi research was moderately accurate, researchers would seek to discover particularly how problems related to equipment, cost, faculty and curriculum were dealt with. Certainly the case study process of depth interviews and review of primary documents would uncover other problems and corresponding solutions in a real-world scenario. This information would be invaluable for journalism schools working to bring CAR into their programs.

Additionally, future research should examine the implications of CAR from the perspective of certain communication theories, such as agenda-setting, gatekeeping, dissonance, and the diffusion of innovations.

Concluding Comment

University journalism schools have been criticized in the past for their laggard status with respect to the world of professional journalists. Several panelists in the study repeated that refrain. Little by little, their programs have changed in an attempt to keep pace with the contemporary reality of news reporting. Recently, however, the pace of change has accelerated. If journalism schools are serious about the education and preparation of future news professionals, then the implementation of CAR is essential.

What sort of benefits should CAR-enhanced journalism programs look forward to? First and foremost, better prepared and highly marketable graduates -- computer-smart reporters in an age of online information. Journalism schools will enjoy an influx of energy and enthusiasm as well: a new generation of inquisitive students, new associations with working journalists, a plethora of avenues for funding and research, enhanced reputations, and plenty of public relations opportunities.

To implement CAR courses and realize some of these benefits, the experts agreed that equipment money and knowledgeable faculty are the two biggest needs. Funding to buy and maintain computer software and hardware should be sought "aggressively," one panelist said. In addition to traditional sources, journalism schools and universities should look to equipment manufacturers and resellers. The

respondents also consistently prodded educators to cooperate with other entities within the university: use computer labs jointly with the business department, purchase second-generation equipment from a division that is upgrading to state-of-the-art, borrow instructors from other departments.

Flexibility was seen as a key to securing instructors for CAR courses. Schools should recruit knowledgeable adjuncts from nearby professional news operations without getting bogged down in debates over academic credentials, the panel suggested. Existing journalism school faculty should pry themselves out of their chairs and make the trek to training seminars sponsored by NICAR or other organizations. What about those who refuse? A number of the respondents were quite adamant about the solution for resistant faculty: replace them.

Aspiring journalists should be able to acquire the knowledge and training in CAR they need at the university journalism school. Repeating a common theme of the panel, one respondent said CAR is "essential to modern journalism." University journalism schools that forge ahead with CAR programs will reap a harvest of benefits, the experts predict. However, those journalism programs which postpone their entrance into the computer age could find themselves circumvented in the process of training tomorrow's professionals. Future journalists seeking training -- and news operations seeking qualified reporters -- may simply look elsewhere.

BIBLIOGRAPHY

Abernathy, Joe. "Casting the Internet." Columbia Journalism Review. January/February 1993, 56.

Allen, T. Harrell. New Methods in Social Science Research: Policy Sciences and Futures Research. New York: Praeger, 1978.

Allmann, William F. "Pioneering the Electronic Frontier," U.S. News & World Report. 6 December 1993, 63.

_____, and Vic Sussman. "A Baedeker for the electronic tourist." U.S. News & World Report. 6 December 1993, 71.

Beard, Frank. "Implementing PC Technology with Organizational Change." Journalism Educator. Spring 1991, 72.

Bennett, David, and Paul Hightower. "Computerizing Visual Journalism: Lessons from the Writing Labs." Journalism Educator. Spring 1991, 46-49.

"Bits, bytes and nibbles." Uplink. October 1992, 6; November 1992, 6.

Bland, Dorothy. "Computers Can Turn Ordinary Reporters into Super Sleuths." ASNE Bulletin. January/February 1991, 11-15.

Boggs, Alison. "Quick hits! Writing a computer-assisted story in less than a week." Uplink. October 1992, 2.

Borsi, Dianna. "Taking bytes out of the education apple." Uplink. February 1993, 4.

"Brave new world." U.S. News & World Report. 6 December 1993, 6.

Brooks, Brian S., and Tai-en Yang. "Patterns of Computer Use in Newspaper Newsrooms: A National Study of U.S. Dailies." Kansas City, Missouri: Association for Education in Journalism and Mass Communication, annual convention, 1993. Photocopied.

Burnham, David, and Susan Long. "`TRAC'ing more complete NRC data," Uplink. February 1993, 3.

Davis, Dave. "Acquiring information from the Nuclear Regulatory Commission." Uplink. February 1993, 2.

Endres, Frederic F. "Daily Newspaper Utilization of Computer Databases." Newspaper Research Journal. Fall 1985, 29-35.

Foster, Tom. "Bringing computer-assisted reporting to every reporter's repertoire." Uplink. April/May 1993, 3.

Fleming, Diedre. "CD-ROM may be the future, but don't give up your tape drive yet." Uplink. April/May 1993, 2.

Giles, Robert H. Journalism Education: Facing Up to the Challenge of Change. Washington D.C.: American Society of Newspaper Editors, 1990.

Hansen, Kathleen A., Jean Ward, and Douglas M. McLeod. "Effects of the Electronic Library on News Reporting Protocols." Journalism Quarterly. Winter 1988, 714-720.

"Harnessing computers to cover the news." The Forum. September 1993, 4-7.

Helmer, Olaf. Looking Forward: A Guide to Futures Research. Beverly Hills, Calif.: Sage Publications, 1983.

Jacobsen, Thomas L., and John Ullman. "Commercial Databases and Reporting: Opinions of Newspaper Journalists and Librarians." Newspaper Research Journal. Winter 1989, 15-25.

Jaspin, Elliot. "Just Do It!" ASNE Bulletin. December 1991, 5.

_____, and Mark Sableman, "News Media Access to Computer Records: Updating Information Laws in the Electronic Age." St. Louis University Law Journal. Winter 1991.

Johnson, J.T. "The Unconscious Fraud of Journalism Education." Quill. June 1992, 31.

Koch, Tom. Journalism for the 21st Century: Online Information, Electronic Databases, and the News. New York: Praeger, 1991.

Lail, Jack. "Computer Journalism." Quill. September 1993, 22.

Landau, George. "Quantum Leaps: Computer Journalism Takes Off." Columbia Journalism Review. May/June 1992, 61-64.

Lecesse, Mark. "Electronic 'corner tavern' connects you to
    journalists' sources around the world." Quill.
    January/February 1993, 12.

Leff, Mark. "Psst! Want some data ... *cheap*?" Quill.
    September 1993, 21.

Meyer, Philip. The New Precision Journalism. Bloomington:
    Indiana University Press, 1991.

MICAR. The TRI/DART Seminar: Training Reporters In Data
    Acquisition & Retrieval Technologies. Columbia,
    Missouri: Missouri Institute for Computer-Assisted
    Reporting, 1993.

Miller, Tim. 1988. "The Database Revolution." Columbia
    Journalism Review. September/October 1988, 35-38.

Nelson, Marlan D., and George R. Rhoades. Basics of Writing
    for the Mass Media, 2nd ed. Dubuque, Iowa: Kendall/Hunt
    Publishing, 1986.

Paul, Nora. Computer Assisted Research: A Guide to
    Tapping Online Information. St. Petersburg, Fla.: The
    Poynter Institute for Media Studies, February 1993.

_____. "Database & bulletin board services: A guide to
online resources." Quill. September 1993, 18.

Pease, Edward C. "Defining Communication's Role and
    Identity in the 1990s: Promises and Opportunities for
    Journalism and Communication Studies." Insights:
    Journal of the Association of Schools of Journalism and
    Mass Communication. Summer 1992, 6-10.

_____. "Professional Orientation Equals Second-class
Status in Academe." Journalism Educator. Autumn 1993, 38-45.

Planning for Curricular Change. Eugene: School of Journalism,
    University of Oregon, 1984.

Ross, Steven S. Exercises in Computer-Assisted Reporting, 4th
    ed. New York: Steven S. Ross, 1993.

Sackman, Harold. Delphi Critique: Expert Opinion,
    Forecasting, and Group Process. Lexington, Mass.:
    Lexington Books, 1975.

Schmid, Jonathan, and Andrew Scott, eds. Selected
    Computer-Assisted Stories from the IRE Morgue.
    Columbia, Missouri: Investigative Reporters and
    Editors, 1992.

Smawley, Michelle. "Enthusiasm for computer-assisted reporting is keen, although broadcasters are leery of cost vs. return." Uplink. June/July 1993, 4.

Spohn, Gustav. "Billy Graham Goes 'Online' ... and Likes It," The Baptist Messenger. 6 January 1994, 4.

Syken, William. "What they didn't teach you in school." Uplink. August 1992, 6.

Ullmann, John. "Tapping the Electronic Library." IRE Journal. Summer 1983.

Ward, Jean, and Kathleen A. Hansen. "Journalist and Librarian Roles, Information Technologies and Newsmaking." Journalism Quarterly. Winter 1991, 491-498.

Ward, Jean, Kathleen A. Hansen, and Douglas McLeod. "Effects of the Electronic Library On News Reporting Protocols." Journalism Quarterly. Winter 1988, 845-852.

Ward, Michele. Acting Director/Secretary, National Institute of Computer-Assisted Reporting. Interview by author. Columbia, Missouri. 18 October 1993.

Wendling, Ted, and Dave Davis. "Dangerous medicine, deadly mistakes. (A Special Reprint). The (Cleveland) Plain Dealer. December 1992, 1-14.

Whiteside, Mary Ann Chick. "Census Connection." Editor & Publisher. 2 November 1991, 6pc-7pc.

_____. "Computers -- just another reporting tool." Editor & Publisher. 2 November 1991, 1pc, 20pc.

Wiley, Gale. "Databases and PCs." Journalism Educator. Autumn 1991, 76.

Wilson, David L. "Electronic Riches are Free on the Internet, but Some Worry About the Consequences." The Chronicle of Higher Education. 28 July 1993, A18.

APPENDIX A

PANELISTS' BIOGRAPHICAL INFORMATION


From a master list of 53 potential respondents, 33 journalists and journalism educators completed a reply form (see Appendix C) agreeing to participate in the study. Each of the 33 was sent a Round I questionnaire. Thirty returned completed questionnaires. John L. Griffith, professor in the College of Journalism and Communication at the University of Florida, returned an unanswered copy of the questionnaire and requested that he be dropped from the study. He said he had "not kept up with" computer-assisted reporting enough to knowledgeably answer the questions. Bill Dedman, director of the Associated Press' computer-assisted reporting program and 1989 Pulitzer Prize winner for an Atlanta Journal CAR story, was sent on a one-month overseas assignment shortly after Round I was mailed out. He returned his Round I questionnaire too late to be included in subsequent rounds.

Two respondents did not return questionnaires or respond to follow-up phone calls, facsimile letters or e-mail messages: Dr. Susan Long, co-director of the Transactional Records Access Clearinghouse (TRAC) at Syracuse University; and Richard Mullins, professor at

the School of Journalism, University of Missouri, and founder of the National Library on Money & Politics.

The following 29 panelists participated in all three rounds. Respondents are listed in alphabetical order.


**Len Ackland** is an associate professor in the School of Journalism and Mass Communication at the University of Colorado. He also serves as director for the institution's Center for Environmental Journalism. He teaches a CAR course titled "Precision Journalism." Ackland worked as a technology and business reporter for the <u>Chicago Tribune</u> for six years and as a reporter for the <u>Des Moines Register</u> for three years. He is co-editor of the 1986 book <u>Assessing the Nuclear Age</u>.

**Adam Berliant** is a database reporter for the <u>Morning News-Tribune</u> in Tacoma, Washington. He is co-founder of a computer-assisted reporting research service, Electronic Public Information Consultants, EPIC. Berliant worked at NICAR for 2 years with Elliot Jaspin.

**Dr. Roger Bird** is an assistant professor in the School of Journalism and Communication at Carleton University, Ottawa, Canada. He was trained in CAR at NICAR.

