Catalyst for a new order: the role of Internet technology in today's leadership

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Catalyst for a New Order:
The Role of Internet Technology in Today’s Leadership

by

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Introduction

Ultimately the moral legitimacy of transformational leadership, and to a lesser degree transactional leadership, is grounded in conscious choice among real alternatives. Hence leadership assumes competition and conflict, and brute power denies it.¹

In the opening chapter of his classic work on leadership James MacGregor Burns identifies "conscious choice," or decision-making as an integral part of leadership. Vroom and Yetton (1973) devoted an entire leadership theory to the topic of what they called the normative decision model, in which they maintain that the effectiveness of a leader is contingent upon that leader's ability to assess situations and make good decisions.² In his book Leadership in Organizations Gary Yukl cites that "research on crisis management suggests that effective leaders quickly identify the cause of the problem and take decisive action to direct the work unit's response to it."³ Forsyth credits the utilization of "effective decision techniques" for allowing the United States to prevail in the Cuban Missile Crisis, and uses that example to show how those techniques can be used to avoid groupthink in any situation.⁴ In short, a crucial element of leadership is decision-making.

Decision-making itself is a widely researched topic, especially as it pertains to the management of formal organizations and political organizations. In his book The Managerial Decision-Making Process Frank Harrison cites the work of numerous authors on the topic of the


decision-making process: whether they call it "information gathering" or "finding possible courses of action" or "problem diagnosis" or "information input" or "posing criteria questions" almost all of the authors have in their decision-making process a specific step that involves information gathering. From the amount of attention it receives it can be concluded that information-gathering is crucial to decision-making.

Leadership depends on decision-making; decision-making depends on information-gathering, and therefore leadership depends on the practice of acquiring information used to make decisions. I will show that new technology, in particular the information resources of the internet, impact, and are relevant to leadership. As a case study I will show indirectly how internet technology has affected the decision-making processes of US Senators, people who are charged


with making leadership decisions every day.

Before I go further I need to clarify what I mean by "leadership." Burns defines leadership as a special type of power, or a characteristic of a relationship between two people or between a person and a group of people; more specifically Burns says:

_Leadership over human beings is exercised when persons with certain motives and purposes mobilize, in competition or conflict with others, institutional, political, psychological, and other resources so as to arouse, engage, and satisfy the motives of followers._11

This definition addresses the major elements of leadership, and can easily be applied in this case study. The leaders in our case are U.S. Senators whose "motives and purposes" operate in concert with their power to "mobilize...resources," i.e. votes, favors, political pressure, etc., which arouses, engages, and satisfies(or dis-satisfies), the motives of their followers, i.e. constituents, the American people, other senators, etc. In particular this paper will focus on the means by which senators gather the information they use to make the myriad decisions associated with their jobs.

Senators vote on hundreds of pieces of legislation each year, are approached by many lobbies and special interest groups proffering information and requesting resources, are petitioned daily by constituents requiring the services of their elected representatives. Whether or not it is effective, senatorial legislation comprises the vision for our country that our elected senators create. The decisions that senators make represent the mobilization of our national resources to provide for the common good. To make good decisions12 on how to vote for the numerous bills


12For now I will not discuss what constitutes a "good" decision, but rather state that it is the decision that the senator would make under the most ideal conditions.
that are proposed, or how to use the information of lobbyists, or how to best serve constituents senators would need to spend all of their time educating themselves on the intimacies and implications of every issue that they encountered. Obviously this is not possible, and therefore senators rely on other people to make their decisions for them; more specifically, senators rely on others to gather the information they need to judge what is the best decision in each case. Sometimes this information comes from the senator's political party, sometimes from the research staff of a senate sub-committee, and sometimes from the senator's own office staff. In this study I chose to focus on the senator's personal office staff as the source of information used to make voting decisions; I chose this group both because it was the easiest group to target and also because U.S. Senators rely heavily on their personal staffs which are generally large having anywhere from twenty to fifty members. The survey was designed to find out which senators' staffs were using internet technology to gather information used in decision-making, what particular internet resources the staffs used and to what extent.

Information Gathering

In studying the internet as an information source, comparison with other information sources is important. To begin with, decision-makers possess a certain amount of information prior to any research done on a particular topic. Sometimes the decision-maker is an expert in the field, and therefore must do little research before making a decision; for example, a baseball umpire is expert at the rules of baseball and would therefore not need to consult a manual or rule book before making a call on a play. However, the same umpire may know nothing about cars, and must do some research before deciding which new car to buy. While each senator may have

13Palazzolo, D. Interview in February, 1996. University of Richmond
extensive knowledge of several subjects, it is highly unlikely that any senator, despite what he or she may personally think, is expert on every issue; therefore this study focuses on information sources other than the decision-maker themself.

