THE COLLECTIVE MONOLOGUES OF CYBERSPACE

THE COLLECTIVE MONOLOGUES OF CYBERSPACE: EGOCENTRIC SPEECH & THE INTERNET

By

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Abstract

Multimedia computing offers a way of producing and integrating a variety of media in a variety of electronic forms. Creating multimedia requires a new repertoire of compositional skills and hence requires a reconstituted creative process. Currently, the most significant and fastest growing multimedia application is the Internet.

The prevailing critical approach to hypertexts centres on theories of discursive communities based on the works of Bakhtin, Foucault and others. Thus, David Mayer, of the Brown University Storyspace Cluster refers to cyberspace as "a pile of dead letters which awaits your perusal. Each letter contains its own distinct voice, while together, they create the whole of your reading." Similar analogies include "a library with all the books thrown on the floor". While the discursive community models appear to work, just what exactly comprises each community, "the community," or McLuhan's "Global Village"?

Recent work in Cultural Studies stresses the importance of developmental psychology as it pertains to theorizing the production and consumption of popular culture. Since the production and consumption of

Internet communication is inherently and predominantly language based, the intent of this work is to examine Internet communication through the theories of L.S. Vygotsky and Jean Piaget. Piaget and Vygotsky attempt to describe the way in which people, especially children, accompany a multiplicity of tasks with self-directed speech: *i.e.*, thinking out loud. The theorists differ primarily in regard to the use of such speech by adults. Piaget contends that this behaviour disappears before adolescence while Vygotsky maintains that adults continue to think out loud given the appropriate setting. Piaget's phrase, collective monologue, refers to the effect on a listener of a group of people thinking out loud simultaneously.

This paper explores the ways in which the faceless, fast-paced, streamlined, and often abbreviated nature of Internet communications mirrors "thinking out loud". In fact, Howard Rheingold remarks that J.C.R. Licklider and Douglas Engelbart, two of the earliest Internet visionaries, were hoping to augment or enhance human thought through computers (65-7). As far back as 1960, Licklider wrote: "in not too many years, human brains and computing machines will be coupled together very tightly, and that the resulting partnership will think as no human being has ever thought and process data in a way not approached by the information handling machines we know today"

(as qtd. in Rheingold 70). As this thesis and the data that supports it show, Licklider and his successors have been successful in creating a system which has changed the nature of human communication.

Acknowledgements

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For Michelle, who never minds my manic midnight musings or my aleatoric alliterations. Anyone's any was all to her.

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Introduction

Unlike anything that has preceded it, the Internet has revolutionized the computer and communication world. Its development has been compared justifiably to the invention the printing press. The Internet combines the earlier inventions of the telegraph, telephone, radio, and computer in an application of unprecedented capabilities. This network of networks is simultaneously a global broadcast system, an infrastructural safeguard, a resource for collaboration and information sharing, and a medium for interaction among widely dispersed individuals.

The prevailing tendency among Internet critics and theorists is to focus on the "discursive communities" that have emerged. The central question of my thesis is whether or not the Internet users who comprise the discursive communities exhibit forms of a behaviour called "egocentric speech," which was first documented by the Swiss psychologist and epistemologist, Jean Piaget. This phenomenon, which is described most simply as "thinking out loud" was observed while Piaget watched children play. He coined the term, "egocentric speech," because he believed that it reflects an inherent egocentrism in young children. In Piagetian terms, this egocentrism exists

because children are unable to consider a position other than their own. Michael and Sheila Cole explain that "children often fail to distinguish their point of view from that of others, become easily captured by surface appearances, and are often confused about causal relations" (162). Piaget reasoned that as children become socialized egocentric speech disappears since it is a socially unacceptable behaviour for any person over the age of about seven.

The Soviet psychologist, Lev Vygotsky, later developed his own theories based on Piaget's work regarding this phenomenon. Vygotsky's research, largely ignored or unknown in the West, indicates that egocentric speech can serve an actual purpose as an accompaniment or guide during the performance of tasks. Kenneth Rubin, a contemporary researcher in the Vygotskian tradition, provides the example of Keith, a four-year-old boy engaged in free play with a minimally responsive adult:

> I like dose animals on dose blocks. Da numbers 'n' stuff. Le's see . . . I *should get all da number ones together* [following verbalization, puts blocks on table]. All da wood ones are da number ones! (266)

Moreover, Vygotsky proposes that egocentric speech does not disappear as

children develop. Rather, it is internalized as children become adapted. Given the right environment or circumstances, egocentric speech can and will reappear in adult behaviour. Until now, this hypothesis has remained virtually untested and examples like the one above are at best anecdotal.

In spite of their differing approaches, both researchers used Piaget's term, "egocentric speech," to characterize their observations of children "thinking out loud" while at play or solving problems. Subsequent psychologists have tried unsuccessfully to find a more appropriate phrase to describe speech that is psychologically internal but physiologically external. The alternatives include "acommunicative speech," "self-directed speech," "self-regulating speech," and "private speech" (Zivin 9-10). Egocentric speech is used throughout this thesis for the sake of consistency. The connotations of the original appellation, as well as Piaget's original intent, are unfortunate, especially in the case of the present project, because the author does not in any way wish to imply that Internet communications are indicative of an inherent egocentrism. Rather, it is intended that a re-evaluation of egocentric speech, and especially its adult variety, will demonstrate that J.C.R. Licklider, one of the earliest proponents of the Internet, was correct in his belief that the

Internet would fundamentally change the way people think and communicate.

Adult egocentric speech differs from the childhood form in that it is highly abbreviated and lacks functors and grammatical structure. Since the meaning is already known to both speaker and receiver, this streamlined type of speech is more efficient. The distinction occurs because the sender does not need to encode the abbreviations into words and is therefore able to more closely mirror thought as he or she types. Rubin relates:

> A nice example of such abbreviated speech may be illustrated by reading the classroom notes written by undergraduate students. These notes generally lack functors, use abbreviations, and are [often] uninterpretable to others -- unless of course those others are highly familiar with the writer's restricted language style (it should be noted that the oft-suggested recommendation, "Let's skip class and borrow Amy's notes.", should be accepted with caution unless Amy happens to be a good friend or is a copious note-taker). (267)

In the second example from Rubin, Amy faces a number of constraints that affect the way in which she takes notes: the speed with which the professor delivers the lecture; the speed with which she writes; the amount of space on the page; her vocabulary of shortforms; the technicality and formality of the subject matter. All of these factors have analogs in Internet communications.

