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2.1: Introduction to cyberspace

The space of interactive computational possibilities where computers and their contents are available to users of any participating computers anywhere is called the cyberspace [Ermel Stepp]. Cyberspace is where more and more of the information and knowledge is stored and transmitted but more importantly it is also the place where you are when communicating with somebody through computers.

The notion of cyberspace came about through the subjective experiences of people communicating through electronic mail or through computer conferencing on Bulletin Boards. It is felt by participants in these media that they are jointly 'entering' a shared space, shared forums. It also has an objective element viz that the computer is conscious of our presence that is not the case of non-digital media such as paper.
2.1.1: Cyberspatial tools:

We will have a parallel world existing next to the physical world that will actively engage all our senses. The traditional online databases that we use to retrieve formalised knowledge are first level cyberspatial tools. When we need contextual information available through live human beings with concrete experiences we need second level cyberspatial tools which not only allow information retrieval [man-machine communication] but also people-people communication. This is where personal email within and without organisations, collective mail based discussions, bulletin boards and computer conferencing systems come. Level three tools allow for cooperation in virtual offices in real time with telepresence or immersion technologies. Telepresence is a technology which lets you manipulate objects that are distantly located by allowing the operator to embody a remote robot. Immersion technologies allow distant participants to meet in the same virtual environment with the opportunity to collectively manipulate objects. These technologies are already being used or tested by
military in real life applications and won't take too long to emigrate to business environment.

2.1.2: Knowledge and information:

Cyberspace is so important because knowledge is the basic resource today. Knowledge is the meta resource which multiplies the effectiveness of other resources such as land labour and capital. It's very hard to define concepts like information or wisdom. As perceiving individuals we are surrounded by external stimuli. Those that come to our attention the atoms of the phenomenal world are facts. When transcribed into symbols these facts become data which when processed and transmitted a kind of information in a rough and unprocessed form. The haphazard data is organised as information which is external yet to be integrated into one's knowledge structure. The information has to be digested, compared, related and evaluated critically fitting into our knowledge structure. Information plus experience is knowledge. Knowledge is internal information related to past experience. When linked with the decision making process this actionable knowledge is called intelligence, the knowledge applied to the future. Wisdom is the last processing stage of intelligence fusing with one's
action when the gap between what one knows and what one does is abolished. In our post capitalist society, competitiveness is now dependent on applying knowledge at all stages of production. Value orientation is foremost a matter of intellectual capabilities and mental labour enhanced by computers and robots which are extensions of mind and bodies respectively.

2.1.3: Virtualisation:

Virtualisation also means the process whereby what is critical and vital for an organisation is increasingly taking place through the mediation of computers. Virtual corporations are pools of talent across companies and organisations configured together through cyberspace. Virtual communities are groups of people exchanging ideas in cyberspace. It is possible to anticipate a time a few decades hence when people will spend more time in remote [telepresence] and virtual realities than in their immediate surroundings.

The quest of mankind is one that aims to replace the realm of necessity by a realm of freedom. It means that in very simple terms we
want to replace what we have to do by what we want to do. One basic law is in this process is that matter is more expensive than energy and energy is more expensive than information. We produce more and more using ever lesser and lesser resources to do so and this process is a function of knowledge. Where matter is increasingly replaced by information this process is called virtualisation. In agricultural society matter was being transformed with physical tools and manual labour. In industrial society matter was being transformed by machines driven by processed energy and in information society machines driven by intelligence that is robots transform matter.

Consider the exponential productivity gains involved by using information technology. Just compare the production of papyrus, printed books and the one electronic book that can be instantly reproduced to mass audience of millions.

For individuals with disabilities, CMC helps them interact with peers, gain greater access to many kinds of resources, and eliminate some of the physical constraints of communication. Increased use of online
communication may improve literacy skills, and the disabled may gain opportunities for home employment.

While the Internet holds the potential to break down barriers often associated with a person's disability, there are limitations imposed by the Internet as well. In Computer Mediated Communication and the Online Classroom (1995), authors Berge and Collins point out, "...it becomes clear that there are many benefits to using CMC, but there are also some limitations that must be recognized."