Outside of personal expertise, information sources can be classified into human and non-human sources. Information from sources is the result of direct consultation of people to get information. This consultation may take the form of interviewing an expert in the field of research, consulting laypeople, i.e. constituents in the form of an opinion poll or survey, or discussion with others such as key constituents who would be affected by legislation, celebrity constituents, or lobbyists. Non-human research takes such forms as library research, reading newspapers, or watching informative television.

As an information source, the internet contains elements of both human and non-human sources. Through such services as e-mail, talk, or relay chat, information gatherers can speak directly with people who can provide critical information on a topic. It is even possible to have "face to face" conversations via internet using camcorders--Macintosh has advertised this "face to face" communication heavily in television ads espousing their global classroom idea. Through resources such as gopher, FTP, FirstSearch, and telnet a researcher can gather many forms of written(non-human) information on a topic. Often articles are written and published electronically, which means that via internet researchers have access to them much faster than in the past when it was necessary to wait for publications to be printed and circulated to libraries. Increasingly, by using a World Wide Web(WWW) browser a researcher can find information that is updated monthly, daily, or even hourly free and available to the public. Such organizations as Gallup, a major opinion polling organization, have "home pages" on the web that allow
researchers to view them at any time of the day.

In order to make the comparison between internet information resources and what I will call conventional information resources more clear, I will discuss each source in reference to some of the major factors that affect decision-making. The first issue I will discuss is availability of information. Hogarth and Makridakis list availability of information as one of the major contributors to bias in the forecasting and planning process. Conventional resources can be available in a variety of ways: people can be telephoned, mailed, visited, and sometimes summoned; libraries can be visited and often will mail researchers information; televisions can be watched from most places and during most times of the day. Conventional resources are limited by times of availability: people are not always able to come to the phone, although answering machines have greatly facilitated phone communication; visits to people and libraries are generally limited to daytime hours; TV programs are only aired at certain times of day. The advantages of conventional resources are that most everyone has a telephone, or at least a mailbox, and most researchers are very familiar with how to do library research and watch TV. The disadvantages are the costs of the telephone bill, the expense, both of time and money, to travel to visit a person or library or to send mail to a person, especially if a response is desired.

Internet resources are generally available twenty-four hours a day, seven days a week. Email generally takes much less time than conventional or "snail" mail, but it is limited by the fact that most people still do not have e-mail addresses. Availability of information sources such as gopher, WWW pages, FTP, or telnet is often restricted by the traffic on the internet at the time;

during daytime hours information transfer takes much longer than on nights or weekends. Internet access requires the availability of a computer; internet research becomes more efficient the more advanced the computer is. Responding to electronic communication most often requires a typed response; this takes more time and energy than simply speaking, as with phone communication; however technology to transmit spoken and video messages exists and is becoming more common every day. Internet resources are available internationally, and researchers often have access to people to whom a phone call would be much too expensive, and articles which are not published in the United States. At the current time literature searches on the internet will produce more bibliographic than full-text information, but that is rapidly changing as electronic publishing becomes more and more popular--one article marks that the boom in electronic publishing began in 1990 and has increased more rapidly each year since then.\textsuperscript{15} In fact, the WWW was created at CERN, a high-tech research facility in France, in 1989 and has seen the most dramatic growth--many times faster than television.\textsuperscript{16}

Several scholars discuss the effect of time constraints on decision-making.\textsuperscript{17} Pressure to


\textsuperscript{16}http://www.cern.ch/


Hughes, R.L., R.C. Ginnett, and G.J. Curphy. 1993 \textit{Leadership: Enhancing the Lessons of
make a decision in a small amount of time limits the amount and quality of the information that may be gathered on a subject. The major advantage of the internet over conventional resources is the speed with which information can be acquired from a multitude of sources. For instance, a multi-state committee doing research on a proposed piece of national legislation can conduct conversations using an internet discussion group, allowing virtually instantaneous transmission of ideas to people in many places at a fraction of the cost of long-distance phone bills. Also, many more people can participate in an internet discussion group than could participate in a conference call. The major drawback of the internet, when compared to conventional information sources is that many sources of information have not been made electronic yet, and are therefore not available via internet; this is rapidly changing, however.