The Internet also lacks the conventions of traditional written or oral discourse. Both of these factors tend to reduce further the vetting of the messages being exchanged. Thus, the Internet environment allows and encourages users to "think out loud" when they communicate.

It is not the intention of this study to settle the debate between Piaget and Vygotsky regarding egocentric speech. In fact, Gail Zivin explains that the contemporary belief among psychologists is that Piaget and Vygotsky may have been describing different forms of a phenomenon or different phenomena altogether and that their true disagreement is "on the relation between thought and language" (14). In "The Nature of the Social for Piaget and Vygotsky," Richard Kitchener summarizes the difference:

> For Piaget, the individual is primary and the social secondary, whereas for Vygotsky, the social is primary and the individual secondary. Hence, the mind (or the mental) is internal and private according to the first account but external and public according to the second. (243)

While Vygotsky was heavily influenced by Piaget, the latter largely ignored his Russian counterpart. It is for this reason that René van der Veer refers to their abortive dialogue as a "collective monologue" in his history of the two

psychologists (237). Collective monologue is Piaget's term for (egocentric) speech that occurs in the presence of others but is not necessarily communicative and is often uttered because the speaker believes he or she is interesting to others (Cole and Cole 308-9).

The opening chapter of my thesis will begin by outlining key events in the development of the Internet. The major components of the Internet and the ways in which they function will also be provided as they are essential to the creation of an environment that facilitates manifestations of egocentric speech. The chapter will then present a discussion of egocentric speech in both Piagetian and Vygotskian terms, elaborating the forms and functions of this mode of speech as documented by each psychologist. Brief mention is also made of the findings of a survey conducted during the preparation of this thesis. The survey supports the previously untested theory that egocentric utterances will occur in adulthood.

The second chapter begins by examining in detail the factors which combine to create an environment in which egocentric speech by adults will flourish. Once the environment is established, a learning mechanism is needed to ensure that the behaviour will be perpetuated. The Internet, with its ability

to produce exact copies of nearly all communications, provides a nearly perfect transmission model for learning. Additionally, certain Internet applications, such as search engines, not only encourage, but require users to "think out loud." This chapter continues with examinations of specific examples of Internet communications and websites. While an exhaustive study is beyond the scope of this project, it does provide clear evidence that Internet communications approach an unprecented level of congruence with the human thought process. A larger exploration into psycho-linguistics will only demonstrate this theoretical position in greater detail.

1.1 Links: A brief history of the Internet

Given the several million Internet sites extant, it is surprising how little information is available regarding the history of the Internet.[1] The majority of Internet-related texts and periodicals fall into the "how to" category. Perhaps the scarcity of details about the development of the Internet is related to its original military purpose. According to the Internet Society (ISOC), the launch of Sputnik by the former Soviet Union, in 1957, is, at least in part, a determining factor (Timeline). In response to the real or supposed threat to the security of the United States posed by Sputnik and its successors, the Advanced Research Projects Agency (ARPA) was created in the same year. The agency's name was later changed to DARPA after the word "Defence" was added.[2] ARPA's mandate was, and continues to be, to maintain the American lead in science and technology, especially as it applies to the military.

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[1]In strict terms, an internet is a network of many networks such as those which are connected worldwide and use the Transmission Control Protocol or Internet Protocol (TCP/IP) (Delphi). The TCP/IP are the protocols used to transmit bundles of data, or data packets, on the Internet. Virtually all Internet sites utilize the IP.

[2]In fact, ARPA became DARPA for the first time in 1971. The name was changed back to ARPA in 1993 and subsequently back to DARPA in 1996. (Leiner)

As was demonstrated during the Persian Gulf War, in 1991, the first and most important targets to be attacked in any large-scale conflict are the command, control, communication, and information (C^3I) links. Since these vital chains are often centralized, which increases their vulnerability, their removal can lead to a complete and catastrophic breakdown of any nation's infrastructure. In order to ensure the stability of the American C^3I network in the event of a disaster, ARPA initiated the projects which ultimately led to today's Internet. Leiner *et al* explain:

> The first recorded description of the social interactions that could be enabled through networking was a series of memos written by J.C.R. Licklider of MIT in August 1962 discussing his "Galactic Network" concept. He envisioned a globally interconnected set of [networks] through which everyone could quickly access data and programs from any site. In spirit, the concept was very much like the Internet of today. (Leiner)

Licklider was the first head of computer research programs at DARPA. His "Galactic Network" concept was inspired by Douglas Engelbart's earlier study, "The Augmentation of Human Intellect" (Rheingold 70). Engelbart, an engineer by training, had been a radar operator during WWII. Based on this experience, he understood "that if these machines can show you information on punchcards and printouts on paper, they could draw that information on a

screen. When I saw the connection between a cathode-ray screen, an information processor, and a medium for representing symbols to a person, it all tumbled together in about half and hour" (as qtd. in Rheingold 65). As Rheingold recounts, Engelbart "got a job in the early 1960s doing some respectably orthodox computer research at a new think tank in Menlo Park, California, the Stanford Research Institute" (70). Engelbart hoped to create an environment to join groups of people and computers.

Licklider later convinced his successors of the importance of the vision he shared with Engelbart, "that if he could get the right information into the computer's memory, he would be able to fiddle with data, draw graphs, and find citations -- what he called 'getting into position to think' -- far more efficiently" (Rheingold 71). In 1962, the new network Licklider described in his paper, "On-Line Man Computer Communication," was intended to enable communications among defence contractors and research establishments to continue even if some sites were destroyed. In theory, direct routing would not be necessary, or even vital, since routers would ensure that information reached its intended destination.[3]

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[3]A router is used to connect networks. Unlike bridges, which connect local area networks (LANs) of similar types, routers can connect networks of different types. Often, a router will pass bundles of information (packets) to

In July of 1961, Leonard Kleinrock, of MIT, wrote the first paper on packet switching theory.[4] Communication using packets is simpler than using circuits. Thus, Kleinrock was able to convince Lawrence Roberts, then head of DARPA's computer research program, that Licklider's dream was possible. The physical confirmation of Kleinrock's theory came during a demonstration project in 1965. As Leiner *et al* describe, the next major step was to make two computers "talk" to each other. To do this

> Roberts connected the TX-2 computer in Mass. to the Q-32 in California with a low speed dial-up telephone line creating the first (however small) wide-area computer network ever built. The result of this experiment was the realization that the time-shared computers could work well together, running programs and retrieving data as necessary on the remote machine, but that the circuit switched telephone system was totally inadequate for the job. (Leiner)

Following this experiment, Roberts quickly formulated a plan to develop a larger computer network for DARPA. Roberts called this network the

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other routers, providing alternate routes where necessary, until the final destination is reached. (Delphi)

[4]Packets are self-contained bundles of data sent over packet switching network. For ease of transmission, long files are broken down into packets. These packets, typically 1500 bytes in size, are then reassembled at the destination. Packets contain such familiar data as headers with sender/receiver information, sequences of packets, and error checks. (Delphi)

"ARPANET" and published his concept in 1967.