**Dr. Jim Brown** serves as executive director for the National Institute for Advanced Reporting (NIAR)

which hosts annual CAR seminars. He is also associate dean at the University of Indiana-Indianapolis School of Journalism.

**Lloyd Brown** is editor of the editorial page for The Florida Times-Union in Jacksonville, Florida. He has worked as a reporter and editor for the Jacksonville Journal and Times-Union for over 35 years.

**Dr. Wayne Danielson** is a professor in the department of journalism at the University of Texas. He was director of UT's Project Quest, 1984-1987, promoting use of microcomputers in teaching and research. He has authored/edited over one dozen computer programs since the mid 1980s. Danielson has served as a reporter and editor for the San Jose Mercury-News and the Philadelphia Inquirer. He is the author of several books, including Exercises and Tests for Journalists, Programmed Newspaper Style, and Programmed News Style. Danielson is also the author of several dozen scholarly articles in Journalism Quarterly, Public Opinion Quarterly, Perspectives in Computing, etc.

**Thomas Greer** is vice president and senior editor for The Plain Dealer in Cleveland, Ohio. He has overseen a number of large-scale CAR projects, included one nominated for a Pulitzer Prize.

**David Hinchman** is associate producer for NBC's "Dateline," and has directed numerous CAR investigations for the news program. He served as assistant director

for NICAR from 1989-1992. Hinchman co-founded EPIC -- a computer analysis service for journalists -- with Adam Berliant. He has won several reporting awards for investigative stories using CAR.

**Brant Houston** is managing director of the National Institute for Computer-Assisted Reporting (NICAR) and adjunct assistant professor of journalism at the University of Missouri School of Journalism. He worked for 17 years as an investigative reporter and editor for the Kansas City Star and the Hartford Courant. He developed the Courant's CAR program and trained more than two dozen reporters.

**Elliot Jaspin** is director of computer-assisted reporting for Cox Newspapers in Washington, D.C. He is the founding director of NICAR. Jaspin won a Pulitzer Prize for his investigative reporting with the Providence (R.I.) Journal-Bulletin in 1988-89. With a grant from the Freedom Forum, he developed "Nine-Track Express," a CAR software for analyzing nine-track magnetic computer tapes used extensively by federal and state governments to store data.

**Dr. J. T. "Tom" Johnson** is a professor in the department of journalism at San Francisco State University. He has worked as an editor for Scientific American/W. H. Freeman and Company and as a reporter, stringer, and correspondent for the New York Times, United Press International, Time-Life News Service,

<u>Popular Science</u> magazine and the <u>Topeka Capital-Journal</u>. He is the founding editor of <u>MacWEEK</u> and contributing editor to <u>InformationWEEK</u> magazines. Johnson is president of SARTOR Associates: Editorial and Telecommunication Consultants, supporting the use of personal computers in journalism and higher education.

**George Landau** is computer specialist for the <u>St. Louis Post-Dispatch</u>. He founded the CAR program at the newspaper in 1989 after several years as a general assignment reporter. Landau was a finalist for the 1993 Pulitzer Prize for his investigative report of corruption in the office of Missouri Attorney General William Webster.

**Penny Loeb** is associate editor and director of the CAR program for <u>U.S. News & World Report</u>. She worked as part of an investigative reporting team for New York's <u>Newsday</u> for five years. Loeb is a recipient of a Scripps Howard Public Service Award and a Society of Professional Journalists Public Service Award for two CAR stories.

**Dr. Diane Lynch** is an assistant professor and chair in the department of journalism at St. Michael's College. She was trained in computer-assisted reporting at NICAR and conducts CAR seminars for faculty.

**Shawn McIntosh** is database editor for the <u>Dallas Morning News</u>. She has worked as a reporter for <u>USA Today</u> and is a member of the Society of Professional

Journalists. McIntosh has written CAR articles for professional publications, such as <u>Quill</u>, and given CAR presentations at SPJ and NICAR conferences.

**Dr. Philip Meyer** is the Knight Professor in the School of Journalism, University of North Carolina. He is the author of <u>Precision Journalism: A Reporter's Guide to Social Science Research Methods</u> and <u>The New Precision Journalism</u> -- books which help "bridge the gap between social science and journalism."

Meyer worked as a reporter and editor for the <u>Miami Herald</u> and Knight-Ridder's Washington bureau for over 20 years. In 1968 he won a Pulitzer Prize for pioneering CAR reporting at the <u>Detroit Free Press</u>.

**Deborah Nelson** is an investigative reporter for the <u>Chicago Sun-Times</u> and president of the IRE board of directors.

**Elliot Parker** is an associate professor in the department of journalism at Central Michigan University. He is curator of the Internet's Computer Assisted Research and Reporting List (CARR-L). He has worked for United Press International and several daily newspapers.

**Nora Paul** is director for the Poynter Institute Library. She is also a Poynter Associate, responsible for organizing seminars for news research. She served for 12 years as library director then information services editor for the <u>Miami Herald</u>. Paul has served as adjunct professor of communications at the University of

Miami. She has written a number of articles on CAR and the Poynter booklet, <u>Computer-Assisted Research: A guide to tapping online information</u>, which is being used in some university courses. She writes a column on bulletin board services for the <u>Database Files</u> newsletter.

**Greg Reeves** is a special assignment reporter for <u>The Kansas City Star</u>. He conducted CAR research for the newspaper's 1991 Pulitzer Prize-winning series on the USDA and shared Sigma Delta Chi award for the same. He has worked for <u>The Star</u> since 1976.

**Dr. Steven Sander Ross** is an associate professor in the Graduate School of Journalism at Columbia University. He has taught numerous CAR courses and seminars for students, journalists, and faculty. Ross is the author of the only textbook devoted exclusively to CAR, <u>Exercises in Computer-Assisted Reporting</u>, 4th ed.

**Barbara Semonche** serves as director of the News Library for the School of Journalism at the University of North Carolina. She is the editor of the 1993 <u>News Media Libraries: A Management Handbook</u>, which includes several chapters and appendices of CAR information.

**Jeff South** is database editor for the <u>Austin American Statesman</u>. He has served as editor and reporter for newspapers in Texas, Arizona and Virginia.

**John Ullmann** is an assistant professor of journalism at the University of Wisconsin-Eau Claire. He is the author of the 1995 <u>Investigative Reporting:</u>

Advanced Methods and Techniques, which devotes a chapter
to CAR. He filmed a 45-minute CAR training tape for the
American Press Institute for broadcast to several
hundred newspapers October 1994. Ullmann served as
assistant managing editor for projects at the Star
Tribune in Minneapolis from 1984-1990. Projects he
directed won more than four dozen awards, including the
1990 Pulitzer for Investigative Reporting. He served as
IRE's first executive director from 1978-1984.

**Edward Valauskas** is principal and founder of
Internet Mechanics, a consulting firm for computing,
telecommunications and network applications. He was
named the 1991 Apple (Computer) Teaching Fellow and
recently named an Apple Consulting Educator. Valauskas
is a columnist for DATABASE, Online, Library Journal,
and the Apple Library Users Group Newsletter. He is co-
author of the recent Internet Troubleshooter: Help for
the Logged-On and Lost.

**Laura S. Washington** is editor of The Chicago
Reporter, which frequently uses CAR to research stories.
She served as education reporter for the investigative
monthly from 1980 to 1985. She was appointed deputy
press secretary to Mayor Harold Washington in 1985.
Washington is also a part-time correspondent for PBS's
"Chicago Tonight." She is a board member of IRE, a
member of the Chicago and National Associations of Black

Journalists, and chair of the advisory board of the Chicago Media Workshop.

**Mary Ann Chick Whiteside** serves as new media manager for the <u>Flint (Mich.) Journal</u>. She has authored several articles on CAR for <u>Editor & Publisher</u> magazine.

**Dr. Gale Wiley** is an associate professor in the department of journalism at the University of Texas and director of the university's Clearinghouse for Computer-Based Education in Journalism. He has served as computer editor for <u>Journalism Quarterly</u>.

**Dr. Fred Williams** serves as director for the Center for Research on Communication Technology and Society, and holds the Mary Gibbs Jones Centennial Chair, in the College of Communication at the University of Texas. He is a Senior Research Fellow in the university's Business Research Unit. Williams has authored, coauthored or edited some 75 research articles and 43 books, including <u>Research Methods and the New Media</u>, and the 1993 <u>The People's Right to Know: Media, Democracy and The Information Highway</u>. From 1973 to 1985, he served as founding dean, then professor, for the Annenberg School of Communications at the University of Southern California.

APPENDIX B


LETTER OF INVITATION


March 23, 1994

Len Ackland, Associate Professor
School of Journalism and Mass Communication
University of Colorado
Boulder, Colorado 80309-0287

Dear Professor Ackland:

This letter is an invitation for you to participate in a Delphi study of
the future of computer-assisted reporting courses in university
journalism programs. I am pursuing a doctorate of higher education with
an emphasis in mass communication at Oklahoma State University in
Stillwater. This study will comprise the research component of my
dissertation.

The Delphi research method involves a selective panel of approximately
30 persons with expertise regarding the subject of study. I am inviting
professionals and educators in journalism with knowledge of computer-
assisted reporting, such as yourself, to take part in this study.

Your participation in the research would involve filling out three short
questionnaires mailed to you over a three-month period beginning in
September. The questionnaires are designed to take up a minimal amount
of your time and you will be allowed a great deal of freedom in your
responses.

Your anonymous responses regarding the future of CAR courses in
journalism programs will be distributed to other panel members.
Conversely, you will have the opportunity to respond to their
predictions. When writing my dissertation at the conclusion of the
study, I will not associate your name directly with any of your answers
on the questionnaires.

If you agree to participate, I believe that you will find the Delphi
study informative regarding the future of computer-assisted reporting
education. If you would like a summary of the results, please let me
know. I would be pleased to share that information with you.

Please indicate your willingness to participate in the study by
Wednesday April 20. I have enclosed a reply form and a pre-addressed,
stamped envelope for your convenience. If you have any questions or
prefer to respond by phone, please call me at the number listed below.
Thank you.

Sincerely,

Kevin C. Lee
(405) 377-5506

APPENDIX C

REPLY FORM


Reply Form: Delphi Study of CAR Courses


Yes, I agree to serve as a participant in a Delphi study concerning the future of computer-assisted reporting courses in university journalism programs. I understand that my participation will require the completion of three short questionnaires over a three-month period beginning in September.


Signed _____


Name _____

Street/Box _____

City, State, Zip

APPENDIX D

ROUND I COVER LETTER

August 22, 1994

Len Ackland, Associate Professor
School of Journalism and Mass Communication
University of Colorado
Boulder, Colorado  80309-0287

Dear Professor Ackland:

Thank you for agreeing to participate in this Delphi study of computer-
assisted reporting -- the research component of my dissertation! You are
one of approximately 30 persons serving as respondents for the three-
round study. Because of the small number of participants, each
respondent's input in all three rounds is crucial for the successful
completion of the study!

I have enclosed a copy of the Round I survey for you to complete and
return at your earliest convenience. Responses do not need to be ranked.

In Round II, respondents will rank the individual problem statements
generated in Round I. In Round III, respondents will suggest possible
solutions to the top-ranked problem statements from Round II.

The responses are numbered for organizational purposes. Your name will
not be revealed to the other participants during the course of the
study. At no time will your responses be directly associated with your
name.

I have enclosed an addressed, stamped envelope for your convenience. If
you prefer to respond by e-mail, my address is 75054.662@compuserve.com.
If you prefer to respond by fax, my fax/modem number is 304/473-8233.

Please respond at your earliest convenience before September 19. I hope
to mail out Round II near the end of September and Round III near the
end of October.

Thank you again for your participation. If you have any questions or
desire any additional information, please do not hesitate to contact me.
My previous communication was from Oklahoma State, so please note new
address, phone, etc.