The internet has a number of other drawbacks, each of which is worthy of study and discussion, but I will only list them here. These drawbacks include failure to acknowledge new scholarly enterprises related, mostly, to technology, too much knowledge to access, too much accessible knowledge to manage, a threat to paper as a concrete means of recording information, the existence of some information only in digital form which is difficult for non-computer-users, the lag between the availability of resources electronically and the know-how of people who would like to access that information, and finally the amount of "junk" information on the internet, i.e. information that is outdated or just wrong that gets equal space and attention as that which is accurate and up to date.\(^{18}\) The solutions to these problems are currently being worked on by many people in the internet community.


\(^{18}\)Forward from an internet news-group posting. Source not available.
Overall, the internet is a powerful tool to the information gatherer, and its power grows daily as new applications are developed and as more and more information is made available. The power of the internet is such that it should become a major tool of senate offices for gathering information in coming years. Already every senator has a WWW home page and most have an e-mail address. On the other hand, current legislation suggests that senators are not informed about the nature of the internet and have not grasped its full potential.

Methodology

A survey was created (see Appendix I) to discover the degree to which senators use the internet, the degree to which their staffs use it, and the degree to which the senator encourages the staff to use the internet in doing research. The survey was distributed electronically to all systems administrators for whom an e-mail address could be found. When this did not generate a great enough response, systems administrators were interviewed in person. The sample was made up of a combination of those who voluntarily responded electronically and those who were available to be interviewed the day I was in Washington.

At most, three months were all the time available for the conception, planning, and execution of this research. This time constraint severely limited the complexity of the research instrument, and the ability to gather as many responses as possible. Time did not allow adequate pre-testing of the research instrument, which could have streamlined the survey and made the data it collected more useful.

A second constraint was the lack of funding for this research. As it was, two trips were
made to Washington, D.C. to gather information directly from senators' offices. E-mail was not the most effective way to distribute the survey because e-mail addresses were not readily available in many cases, and senate offices don't in general have a well developed scheme for answering e-mail; however, phone interviews or in-person interviews would have been cost-prohibitive to this researcher.

The last major constraint was the researcher's inexperience at doing survey research. The survey employed here was only able to gather the most simple information regarding behaviors of senate staff and the internet. It was not able to gather explicit and more complicated data on attitudes of staff toward information technology, nor was it able to gather information that would create a concrete link between internet use and quality of decision-making. Nonetheless the data that were collected allowed speculation upon the possible links between technology and leadership and provided a direction for further study.

The statistical analyses of the data were quite simple. The only value that needs explanation is the internet usage score that was used to compare offices' relative internet use. This score was the arithmetic sum of all the survey questions that asked for the usage frequency for specific internet resources. Frequency was rated from "never" (usage value=0) to "hourly" (usage value=4). Possible usage score totals could range from 0 to 44. Actual usage scores ranged from 6 to 27.

Results

In all, twenty senators' offices responded to the survey. Twelve responded either by e-mail or snail mail to the survey which was sent to them via e-mail. Eight responses were obtained by a personal visit to the senator's system administrator. Nineteen of the senators were male; one
female. They ranged in age from 38 to 78 with the average being 57. Twelve respondents were Republicans and eight were Democrats. Half of the respondents had a tenure in congress of ten years or less; five of those were in their first year of service. Two respondents had more than thirty years in congress while eight were between ten and thirty years. All offices had at least as many computers as staff members, often more. In nine offices all of computers were connected to the internet, while in six more offices more than half of the computers were connected.

<table>
<thead>
<tr>
<th>User</th>
<th>E-mail</th>
<th>WWW</th>
<th>Gopher</th>
<th>FTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senators</td>
<td>85%</td>
<td>30</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Staff</td>
<td>100</td>
<td>90</td>
<td>35</td>
<td>50</td>
</tr>
</tbody>
</table>

The most utilized internet resource was electronic mail (see Table 1). Every staff member in the offices that responded used some sort of electronic mail. The most predominant use of e-mail was for communication between members of the same staff, closely followed by communication between different senator's staffs. E-mail offers the ability to send a detailed message that will not interrupt the receiver (as would a phone call), that will allow the receiver flexibility of response time, that can be sent to many recipients at once, and that can be stored easily for purposes of having records of conversations. E-mail transmits instantaneously whereas a paper memo could take a great deal of time to be sent. It takes fewer staff to send messages by e-mail, i.e. postal staff and secretarial staff are not necessary. E-mail also does not use paper or contribute to office waste. On the other hand, e-mail is not the best when a highly interactive conversation needs to occur, and people are still uncertain of the confidentiality of e-mail communication. Importantly, e-mail is accessible to all senate employees. Fourteen of the responding senators and eighteen of the staffs had been trained in the use of e-mail.
Seventeen of the responding senators had a personal e-mail address, however, only six of those actually read and/or responded to their own e-mail. In general e-mail is treated like other office mail and is filtered through staff assistants. Nine of the twenty senators used e-mail to communicate with their staffs on a regular basis, four of them on an hourly basis. Staffs indicate that they send intra-office and inter-office e-mail hourly, if not every fifteen minutes. Seventeen of the offices accepted constituent e-mail, however the method of response varied from automated electronic replies, to personalized electronic responses, to conventional mail responses. Nine of the offices reply to constituent e-mail at least daily; eight respond only occasionally or weekly. Half of the offices do not use e-mail to communicate with lobbyists at all, and the other half vary from occasional to hourly exchange of e-mail with senate lobbies.