DARPA is not the only agency that can lay claim to the creation of the Internet. Under a grant from the United States Air Force, Paul Baran of the RAND Corporation wrote the research paper, "On Distributed Communications Networks," in 1962. This study of the feasibility of packet switching networks for secure voice transmissions was made public in 1964. Since he was specifically trying to create a system that would preserve communication links in the event of a preemptive nuclear strike by the then Soviet Union, Baran made the initial assumption that the network would be inherently unreliable and vulnerable (Sterling).[5] Therefore, it is designed to function in spite of itself so that any breaches can be overcome by multiple and redundant routing. Further, the network has no central authority. Rather, all nodes have equal authority to send and receive messages, thereby enhancing the network's ability to operate while in tatters. While the messages may take

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[5]This point is significant because Leiner and his co-authors, who were also his colleagues in the development of the ARPANET, claim in their footnotes that "It was from the RAND study that the false rumour started claiming that the ARPANET was somehow related to building a network resistant to nuclear war. This was never true of the ARPANET, only the unrelated RAND study . . . considered nuclear war" (Leiner). However, they do allow that later work "did emphasize robustness and survivability, including the capability to withstand losses of large portions" (Leiner).

a circuitous route, they still reach the intended receiver.

While the ARPA and RAND groups were working independently of each other in the United States, the National Physical Laboratory (NPL) in the United Kingdom embarked on a similar project. The three groups met for the first time in 1967 at the Association for Computing Machinery (ACM) symposium (Hardy 6-7). It was at this conference that the word "packet" was adopted from the studies at NPL (Leiner). Subsequently, NPL set up the first test network, the NPL Data Network, based on the packet switching theories, in 1968 (Sterling).

With the success of the NPL project, Roberts and the DARPA research team developed the specifications for the overall structure of the ARPANET. The first ARPANET Interface Message Processor, i.e., the actual packet switch, was installed at UCLA in 1969.[6] Additional nodes were established at the Stanford Research Institute (SRI), UC Santa Barbara (UCSB), and the University of Utah (NCS 1). The site at SRI included NLS, an early hypertext

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[6]Interestingly, the IMP is occasionally and erroneously called an Information Message Processor, as in Hardy (7). Humorously, Sen. Edward Kennedy is reported to have congratulated the IMP development group for their ecumenical spirit in producing an "Interfaith Message Processor". (Delphi)

system.[7] The nodes at the Utah and UCSB "incorporated application visualization projects . . . [with] UCSB investigating methods for display of mathematical functions using storage displays to deal with the problem of refresh[ing remote displays] over the net [as relevant information is changed] . . . [and with] Utah investigating methods of 3-D representations over the net" (Leiner). Utah was also significant as the first site capable of being accessed remotely (Hardy 7). By the end of 1971, there were fifteen nodes and twenty-three hosts on the ARPANET (NCS). In 1973, the first international sites were added to the ARPANET, at the University College of London (U.K.) and the Royal Radar Establishment (Norway) (Timeline). Once these connections were complete, the first portion of the Internet was up and running.

To become a true Internet, the ARPANET would have to be connected to one or more additional networks. The origins of this project can be traced to the International Computer Communication Conference (ICCC), in October, 1972. This conference was organized to present the first public display of the ARPANET. For the purposes of the exhibit, forty computers were connected to

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[7]Hypertext refers to any text which includes visible links to other pages of text or media. These links are accessible by clicking or selecting the pertinent text. (Delphi)

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In order to improve the situation, Ray Tomlinson wrote the first electronic mail (email) send-and-read software in March 1972 (Leiner, Timeline). An enhanced version of the application, capable of listing and selectively reading, filing, forwarding, and responding to messages, was added in July 1972 by Lawrence Roberts (Leiner, Timeline). Tomlinson and Roberts had unexpectedly produced a program that would become the most popular network application for over a decade. Also unanticipated, but very important to the current project, was the nature of the email messages. As early as 1978, J.C.R. Licklider and Albert Vezza remarked that a new method of communicating developed along with the new application. They marvelled that

> in an ARPANET message, one could write tersely and type imperfectly, even to an older person in a

> superior position and even to a person one did not know very well, and the recipient took no offense. The formality and perfection that most people expect in a typed letter did not become associated with network messages . . . Indeed, tolerance for informality and imperfect typing was even more evident when two users of the ARPANET linked their consoles together and typed back and forth in an alphanumeric conversation. . . . [Additionally] one could proceed immediately to the point without having to engage in small talk first . . . (as qtd. in Hardy)

Licklider and Vezza considered the streamlined and abbreviated -- perhaps even abrupt -- character of email messages to be an intrinsic advantage. The preference for terse messages may have stemmed from the need for efficiency and the lack of available memory and disk space in the early computers.[8] Nevertheless, the email software facilitated the kind of Internet communications still in use today.

ARPANET would eventually be divided into ARPANET and MILNET, in 1983. MILNET was merged with the Defense Data Network and assumed all military functions. By 1990, ARPANET had ceased to exist (Hardy 8, Timeline). However, the email capabilities developed for ARPANET led to the

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[8]For example, the first ARPANET messages were transmitted using a Honeywell 516 mini computer -- i.e., a mini mainframe -- with 12Kb of memory. By way of comparison, the notebook computer being used for much of this thesis has 32Mb, or nearly 2700 times more memory.

creation of other important parts of the Internet. Hardy explains:

> Store-and-forward networks used the technology of electronic mail systems and extended them to what we now call conferencing. A conference in this sense is somewhere in between broadcasting (one-way, one-to-many) and electronic mail (two-way, one-to-one). Conferencing is two-way and one-to-many. (8)

As with electronic mail, store-and-forward networks hold messages in storage until they are accessed by the receiver and allow two-way communication. However, the conferencing networks have the added benefit of being able to reach multiple receivers in two-way communications. Initially, these networks were slow and inefficient, especially when compared to today's systems. Eventually, the emergence of USENET, BITNET, and Fidonet would improve the performance of the networks and form an important part of the current Internet.