Sincerely,

Kevin C. Lee

APPENDIX E


ROUND I SURVEY INSTRUMENT


Predicted Benefits and Problems
of Computer-Assisted Reporting Courses
in University Journalism Programs


Directions: List up to **five** statements for each of the two
questions. Response statements do not need to be ranked
according to importance. Use the back of the page for answers
if needed.


Question #1:

    List the most important **benefits** that you believe
university journalism programs will realize from the
introduction of computer-assisted reporting courses.


Question #2:

    List the most important **problems** that you believe
university journalism programs will encounter during the
process of introducing computer-assisted reporting courses.

APPENDIX F

ROUND II COVER LETTER

October 7, 1994

Len Ackland, Associate Professor
School of Journalism and Mass Communication
University of Colorado
Boulder, Colorado   80309-0287

Dear Professor Ackland:

Thank you for completing Round I of this study of computer-assisted reporting! I have enclosed a copy of Round II for you to complete and return. It includes NO open-ended questions. In Section I you simply have to mark an "X" on the scales and in Section II rank the top-five obstacles.

You are one of approximately 20 persons serving as respondents for the three-round study, therefore your input in all three rounds is crucial for the successful completion of the study!

The Round II survey was developed from respondents' Round I problem statements. Responses were consolidated and paraphrased. A few answers which addressed broader problems were not included in Round II. There was a good deal of consensus on several issues! In Round III, respondents will suggest possible solutions to the top-ranked problem statements from Round II.

I have enclosed an addressed, stamped envelope for your convenience. If you prefer to respond by e-mail, my address is 75054.662@compuserve.com. For Section I online response, simply type the number corresponding to each statement followed by the letter indicating your response. (e.g. 1-A, 2-C, 3-A, 4-B, etc.) For Section II, simply type "first," "second," etc. followed by the number of the statement you choose. (e.g. - first #14, second #8, etc.)

If you prefer to respond by fax, my number is 304/473-8233. However, this is also my voice phone line, so you may want to call first to let me know a fax is coming in.

Please respond at your earliest convenience before October 29. I hope to mail out Round III near the beginning of November. Please remember to complete Section II, ranking the top five biggest obstacles!

Thank you again for your participation!

Sincerely,

Kevin C. Lee

APPENDIX G

ROUND II SURVEY INSTRUMENT

Section I: Problem Likelihood

Directions: Will the following problems affect the successful introduction of computer-assisted reporting courses in university journalism programs? Please mark an "X" on the scales indicating how unlikely or likely you believe the corresponding item will be a problem:

1. **Resistance of faculty**

        Unlikely _____ _____ _____ _____ _____ Likely

2. **Lack of qualified faculty to teach CAR courses**

        Unlikely _____ _____ _____ _____ _____ Likely

3. **For purposes of promotion and tenure, faculty will devote time to research rather than learning new CAR skills for teaching**

        Unlikely _____ _____ _____ _____ _____ Likely

4. **Faculty who misunderstand economic importance of CAR**

        Unlikely _____ _____ _____ _____ _____ Likely

5. **Resistance of university administrators**

        Unlikely _____ _____ _____ _____ _____ Likely

6. **Cost of equipment, computer hardware and software**

        Unlikely _____ _____ _____ _____ _____ Likely

7. **Maintainence of equipment, hardware and software**

        Unlikely _____ _____ _____ _____ _____ Likely

8. **Class sizes limited because of equipment costs**

        Unlikely _____ _____ _____ _____ _____ Likely

9. **Cost of online time**

        Unlikely _____ _____ _____ _____ _____ Likely

10. Offering sophisticated online computer services such as Lexis-Nexis, Internet, and databases simultaneously to large numbers of students

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

11. Lack of standard computer hardware for CAR

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

12. Lack of standard computer software for CAR

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

13. Computer hardware becoming obsolete quickly

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

14. Computer software becoming obsolete quickly

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

15. CAR techniques becoming obsolete quickly

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

16. Meeting expectations of incoming students who have been exposed to new technology in high school and home

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

17. Students who are apathetic about CAR

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

18. Students intimidated by computers

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

19. CAR taught as replacement for, not complement to, traditional reporting

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

20. CAR skills segregated in separate courses rather than taught across the journalism curriculum

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

21. Curriculum revision necessary for CAR courses

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

## 22. Scarcity of CAR teaching materials

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

## 23. Developing substantive student assignments

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

## 24. Developing new courses in statistical analysis for journalism students

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

## 25. The quality of retrieved data not being assessed

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

## 26. The limited number of student internships available in CAR-equipped newsrooms

Unlikely \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ Likely

Section II: Problem Ranking

Directions: On the above list, please rank the top FIVE BIGGEST PROBLEMS you believe university journalism programs will encounter during the process of introducing computer-assisted reporting courses. Simply write a number on the LEFT next to top five problems on the above list where #1 = Biggest, #2 - 2nd Biggest, #3 = 3rd Biggest, etc.

APPENDIX H


ROUND III COVER LETTER


November 16, 1994

Len Ackland, Associate Professor
School of Journalism and Mass Communication
University of Colorado
Boulder, Colorado  80309-0287


Dear Professor Ackland:

Thank you very much for completing Rounds I & II of this study of
computer-assisted reporting! I have enclosed a copy of Round III - the
last round - for you to complete and return.

The Round III survey includes the top five ranked "biggest problems" and
the top five "likely to be" problems from Round II. Three problems
statements scored in the top five in both categories, yielding a final
list of seven. They appear on the Round III survey in alphabetical
order. Please suggest possible solutions for each, or indicate if you
believe little can be done about the problem.

I have enclosed an addressed, stamped envelope for your convenience. If
you prefer to respond by e-mail, my address is 75054.662@compuserve.com.

If you prefer to respond by fax, my number is 304/473-8233. However,
this is also my voice phone line, so you may want to call first to let
me know a fax is coming in.

Please respond at your earliest convenience before December 15.

At no time will any of your responses be directly associated with your
name. However, I am compiling a list of the respondents and their
credentials for an appendix of the dissertation. Therefore, please
include a copy of your vita/resume or brief description of your
background in journalism/CAR.

I hope to have a summary of the results prepared by early spring. Please
indicate on the Round III Survey if you would like to receive a copy.
Also, please provide an e-mail address for future communication if you
have not already done so.

Thank you again very much for your participation!

Sincerely,

Kevin C. Lee

APPENDIX I

ROUND III SURVEY INSTRUMENT


Directions: For each problem statement below, please provide a possible solution or a way that CAR educators and/or professionals might address the problem. If you believe little can be done about the problem, state that. If you believe that the problem is not a substantial one, state that.


A. Class sizes limited because of equipment costs

B. Cost of equipment, computer hardware and software

C. Curriculum revision necessary for CAR courses

D. Lack of qualified faculty to teach CAR courses

E. Maintainence of equipment, hardware and software

F. Resistance of faculty

G. Resistance of university administrators

* I would like a copy of the results _____ (Mark "X" for "Yes")


NOTE: This questionnaire was originally spread out over two full pages to allow respondents ample room to write answers.

APPENDIX J

ROUND I VERBATIM RESPONSES

QUESTION 1:

List the most important **benefits** that you believe university journalism programs will realize from the introduction of computer-assisted reporting courses.

A.

1. Such journalism programs will have entered the modern world.

2. Well-designed courses will provide students with analytical skills as well as specific tools. Courses should include a statistics module to help students understand the results of surveys and studies in addition to teaching spreadsheets, database searching, and telecommuting.

3. Computer technology gives journalists new and powerful tools. Spreadsheets, for example, enable reporters to do independent analysis of city budgets. Previously they would have been dependent on the agencies themselves.

4. Students graduating from well-designed courses will be up to speed when they enter newsrooms or other places of employment. And they will be grateful to their journalism programs for preparing them well.

B.

1. New technologies provide access to information on scales unknown to traditional non-computing means of harvesting information. Ignoring these resources, and not learning how to use them, is simply unprofessional.

2. Computer-assisted reporting will mean an expanded horizon, even on a local scale, access to details and facts that would be unobtainable in any other fashion.

C.

1. Preparing students for real world experience.

2. Attracting people who might not have considered journalism but are interested in the field of computers.

3. Students will learn the importance of distilling large amounts of information for busy readers.

D.

1. Students will learn an essential and basic skill for effective journalists.

2. Graduates with that training will have an easier time getting hired.

3. Schools that offer that training will be more attractive to prospective journalism majors.

E.

1. Young reporters will learn how to tap alternative sources for information.

2. Young reporters will learn more about understanding databases and spreadsheets.

3. Young reporters will ultimately be better servants to their reading public -- in theory they can understand large systems better and report on them.

F.

1. University journalism programs which offer computer-assisted reporting will be on the cutting edge of new methods for generating news stories.

2. The courses will encourage enterprising, investigative reporting which will help to inform the public.

3. Students who take these classes will have an increased chance of finding a job upon graduation.

4. CAR classes will help to attract the best and brightest students and teachers to the university.

5. In-depth computer-assisted reporting is a good marketing/public relations tool for universities and news organizations.

G.

1. Students will acquire knowledge vital to their future jobs in the news business. Most public records today are computer records. A working, practical knowledge of how to access and analyze these records will be important for most news reporters and crucial for some.

2. Computer literacy will give students an introduction to possible other career fields if they decide to bail out of journalism.

3. Acquiring and using computerized public records will heighten students' awareness of First Amendment and privacy issues.

H.

1. Broadening of student perspective in terms of available news sources.

2. New connections between j-programs and professionals in terms of training.

3. Enhanced student understanding of data analysis and consequent reduction of math phobia common to j-students.

4. New relationships between students/media professionals nationally and internationally.

5. Higher visibility for programs teaching CAR.

I.

1. It gives them a chance to get ahead of the industry they serve instead of always trailing behind.

2. The courses are a magnet for mid-career trainees.

3. The courses force faculty to keep learning new things.

4. The courses provide a natural bridge to much-needed training in scientific method.

5. CAR can bridge the gap between green-eye shades and chi squares.

J.

1. Produce graduates with a higher level of skills.

2. Hence, the department's reputation grows.

3. Better students are attracted and the upward spiral continues.

4. CAR can raise the intellectual level of discourse among the faculty, especially if more come from the green-eye shade side of the profession.

K.

1. Graduates comfortable with required technical skills.

2. Will help students learn to use computers as tools for stories.

3. Will help students recognize story ideas.

L.

1. Graduates will be qualified for a wider range of news jobs: i.e., CAR is, yes, used by big-time media like NY Times, Buffalo Evening News, CBS, whatever, but also, in a more patchy way, by smaller news operations. All would be available to a grad with CAR under his/her belt.

2. Graduates entering a news operation that does <u>not</u> use CAR can bring the good news about it and impress the hell out of the employer.

3. Those graduates who had regarded a computer as merely a writing and editing device will now respect it as something with a multitude of uses, many of which are as yet unpredicted. This anticipation of the unknown is useful in a journalist.

4. Graduates with CAR will be more at home in cyberspace, an important recreational and educational territory.


M.

1. Computer-assisted reporting classes will provide students with some skills in an area that is becoming increasingly important in journalism. If students want to get jobs, and if they want to be good reporters, they will need to know this.

2. Such classes will attract students to the university, and will enhance the university's reputation among working journalists.

3. If [universities] will offer such classes, they might lead to seminars or professional development classes for working journalists. And that would benefit both the university and journalism.


N.

1. Relevance.

2. Skills training.

3. Embracing change -- directing a changing environment.

4. Linking to other departments/programs.

O.

1. First and foremost, I believe that j-school graduates who have computer-assisted reporting skills will be far more likely to find jobs. That's because computer-assisted reporting skills are sadly lacking in most newsrooms, and news organizations will look favorably on applicants who know how to do online research, dial into computer bulletin boards, navigate the Internet, crunch numbers in a spreadsheet and do database and statistical analysis. Beginning reporters who have these skills will stand out in the job pool. And instead of starting in neighborhood-zone jobs, they are likely to land plum positions.