The second most popular internet resource was the World Wide Web (WWW). Eleven senators and sixteen staffs had been trained in the use of a WWW browser such as Netscape. The most common use of the WWW was to find out about news events, followed by data sets, information on individual people or organizations, then group information (such as opinion polls), and lastly documents (legislation, hearing transcripts, etc.); there was not much difference though between the frequency of the usage of the WWW to gather these types of information. On the average, offices used WWW daily to get information, but at least three offices use the WWW hourly to do research. One office complained that they had difficulty finding the information they wanted despite a concerted effort to incorporate the WWW technology into their daily routine. Fourteen senators have personalized web pages, six of which are designed to gather various information from their visitors such as their concerns, names and addresses. One senator has a computer terminal in his office specifically for the use of visitors who wish to browse his web
Gopher and FTP resources were used considerably less than e-mail and WWW by the senate staffs (see Table 2). Several reasons were given for this: gopher and FTP take more technical knowledge to navigate than the WWW although it was admitted that they probably had more useful information. Also through Netscape, the predominant WWW browser, staffs were able to take advantage of gopher and FTP as part of the WWW. Several offices reported that the use of FTP had not been approved by the Senate Rules Committee and was therefore illegal, while other offices claimed to use FTP daily or weekly. One system administrator explained that FTP was approved, but that each file transfer had to be approved individually. Senate offices may

Table 2: Proportional use of internet resources by senate offices
download software as well, but are always required to pay for it, even if the software is shareware—programs that are freely available to anyone who wishes to own a copy.

The survey also asked a series of questions regarding office participation in news and discussion groups on the internet. The majority of offices responded that these groups were off-limits to senate offices. Several reported that the benefit of being a member of a discussion group was not worth the time and energy needed to train staff and implement their use. One office, administers a list that sends updates on that senator's activities automatically to constituents, and one other occasionally participates in a sponsored chat session addressing specific issues, but in general this resource is unused. One office speculated that news groups were not allowed because they would overload the senate internet servers.

The survey collected information on the role of senators in encouraging the use of internet technology. There are clearly two pieces to this picture: one is the time and energy that a senator spends learning about and using internet technology, the second is the time, energy, and initiative that the staff takes to learn about and use internet resources. On one end, some senators communicate that they implicitly expect their staffs to avail themselves of any and all resources that will make them efficient. Staffs, in turn, take varying levels of initiative at implementing new technology in their offices—some stick with the conventional, well known methods of research, while others aggressively utilize new technology. Senators in this scenario have little or no personal knowledge of computers and do not personally use any internet resources. On the other end of the spectrum, several senators carry laptop computers with them and communicate via e-mail to their staffs continually. A strong emphasis on technology use propels these offices to innovate, to seek out new resources and incorporate them into daily office procedures. In
addition there is one other major influence on the use of technology in the office--the Senate Rules Committee.

The Senate Rules Committee is responsible for reviewing and approving all technology that is used by the senate offices. This committee decides whether or not senate offices may use various internet resources. Often in conducting this survey, offices responded that certain resources were not available to them. However, other offices indicated that they used the resources that their colleagues believed off-limits. I never found the actual rules, nor was able to clearly understand what the prohibitions were for certain resources. Regardless, it is clear that the rules committee plays an important role in determining what resources are used by the offices.

Worthy of mention is another player in the research done by the senate offices. The Senate Computer Center provides training and support for all of the approved technology in the senate offices. The SCC houses the server which supports the senate web-pages and administers the internet access of each office. Many of the respondents to the survey used the SCC to train some or all of their staff members in the use of various internet technology.