The USENET was made possible by the earlier use of the Unix to Unix Copy Protocol (UUCP) in a similar network. Researchers at AT&T's Bell Labs originally created UUCP for use within the company. Its success led to the implementation of UUCP in THEORYNET at the University of Wisconsin (Timeline). THEORYNET was produced to allow institutions not connected to the ARPANET to have the advantages of linked computer systems. Ultimately, scientists at DARPA developed a gateway, or router, to link THEORYNET

with ARPANET using the TCP/IP protocols in 1980 (Hardy 9). Vinton Cerf, currently Senior Vice-President, Internet Architecture and Engineering at MCI, was the DARPA scientist responsible for this program, generally considered to be the basis for the Internet as we know it.

One of the most important features resulting from THEORYNET was the Domain Name System (DNS). The DNS no longer requires each host computer used to connect to the Internet to store the exact location of every single Internet address. Instead, the new system makes use of Domain Name Servers (also DNS). Domain Name Servers contain a database which holds all of the necessary information regarding site addresses. Routers consult the appropriate DNS as the information is passed. This approach simplifies communications by reducing the complexity of the host computer system for the users.

The USENET, or Unix User Network, is known more commonly as the home of the more than 2400 newsgroups on the Internet.[9] The software for the USENET was written in 1979, by Steve Bellovin, at the University of

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[9]This is an approximate figure based on the newsgroups accessed by the author's Internet Service Provider (ISP) as of June 4, 1998. The total varies as groups are added or removed. Additionally, some ISPs either cannot -- due to physical or technological restrictions -- or do not -- due to concern regarding the content of certain newsgroups -- provide access to all newsgroups.

North Carolina (Timeline, Hardy 10). Unlike other early networks, USENET was not developed for use by a specific community, *i.e.*, researchers and the military. Thus, the architecture was more flexible, as it was intended for a more general audience. Further, the users of the new system were more liberal because their actions were not restricted to military or research purposes only. The USENET is an example of a store-and-forward network. Its contents are arranged within a branched hierarchy. The main branches -- alt, biz, misc, rec, *etc.* -- are divided by topic, into newsgroups. Within each newsgroup, users access a list of threads, or message topics, that were sent previously to a server.[10] Upon request the full text of the postings are forwarded to the user. The user then has the opportunity to reply to the message, store it, print it, or manipulate it in a variety of fashions.[11] Moreover, any user can add a new

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[10]A new thread is created each time someone posts a message on a new subject to a newsgroup. Responses to the original message form a new level in the hierarchy to which more branches may be added by further responses. The process of adding layers continues until the thread "dies" by being inactive for a specified period of time. Successful or popular threads frequently undergo name changes which helps to prolong their lives.

[11]One of the more interesting functions available is the kill file, or "bozo filter" (Rheingold 119). A kill file contains the names of people whose postings a user never wants to see again. For example, during the collection of data for the survey portion of this thesis, two people were added to the author's kill file due to their needless and vociferous flames. The author was threatened with similar treatment by these same people for allegedly "clogging the newsgroup

message to any newsgroup at any time.

One of the most important events in the short history of the USENET was the breaking of the "backbone cabal," in 1987. The backbone cabal was a "quasi-anarchic ruling council . . . consisting of the system administrators who ran the computers at the sites that were carrying most of the traffic for the UUCP" (Rheingold 120).[12] The administrators of the USENET backbone refused to carry newsgroups dealing with recreational sex and drugs -- rock'n roll was added later for "aesthetic purposes" (as qtd. in Hardy). The participants in the newsgroups devised alternate paths in order to continue the transmission of the previously taboo topics. The "alt" hierarchy was created to handle the traffic. The use of the IP for USENET messages combined with the new hierarchies to make the cabal an "historic artifact" (Rheingold 120). The result, according to Rheingold, is that "USENET continues to be ruled by norms, not individuals, or organizations. If you violate one of the norms . . . you'll get a lot of angry e-mail, and people might refuse to give you newsfeeds,

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with spam" (as qtd. in email 1 July 1998).

[12]Generally, a backbone is a central network connecting other networks together. The original backbone was run by the U.S. government's National Science Foundation. There are now multiple backbones run by commercial providers such as MCI, Sprint, UUNET, and AT&T. (Delphi)

but no USENET cops are going to show up at the door" (120-1). Essentially, the USENET is a virtual soapbox or a global computerized version of the notorious Speaker's Corners in London and Toronto.

Just two years after the USENET was created, another important network using store-and-forward technology was developed, in 1981. This network, named BITNET, was started as a cooperative venture between the City University of New York and Yale University. The BITNET name was originally an acronym for "Because It's There Network" (Timeline). This appellation referred to the use of free protocols provided with IBM systems at the time. Later, the meaning of the acronym was changed to "Because It's Time Network." BITNET utilizes electronic mail and listserv servers to distribute information and transfer files. People wishing to receive the messages that make up the discussion lists hosted on BITNET must subscribe to each desired list. Like USENET groups, discussion lists are divided by topic. Unlike USENET groups, discussion lists are almost always moderated (netspeak for "censored"). The world of BITNET is therefore more restrained and conservative than the USENET since flames and controversy are avoided. Would-be disturbers of the peace are usually told to take their disputes to email. The primary advantage of BITNET is that anyone with access to email

can join as many lists as he or she pleases.

As the commands for the various parts of the Internet became standardized, it became substantially easier for non-technical people to use. Software packages such as *Archie*, the first index of internet sites, developed in 1990 by Peter Deutsch and his team at McGill University, further reduced the amount of work and knowledge required of users, although *Archie* still required a proficiency in Unix (Delphi). In 1991, the University of Minnesota developed the *Gopher* interface to the Internet (Timeline). *Gopher* was intended to be a menu-based system to access files and information through the local network on the university's campus and can still be used to find sites around the world. It was a significant development since it requires no knowledge of Unix or computer architecture to use and was designed to operate on small computers instead of the traditional mainframes.

While *Gopher* may have been the first "user friendly" Internet interface, Tim Berners-Lee, a researcher at the European Laboratory for Particle Research (CERN) had actually proposed an even more friendly application two years earlier. Berners-Lee introduced a new protocol for information distribution based on the hypertext concept. Earlier systems had used embedded links, but the new protocol, which became the World Wide Web (WWW) in 1991, was

based on a Hypertext Markup Language (HTML). The advantage of the Berners-Lee's concept is that HTML would be transportable to any computer. In 1993, Marc Andreeson and his team at the National Center for Supercomputing Applications developed *Mosaic*, the first graphical Internet browser (*i.e.*, using a icons and a pointer such as a mouse, as opposed to a menu system like *Gopher*). Andreeson would later head the development of *Netscape*. These browsers helped the WWW to quickly become the most popular Internet application, a position it has yet to relinquish.