2. In addition, journalism programs that develop expertise in computer-assisted reporting will find their stock soar among news organizations. I know many top editors who can't even use a mouse, much less structured query language. These editors also seem to be the ones who think that j-schools are out of touch with the real world -- that journalism programs too often engage in meaningless research instead of teaching workaday skills. As editors realize who far behind they are in computer-assisted reporting skills, they'll be searching for ways to remedy the deficiency. And if they discover that the university j-school nearby is teaching modeming, database analysis and other computer-

research topics, the school will gain respect -- as well as some non-traditional students.

3. At a time when many universities are cutting back, merging or eliminating j-schools, programs can help ensure their survival by developing expertise in cutting-edge skills. School can't get by with just teaching the five W's; gathering and analyzing information in the 1990s requires high-level computer skills.

P.

1. Getting journalism students over the "fear factor:" Getting them used to the use of computers for the analysis and retrieval of complex data and other information. Familiarizing them with computer programs, spreadsheets, databases and the other tools of computer-assisted journalism. I would have loved to have access to such a course at Northwestern's Medill.

2. As a journalism instructor at Medill, I find that students often don't see the value of computers beyond word processing because they have never been exposed to the tools. And faculty members are often as ignorant about computer-assisted research as their students, since they heavily rely on research assistants to do the heavy lifting for their classes.

3. The creation of databases and other research that university faculty can use for research.

4. Universities who get out in front on this will have a definite advantage on student recruiting over their competitors.

Q.

1. Keeps student current with industry practices.

2. CAR is useful in other courses.

3. CAR teaches valuable research tool.

4. CAR allows examination of entire data set, not just sample.

5. CAR makes students more computer literate.

R.

1. Better reputation, or continued good reputation.

2. Students who are more interested in their program.

3. Improved placement of students in jobs.

4. Perception that the program is not lagging behind in technology.

S.

1. Better training for the job market.

2. Improved overall orientation of students to the new media world, including

3. Ability of students to envision story production across the whole range from research to publication format.

4. Opening of whole new vistas for researching stories.

5. Experience that will lead to recognition of viability of electronic distribution of newspapers.

6. Improved opinions from academic colleagues about journalism programs in our universities.

T.

1. Extend the "known world" beyond local campus and serve as an "equalizer" for smaller departments.

2. Keep up with journalism and information industry.

3. Allow more emphasis on thinking, gathering information and communicating information to a public.

4. Could allow more interaction between school and industry.

U.

1. CAR, in its driving principals and apart from its technology, offers journalists a chance to return to their roots as skeptical members of society who don't just report what others say, but find out what is true. Increased emphasis on this ethic of inquiry -- of the journalist being expected to check records to determine the truth of a bureaucrat's assertion -- will benefit all new journalists, regardless of their specialty or medium.

2. CAR makes journalists more comfortable with numbers, which is something has GOT to happen if media are to remain intelligent, valuable providers and FILTERERS of information. Many stories these days, whether dealing with scientific

research, social policy or government budgets, require that
reporters understand at least basic things like rates,
ratios, percentages, averages and medians. All reporters, for
example, should routinely adjust dollar figures for inflation
when comparing them over time; a little bit of CAR-generated
software can make this easy.

3. If a university's CAR program were well-promoted, a
journalism department might be able to attract valuable and
talented students of a scientific or analytic bent who would
otherwise be uninterested in journalism.


V.

1. Increase the quality of teaching and learning.

2. Increase in motivation of students.

3. Increase in ability of students to perform
professionally in new ways.


W.

1. Less reliance on others' interpretation of events.

2. Less reliance on others for story ideas (health bill
articles all seem to have been written by insurance industry,
for instance).

3. More focus on issues, instead of
conflict/personalities in issues (consider Whitewater
reporting ... know what the scandal is all about?)

4. Wider circle of sources.

5. More attention to "minority" points of view -- not simply people of color, but wide segments of society not covered in typical media outlets now.

X.

1. Students learning when to use the tool.

2. Turning out journalists with specialized skills.

3. Giving the general introduction to concepts of using social science measuring techniques in journalism.

4. Cross-pollination with those interested more in qualitative research.

Y.

1. It will engage the brightest students who enjoy the sheer intellectual challenge of applying new technologies to old problems.

2. It will spur the faculty and students to rethink their assumptions about how technology shapes the profession.

3. It will make the university current with the way the profession is being practiced.

4. It may, just possibly, encourage journalism faculties to lead rather than follow.

Z.

1. Students will be trained in a new skill. It is a skill that should help them get a job.

2. The university will attract better applicants because it will be seen as a place journalism students can learn a new skill.

3. The university will attract better professors because they will see it as a place on the cutting edge of journalism.

4. As the use of computers in journalism is an ever-developing science, the professors at the university will benefit from the excitement, challenge and exchange of ideas.

5. Universities can make money by offering the training and teaching services to local businesses. business associations and others who want to learn how to use computers to analyze data.


AA.

1. The practice of journalism has changed. Students must be exposed to the methods of CAR to be consistent with what they should be able to do when they enter the job market.

2. Students will improve the management of information by using CAR methods no matter what their area of emphasis: public relations, photojournalism, graphics, and all forms of word reporting for any medium.

3. Students will gain a better understanding of what numbers mean and

4. How data can suggest stories.

5. Story ideas may also suggest data sources that may improve reporting.

6. Students will have a new, at least to journalism, powerful tool to aid them in reporting.

BB.

1. The university offering computer-assisted reporting will provide the training for journalists of the late 20th century and 21st century, thereby keeping its education relevant and up to date.

2. It will attract the better and more aggressive students.

3. It will make the university more competitive with other schools.

4. It will help the university gain funding from companies, both media and computer-related, who are interested in being part of the future of journalism.

5. It will improve interdepartment relations and thus improve faculty skills.

CC.

I believe that the students will:

1. Develop better skills in interviewing and questioning people and paper/electronic sources.

2. Uncover a healthy respect for the problems of quality control (or lack thereof), accuracy, consistency, timeliness and comprehensiveness.

3. Discover the complexity of social and political organizations.

4. Develop appreciation and skills in managing access to large electronic records.

5. Understand the difficulties in public access to electronically stored public records.

6. Also, I trust that experiences with CAR will help students avoid the limitations and perils of "anecdotal" reporting.

7. And finally, I trust that students will recognize the importance of media as a genuine provider of useful information typically unavailable to citizens.


DD.

(This panelist returned the Round I questionnaire too late to be included in either the master list of Round I responses or in subsequent rounds.)

1. _If done well_, these courses can produce journalist who are better prepared for new media environments _and_ traditional reporting/editing.

2. If one school doesn't do it, another will, so it's a competitive protection.

QUESTION 2:

List the most important **problems** that you believe university journalism programs will encounter during the process of introducing computer-assisted reporting courses.

A.

1. Schools introducing computer-assisted reporting (CAR) need to be sure to place it in context, both for instructors and students.

2. CAR is a complementary tool for traditional reporting, not a substitute for it. Database searching, for example, must be used in conjunction with library and other research and not become a crutch.

3. Along the same lines, journalism programs must avoid gee-whiz tendencies and fully explore the shortcomings of computerized data -- such as the fact that the data are "dirty." Heavy doses of skepticism need to accompany the applause for computer-assisted reporting.

B.

1. Given the amount of information available over networks -- some 6,000 gigabytes on the Internet -- there is a real difficulty in filtering this information to find the right story, the correct fact.

2. The use of computers should never conflict with plain old common sense and logic in a search for information.

3. A dependency on technology should never be encouraged over historically and professionally valid approaches.

C.

1. Staying up with technology.

2. Failing to emphasize analysis, not just number crunching.

D.

1. Most journalism instructors/professors have limited training in computer-assisted reporting.

2. Journalism schools would need to develop new courses in statistical analysis as well as computer techniques, as it's dangerous to teach the latter without providing a good foundation in the former.

3. Schools may have to find money for the purchase of computer equipment and software.

E.

1. Finding qualified instructors to teach courses

2. Offering sophisticated computer services such as Lexis-Nexis, Internet, and databases to large numbers simultaneously.

3. Developing adequate assignments which are meaningful.

4. Ensuring students can translate what they learn into something they can use.

F.

1. Introducing computer-assisted reporting is expensive in terms of computer hardware and software.

2. It's difficult to find professors who are qualified to teach the classes.

3. Students are often intimidated by computers, which can lead to low enrollment and high drop rates.

4. Because of the added cost of hardware/software the classes may have to be small.

5. Students who don't comprehend the notion of enterprising reporting may have a difficult time with computer-assisted reporting.


G.

1. Universities will find it nearly impossible to keep up with the ever-changing hardware and software needs of large numbers of students.

2. Computer reporting is a specialized area. Students will be computer-smart and news-dumb if universities are not careful.

3. Students can waste a lot more time getting information from a computer than getting off their butts and going out and getting it. (This goes for reporters too...)


H.

1. Math phobia among students, need for remediation in statistics, data analysis.

2. Limited resources -- equipment, software.

3. Budget for online access.

4. Gap between CAR-trained students and untrained professionals.

5. Limited number of available internships in CAR-equipped newsrooms.

6. Administrations' perceptions that it's a fad, not worth funding.


I.

1. Few faculty members are qualified to teach the subject.

2. Equipment is not always available.

3. Online time is expensive.

4. Graduates will be overtrained for their first jobs.

5. Computing involves math skills, and ...


J.

1. Resistance/inertia on the part of the faculty.

2. #2-#100: Same as above. (I'm not kidding.)


K.

1. Rapidly changing technology makes equipment, software and even techniques obsolete quickly.

2. People can get overwhelmed by technology and forget basics of reporting.

3. No standards in industry -- i.e. within newspaper, more than one database program used.

L.

1. Too many professors in journalism schools suffer from the defects of the previous generation of news gathering and production (I still have a colleague who uses a typewriter). They are uncomfortable with the new world and view it with suspicion or fear. They would be bad teachers.

2. On the other hand, young professor who are totally at home in cyberspace and with data retrieval and manipulation could possibly lack the depth of the experienced old geezers. This would mean less capacity to judge the worth and validity of the data gathered through CAR.

3. Probably irrelevant to your survey, but this country [Canada] has little public data available in electronic form (I went on the course at Missouri, came home with fresh skills and found there was nothing I could apply them to; 90 percent of data released by, e.g., Statistics Canada, is on paper and you pay steeply for anything on tape or CD).

4. Costs. At least here, buying the hardware and software necessary for CAR is problematic at best. The universities would have to be willing to realize this is the necessary way of future journalism and be prepared to pay for it.

M.

1. Well, the programs cost something to start, and

2. You have to be able to attract professionals who are able to teach them.

3. In these days of tight budgets, getting the money to start a program is the biggest problem I see.

N.

1. Resistance from intimidated faculty.

2. Sufficient funding.

3. Student apathy.

O.

1. One problem is that there aren't many people in journalism who have computer-assisted reporting skills. J-schools may need to import experts from other areas: library-science/information-resource professors who know online research; computer-science/computer-programming professors who know spreadsheet, database and statistical software; accounting/business professor who know how to analyze budgets. J-schools also may need to look to the community for non-academic types: hackers who can explain modeming in the real world, and reporters who have taught themselves how to analyze data -- and have the clips to show why this skill is valuable.

2. As in the newsrooms, there will be resistance among some j-school types to developing computer-assisted training. It's an intimidating idea for people who may be excellent

traditional researchers and engaging writers but who are afraid of computers.

3. Fitting computer-assisted courses into the curriculum may be difficult. Many professors say they don't have enough time to teach traditional skills, much less digital-age skills.

4. Another problem is that there is no standard software or hardware for doing computer-assisted reporting. Some reporters are Mac-oriented; others are PC-oriented; some (like me) have a foot in both camps. And those are just the platforms: If you decide to prepare students for a PC world, you must choose among dozens of communications, spreadsheet, database and other programs, many of which may be obsolete by the time graduation comes.