Researchers in past decades have taken many approaches to analyzing human communication on computer and networked communication systems. Using a variety of frameworks for defining units of analysis, these researchers have examined an array of communication settings. For example, some research has explored the relationships between the characteristics of media systems and the characteristics of individuals using them (Hiltz & Turoff, 1978; Johansen, Valle, & Spangler, 1979). Other researchers have examined the human component of computer-mediated communication processes in detail, examining social-psychological factors.
(Kiesler, Siegel, & McGuire, 1984; McGuire, 1983; Spears, Lea, & Lee, 1990), as well as social context factors (Feenberg, 1989, 1992; Fulk, Schmitz, & Steinfield, 1990; Fulk, Steinfield, Schmitz, & Power, 1987; Georgoudi & Rosnow, 1985; Martin, O'Shea, Fung, & Spears, 1992; Schmitz & Fulk, 1991), and social cues (DeSanctis & Gallupe, 1987; Kiesler, 1986; McGuire, Kiesler, & Siegel, 1987; Rutter, 1987; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). This body of work presents a mixture of results that are very dependent on the context of the research setting. Integration of results, particularly at the theoretical level, is difficult.

Research focusing on media has likewise lead to insights, but little theoretical integration or comparison of results from study to study. Researchers have examined the diffusion and adoption of interactive media and found factors contributing to media technology adoption as well as patterns of how technology use develops in a community (Markus, 1987, 1990; Rogers, 1983, 1986). Other researchers and writers have looked at media evolution to identify societal and individual changes as a result of the use of communication technology (Havelock, 1986; Innis, 1972; Levinson,
More recently, media researchers have examined the notion of "media richness" to examine media selection in individual and organizational communication (Trevino, Lengel, Bodensteiner, Gerloff, & Muir, 1990; Trevino, Lengel, & Daft, 1987). This focus on media uses a variety of frameworks for defining units of analysis, or fails to define any units of analysis. As a result, it is difficult to piece together an integrative model to explain and predict media use, adoption, and evolution patterns, or even classify study results or theoretical statements.

Over the decades, research in computer-mediated communication has also explored myriad on-line experiences, focusing on human and social characteristics, media, and language and rhetorical content. However, the research has not led to much successful theoretical integration or cross-study comparisons. Indeed, some research has directly contradicted previous work (Lea, 1992). These settings have included stand-alone computer-to-computer communication, electronic mail discussion lists,
commercial and proprietary on-line services, commercial communication
and group-ware packages, and many other communication systems
(Rapaport, 1991). Similarly, the many theoretical approaches have
employed diverse terminology and definitions for units of analysis.

Added to this lack of theoretical integration have been the changes
and advances in Internet communication technology over the period 1969-
1995. While electronic mail and Usenet news-group discussions were the
early forms of communication used on the Internet, today the Internet
offers a far wider range of tools for information retrieval, communication,
and interaction than just text-based discussion and information
dissemination (December, 1995a). The use of the Internet also has rapidly
increased, with some Internet applications, such as the World Wide Web
(the system for linking documents associatively using hypertext),
experiencing very rapid increases in use and range of expression (December
& Randall, 1995).
2.1.4: Network protocol:

This common protocol scheme creates commonality for data exchange, with which TCP/IP networks can be connected in larger and larger communication systems. Individual organizations can run their own TCP/IP network (an Internet) and connect it with other local, regional, national, and global networks called Internet. This shared TCP/IP protocol suite is a cooperatively organized, globally distributed system for exchanging information. The data that traverses this network of networks is Internet communication.

2.1.5: Computer:

The term computer in the context of defining Internet computer-mediated communication means much more than just a device for calculation. In fact, the salient function of a computer as used for communication is not to provide computational capability, but to provide a platform for the operating system and software applications to support network data transmission and user applications.
On the Internet, the relationships among computers commonly follow the client-server model. A server is a computer and its associated hardware and software applications that act as a repository for information files or software programs. The server sends this information by request across the network to users of client software.

2.1.6: Mediation:

For Internet communication, mediation, the process of intervention involves encoding a message into electronic, magnetic, or optical patterns for storage and transmittal according to the rules of the client-server application and the TCP/IP protocol suite.

2.1.7: Transmission:

The transmittal of this mediated message on the Internet can also have a variety of mediation characteristics, including time, distribution, and media type. The time delay between sending and receiving messages can vary. It is instantaneous in applications where users take part in (nearly) "real time" text interchange. Internet applications where users engage in this communication include mass and group communication systems, such
Internet Relay Chat (IRC), and Multiple User Dialogue/Dimension/Dungeon (MUDs) or variants (known as MU* systems).