1.2 Frames: Piaget, Vygotsky, and Egocentric Speech

Within the field of psychology, it is an established perspective that thinking is interwoven with speech. An early psychological view held that an explanation of the nature of thinking can be reduced simply to internalized speech (Vygotsky, Works 3, 24). The American psychologist, John B. Watson, the founder and leader of behaviourism during the 1920s, concluded that the development of thinking progresses in the following fashion: loud speech - whispering - internal speech.[13] Watson's conclusion was in direct opposition to that formed earlier by experimenters at the Würzburg school.[14] Their studies, carried out at the beginning of the century, had appeared to indicate that thinking and speech do not coincide.

Thus, there were two contrasting viewpoints with respect to thinking

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[13]Behaviourism, or the environmental-learning perspective, is a school of psychological thought that maintains that biological factors provide the foundation for development, but developmental changes are predominantly caused by environmental factors.

[14]The Würzburg school was a tradition in the study of the psychology of thinking that developed at the beginning of the twentieth century in the psychological institute in Würzburg, Germany. Oswald Kulpe was its founder and Narciss Ach and Karl Buhler were its most prominent members. The Würzburg school primarily proposed that thinking is imageless and instead consists of relationships and integral sets.

and speech: the position that thinking and speech fully coincide and the position that thinking and speech are unrelated. These one-sided theories dissected the verbal thought processes observed in "adult civilized persons" into irreducible elements (Works 3, 24). Vygotsky found the attempts to link thinking and speech to be the major failings of early theories. In Vygotsky's opinion, early psychologists considered the connection a "purely mechanical dependency between two different processes" (Works 3, 24). Using an historical-genetic approach, Vygotsky sought to determine and redefine the relationship between thinking and speech.

The historical-genetic approach had been successful in the 1920s for Wolfgang Köhler. Köhler's study of apes revealed what he called instrumental intellect, which appeared to be connected to human thinking, particularly the verbal form. In other words, instrumental intellect phylogenetically precedes human thinking. Additionally, Köhler and other researchers found several analogues of human-like speech in the apes. However, a link between these rudimentary types of speech and instrumental intellect was absent. Based on this information, Vygotsky concluded that verbal thinking develops due to the mediation of speech during an early stage in which thinking and speech converge. Vygotsky's colleague, Aleksei Leont'ev recalls:

> Vygotsky expressed this idea in an aphoristic manner, paraphrasing the famous words from Faust. Instead of the biblical, "In the beginning was the word" Goethe writes "In the beginning was the act." For Vygotsky, in the problem of the genesis of thinking, the logical emphasis transferred to the words "in the beginning." Thus, *in the beginning* was the act (practical activity), which became mediated by the word. (Works 3, 25)

Thus, Vygotsky was certain that he had found the origin of the problem in the phylogenesis and, in principle, something similar should take place in ontogenesis.[15] That is to say, if thinking and speech appear to converge during the development of humans, as a species, then this phenomenon should be observable in an individual.

In this latter regard, Jean Piaget investigated thinking and speech during the 1920s. As a result of his studies, Piaget observed and described the phenomenon of what he would later call egocentric speech. Piaget noticed that children at play will tend to speak out loud even though no one is listening or even present. He noted three forms of egocentric speech: echolalia, or simple repetition, monologue, and collective monologue. Additionally, the children's

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[15]In psychological parlance, phylogenesis is the course of development of a genetically related population, as opposed to individuals within that population. Ontogenesis, then, is the course of development of an individual within a population.

remarks actually focus on what they are doing by themselves. In The Development of Children, Michael and Sheila Cole include the following example of a collective monologue:

> **Jenny:** They wiggle sideways when they kiss.
> **Chris:** (vaguely) What?
> **Jenny:** My bunny slippers. They are brown and red and sort of yellow and white. And they have eyes and ears and these noses that wiggle sideways when they kiss.
> **Chris:** I have a piece of sugar in a red piece of paper. I'm gonna eat it but maybe it's for a horse.
> **Jenny:** We bought them. My mommy did. We couldn't find the old ones. These are like the old ones. They were not in the trunk.
> **Chris:** Can't eat the piece of sugar, not unless you take the paper off.
> **Jenny:** And we found Mother Lamb. Oh, she was in Poughkeepsie in the trunk in the house in the woods where Mrs. Tiddywinkle lives.
> **Chris:** Do I like sugar? I do, and so do horses.
> **Jenny:** I play with my bunnies. They are real. We play in the woods. They have eyes. We all go in the woods. My teddy bear and the bunnies and the duck, to visit Mrs. Tiddywinkle. We play and play.
> **Chris:** I guess I'll eat my sugar at lunch time. I can get more for the horses. Besides, I don't have no horses now.
> (309)

The collective monologue behaviour is distinguished from monologue because the latter occurs when the child is alone.Piaget coined the phrase "collective monologue" to characterize simultaneous outbursts of egocentric speech among

children in a group (Cole and Cole 308-9). In this form, each child speaks to a nonexistent external other, or subject. Thus, egocentric speech persists, *even in a social context*.

Piaget attributed this form of speech to the manifestation of inherent egocentrism and asocial behaviours in children. In fact, Piaget classified all speech by children as either egocentric or social. By egocentric speech, Piaget was concerned with a speech form that is distinguished primarily by its (lack of) function although he only noted the form the speech takes. Piaget wrote that "this talk is egocentric partly because the child speaks only about himself [or herself], but chiefly because he [or she] does not attempt to place himself [or herself] at the point of view of his [or her] hearer" (Thought 9). In Piaget's view, since egocentric speech is not a method of social interaction, it cannot have a communicative function. Rather, the function of egocentric language is to serve as an accompaniment to the thought or action of the individual. It is speech that cannot and does not have any significant effect on the child's activity and is nearly incomprehensible to anyone who happens to hear. According to Piaget, egocentric speech dies off as the child is socialized and

becomes able to consider the points of view of others.[16] Collective monologues, then, give way to real dialogues.