Each responding office was given a internet usage score based on the frequency with which both the staff and the senator used e-mail, WWW, gopher, and FTP. A regression analysis was run against the age, sex, tenure, and party affiliation of the senators. The results indicated that there were no characteristics of a senator that predict how much his or her office uses internet technology. However, a positive correlation was found between the proportion of the staff that was less than age 30 and the use of internet resources; younger staffs tend to use internet resources more often ($r=0.47$, $p=0.036$).
Discussion

Brief History of the Internet

In 1957, the U.S.S.R. launched Sputnik, the first artificial earth satellite. In response the United States Department of Defense created the Advanced Research Projects Agency (ARPA), an organization that would fund and coordinate research in the U.S. for military and defense applications. Research began in the early 60's in computer science to develop packet-switching networks. This technology serves as the foundation of the internet. ARPA began funding the research in 1965 which led to the creation of ARPANET in 1969, an early network that included nodes at four different research facilities in California and Utah. In 1972, a demonstration of ARPANET at the International Conference on Computer Communications earned international attention. International partnerships began which led researchers to create internet technology in such a manner as to be usable regardless of the platform from which a user was gaining access; that means that no matter what type of computer, there were standard computer protocols that would allow transfer of information--a sort of Esperanto for computers. The first official e-mail was sent in 1976 by Queen Elizabeth of England. By 1984, the number of network hosts barely broke 1,000. In 1990 ARPANET was completely replaced by the internet. In 1992, the number of internet hosts broke 1,000,000. By 1996 the number of internet hosts has reached nearly 10,000,000 and growth has become exponential. There are currently approximately 30,000,000 users world wide and that figure is estimated to be increasing at over 15% per month. The WWW, a 1990 creation of researchers at the CERN particle accelerator in France, now provides access to several million documents or "pages," and high-tech software can sift through the
information on all those pages to find what a researcher is looking for in seconds.\textsuperscript{19}

**The U.S. Senate and the Internet**

I've been observing the progress of debate on the "information highway" and somehow a great many people who know better are pretending that it is just another grand venture like the interstates or the space program, when it is actually something of much greater consequence for two simple reasons: it will change everything and it is irreversible.\textsuperscript{20}

I wholeheartedly agree with this statement. The growth of the internet has far outstripped the growth of television and it is showing no slowdown. This paper aims to show that internet technology impacts and is relevant to leadership; I believe in a profound way. First I want to discuss the internet in the context of our case study, the U.S. Senate, and second I want to make more general speculations about the impact of the internet on leadership.

The results of this survey showed that the majority of senators remain ignorant of or aloof from the new technology being used in their own offices, in general entrusting responsibility to their staffs to use all available innovations to the best advantage. Some senators energetically endorse the use of the internet and model that use for their staffs, while for many the endorsement is, at best, implicit. Systems administrators (or sysadmins) answering the survey showed a wide range of technical knowledge of the internet and information systems(IS), with the most advanced having an understanding of the creation and administration of LANs(Local Area Networks), while the least advanced were not even familiar with programs such as Netscape. Kevin Wilson,

For a more complete history please visit the Hobbes' page.

Senator Pell's sysadmin commented on the changing role of his job: in the past Mr. Wilson was only a part time staff member overseeing the operation of simple office machines, but now his job description has expanded dramatically, putting him in a vital position coordinating not only the operation of the machines, but also the staff's ability to use them. Most offices did not have any staff positions which explicitly required knowledge of internet technology, but several offices required their sysadmins to be extremely conversant with IS platforms. In general, when a senator used internet technology frequently, so did the staff.

In roughly twenty-five years the internet has grown from four computers to nearly ten million. I acquired my first e-mail account when I was sixteen years old, a junior in high school in 1990. E-mail addresses were not approved for U.S. Senate staffs until the summer of 1995. In April of 1996 there are still senators who don't have e-mail addresses. What does it mean when the U.S. Senate, ostensibly a body representing the leadership of our nation, does not get permission to use technology that was available to a small-town, high school student in 1990 until five years later? The survey indicates that the responsibility for this lag rests on the Senate Rules Committee who sets all operating policy for senate offices. Recently the Senate passed a bill which eventually became the Telecommunications Deregulation Act of 1996--it was one of the first pieces of legislation to discuss the internet and its regulation in this country. The passage of the bill caused an uproar in the internet community because, according to the ACLU brief, "the 'Deregulation' Bill Will Establish a Big Government Censorship Regime with New Speech Crimes for the Internet and Online Communications;" apparently the bill could be interpreted to allow prosecution of people for what they write in their most private e-mail messages, and squelch
debate of sensitive issues online because the language violates FCC rules. One metaphor compared the writing of internet regulation legislation by the U.S. Senate to the blind telling the public what they can't read.