P.

1. Lack of journalism professionals who can serve as instructors and resources.

2. The costs of acquiring the appropriate equipment and software.

3. Resistance from university administrators to anything new, anything they don't understand and their own conventional wisdom.


Q.

1. Finding faculty with expertise.

2. Finding faculty with interest in CAR.

3. Finding a place to put course.

4. Tendency of faculty to want to have only brief info.

5. Lightweight equipment. (Insufficient power, speed, memory.)

R.

1. Expense.

2. Technological difficulties.

3. Quality instructors.

S.

1. Exceedingly high costs of equipping labs; many programs will be left with out-of-date technology.

2. Too much emphasis upon technology will be at the expense of attention to qualities of excellence in reporting.

3. Many faculty will not be able to reinvent themselves in this new electronic era.

4. Many faculty do not understand the economics of the new era of computer-assisted reporting.

5. The need to have whole new interpretations of First Amendment and copyright issues in electronic publishing.

T.

1. Faculty and administration technophobia and fear of change.

2. Lack of funding.

3. Meeting expectations of incoming students who have already been exposed to technology in high school and at home.

4. Curriculum will need to be revised to reflect changes.

5. Lack of ideas on how to use technology.

U.

1. Journalism programs may find it difficult to find qualified journalism teachers who possess cutting-edge skills in data analysis. The real stars in this field are few in number and expensive to hire.

2. Journalism programs will find it difficult and expensive to install and maintain state-of-the-art classrooms for teaching CAR. Hardware and software will need to be upgraded or replaced every 3-5 years if students are to learn on systems similar to those in the real world.

3. A school's CAR curriculum will require more frequent revision than other more traditional areas of journalism instruction.

4. Faculty must be willing to master and adopt new software technologies as they become available. For example, an SQL software package called XDB was state-of-the-art for PCs in 1989. By 1992, most newsrooms that used SQL had switched to FoxPro for its far superior speed. And now in 1994, some of us are starting to use Microsoft Access in applications that benefit from its more sophisticated

database engine and far friendlier user interface. And that's just for the database software: the same trends apply to spreadsheets, statistics packages, mapping software, online retrieval systems, front-end builders like Visual BASIC ... In other words, staying current in CAR requires a serious commitment to continue learning.

V.

1. Acquiring and replacing equipment.

2. Getting access to relevant data files.

3. Changing old teaching methods.


W.

1. Expense; easy to get funds for toys but not for data access.

2. Lack of math ability among journalism students.

3. Hostility of faculty (not a problem at Columbia).

4. Desire of many to segregate CAR as a separate course; must be embedded in all courses.

5. Lack of teaching materials (Exercises in CAR got written because there wasn't anything else).


X.

1. Linking students to specific software; students will be reluctant to change.

2. Overemphasizing computing process, rather than journalism concepts.

3. CAR techniques quickly outdated.


Y.

1. There will not be enough professors with adequate training or understanding to teach computer-assisted reporting.

2. Schools will have to commit substantial resources to the purchase of equipment and the training of staff to make the program effective.

3. There will be significant backlash from a segment of faculty who will argue that there is nothing particularly important in using computers in the reporting process.

4. The curriculum will be too far removed from day to day practice on newspapers to be of any value.


Z.

1. Many universities have Mac systems already in place. They will have to go to extra lengths to adapt these to computer-assisted reporting, though it can be done.

2. If universities don't have computers, it will be expensive to buy enough to start a program.

3. Finding a qualified person to teach the class.

4. Training an existing professor, if one with the skills can't be found.

5. Choosing the correct software and curriculum to teach. The journalism industry itself appears to be pretty evenly split between FoxPro and Paradox. Now a new database

software, Access, has come into use. The university will first have to choose and then keep up with changes in the industry.

6. The curriculum is key, too. It should integrate computer analysis skills with reporting. Students shouldn't come out as computer geeks. But they do need to know enough software, enough DOS, and enough about troubleshooting computers, to hit the ground running at their first job.

AA.

1. Few faculty are knowledgeable about CAR and, thus, are ill-prepared to teach the methods.

2. The methods are seen as more on the skills side of the skills-theory continuum. For purposes of promotion and tenure, most faculty will devote their time to research projects rather than learning new CAR skills for teaching.

3. Schools will need to provide sufficient computers and software for students to use for CAR, or insist that students have their own computers and software. Perhaps there will be some combination of access. In either case money will be spent.

4. Journalism students typically do not believe that statistics, and related research methodology, are relevant to what they want to do. They have entered journalism programs because they like to write, photograph, etc. Now they find they have to understand numbers and how to crunch them; it will be a shock for some.

5. Professors and students will have to arrive at projects and assignments that are doable within the time constraints of a course.

BB.

1. Finding proper equipment.

2. Finding knowledgeable faculty.

3. Training current faculty.

4. Keeping equipment up to date.

5. Keeping curriculum up to date.

CC.

1. I suppose the biggest obstacle to the development or growth of CAR in journalism education is the lack of skilled, knowledgeable, committed leadership. Once started, the ripple effect begins to take on the proportion of a techno-tsunami wave.

2. Further dampening effects are poor funding. Face it, journalism education programs started introducing computers for writing less than 10 years ago. Now we are expected to keep up with the media industry with its sophisticated photoarchiving systems, networked online databases, interactive media, electronic research, not to mention systems coordinators, project editors, software programmers, cybrarians and all manner of highly skilled, deeply motivated professionals. These people are in a competitive business; they use technology not only to survive, but to prevail!

3. The industry has associations such as IRE to promote and develop skilled CAR practitioners. Where do journalism educators turn to for guidance and experience? There is little or no professional or financial support for journalism educators to participate in training. It is costly and time consuming. Where can the j-schools get the money to support constant upgrading of skills, equipment and software? Are we all competing for the attention of the same foundations and industry-supported training grants? What is the ethics of this kind of competition?

4. There is also the question of what is really the mission of journalism education. Are we simply a "farm team" for media heavy hitters? I don't think that even the media industry would necessarily desire that. Certainly more is expected from an academic journalism program.

5. One of the major problems of our industry is declining employment. Our graduates, even the best of them, are spending longer in searching for jobs in their fields.

6. The challenge all of us face is to learn how to use technology and not be used by it. High tech is an ongoing story in the 1990s, but journalists, print and broadcast, should not be dominated by it. There are enough errors, legal traps, contradictions and ethical issues involved with this technology to keep all of us alert and, yes, suspicious, for a long time. Journalists, news researchers and educators become identified by the tools they use. If all one has for a tool is a hammer (or a power drill, to use an electronic

analogy), one tends to think of the world's problems as nails. Somewhere there needs to be more than sophistication with SQL. Journalists need to be skilled observers, talented writers, and serious investigators. If they can also be energetic, fair and honest, well, that would be just about perfect. While journalism educators may be able to do something about developing those qualities, we can't do it all.

DD.

(This panelist returned the Round I questionnaire too late to be included in either the Round I master list or in subsequent rounds.)

1. Integrating CAR into the curriculum.

2. Resistance from instructors of theory courses.

3. Lack of qualified instructors who know journalism and these tools.

4. Inadequate preparation of students: in reporting, critical thinking, math, and computers.

APPENDIX K

ROUND II RESPONSES


For Round II the 29 panelists rated each of the 26 problem statements generated from Round I by means of a semantic differential scale (Appendix G). The respondents checked one of five blanks between the bipolar adjectives "unlikely" and "likely" for each statement. All 29 participants rated the problems statements. "E," the blank closest to "likely" was scored a five; "D," the next closest, four; "C," the center blank, three; "B," the next closest, two; and "A," the blank closest to "unlikely," one. Total points were then calculated for each problem to determine likelihood. Sums, means and standard deviations are listed below following each statement.

In Round II, the panelists were also asked to rank the top five biggest problems. The respondents were asked to write "1" in the left hand margin of the list next to the problem of greatest magnitude, "2" next to the second biggest problem, "3" next to the third, etc. All 29 respondents ranked the problem statements. Each #1 ranking was scored a five; #2, four; #3, three; #4, two; and #5, one. Total points were then calculated for each problem statement to determine magnitude. Sums and total #1 rankings are listed below following each statement.

Section I: Problem Likelihood

Directions: Will the following problems affect the successful introduction of computer-assisted reporting courses in university journalism programs? Please mark an "X" on the scales indicating how unlikely or likely you believe the corresponding item will be a problem:

Section II: Problem Ranking

Directions: On the list, please rank the top FIVE BIGGEST PROBLEMS you believe university journalism programs will encounter during the process of introducing computer-assisted reporting courses. Simply write a number on the LEFT next to top five problems on the above list where #1 = Biggest, #2 - 2nd Biggest, #3 = 3rd Biggest, etc.

## 1. Resistance of faculty

Unlikely _____ _____ _____ _____ _____ Likely
          A     B     C     D     E

Sum likelihood rating points: 86
Mean likelihood rating points: 2.97
Standard Deviation: 1.32

Sum magnitude ranking points: 27
#1 magnitude rankings: 3

## 2. Lack of qualified faculty to teach CAR courses

Unlikely _____ _____ _____ _____ _____ Likely
          A     B     C     D     E

Sum likelihood rating points: 116
Mean likelihood rating points: 4.0
Standard Deviation: 1.22

Sum magnitude ranking points: 67
#1 magnitude rankings: 9

## 3. For purposes of promotion and tenure, faculty will devote time to research rather than learning new CAR skills for teaching

Unlikely ____ ____ ____ ____ ____ Likely
    A    B    C    D    E

Sum likelihood rating points: 92
Mean likelihood rating points: 3.17
Standard Deviation: 1.26

Sum magnitude ranking points: 8
#1 magnitude rankings: 0

## 4. Faculty who misunderstand economic importance of CAR

Unlikely ____ ____ ____ ____ ____ Likely
    A    B    C    D    E

Sum likelihood rating points: 88
Mean likelihood rating points: 3.034
Standard Deviation: 1.02

Sum magnitude ranking points: 2
#1 magnitude rankings: 0

## 5. Resistance of university administrators

Unlikely ____ ____ ____ ____ ____ Likely
    A    B    C    D    E

Sum likelihood rating points: 94
Mean likelihood rating points: 3.24
Standard Deviation: 1.43

Sum magnitude ranking points: 27
#1 magnitude rankings: 3

## 6. Cost of equipment, computer hardware and software

Unlikely ____ ____ ____ ____ ____ Likely
    A    B    C    D    E

Sum likelihood rating points: 119
Mean likelihood rating points: 4.1
Standard Deviation: 1.14

Sum magnitude ranking points: 97
#1 magnitude rankings: 11

## 7. Maintainence of equipment, hardware and software

Unlikely ___ ___ ___ ___ ___ Likely
        A    B    C    D    E

Sum likelihood rating points: 111
Mean likelihood rating points: 3.83
Standard Deviation: 1.17

Sum magnitude ranking points: 30
#1 magnitude rankings: 0

## 8. Class sizes limited because of equipment costs

Unlikely ___ ___ ___ ___ ___ Likely
        A    B    C    D    E

Sum likelihood rating points: 104
Mean likelihood rating points: 3.59
Standard Deviation: 1.35

Sum magnitude ranking points: 26
#1 magnitude rankings: 0

## 9. Cost of online time

Unlikely ___ ___ ___ ___ ___ Likely
        A    B    C    D    E

Sum likelihood rating points: 83
Mean likelihood rating points: 2.86
Standard Deviation: 1.36

Sum magnitude ranking points: 15
#1 magnitude rankings: 0

## 10. Offering sophisticated online computer services such as Lexis-Nexis, Internet, and databases simultaneously to large numbers of students