Vygotsky's book, Thinking and Speech, was intended to be a polemic against Piaget and his findings. As Leont'ev explains, in the course of his investigations, the Russian researcher

> convincingly showed that [the purpose and development of egocentric speech] is exactly the opposite. Egocentric speech is originally social. It does not fade away, but becomes internal speech. It is internalized. It is the most important means of thinking which is born in the external, objective activity of the child. . . . the thinking which develops from practical activity is *mediated* by speech, by the word. (Works 3, 25)

The stated goal of Vygotsky's research was to "attain a unified perspective on the entire system, to identify and critically interpret the threads (threads that are not always immediately apparent) that link these separate studies in a unified theoretical whole" (Works 1, 68). The Soviet psychologist could not

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[16]Vygotsky prefers the term "communicative speech" rather than the term "socialized speech," as used by Piaget. Vygotsky and Luria explain: "The notion that speech is socialized is incorrect in that this implies that [egocentric] speech was originally non-social, that it becomes social only through development and change" (Works 1, 74). As a point of further clarification, they add: "It is only after an initial stage where . . . speech is a purely social phenomenon, only in subsequent growth and development, that we begin to see a sharp differentiation of social speech into egocentric speech and communicative speech" (Works 1, 74).

have known how prophetic his choice of words, especially "thread," "link," "interpret," and "unified whole," would be with respect to this project.

Vygotsky based his research on the assumption that at a very early age, "egocentric speech begins to fulfil the function of primitive speech-thinking: thinking aloud" (Reader 110). He further hypothesized that egocentric speech "should be regarded as the transitional form between external and internal speech" (Reader 110). Since it is vocalized, egocentric speech is physiologically external speech but is inner speech psychologically. Children utilize egocentric speech for the same purposes for which adults use inner speech. Vygotsky was able then to reformulate Watson's sequence of fundamental stages in speech development. The new sequence became the following: external speech - egocentric speech - inner speech (Reader 110). This new order reflects the position that egocentric speech is inherently social in function.

The major point of divergence between Piaget and Vygotsky is the cessation of egocentric speech. In Vygotsky's words, this issue "constitutes the vital nerve of Piaget's entire perspective on this phenomenon" (Works 1, 69). Piaget was certain that egocentric speech, i.e., speech merely and solely for oneself, eventually disappears completely. Piaget's position was based on the assumption that as egocentrism is displaced, it moves to another level and

begins to govern abstract verbal thinking and manifests itself in ways which are not analogous to the egocentric utterances of young children. Lacking both a function and a link to thinking, egocentric speech simply evaporates. However, Vygotsky demonstrated that egocentric speech plays an important role in regulating children's actions and permitting them to organize and perform tasks. Vygotsky and his most noted assistant, Alexander Luria, relate:

> Social forms of behaviour are more complicated and are in advance in their development in the child; when, however, they become individual, they are 'lowered' and begin to function according to simpler laws. Egocentric speech *per se*, for instance, is structurally lower than normal speech, but as a stage in the development of thought it is higher than social speech in the child of the same age; that may be the reason why Piaget regards it as the predecessor of socialized speech and not as a form derived from it. (Reader 153)

Though primitive in nature, egocentric speech still provides children with a preliminary method of control over self and action. As children's ability to control themselves and their environment improves, egocentric speech becomes internalized rather than extinguished.

Admittedly, little or no proof exists to support Vygotsky's contention that egocentric speech can be re-externalized by older people. This may be due, in part, to the prominence of Piaget in Western psychology. As well, there are

few studies based on Vygotsky's works. Laura Berk notes that only one book based on the Russian's theories of egocentric speech has been written (vi) and less than fifty studies have been undertaken (3). For these reasons, a survey was distributed on the Internet in the hopes of finding support for Vygotsky's assertion that adults can and do use egocentric speech in certain situations. The data obtained from this survey is included in Appendix A. The range of the ages of the respondents is 14-60. According to Piaget, none of these people should exhibit egocentric speech. However, the results of the analysis indicate that Piaget is incorrect in this regard. Based on the data received, we can be 99.5% sure that egocentric speech persists in adults. Further, egocentric speech continues to perform the same functions for adults, as the experiences of several respondents indicate. GITREKKER writes:

> Sometimes when I am
> writing a story, I find that it is useful to get away from the computer, and
> even my apartment, and take a walk. I will often "act out", sometimes aloud,
> the character parts to see if they "sound" believable or appropriate to me.
> (Email to author 8 July 1998)

For GITREKKER, thinking out loud is an accompaniment to the task of writing and an aid in problem solving. As a whole, these characterizations may be conducted consciously, but their content is contemporaneously conceived.

Charles adds a similar account:

> From my experience, I typically speak as I type and read. I find that my
> ability to retain information is increased by this method, however it
> greatly decrease the spped in which I read.
> (Email to author 7 July 1998)

When considered together, the anecdotal experiences and the survey data collected in the preparation of this thesis support the assertion that egocentric speech is a part of adult life. Instead of egocentric speech disappearing as the child becomes socialized, it is entirely possible that it becomes more difficult to detect as the child becomes more proficient in the use of language.[17]

Vygotsky and Luria also demonstrated experimentally that egocentric speech is linked to social speech. Social speech, they explain, "always consists of emotional and expressive elements, communications as to what [the child] intends to do, and so on"(Reader 119). Vygotsky and Luria found that the links between egocentric speech and social speech occur through

> thousands of transitional forms . . . Very frequently these transitional forms were not clear enough for us to determine to what form of speech one or another

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[17]Anyone who has had the opportunity to sit next to a loquacious person while traveling in a plane, train, or automobile will also note that we are generally socialized to tolerate the speech of adults, and especially people older than ourselves, no matter how boring, monotonous, or trivial their stories may be. Generally, such tolerance is not afforded children.

> of the child's expressions could be related. This resemblance and mutual relation of both forms of speech is reflected in the close ties of those of the child's functions which are carried out by both forms of the child's verbal activity. (Reader 119)

The use of egocentric speech increases during problem-solving processes, especially in the absence of an external other, or subject. The greatest developmental change, as Vygotsky himself emphasized, occurs when instead of appealing to an adult for assistance, socialized speech previously addressed to an adult "*is turned to himself*" (Reader 119). Thus, the child appeals verbally to him/herself and the speech, "*from an inter-psychological category, now becomes an intra-psychological function* [Vygotsky's emphasis]" (Reader 119). As a result, egocentric speech becomes more than speech for oneself. Instead of being directed at an imagined or nonexistent subject, it becomes self-directed speech and in so being is truly thinking out loud.

The process of "interiorization" is related to the development of social forms of behaviour based on "a certain cultural method of self-control from without" (Reader 155). In other words, the influence of societal norms imposed by parents, educators, and other care givers causes the child to restrict gradually outbursts of egocentric speech in much the same manner as the child learns to control other normal bodily functions. According to Vygotsky, while

natural psychological activities, such as egocentric speech,

> actually cease to exist as such, being incorporated in [a] system of behaviour, now reconstructed on a cultural-psychological basis so as to form a new entity. This new entity must by definition include these former elementary functions which, however, continue to exist in subordinate forms acting now according to new laws characteristic of this whole system. (Reader 155)

Thus, just as other natural processes continue to occur, albeit in a "socially acceptable manner," the child learns to regulate similarly his or her speech.