2.1.8: Communication

Internet-based communication is essentially human communication via the Internet computer network, so any definition of Internet communication necessary involves defining human communication itself. Human communication can be characterized as a process in which people exchange symbols. Internet content can be encoded and decoded using a variety of media types (text, graphics, sound, video, and executable file). Because of its mediated form, Internet communication often leaves a visible trail of artifacts that can be collected for study. For example, Usenet discussion groups produce a set of articles that can be examined and analyzed. Real-time discourse among a group of participants, such as in MU* systems, can be recorded in the form of a transcript. People use the Internet for communication in a one-to-one, one-to-many, or many-to-many setting. This communication can be used for scholarly activity and
research or for personal and group communication and discussion. Examples: Usenet, electronic mail, and Listserv.

2.1.9: Interaction:

People can use the Internet for the purpose of play or learning, not just for information transfer or discussion. Interaction spaces are often used for social activity and for group interaction and education. Examples: MU*s and IRC.

2.1.10: Information:

People use the Internet for dissemination and retrieval of information. This information deals with subject matter covering a wide range of human activities and knowledge. Examples are the World Wide Web, Gopher, and FTP. Defining what Internet communication is and showing how this definition encompasses a broad range of human communication, interaction, and information purposes are the first steps in characterizing the units of analysis for Internet communication research.
Media space - A media space consists of the set of all servers of a particular type that may provide information in one or more protocols, the corresponding clients that are capable of accessing these servers, and the associated content available for access on these servers.

Media instance - A media instance is a media object at a particular time. People perceive media instances, not media objects, classes, or spaces. However, colloquially, people often talk in terms of media objects and classes: "I watch TV" (space), "I watch TV news" (class), or "I watch the CBS news on my TV" (object). We, however, can actually experience only media instances, for example, "the CBS news on my TV last night for the first twenty minutes" (instance).

To specify a media instance, a researcher needs to specify a particular point in time for observing a media object. For example, the media object W, defined above, can be used to define the instance: W as observed on August 21, 1995, at 10:25 p.m. X watched the CBS news broadcast on Wednesday, August 30, 1995, for the first 10 minutes. (Implied in this
description is the specification of the server as X's local television broadcast station or cable service and her client as her particular model of TV set).

2.2: Uses and Gratifications perspective

The computer is an object with out a fixed or predetermined function. It may take the form of a work tool, a calculator, a toy depending on how the computer is used. The same can be said for on-line services: they can be used for research, correspondence, games and shopping, etc. If the computer and by extension on-line services really have no inherent set of functions, how do people decide how to use it?

Currently, while there is no formal explanation of why and how someone using on-line services, uses and gratifications might be an appropriate framework from which to examine on-line service use since the theory accepts the idea of an active audience. Newhagen argues that "the perspective seems to hold some prospect for understanding the Internet because it addresses the problem of its mutability...the Internet offers the user a broad range of communication opportunities...[and] uses-and-
gratifications offers a vehicle to lay out a taxonomy of just what goes on it cyberspace." (Newhagen, 1996) 30

The uses and gratifications approach to media studies is described by as one that looks at "(1) the social and psychological origins of (2) needs, which generate (3) expectations of (4) the mass media or other sources, which lead to (5) differing patterns of media exposure..., resulting in (6) need gratifications and (7) other consequences" [Katz, Blumler, and Gurevitch, 1974] 31.

Thus the social and psychological characteristics of people influence their motivations for using media sources. While the model posits a connection from the origins of needs to effects of media in that "the strength of needs (gratifications sought) will ultimately determine the impact of... any selected communication channel (Lometti et al., 1977)" this connection is rarely investigated" 32.

Currently uses and gratifications seems to be most useful for describing the various reasons or motivations for choosing one medium
over another one. Lichtenstein and Rosenfield (1984) found that "the
decision to utilize mass communications channels involves a two part
process. The first part involves the acquisition of normative expectations
about gratifications from different media. The second part concerns
individualistic decisions about how to seek gratifications." They explain that
since people "choose their media experiences according to the particular
gratifications,...research has focused primarily on the exploration of
audiences' decision making processes."  

People use their perceptions of the ability of a medium or channel to
fulfill them in making a decision to use that medium. "Media selection is
goal-directed, purposive, and motivated...in order to satisfy felt needs or
desires." (Rubin, 1994)  

Unfortunately there is no one master list of the gratifications
obtained from media use, instead there are numerous classification systems
and categories. Examples of gratifications uncovered in past research on
conventional media include a need for factual information, substitute
companionship, social validation, relaxation, behavioral guidance,
excitement, companionship and affective guidance (Lometti, op cit). These and other gratifications have been used in examining which media outlets people seek for what purpose.