Leadership depends on good decision-making which depends on good information. The growing population of internet users are becoming more and more reliant on it as their primary information source; naturally there would be worry if the government threatened to take it away. In the business world, the companies that are showing the most growth usually have a strong interest in internet technology; these are companies like MicroSoft, Intel, and Netscape. These are the companies that are the current leaders in our economic system; they are multi-national and much of their inter-office communication depends on internet technology; few companies air TV ads that don't include their WWW address. The information on the senate points overwhelmingly to the fact that senators do not have time, or do not take the time to keep abreast of and incorporate information technology into their lives. Sometimes their staffs are able to do this, but the staffs are limited by the rules that are imposed upon them. In short, the senate has not been able to keep up with the rest of the culture, meaning they have not had access to the most current information, are not able to make the best decisions, and are therefore not exercising the most effective leadership. The internet has made a positive impact on the leadership outside of government--people have access to more and more current information and therefore make better decisions; inside the government however, the technology lag has had a negative effect on the leadership of our nation.

One statistic uncovered by the survey suggests that the younger the senate staff, the more frequent was the use of the internet. If more frequent internet use is deemed a positive thing, there are two actions that would logically bring it about based on this statistic: one is to actively seek out and hire younger staff that already have strong internet understanding, and the second is to wait until those younger, more technically aware people have gained the experience of the older people currently on the staff. In either case, what needs to happen is the arrival of the next generation of leadership.

The Internet and the Next Generation of Leadership

Alvin Toffler characterizes the next generation to be raised in our society as a group of non-linear thinkers. Hypertext documents are an example of this type of thinking. Basically, linear thinking assumes that there is a single best path to solving a particular problem while non-linear thinking embraces several paths at the same time. Hypertext is the format in which WWW pages appear. In a linear document a person opens a book or magazine, starts at the beginning and reads through to the end in order to garner the wisdom the document holds. In a non-linear, hypertext document video, sound and text may be incorporated and a number of different primary sources may be accessed simultaneously to make sense of complex subject matter in a short amount of time. Web pages have multiple links that can be followed in no particular order to arrive at an acceptable level of understanding of an issue. Using the WWW search engines, a person can find and process information from multiple sources on virtually any subject in seconds.

Elizabeth Mackenzie has written a paper on multi-sourced leadership which she claims is the next paradigm of leadership in our world. In this system, no longer is the singular nation-state looked to to guide and lead the people, but an intricate web of organizations including businesses,
religious organizations, NGOs, and the like are all given partial responsibility for solving problems, but are together asked to provide a moral standard. The current paradigm was begun during the Enlightenment period of Western history; this paradigm emphasizes logic and reason and believes that simple laws can be discovered to explain all of the phenomena of our world.

The new paradigm also believes in logic and reason, but has abandoned the belief in simplicity; instead, the concepts of chaos and complexity dominate today's intellectual leaders; in addition, leaders are required to act on intuition and also to consider more than the "bottom line" in making decisions. There is a focus on planning for the future, and there is no longer a prevalent belief that technology equals progress. The internet embraces this complexity.

The internet is a web of 30,000,000 people connected in an intellectual cyberspace. It is mind-boggling to try to grasp the implications of this. The web is essentially anarchic--no entity has control over it anymore. The legislation passed by the U.S. Senate is most likely unenforceable. The nation-state as a sovereign entity is not capable of regulating something as amorphous and pervasive as the internet. This complexity is at the heart of what makes the internet crucial to leadership. I believe Mackenzie is correct that the end of the Westphalian system is at hand. In the new order that emerges, leaders will need to have a powerful command over tools of communication so that they can espouse the visions that will bind the world community together. They will have no choice but to choose a value system that provides for the common good of all people. They will have no choice but to use the internet or its child to convey those values. National boundaries will begin to become extremely hazy, and the ethics of cultural relativism will be stretched to their limits. The task of leadership will remain the same, and that is to create and communicate a vision of change that motivates the followers; however, in
the new order the scope is much broader--there will be many leaders and the followers they must communicate with will be the whole world. This phenomenon is created by the internet and its ability to transfer ideas quickly and effectively over long distances. To restate this, information technology is the catalyst of the change in the world order, not the result or by-product.