Unlikely ___ ___ ___ ___ ___ Likely
        A    B    C    D    E

Sum likelihood rating points: 88
Mean likelihood rating points: 3.03
Standard Deviation: 1.43

Sum magnitude ranking points: 3
#1 magnitude rankings: 0

## 11. Lack of standard computer hardware for CAR

Unlikely ___ ___ ___ ___ ___ Likely
          A    B   C   D   E

Sum likelihood rating points: 84
Mean likelihood rating points: 2.9
Standard Deviation: 1.63

Sum magnitude ranking points:  5
#1 magnitude rankings: 0

## 12. Lack of standard computer software for CAR

Unlikely ___ ___ ___ ___ ___ Likely
          A    B   C   D   E

Sum likelihood rating points: 81
Mean likelihood rating points: 2.79
Standard Deviation: 1.45

Sum magnitude ranking points: 5
#1 magnitude rankings: 1

## 13. Computer hardware becoming obsolete quickly

Unlikely ___ ___ ___ ___ ___ Likely
          A    B   C   D   E

Sum likelihood rating points: 96
Mean likelihood rating points: 3.31
Standard Deviation: 1.49

Sum magnitude ranking points: 8
#1 magnitude rankings: 0

## 14. Computer software becoming obsolete quickly

Unlikely ___ ___ ___ ___ ___ Likely
          A    B   C   D   E

Sum likelihood rating points: 85
Mean likelihood rating points: 2.93
Standard Deviation: 1.44

Sum magnitude ranking points: 3
#1 magnitude rankings: 0

## 15. CAR techniques becoming obsolete quickly

Unlikely ___ ___ ___ ___ ___ Likely
A   B   C   D   E

Sum likelihood rating points: 61
Mean likelihood rating points: 2.1
Standard Deviation: 1.26

Sum magnitude ranking points: 7
#1 magnitude rankings: 1

## 16. Meeting expectations of incoming students who have been exposed to new technology in high school and home

Unlikely ___ ___ ___ ___ ___ Likely
A   B   C   D   E

Sum likelihood rating points: 75
Mean likelihood rating points: 2.59
Standard Deviation: 1.21

Sum magnitude ranking points: 2
#1 magnitude rankings: 0

## 17. Students who are apathetic about CAR

Unlikely ___ ___ ___ ___ ___ Likely
A   B   C   D   E

Sum likelihood rating points: 91
Mean likelihood rating points: 3.14
Standard Deviation: 1.46

Sum magnitude ranking points: 18
#1 magnitude rankings: 1

## 18. Students intimidated by computers

Unlikely ___ ___ ___ ___ ___ Likely
A   B   C   D   E

Sum likelihood rating points: 76
Mean likelihood rating points: 2.62
Standard Deviation: 1.45

Sum magnitude ranking points: 14
#1 magnitude rankings: 0

## 19. CAR taught as replacement for, not complement to, traditional reporting

Unlikely ____ ____ ____ ____ ____ Likely
         A    B    C    D    E

Sum likelihood rating points: 76
Mean likelihood rating points: 2.62
Standard Deviation: 1.35

Sum magnitude ranking points: 11
#1 magnitude rankings: 1


## 20. CAR skills segregated in separate courses rather than taught across the journalism curriculum

Unlikely ____ ____ ____ ____ ____ Likely
         A    B    C    D    E

Sum likelihood rating points: 101
Mean likelihood rating points: 3.48
Standard Deviation: 1.35

Sum magnitude ranking points: 15
#1 magnitude rankings: 0


## 21. Curriculum revision necessary for CAR courses

Unlikely ____ ____ ____ ____ ____ Likely
         A    B    C    D    E

Sum likelihood rating points: 104
Mean likelihood rating points: 3.59
Standard Deviation: 1.43

Sum magnitude ranking points: 14
#1 magnitude rankings: 0


## 22. Scarcity of CAR teaching materials

Unlikely ____ ____ ____ ____ ____ Likely
         A    B    C    D    E

Sum likelihood rating points: 89
Mean likelihood rating points: 3.07
Standard Deviation: 1.36

Sum magnitude ranking points: 10
#1 magnitude rankings: 0

## 23. Developing substantive student assignments

Unlikely ____ ____ ____ ____ ____ Likely

A    B    C    D    E

Sum likelihood rating points: 61
Mean likelihood rating points: 2.1
Standard Deviation: 1.11

Sum magnitude ranking points: 5
#1 magnitude rankings: 0

## 24. Developing new courses in statistical analysis for journalism students

Unlikely ____ ____ ____ ____ ____ Likely

A    B    C    D    E

Sum likelihood rating points: 84
Mean likelihood rating points: 2.9
Standard Deviation: 1.29

Sum magnitude ranking points: 1
#1 magnitude rankings: 0

## 25. The quality of retrieved data not being assessed

Unlikely ____ ____ ____ ____ ____ Likely

A    B    C    D    E

Sum likelihood rating points: 89
Mean likelihood rating points: 3.07
Standard Deviation: 1.16

Sum magnitude ranking points: 6
#1 magnitude rankings: 1

## 26. The limited number of student internships available in CAR-equipped newsrooms

Unlikely ____ ____ ____ ____ ____ Likely

A    B    C    D    E

Sum likelihood rating points: 81
Mean likelihood rating points: 2.79
Standard Deviation: 1.54

Sum magnitude ranking points: 5
#1 magnitude rankings: 0

APPENDIX L

ROUND III VERBATIM RESPONSES


Round III asked panelists to offer possible solutions to
the top five most "likely" problems and the top five
"biggest" problems from the Round II ratings and rankings
(see Table III). Because three of the top five rated problems
were also three of the top five ranked problems, the Round
III survey instrument consisted of seven questions (Appendix
I). For each problem statement, respondents were asked to
"provide a possible solution or a way CAR educators and/or
professionals might address the problem." The problem
statements are listed below in the order they appear in Table
III, beginning with the highest rated and ranked problem.

Verbatim responses to each question are listed below
following each of the seven problem statements. Responses
appear in no specific order. Some respondents offered more
than one solution to a problem. Some respondents offered no
solution to a problem.


**A.  Cost  of  equipment,  computer  hardware  and  software.**

1. I think little can be done about this. Equipment
costs are fixed.

2. The obvious -- beg, borrow, reduce scope, etc.

3. There is simply no way around this; nothing is free.
But it is possible to get a very powerful stand-alone machine

today for $750-800, especially if one realizes that DOS is the way to go. And there's still plenty of freeware and shareware out there. One doesn't need to have the latest and greatest to teach/learn this stuff. PC Write or VI, for example, still have some advantages as a word processor. Likewise ASEASY as a spreadsheet and PCFile for databases.

4. Same [as answer for D]. (Problem D #s 1-5)

5. Equipment pricing has remained constant or has dropped over the last decade, but the power of each computer and its associate software has risen. Better value for same $. Not a substantial problem for any reasonable administrator!

6. Seek funding/partnership arrangement with a computer company. Pool computers from other classes, programs and use them in off hours.

7. Maximize use of freeware/low cost shareware for CAR.

8. See answer above. (Problem D #14).

9. See D. (Problem D #15).

10. Computers can be bought for about $1,500 apiece. Some might be obtained by getting those other departments, such as the business offices, don't want.

11. Don't know how this is different than A.

12. This problem is solved only by salesmanship to the people who control the purse strings.

13. If you buy cheap, second rate equipment, it'll break.

14. Partner with a department in the university which has equipment (and might be getting an upgrade -- might get rid of some older equipment).

15. Look for funding, grants, corporate alliances to help with the cost.

16. Write grant proposals.

17. Charge special student fees.

18. See above. (Problem D #23-25).

19. Persuade university officials CAR is important.

20. Tell administration either spend or become obsolete in five years.

21. Try to get a local PC vendor (or national manufacturer) to donate or deeply discount some hardware.

22. Lease PCs.

23. Microsoft and other software vendors will donate licenses to non-profit organizations, especially schools that train young journalists to use their products. This is how IRE/NICAR gets its software.

24. Seek grants from vendors.

25. I don't recognize this as much of a problem. Hardware and software is very cheap, especially if you buy a generation or two behind state-of-the-art. Most anyone can get into CAR with some careful shopping. For example, Quattro Pro for Windows was commonly available for under $40.

26. I could not afford the equipment we needed in Indianapolis. I formed a five-school consortium to pool student technology fees and jointly plan facilities. That

activity yielded big dividends. The campus matched our money because five schools were cooperating in planning for the future. A student technology fee is a very good way to raise money for equipment and software.

27. Leasing arrangements can also be a way of making your equipment dollars stretch farther. You get all the equipment you need now but can pay for it in installments over three to five years.

28. Ethernet connecting, online charges, and hardware are not insignificant items in anyone's budget.

29. Some foundations provide grants to promote computer-assisted reporting.

30. Do computer companies still donate equipment to universities to hook students on their products?

31. Little can be done, except to recognize that the most up-to-date software and equipment costs a lot more than the one generation previous. For example, a 386 with Paradox 4.0 costs substantially less than a 486 with Paradox 4.5.

32. Look elsewhere for equipment ... at the newspaper, check out the accounting department ... at the college, look at the computer center, business college, etc. Barter services or use after-hours.

33. Surely the initial costs are coming down, but what most journalism educators and administrators may not be figuring into the equation is the additional (and perhaps greater) costs attendant to computer network staffing,

maintenance, upgrades and ongoing faculty/staff training in using these dazzling but challenging new systems.

34. A room full of 18 Pentiums, fully networked, with CD-ROM players, etc., cost us under $40,000 this summer. We had the furniture and printers. Seems cheap to me.

35. The degree to which this is a problem depends on the resources of the department; here, we have a supportive administration that understands the importance of technology in our curriculum.

36. Long-range planning is essential here: you ask 'em for $200,000 and expect them to give you $30,000. Then you spend the $30,000 and ask for another $200,000 next year; bit by bit, you get what you need.

37. In addition, it's absolutely essential to be sure that the campus community knows what you're doing and that there is ample opportunity for other faculty to access the resources. We got a $200,000 Macintosh lab a few years ago by soliciting support from the rest of the faculty and assuring the college community that it would be a shared lab, open to everyone. As it turns out, we're about the only ones who use it -- but we wouldn't have gotten it at all if we hadn't generated community support.

38. Can be covered with course fees.

39. Academics will have to admit, finally, the capital cost of equipment and make a pitch to the administrator. It will be a substantial problem.

40. Through NICAR I was able to raise some money that I then plowed back into the academic program. But the main source of money was the university and I see no way around this. Either you support the program or you don't.

**B. Lack of qualified faculty to teach CAR courses.**

1. Raise salaries; qualified people will appear.

2. Hire an adjunct.

3. Send a willing faculty member to training sessions.

4. Borrow someone from another department.

5. Most importantly, demystify the knowledge needed to introduce students to CAR.

6. I suspect this can't be something that someone is "assigned" to teach. And if none of the faculty want to teach CAR, and adjuncts can't be hired, then it won't get taught.

7. This is a problem. You either need to train someone on your staff, hire someone new, or use part-time professionals from a nearby newspaper. Any of these choices would work.

8. Faculty who are unprepared to learn more about computing should be encouraged to pursue other careers.

9. Get experts from local news media, if available.

10. Use experts from other university departments

11. Send faculty to NICAR for training.

12. Have NICAR come to the school to "train the trainers."

13. People are out there -- though they may not have traditional academic credentials. Be flexible about hiring adjunct faculty with hands-on, practical experience -- they make the best teachers.

14. New hires <u>will</u> be able to do this. Old timers who want to learn should be helped in any way possible.

15. Send one or two professors to the week-long seminars at NICAR. Bring in reporters who know CAR from local newspapers to teach.

16. Get training at Missouri (NICAR) or from local journalist with expertise or by using, say, Lotus 1-2-3 or SPSS.PC and census data from local library.