Thinking out loud may still occur in certain situations. However, as the child develops and learns, the internalized egocentric speech will manifest itself in other less obvious forms, such as writing or typing. While the quantity of egocentric utterances will be reduced as children become adults

> the egocentric speech of the latter [group] is much richer. In functional terms, what we [adults] think silently is egocentric rather than social speech. . . . it is speech that serves individual rather than social adaptation. Thus, the first similarity between the adult's inner speech and the preschooler's egocentric speech is functional. Both are speech for oneself. They are divorced from social speech which functions to inform . . . One need only consider psychological experiments such as those carried out by Watson where the individual is asked to solve some intellectual task while verbalizing and displaying his [or her] inner speech to see the profound similarity between the adult's overt verbal

> thinking and the child's egocentric speech.
> (Works 1, 71-2)

By studying a statistically significant sample made up of individuals Watson was then able to extrapolate his findings to explain the phenomenon in adults as a population. It is important that Vygotsky refers to Watson's experiments, which provided clinical evidence that adults, like children, accompany many everyday tasks with verbalized thinking. One only needs to recall one's last encounter with a set of instructions for electronic equipment for confirmation of Watson and Vygotsky's conclusions.

Vygotsky cites the structure of the utterances as a further similarity between the egocentric speech of the child and the inner speech of the adult. Generally, egocentric speech is incomprehensible to anyone but the speaker. This is especially the case when the content of the speech is removed from the context in which it is spoken, as Vygotsky explains: "an important characteristic of egocentric speech is that others cannot understand it if it is divorced from the concrete action or situation in which it emerges; if, for example, it is recorded as an experimental protocol" (Works 1, 72). Additionally, there is a marked tendency to omit or abbreviate words, phrases, or sentences normally used in social communication that is "fundamental to both" modes of expression (Works 1, 72). In this instance, Vygotsky maintains

that the disappearance of egocentric speech that Piaget suggests "reflects not the atrophy of egocentric speech but its transformation into inner speech, its movement to the inner sphere" (Works 1, 72). Based on his findings, Vygotsky concludes that "the processes of silent contemplation or thinking are functionally equivalent to the processes of egocentric speech" (Works 1, 72). Egocentric speech does not disappear as children develop, but is instead reconfigured as they reach adulthood. Rather than reflecting an inherent egocentrism in children (since the child does not appear to consider the position of the receiver), egocentric speech can be either a means or component of realistic thinking.

2.0 Document Source: The Collective Monologues of Cyberspace

In the fast paced, ever changing world of cyberspace, the citizens, or netizens, have developed their own forms of discourse. This has occurred mainly out of necessity, but partly by design. J.C.R. Licklider, one of the "fathers" of the Internet, was interested in more than providing connections among research establishments. Howard Rheingold writes:

> Licklider had written a paper of his own in 1960, "Man-Computer Symbiosis," predicting that "in not too many years, human brains and computing machines will be coupled together very tightly, and that the resulting partnership will think as no human being has ever thought and process data in a way not approached by the information-handling machines we know today." (70)

As was earlier noted, the nature of Internet communications was inherently informal from the very beginning of ARPANET. Several factors initially conspired to influence the way in which people share information over the Internet and continue to do so today. Technological, economic, and temporal limitations will probably always impact the ways in which people use the Internet. Increasingly, the lack of true identity and absence of face-to-face encounters provides an opportunity to transmit messages without adhering to

normal social conventions. Christopher Holcomb observes that when people

> participate in electronic discussions, they do not "talk" in the normal sense of the word; they converse with one another through typed messages that, once sent, scroll rapidly up their computer screens. According to Lester Faigley, "The result is a hybrid form of discourse, something between oral and written" (168)

The result is a streamlined, fast-paced, often abbreviated discourse which is markedly similar to the egocentric speech Piaget and Vygotsky document.

Brian M. Connery compares and contrasts the Internet, and especially the Listserv environment, with the coffeehouse of seventeenth century England. According to Connery, the Internet, like the coffeehouse, fulfills the function of what Jürgen Habermas calls the "public sphere" (as qtd., 161). In these terms, the "public sphere" refers to a "discursive space unregulated by established authority, in which all participants, regardless of their authority or station elsewhere, are considered equally entitled to speak and be heard" (161-2). Internet users are relatively free to create new identities for themselves in a forum in which all participants are considered to be rough equals until they are proven otherwise. Connery stresses the informality of the genre: "[R]hetoric [is] adjusted to offer respect to all while denying *a priori* authority to any" (170) and also, "All participants check their actual selves at the door and enter

the virtual space as equals simply because they are unknown to one another. No one has *a priori* authority" (171). That is to say, the discourse suits the lowest common *envisaged* denominator at any time while denying the privilege of any particular voice. The important distinction in this regard is the fact that the level of discourse is imagined or idealized. No particular subject or audience truly is intended, except in the case of directed email. Theoretically, anyone with access to the Internet can view any newsgroup message or website. Therefore, there can be no guarantees as to the nature of the actual audience. Additionally, the medium is faceless and therefore lacks the social conventions and hierarchies usually associated with face-to-face, conversational speech. The privilege rests with the sender. Given the physical absence of an other, the originator of any message is enabled to act in a less conventionally socialized fashion. The relative anonymity further empowers the sender and removes many of the inhibitions which normally obviate manifestations of egocentric utterances. In other words, the Internet provides a unique psychological environment in which a more conversational form of correspondence which mirrors egocentric speech will take place. The technological factors which influence the nature of correspondence only enhance this phenomenon.

The combination of discursive space in which all users are purportedly

free to participate and the speed with which composition and dissemination occur facilitate a more conversational speech. Connery elaborates:

> Writing, which ordinarily assumes a silent reader, began to be directed at readers who were expected to respond. Writing, at this point, lost authority as it began to imitate conversational speech. Writing, in and of itself, is normally considered to be authoritative, but when writing assumes that it will be answered, it authorizes the reader, just as when we speak in conversation we assume our companion's prerogatives to interrupt, contradict, or change the subject. (167)

Internet communications, be they Usenet postings, email messages, Listserv items, or even websites, do not assume a silent reader/consumer. Some sort of response is expected. This is strikingly similar to one of the functions of egocentric speech Vygotsky describes in children (Works 1, 69-71). The child will look to an authority figure, assumed to be an adult for guidance, or use the egocentric speech for guidance. The use of egocentric utterances was shown in Vygotsky's experiments to increase in the presence of an obstacle or task that requires concentration and to persist in the presence of an adult. This recalls the statement that egocentric speech is not merely speech for oneself because it begins as social speech and its primary functions are social.