The uses and gratifications model has been used extensively to look at television use, as well as other conventional media outlets, but it has also been applied to newer technologies such as VCR's (Rubin 1987). However, as of yet, little research has examined the uses and gratifications of computer based new media such as the Internet.

Deborah Cowles (1989) identified a "pivotal, unanswered question" which is whether people "to satisfy the same needs they have been thought to satisfy with the more traditional...media" use Videotext. She then examined the use of interactive media in the context of financial planning services from a uses and gratifications perspective. Her study suggests that the uses and gratifications approach holds promise for explaining interactive media use. Her study was not an investigation of "media gratification theory as it relates to interactive media". She was examining the utility and
consumer perceptions of interactive media in the context of seeking financial information$^{35}$.

Elizabeth Perse and John Courtright (1993), in a study conducted prior to the advent of the World Wide Web, compared how twelve different communication channels including television, VCR's, cable television, movies, conversation, newspapers, telephones, music, books, magazines, radio, and computers fill needs. Their study found computers to be ranked lower than the other media studied at fulfilling most all needs$^{36}$.

However, Nielsen estimates indicate that 37 million people in the United States and Canada use their computers to access the Internet and on-line services and these people spend considerable amounts of time on-line. Specifically the Nielsen study found that use of the Internet and on-line services averages 5.5 hours per week which is equivalent "to playback of rented videocassettes" (Nielsen Media Research 1995)$^{37}$.

Pitkow and Kehoe (1995) found that 78.4% of respondents use the World Wide Web daily. Additionally, anecdotes abound in the media of people addicted to on-line services and of children spending hours on the
Internet at the expense of homework. Users must find the computer and on-line services more effective than other media in fulfilling needs. There is no reason to devote large amounts of time to the use of the medium nor would World Wide Web users be reporting that they are using the web instead of watching TV (Pitkow and Kehoe, 1995)\(^3\). It seems that these services are being selected either to fulfill needs formerly met by other media or perhaps even needs not formerly met by conventional media.

Structural factors that affect viewing behavior and its outcomes have been the subject of a number of studies (Weibull, 1985)\(^3\). Webster and Wakshlag (1982)\(^4\) found that group viewing affected patterns of program choice and suggested that adaptation and integration of new media by users caused changes in their resource allocation, behaviors, and content reactions.

What communication needs do these services fill? Interestingly, "surfing the net" be motivated by more than a quest for information - by a need for entertainment or time passing. Computers are mainly information processing tools and educational tools, but according to market research,
computer purchasers cite information and education as the motivators for purchasing their computers. 70% of computer owners cite entertainment as the most frequent use of their computers. Given that finding it seems less surprising that Pitkow and Kehoe's World Wide Web User study (1985) found that 79% of respondents used the web for browsing, 63% for entertainment, and 51.8% for work.

Perse and Courtright's study does yield some information about the possible utility of computers for satisfying communication needs: Learning needs, passing time, and diversion were found to be the top three gratifications sought when using computers. Do these uses of computers also apply to on-line activities? It is easy to see how the ability to access information, use educational software, and exchange ideas with other people on-line are all ways people might meet learning needs through on-line service use. On-line games and videos, as well as, browsing or exploring the Internet are examples of time passing, entertainment, and diversion activities that are possible with the medium.
The Nielsen study and the Pitkow and Kehoe study found that common uses of the Internet include searching for information, browsing and exploring, e-mail, discussions, accessing news and magazines, and shopping. While some of these activities clearly fall into the three previously mentioned categories, other activities such as e-mail and on-line discussions could be used for any number of purposes. What about other possible reasons for using on-line services that are not seen in the conventional media including ones stemming from the use of alternative personas and identities on many of the services? Could the ability to transcend race, age, gender, and mobility motivate users of on-line services?

2.3: Media and Social Influence

The idea of a technologically determined communication revolution with far reaching social consequences has been a recurrent theme in both elite and popular discourse for 30 years or more. Current excitement over Internet and the so called information super highway is merely the latest version of a hype previously attached to cable, the personal computer, satellites and video text. The failure of each successive technology to
deliver on the revolutionary claims made for it by policy makers and business people does not appear to undermine this deep seated faith in technological determinism [Nicholas Garnham, 1995].