17. Other than exhaustive efforts to find people, the only way to solve this one is by sending faculty to IRE seminars to train them. Although a week-long course doesn't exactly make someone an expert, it's better than nothing.

18. Partner with local newspapers/TV stations and have them help in the teaching (at the same time increasing the knowledge of the faculty).

19. Get people from the university library to help with online training. The faculty's job is to help make the connections, shore up the foundations of "traditional" journalism!

20. Make a priority for training qualified faculty and communicate to graduate training programs.

21. I'm available for the right price. But that aside, training is available ... faculty should go get it.

22. See above. (Problem E #17).

23. Continued hiring of younger professionals.

24. There are now dozens of working journalists throughout the United States that can teach these courses and are doing so. This points out the problem that academicians have fallen way behind.

25. There is definitely a lack of qualified faculty. This is not an insurmountable problem, however. Everyone that I know that is good at CAR is entirely, or mostly, self-taught. But there are other resources.

26. The Indiana University School of Journalism at Indianapolis runs an annual conference on CAR that is now in its sixth year. The conference is open to journalists, professors and students. The Investigative Reporters and Editors also runs conferences on CAR. These conferences are a great way to get started and develop the kind of enthusiasm that is needed to change curricula.

27. Not a problem except for large database transfer to PC database techniques. Profs need expertise in 8-track tape readers, transferal of data, and translating that data to PC data.

28. Intensive training through IRE or other similar course.

29. Hire working journalists as short-term faculty; they will benefit from teaching for a year or two and the university will benefit from the fresh blood.

30. Offer incentives to faculty to get training; use local reporters versed in CAR techniques as guest teachers.

31. There are few existing faculty who can undertake this kind of instruction. We are going to be looking at what top-of-the-line practitioners are doing in the news industry. UNC-CH Journalism/Mass Communication, with mega support from the Freedom Forum, is launching a Ph.D. program for mid-career journalists. It offers $50,000 per year plus free tuition for 2 1/2 years. The candidate applications will be arriving shortly. Program begins in 1995-1996.

32. In my experience, journalism educators need instruction in database selection and use. Where else to turn to but highly experienced database searchers and news media researchers. We're talking about cybrarians here, folks.

33. We've been training all faculty. A day-long session is being held January 17, in fact. We've also been investing in teaching materials -- my EXERCISES IN COMPUTER-ASSISTED REPORTING, for instance, is slowly being multi-media-ized. This August, helped train over 100 faculty at AEJMC.

34. Not a substantial problem.

35. This is related to #3 but I do not recognize that this is problematic: at this point, too many faculty don't have any idea about CAR or how to approach it. That means our students have a need to learn something we don't know how to teach them.

36. That gap is going to widen as technology continues to develop -- unless we provide faculty with the release time

and the resources they need to masters the skills students demand. That means a commitment on the part of the program/department to provide funding for training and release time from teaching so that faculty can develop new understandings. Three of us have been to formal CAR training, and we continue to teach seminars here to other faculty on campus who are interested in learning it. It's a long-term investment that has to be made.

37. Not a substantial problem. If a school wants to teach CAR, they will have already been forced that way by somebody and he/she can teach it. And if there is no push, there will be no desire to teach it.

38. I always felt I was pretty well qualified and the students I trained did an excellent job. If a university needed to get their faculty trained they send them to NICAR.

## C. Maintenance of equipment, hardware and software.

1. Classes will attract some who are technically capable and interested. Let them help.

2. See A above. (Problem A #2).

3. Not a trivial problem. Requires at least one full-time person for 50 machines. I think the key is a department cannot wait for the Computer Center folks to provide support. The department, especially if the system is being used to produce the newspaper, etc., must look after its own survival.

4. I don't see this as a problem. The equipment isn't too hard to maintain.

5. You build in insurance if you budget and purchase equipment known for quality of manufacture. It's that simple.

6. Don't see this as a problem.

7. Necessary, but shouldn't be a problem.

8. Labs must be replaced every 3-5 years. In other words, they become obsolete before maintenance becomes a problem.

9. See if you can get people from the university computer center. Also, a graduate student in computer science might take this task for a little extra money.

10. No more difficult than for reporting and editing labs.

11. I don't think this is a problem.

12. Get techie-type from the student body to be on-call.

13. A necessary burden. Check with university for others who have similar equipment and share costs. Negotiate better guarantees and service contracts.

14. Absolutely not a problem. (How'd this get in here?)

15. Bigger budget.

16. Not a major problem.

17. Hire and train some grad students to do this, and design a formal process by which technical knowledge gets passed on from year to year.

18. Maintenance can be done by faculty and students for most problems, it they take a little time to learn basic repairs. Also, it requires much less now.

19. Investigate leasing agreements which include maintenance.

20. This is often overlooked.

21. Could be funded through lab fee? I really don't know enough about university funding to answer.

22. Not a significant problem.

23. Get a computer specialist to take care of this.

24. Without financial support for a full-time network systems manager, a CAR program may get off the ground bu it will not make much headway. This is a big challenge, but not an insurmountable one.

25. It IS getting easier -- equipment is getting more reliable and abuse (unintentional) is declining with increase in student computer literacy. Our plant (110 computers in six labs, 50 more in professors' offices, admin and so forth) is maintained by one full-time, brilliant, overworked individual and lots of work-study types, and some "occasional" peak-need help from the university's computer services. The university also handles most of our networks -- we are linked closely to them.

26. A full-time staff position is a necessity.

27. This is ALWAYS a problem in a journalism department, whether you're talking about typewriters and PCs or photo labs and video editing equipment. CAR doesn't change the

picture very much in terms of this issue -- unless a department hasn't been doing anything with technology. I can't imagine there are many of those out there.

28. This will be a major problem. Departments don't have money for maintenance. It will take some creative problem solving with other units in most cases.

29. Major problem. I learned that it is better to buy one of very high quality that is expensive than three of something cheap.

**D. Class sizes limited because of equipment costs.**

1. Share equipment.

2. Use labs.

3. Use of students' personal equipment.

4. Seek business donations.

5. Aren't small classes supposed to be an advantage?

6. Hold classes in another school. (i.e. We used an Engineering School computer lab our first year).

7. Schedule additional sections of the class (i.e. We have three sections of our precision journalism class).

8. (I assume we're talking about instruction in BASIC computer use or what? The higher the level of what is being taught, the smaller the class). Smaller classes are, or course, advantageous for everyone concerned, but ... I find that 10 workstations is about the ideal maximum if I'm teaching without a TA. That means one can accomodate 10

students or up to 20 if they are working in teams, and the latter is sometimes quite productive.

9. I don't see this as a problem. You need to have a small class size in order to give the proper amount of individual attention to students who are trying to use this new technology.

10. Convert small classes to study groups where each group of X number of students has access to only one module. Not every student needs a personal CPU to do assignments!

11. Hold classes at non-traditional times: Saturdays, 7:30 a.m. weekdays, 8 p.m. weekdays, etc.

12. Have intensive but short courses -- a 16-hour weekend workshop, for example, on spreadsheet, or BBS's or database joins -- some well-defined, sharply focused topic.

13. Have a class just for students who have their own equipment -- a laptop computer, w/ modem, software, etc. This would free up the school's equipment for comptuer-less students.

14. Schools must be aggressive about fund raising through corporate and foundation sources to increase resources. This shouldn't be an insurmountable problem.

15. For now, it's better to have small classes than no classes at all.

16. University should offer students opportunity to buy their own computers on the installment plan as part of their tuition and fees each term.

17. This may be difficult to solve at first. But some universities have computer labs. Software for CAR, such as FoxPro, could be loaded on lab computers. Students could work there outside of class.

18. Most j-schools have PCs. LAN them. Load Lotus 1-2-3. Problem solved, if PCs are at least 486 w/ 8 MB RAM.

19. Classes can be made larger by having more teaching assistants and by staggering the times at which students practice with the tape drive, which is the most expensive single piece of equipment used.

20. If you have everyone practicing the relational database portion of the course by using a terminal connected to a LAN, that will allow the class to be considerably larger.

21. Have some larger sized combined "evangelical" sessions. Have the sessions intended for informing/educating about use of these tools be larger. Schedule or make available lab time for self-training in smaller groups.

22. Good software will allow use of TAs, assistant instructors to cover these sections.

23. Try to strike deals with private companies for the donation of equipment/software.

24. Invest in demo equipment and have students share limited technology.

25. Generate enough interest among students to pressure bean counters.

26. No problem.

27. Live with it. Get students _started_ on CAR.

28. Small classes are good, not bad.

29. If you want more students each semester, repeat the labs.

30. Have more sessions of the class.

31. Seek grants from computer vendors for equipment and software.

32. The principles of CAR can be taught with inexpensive equipment. Perhaps the scope of the class could be reduced to a series of short courses so that more students could participate with existing equipment in a given semester. Most university computing centers offer short courses in how to use various software packages such as word processors and database programs. One solution is to have students take those short courses for practical knowledge of how to use software so that the journalism professor could concentrate on what a journalist should do with that knowledge.

33. This is not a liability. Small classes of 10-20 are perfect for teaching with computers.

34. Use lap tops for classroom instruction, or

35. Double up students on terminals for classroom instruction.

36. Alternate lab times and have them available during certain hours for after-class work.

37. Because a computer screen can be sent to an overhead projector, some classroom demo is possible even in a lecture

hall. However, such demo is not ideal as students lose interest quickly if the demo is not hands-on.

38. Best possible solution is a combined lecture/lab type course, much like science classes. The text would include computer tutorials for use during the lab; lab could be completed at the student's leisure in the computer lab.

39. Actually, the best solution is to require all students to have a computer, as many students already do. A requirement that all journalism majors have a laptop equipped with a basic program such as Microsoft Works -- introductory spreadsheet, database, word processor -- wouldn't be a bad idea.

40. See A above. (Problem A #32)

41. This is a substantial problem. Journalism/Mass Communication deans and heads of departments need to increase class size to reach a better "return on investment" (i.e., faculty salaries). Students love smaller class size because they tend to feel that they get more personalized instruction. A possible solution is to collaborate with computer science and/or library science schools to share master computer classrooms. The problem here is that students need access to these computer labs not only during instruction periods, but when they are tackling computer-assisted tutorials and completing assignments. The competition for computers becomes even more serious and the scheduling problems increasingly severe.

42. Provide only network connections and have students provide the computers.

43. Scale your needs (slow, cheap machines give you 95% of Pentium or PowerMac capabilities).

44. Do more self-paced instruction -- that way, fewer students gather in a large class at any one time.

45. Not a substantial problem.

46. There are so many issues surrounding class size and equipment; one solution, of course, is to make students work two or three to a computer. This isn't as effective, obviously, as having each student at a computer station, but it has other benefits in terms of teamwork and group problem-solving.

47. Frankly, I guess I think this one is hard to overcome; the only other solution is to use overheads to introduce students to the technology in the classroom context, and then assign work outside of class that requires them to do the hands-on work on their own.

48. Not a substantial problem; new technology will help.

49. We had precisely this problem at UMO. I started out by interviewing students and taking the ten I thought would be best. (It is interesting to note that no matter how I tried to select the very best students, only 20 percent of every class went on to show a real interest in computer-assisted reporting.)

50. When the class became grossly over-subscribed, I offered a one-week course over semester break. It was for one

credit as I recall and was always full. I also ran NICAR
which got students involved in computer-assisted reporting
either on a sort-of English tutor system or as a followup to
the regular course. That is to say a student who finished the
course and wanted to learn more could work in NICAR.

## E. Curriculum revision necessary for CAR courses.

1. Curriculum should focus on methods, not on hardware
and software.

2. Persuade colleges that CAR is useful tool.

3. I finally gave up trying to get the whole department
to change and just started teaching what I believe to be
important. The students seem to be voting positively with
their feet and the faculty are coming to face reality.