**Conclusion**

What is the impact of internet technology on leadership? The crucial element of the leadership/technology equation is information: the ability to access and digest the most comprehensive, accurate information in the shortest amount of time for the least cost is key to making the best decisions and therefore exercising the best leadership. The case of the U.S. Senate indicates that as a body the senate has trouble keeping abreast of the latest technology; this problem could seriously injure the senate's ability to maintain its leadership position in our society. Mackenzie might argue that this position has already been lost. Regardless, it seems clear that in order to maintain a position of leadership in our society it is crucial that leaders become educated on the use of the most current information resources. As a suggestion for further study I will go one step further to suggest that not only must leaders learn the technology, but they must also learn to think in non-linear fashion; this type of thinking is key to effective use of the new technology, and I believe it will become key to effective decision-making and effective leadership in the near future.
Appendix
Internet Usage vs. Proportion of Senator Staff Under Age 30

\[ Y = 9.55497 + 15.7600X \]

R-Squared = 0.221

\[ p=0.036 \]

95% CI
<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
</tr>
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<tbody>
<tr>
<td>1970</td>
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<tr>
<td>1971</td>
<td>1</td>
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<tr>
<td>1972</td>
<td>4</td>
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4,852,000  
3,212,000  
2,056,000  
1,313,000  
890,000  
535,000  
313,000

Internet Hosts Worldwide
(Logarithmic Scale)

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Drawn by MIDS, Austin, Texas emids@tic.com.

1 Internet hosts with IP addresses (later see RFC 1226).
2 ARPANET host sites (Mark Lovelace emids@tic.com).
3 ARPANET hosts (early RFCs Peter Susa qps@netcom.com).

ftp://tic.com/matrix/growth/internet/hostsl.gif
I. Introduction

Hello. My name is [name] and I am a student of the Jepson School of Leadership Studies at the University of Richmond conducting a survey to collect data for my senior thesis. I am studying the role of internet resources in the decision-making of U.S. senators, and I was hoping that I could take 15 minutes of your time to ask you a few questions.

First, let me explain the survey to you. I am going to ask you a series of questions designed to determine, if, how and how much the senator's staff uses the internet to do research and gather information. Specifically, I am interested in research that is performed to assist the senator in making decisions required by his/her job. I have included definitions to clarify what I am referring to in each question.

The easiest way to respond to this survey is to reply to this message and choose "yes" when the computer asks if you want to include the original message in the reply. Then simply insert the answers into the text of the survey and send it back to:

[urvax.urich.edu]

Questions about the survey may also be sent to this address.

For the purpose of this survey, whenever I refer to the "use" of a particular resource I have defined "use" as "the attempt to acquire or disseminate information regardless of success." This means that whether or not a particular internet resource actually produces valuable information is not important. I only want to know if senatorial staff members consult these resources.

I have not made any specific references to software that might be used in the use of internet resources. I assume that every office has access to appropriate software, while they may not all use the same programs. My interest is primarily in the internet resource and not the software used to access that resource.

II. Demographics

1. How many people are there on the senator's personal staff?
2. How many of the staff members are devoted to doing research or gathering information that the senator uses to perform his/her job?
3. How many of the staff members are age 30 or below? (may be approximate)
4. How many of the research staff are age 30 or below?

III. General Internet Questions

1. How many computers are there in the office?
2. How many of the computers are connected to the internet?
3. How many months have computers in the office been connected to the internet?
4. Do any staff members conduct research from other computers connected to the internet? Y N
5. If so, from where? home library car other

IV. Questions on Specific Resources.
A. E-mail--electronic mail or e-mail refers to a utility which allows creation, distribution, and acquisition of electronic messages, generally in text form.

1. Does the senator have an e-mail address? Y N
2. Who reads the senator's e-mail? ______
3. Who answers the senator's e-mail? ______
5. How many of the staff members have a personal e-mail address? ______
6. Is e-mail used, and if so to what extent between the following people?
   Senator and Staff: Y N hourly daily weekly occasionally
   Staff and Staff: Y N hourly daily weekly occasionally
   Office and Other Offices: Y N hourly daily weekly occasionally
   Office and Lobbies/Interests: Y N hourly daily weekly occasionally
   Office and Constituents: Y N hourly daily weekly occasionally
7. If e-mail is not used, why not?

8. Has the senator or any or all of the staff been trained in the use of e-mail? Y N
   Which people?
8a. The training was initiated/requested by:
   _____ The senator/staff member being trained
   _____ The senator
   _____ Another staff member
8b. The training was performed by:
   _____ An professional trainer
   _____ A staff expert
   _____ Self-taught
   _____ Other(Please specify) ________
9. Other Comments (this is a space to record any info that seems relevant)

B. World Wide Web--the World Wide Web (WWW) is a network of multi-media electronic resources located at thousands of terminals worldwide connected via existing phone lines. Access to the information on these terminals is achieved through the use of a browser, such as Netscape, Mosaic, Lynx, etc.