Conceptualised most often in terms of what humankind gains by virtue of its emergence, the Internet is equated with progress and advancement of civilisation [Garcia Hazel Dicken, 1998]. Communication and social influence are intimately related to each other for influence cannot occur without some form of communication [Walter, 1963]. If one theme underlies all systems of communication it is social influence adds Mortensen [1972]. Social influence of communication is a theme of interest for scholars like Alexander Lunia, Harold Innis, Marshall McLuhan, Walter Ong, Jack Goody, Elizabeth Eisenstein and for development advocates like Wilbur Schramm, Everett Rogers and Elihu Katz. The promise computer-mediated communication (CMC) holds for communication, social interaction, and the exchange of information is well known. The buzz words: computer conferencing, electronic mail, newsgroups, listservs, discussion forums, Internet Relay Chat (IRC) rooms, computer-assisted instruction (CAI) are doing the rounds. Indeed, it appears that CMC has the potential to
provide a range of opportunities for people of all ages, cultures, and socio-economic classes.

David Abrahamson offers five speculations about the future of the Internet. First the advertising would support a major portion of the form and cost. The medium itself will have to mediate between the attention getting needs of advertisers for more glaring commercial entities and the possible reader disaffection with the intrusion. Internet will continue to be transformed into a vehicle for the provision of very specific high value information to very specific high consumption audience. There will be a likely change in the nature and form of domain names to give detailed direction to audiences regarding the kind of information that is available at a particular site. The role of government in the evolution of Internet will quite deliberately be diminished. The fourth speculation focusses on the centripetal dynamic of media evolution significantly heightening levels of economic concentration in the entities that provide information on the net. The fifth point about Internet's future is that we know nothing. It is already likely that the emergence of the Internet will prove to be what historians term a world historical event [David Abrahamson, 1998]45.
Cultivation analyst George Gerbner [1970] conceptualised the impact on social values and life relating media and social structure, the structure and functions of the institutions that transmit them. He also delineates the idea of cultural indicators and their usefulness. Informed policy making and valid interpretation of social behaviour require systematic indicators of the prevailing climate of the changing symbolic environment. A central aspect of cultural indicators would be the periodic analysis of trends in the composition and structure of message systems cultivating conceptions of life relevant to socialisation and public policy [Gerbner, 1972]46.

Writing on Gerbner's approach Rosengren [1972] comments that Gerbner applied this basic idea primarily to violence on television. Connecting measurements of the amount of television violence with actual violence and with peoples' perceptions of actual violence showing that high amount of television violence consumed tend to lead to exaggerated beliefs about the actual amount of violence in society. But Gerbner maintains, may ultimately prepare the way to a more democratic society than the present one.
Further Rosengren [1972] states that it is obvious that this technique could have wide applications and Gerbner's instrumentarium covers a broad field of socio cultural phenomenon which covers the relationship between mass media content, mass media public and the institutions of the surrounding society and hence relevant to mass media and social change. This is what Stephen King [1975] observes while stating that psychological and behavioural changes are process changes. Process changes are result of interactive of a large number of variables without easily defined beginnings or ending. Indeed because process changes have an almost kinetic quality one might refer to it as changing rather than changes. The dynamic relationship between communications technology our culture and personal life could be understood by examining the experience of misdirection to television in early 1950s [Donnelly, 1986]. In the early 1950s, one overlooked the staggering characteristics of television technology, its speed and natural pervasiveness, its mimetic attractiveness and its easy internalisation. Yet the technology would have been understood had television been given different direction within the culture had the social contract between supplier and consumer gone beyond
facile satisfaction. Its impact would have been dramatically different. There could have been more to the message than the medium. But because we failed to imagine the impact of a technology that was far more than the addition of pictures to the innocence and modest power of radio, the technology followed its own path, and the medium did become the message. Without a practical imagination of the future our destinies are liable to be determined by outside forces and technology once again.

The future of the Internet will have nothing to do with how credit card numbers are given out, not given out, encrypted or decrypted for security purposes. It will have nothing to do with speeds of modems, issues related to bandwidth, or whether or not cable television companies will be able to deliver instantaneously what now takes thirty seconds to come up on your home computer screen [David Aubrey, 1997].

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37 Nielson Media Research/Commercenet Internet Demographics Survey: Executive Summary (1995 Nielsen Media Research)
Http://www.nielsenmedia.com/whatsnew/execsum2.html


41 Nicholas Garnham, preface to Patrice Flichy, Dynamics of Modern Communication, Sage, London, 1995


49 Donnelly William J [1986], *The Confetti Generation: How the New Communications Technology is Fragmenting America*. Henry Holt Co. NY.

50 Bandwith Blues, *Computer Shopper*, Feb 1997