4. I don't see this as a problem. You could simply add a
couple of CAR courses without revising your curriculum.

5. Curricula need to be revised, to become more
interdisciplinary and to focus on team learning where
students work in groups on specific projects. Need to dump
model of teaching from one expert to one student.

6. Integrate CAR into existing courses.

7. Use intensive short courses.

8. Seek out experts in this area and consult on
curricula -- experts in both academic and computer-related
fields.

9. This will occur more or less naturally as teachers
begin to teach in computer labs.

10. IRE/NICAR can provide curriculum used to teach CAR at other journalism schools. These can be tailored to individual schools needs.

11. This too is not insurmountable. One person can decide on content, with consultation, then put lectures in appropriate classes with consent. However, CAR course should be included -- a standalone class.

12. I don't see this as a problem. CAR can easily be sold as new "cutting edge journalism," and is one of the few courses that actually have a practical application in the real world of journalism.

13. This may be the toughest problem -- getting faculty to buy in. Might try an approach of weaving the concept/techniques and uses of CAR into the fabric of a number of existing courses -- subtle change, universal introduction of the topic.

14. Must do or be obsolete.

15. Departments across the country should share plans via the Internet.

16. Not a problem, especially compared to cost.

17. Need more computer-literate teachers.

18. Not a problem. Can be fitted into current courses.

19. This gets at the larger issue: CAR is not a one-shot, "there-now-you-know-it" deal. It has to be a building process. As such, to be successful, it has to be integrated throughout the curriculum.

20. Base the curriculum on <u>data</u> and <u>stories</u>, rather than specific brands of software. That way you can perform the same analyses with the best and latest software. A course that works in FoxPro should work even better in Access, with little revision required of the source material.

21. I don't see this as a large problem. We have developed a more than adequate curriculum at the Missouri School of Journalism that we are constantly improving.

22. I see this as a very significant problem. It's a little like the chicken and egg question. A significant number of faculty have to want to change to accomplish the necessary changes. This usually requires years of study and debate. But not that many faculty see the need to change because they do not have experience with CAR themselves. University faculties change curricula at the pace of an advancing glacier. I once heard that one could commit suicide by leaping in front of a glacier -- but it takes 300 years.

23. As more faculty realize that the major stories are done with the aid of computer analysis, they will perceive the need to change. However, many journalist proudly downplay the use of computers in a story. They stay that the computer is only a tool and we don't put details about other tools, such as word processors in a story. As the use of computers becomes second nature to reporters, they may be reluctant to even mention that a computer was used in the reporting process. Thus, the importance of method may become less obvious to those not practicing CAR.

24. Not a problem.

25. Not substantial problem.

26. If CAR is taught as a process and not concepts, it will always fail and this will be a problem. The point of teaching CAR is to introduce the students to the need for social science research methods in journalism, not to teach the keystrokes necessary to run the hottest, newest statistical program. So significant curriculum revision isn't necessary every year, just every few years. Give me a student that has done computer-assisted reporting and understands the fundamentals, and I can teach him or her the latest stuff in a few days.

27. I'd rather see CAR techniques incorporated into regular journalism classes. Who teaches note-taking classes?

28. This is a BIG challenge. Journalism educators cannot undertake this challenge alone. They are going to have to solicit help in creating syllabi. Where else to turn, but to the special projects teams in print and broadcast news organizations. Of course, help from the likes of Phil Meyer, Steve Ross and Nora Paul is an integral part of this computer-assisted research and reporting.

29. Naturally. But CAR can be inserted almost anyplace. We have some freestanding courses. One is a 1-credit short course for everyone, for instance, three 5-hour sessions (spreadsheet, paradox), one 3-hour session (for Internet), one 2-hour session (library, NEXIS, etc.). But we embed the skills into national, business, and investigative courses.

That way, we spread several teachers' expertise with computer/analytical skills into many courses.

30. Not a substantial problem.

31. I don't see this as a problem. It's a challenge to faculty and requires substantial investments of time and effort -- but it seems to me that failure to revise our curriculum to reflect the influence and impact of technology is irresponsible. It's what's happening. It's what our students need to know. It is our charge to know it so that we can teach it to them.

32. Probably not a lot of revision necessary. The zealots will find ways to teach "special topics" courses and some will just include it in a current course.

33. I'm not sure what the problem is here. If I learned something I included it in the course. If something didn't work, I yanked it out. No problem.


## F. Resistance of faculty.

1. No problem.

2. Demonstrate the utility of CAR.

3. Ease people into the technology by requiring the use of e-mail for faculty communications. (i.e. Eliminating paper memos).

4. Bring in working journalists using CAR to make presentations.

5. "Resistance"? Sometimes, but in various forms. Some are intimidated, some scared, some lazy, some lack the

historical understanding of innovation and evolution in communications, some just not very bright. All we can do is press on in whatever manner with whatever we know to be right for our students.

6. This could be a problem, but I don't know what advice I can give to handle it. In general, a successful CAR program is the best way to win over those who are skeptical. You also might try hosting professional CAR seminars which would enhance your reputation both on campus and off.

7. Dump the faculty that have no interest in the future!

8. Emphasize importance of CAR in today's journalism job market.

9. Demonstrate to faculty the career-enhancing and lengthening value of this expertise.

10. Encourage leadership from the top -- through deans and department heads.

11. Be patient. Dinosaurs will become extinct in time.

12. Bring in a program from a university with a successful CAR program to explain how it works. Bring in local reporters who have done CAR stories to explain them and show why they are on the cutting edge.

13. Bring in speakers with credibility to faculty to discuss and demonstrate.

14. Pass around articles on CAR and CAR-produced articles.

15. Salesmanship. CAR offers marketing and promotional opportunities to any journalism school that embraces it. It

should help attract students, and enhance the schools name in journalism circles.

16. See "E." (Problem E #13). This is a hard one. As many people have said, universities are full of former professional journalists who want to wait out their careers in the safety of the university after seeing so much computer use in their newsrooms. They will try to protect themselves.

17. Set up reward system that will overcome resistance -- e.g. summer salary.

18. Little you can do ... But, ultimately the students have to show interest. Gather student support through surveys and petitions.

19. Educate them as to growing role of computers in the information business.

20. See B. (Problem B #23).

21. This stuff is essential to modern journalism. Any j-school instructor who is unwilling to learn it and teach it ought to find another line of work. I mean this.

22. This is not relevant. If faculty continue to resist, they will simply become obsolete.

23. Problem is not faculty but finding qualified faculty to train other faculty.

24. CAR demonstration by IRE or other similar group tailored to lower fears/hostility and raise understanding of what CAR can do. CAR training also.

25. Shoot 'em. Seriously, if faculty want to turn out employable journalists, they will have to come around.

Promote such surveys as the one done by the Association of
Journalism Educators, which show this is the top demand of
newspapers that hire entry-level journalists.

26. Mmmm.

27. This is a moderate challenge. Again, I use UNC-CH
Journalism/Mass Communication as an example. Our dean is not
only a computer literate, he is committed to inspiring others
on the faculty and staff to make progress in this area as
well. For example, our school is in the middle of a search
for a "media futurist" to join our faculty. We should have
the candidate selected in time to come on board in mid-1995.

28. Faculty wo do not understand what is happening in
the media today, and refuse to teach it, may be doing an
enormous disservice to their students and the profession.

29. That said, we've invested in toys, but also in
faculty that teach longer-form writing -- more book writers,
magazine writers, TV documentary types, fewer from tabloid
newspapers. We've found almost NO resistance among first-rate
faculty.

30. Not a substantial problem.

31. In departments where faculty are tenured and
entrenched resistance to new approaches and curriculum is
always a problem. A solution? Can't think of one. So goes the
tenure system.

32. This is a major problem and is the cause of so much
wasted time, effort and funds. Few people are comfortable
with this new technology and see no reason to change "just to

adapt to industry." I suppose some new blood will help, but youth is not a guarantee somebody will embrace change.

33. This was never really a problem at UMO so I am not sure how to deal with it elsewhere.

## G. Resistance of university administrators.

1. Gain support of Regents and/or legislators to insist upon necessary changes.

2. Line up the faculty behind CAR.

3. Work with enlightened computer systems administrators to develop interdisciplinary electronic projects.

4. On this I don't know.

5. See answer to "F." (Problem F #6).

6. Move to another university.

7. Same as above. (Problem F #8).

8. Minor problem, especially if new financial resources can be brought in through computer education initiatives.

9. Always have up-to-date plans ready. When money becomes available administrators will think of you.

10. Publicize your achievements widely. Administrators like good press.

11. Same as for the faculty. (Problem F #12). Also point out small piece recently in U.S. News & World Report that CAR is a hot job in journalism.

12. Find out whether J-schools with CAR programs attract more and better students.

13. Same as F. (Problem F #13). Although I cannot imagine that this is a real problem.

14. Same as answer to F. (Problem F #15).

15. Get more news organizations to communicate their need for journalists with these skills -- if administrators can see direct line between training/education and jobs, and use it to attract students, it should make it an easier sell.

16. Your administrator needs to educate them. Use national reports, including Freedom Forum reports.

17. Same as F. (Problem F #18).

18. See above. (Problem F #19).

19. See A. (Problem A #20).

20. See response to topic C. (Problem C #21).

21. I don't think the resistance is as great as it was. Because of the excitement over the Internet and revenue sources from private industry for development work, administrators will undoubtedly become excited about these programs.

22. I don't have that problem since I am an administrator. If I had to make an argument to convince an administrator that resources should be allocated to CAR efforts, I would concentrate on the marketability of the future graduates and the distinction they would bring the program. Since not many schools have much on CAR, those that do would be seen as distinctive.

23. Not a problem if you believe course is crucial to training.

24. CAR demonstration by IRE or other similar group might help break the ice with university administrators.

25. Same as F. (Problem F #25)

26. Educate gently.

27. I do not sense a problem here.

28. Lottsa money. But a key driving force in our modernization has been Michael Crow, Provost for Technology. Suggest everyone at other schools bother him.

29. I guess like everyone else I trumpeted my successes shamelessly but the administration with a very few exceptions was very supportive anyway. There is just so much that has been written about how important CAR is that a faculty or administration that doesn't support this is not worth fighting. Either you get it or you don't.

30. Once they are convinced this is what the market requires, they lose the resistance -- they still are clueless, but they do understand market dynamics.

31. This is a public relations issue for the department. I am convinced that a good department chair can make a difference between acceptance and rejection of a proposal: administrators have to be convinced that students will benefit, that there will be VISIBLE benefits to the investment, that the investment will enhance the STATUS and the quality of the program, and that there are multiple uses possible in terms of use of the resources by folks outside the journalism department.

APPENDIX M

**OKLAHOMA STATE UNIVERSITY**
**INSTITUTIONAL REVIEW BOARD**
**HUMAN SUBJECTS REVIEW**


**Date:** 03-30-94                    **IRB#:** AS-94-039


**Proposal Title:** THE FUTURE OF COMPUTER-ASSISTED REPORTING COURSES
IN SCHOOLS OF JOURNALISM


**Principal Investigator(s):** Charles A. Fleming, Kevin C. Lee


**Reviewed and Processed as:** Exempt


**Approval Status Recommended by Reviewer(s):** Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT
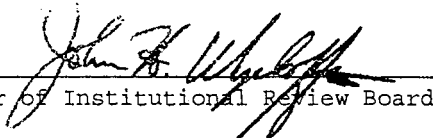MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR
RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.  ANY MODIFICATIONS
TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

_____

Comments, Modifications/Conditions for Approval or Reasons for
Deferral or Disapproval are as follows:


Provisions received and approved.


Signature: _____    Date: April 12, 1994
              Chair of Institutional Review Board

VITA

Kevin C. Lee

Candidate for the Degree of

Doctor of Education

Dissertation:   THE FUTURE OF COMPUTER-ASSISTED REPORTING
                COURSES IN UNIVERSITY JOURNALISM PROGRAMS:
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