1. Does the senator personally gather information from the WWW? Y N
1a. If so, how often? hourly daily weekly occasionally
2. Does the staff gather information from the WWW? Y N
2a. If so, how often? hourly daily weekly occasionally
2b. What types of information are gathered? (Check all that apply)
   _____ Data sets/statistics (census, crime rates, etc.)
   _____ Info on individual people/organizations
   _____ Info on groups of people (opinion polls, etc.)
   _____ Info on events (news, etc.)
   _____ Documents (legislation, laws, articles)
3. Does the senator have a personalized Web page, or does he/she use the standard senate page?
4. Does the senator use his/her page to gather information? Y N
4a. If so, what information?
5. Who maintains the senator's page?

6. If the WWW is not used to gather information, why not?

7. Has the senator or any or all of the staff been trained in the use of WWW? Y N
   Which people?
   7a. The training was initiated/requested by:
      ____ The senator/staff member being trained
      ____ The senator
      ____ Another staff member
   7b. The training was performed by:
      ____ An professional trainer
      ____ A staff expert
      ____ Self-taught
      ____ Other (Please specify) __________

C. Gopher--gopher is a network program that runs on over 600 computers throughout the internet and connects these computers together in such a way that users can seamlessly access information from all over the world through a series of menus. This series of menus is called GopherSpace.

   1. Does the senator use Gopher? Y N
   1a. How often? hourly daily weekly occasionally
   2. Does the staff use Gopher? Y N
   2a. How often? hourly daily weekly occasionally
   2b. What types of information are gathered from gopher?(check all that apply)
      ____ Data sets/statistics (census, crime rates, etc.)
      ____ Info on individual people/organizations
      ____ Info on groups of people (opinion polls, etc.)
      ____ Info on events (news, etc.)
      ____ Documents (legislation, laws, articles)
   3. If gopher is not used, why not?

4. Has the senator or any or all of the staff been trained in the use of gopher? Y N
   Which people?
   4a. The training was initiated/requested by:
      ____ The senator/staff member being trained
      ____ The senator
      ____ Another staff member
   4b. The training was performed by:
      ____ An professional trainer
      ____ A staff expert
      ____ Self-taught
      ____ Other (Please specify) __________

D. FTP--File Transfer Protocol (FTP) is the command used most often to download and upload files connected through the internet.
I. Does the senator use FTP? Y N
1a. How often? hourly daily weekly occasionally
2. Does the staff use FTP? Y N
2a. How often? hourly daily weekly occasionally
2b. What types of information are gathered from FTP?(check all that apply)
   ___ Data sets/statistics(census, crime rates, etc.)
   ___ Info on individual people/organizations
   ___ Info on groups of people(opinion polls, etc.)
   ___ Info on events(news, etc.)
   ___ Documents(legislation, laws, articles)
   ___ Software
3. If FTP is not used, why not?

4. Has the senator or any or all of the staff been trained in the use of FTP? Y N
   Which people?
4a. The training was initiated/requested by:
      ___ The senator/staff member being trained
      ___ The senator
      ___ Another staff member
4b. The training was performed by:
      ___ An professional trainer
      ___ A staff expert
      ___ Self-taught
      ___ Other(Please specify) ________________

E. News and Discussion Groups--newsgroups are ongoing discussion groups covering various topics
organized by subject. It is the internet's multifaceted bulletin board especially designed for people to
communicate news with one another on special interest topics. Newsgroups may be public or private.

1. Does the senator participate(i.e. read and/or submit postings) in any news or discussion groups? No, Yes hourly daily weekly occasionally
2. Do the staff participate in any news or discussion groups? No Yes hourly daily weekly occasionally
3. Does the office maintain or administer(i.e. host or moderate the discussions) any news or discussion
groups? Y N
   3a. If so, on what topics?

3b. What types of information are gathered from News and discussion groups?
   ___ Data sets/statistics(census, crime rates, etc.)
   ___ Info on individual people/organizations
   ___ Info on groups of people(opinion polls, etc.)
   ___ Info on events(news, etc.)
   ___ Documents(legislation, laws, articles)
4. If News and discussion groups are not used, why not?

5. Has the senator or any or all of the staff been trained in the use of News and discussion groups? Y N
   Which people?
5a. The training was initiated/requested by:
The senator/staff member being trained:
- The senator
- Another staff member

5b. The training was performed by:
- An professional trainer
- A staff expert
- Self-taught
- Other (Please specify)

F. Other
1. What other internet resources does the office use, and to what extent? e.g. Lexis/Nexis, FirstSearch, etc.

2. To what extent does the senator encourage use of internet resources, and how? (i.e. sending e-mail, buying hardware/software, paying for training, verbal encouragement, etc.)

3. Do any staff positions require knowledge of internet resources (i.e. it's in the job description)? Which ones?

4. List the primary uses the senator has for the information provided to him/her.