In his essay, "I Flamed Freud," William B. Millard explains that he prefers to "describe phenomena in language of socially constructed process

RATHER than that of individual personality" (147, my emphasis). The distinction Millard makes is between phylogenesis and ontogenesis. In other words, if a behaviour or phenomenon happens in a population it will happen in an individual member of that population. Therefore, the population is considered as a whole in this form of analysis. This is roughly the same methodology that Vygotsky used in his examinations of child development. Millard describes an analogous situation:

> Textual cyberspace filters away all qualities of a personal self save the highly mediated, acutely self-conscious elements that appear in written language. Phatic or metacommunicative cues, the linguistic and paralinguistic signs that maintain cognizance of the social relation between the sender and receiver of a message, are drastically reduced in this medium. (147)

Due to the impersonality of the medium, users gain no additional information from the body language of others. Therefore, all communication must currently rely on textual content for all details.

Phatic or metacommunicative cues take the form of abbreviations or emoticons, an abbreviation for "emote icon". The most frequently used emoticons are ":)" (smiley face) and "<g>" (grin). Since abbreviations are decoded as a whole rather than as acronyms, they are functionally equivalent to emoticons in a very real sense. In describing the phatic function of language,

Jakobson is really describing egocentric speech in semiotic terms. Jakobson relates:

> There are messages primarily serving to establish, to prolong, or to discontinue communication, to check whether the channel works, to attract the attention of the interlocutor or to confirm his [or her] continued attention . . . This set for CONTACT, or in Malinowksi's terms PHATIC function . . . is also the first verbal function acquired by infants; they are prone to communicate before being able to send or receive informative communication. (152-3)

In Piaget or Vygotsky's terms, the phatic function of speech, in the earliest stages of child development, would be performed primarily by egocentric speech.

Additionally, the behaviour is more pronounced in the presence of an established authority figure, usually an adult care giver (Works 1, 69-71). Vygotsky comments on the importance of such speech:

> The social function appears at the beginning of language mastery. The child has many practical and spiritual needs. He [or she] must frequently ask for things, inquire about things, listen carefully to something that he [or she] is striving to understand, or make attempts to be understood. Social speech begins to play a major role in the first years of the child's life. (Works 1, 90)

As well as the purely expressive function mentioned above, the child uses egocentric speech not only to attempt to contact the adult, but also to

maintain or acknowledge contact with a task. In this case, the egocentric speech serves to guide the child through the task. Vygotsky includes the following episode as an anecdotal example. The Russian relates:

> In one of our experiments, a child of five-and-a-half was drawing a picture of a tram. While drawing a line . . . the child put too much pressure on the pencil and the lead broke. The child attempted, nonetheless, to complete the circle by pressing the pencil to the paper. But nothing appeared on the paper . . . As if to himself, the child quietly said, "Broken." Laying the pencil aside, he took a paintbrush and began to draw a broken tram car that was in the process of being repaired after an accident, continuing to talk to himself about the new subject of his drawing. (Works 1, 70).

Approaching the task through, or with the accompaniment of, language confirms attention to the task. At the same time, it provides a form of guidance for the performance of the task.

Speech is shaped by experience, even contemporaneously guided by it, as shown in the above example. If the person is more experienced, then he or she has learned a multitude of things which will affect speech. The effect of experience is that commonly used words or phrases, even entire sentences, are added to the realm of egocentric speech. Once again, Piaget and Vygotsky differ in their opinions of regarding a behavioural phenomenon. In Vygotsky's words, the divergence occurs because

> For Piaget, the notion that the [person] is impervious to experience is a basic dogma. . . . According to Piaget, primitive [hu]man learns from experience only in isolated and specialized technical contexts. . . . [such as] agriculture, hunting, and production. Of these he writes: "Even this momentary and partial contact with facts does not react in any way upon the orientation of his [or her] thought. . . ." Production, hunting, and agriculture, however, do not constitute a passing contact with reality for primitive [hu]man. They are the basis of his [or her] existence. . . . The laws that [Piaget] discovered are not the eternal laws of nature, but historical and social laws. (Works 1, 89-90)

The nature of this disagreement is the extent to which humans learn from experience. Michael Tomasello explains that "Vygotsky accorded to language an active and formative role in intellectual development . . . whereas Piaget always subordinated language to cognition" (269). There is, however, an important area of agreement between the two psychologists: the use of tools and the mechanism through which tool use is learned. Tomasello notes that Bates, building on Piaget's work, found that "the use of intentional gestures and words is similar in many ways to the use of tools . . . Intentional communication is simply social tool use" (271). Similarly, Vygotsky observes that "tools and symbols are external developments that [humans] incorporate into their interactions with the world" (Tomasello, 272). Language, then, becomes one of many tools humans learn to manipulate.

Piaget and Vygotsky agree that when humans do learn from experience the mechanism through which knowledge is usually acquired is called "transmission". As Leslie Smith elaborates, "Transmission models assume that there is some degree of match between the original [behaviour being learned] and any copy. In the best case, the match is perfect and so the copy becomes an exact replica of the original and no more. Non-optimal cases arise when the copy is less adequate than the original" (258). In its most reduced form, transmission occurs through imitation of the original. Teaching is not a prerequisite for learning in these models. Similarly, after an individual learns that there are categories of things to learn linguistically, language acquisition becomes an unconscious process. That is to say, distinctions among parts of speech and between formal and informal speech are present and ready to accept new concepts. Everyday interactions are the medium of learning. In this regard, Tomasello notes that language is frequently learned "in cultural routines such as those involved in eating, traveling, and hygiene. . . . It is very likely that routine interactions of one sort or another play an important role in the language development [in] all cultures" (272-3). Stephen Boggs defines these cultural routines as "sequences which have a repetitive, statistical pattern of component moves which are recognizable in a particular culture as

performing a certain kind of talk" (103). For instance, "children of Polynesian ancestry in Hawaii use a number of routines, such as verbal play, teasing/joking, contradicting, riddles, and simple reports to organize their talk with one another" (Boggs 103-4). Such routines form the basis of the way children learn language.

Transmission is the most important form of learning for Internet users. Every time a Usenet posting, email message, or web page is accessed by a user an exact replica is downloaded to his or her computer. When replying to newsgroups or email, users are given the opportunity to include the original text as part of the response. Theoretically, each successive response can contain the text of every preceding message. The actual text of the brief questionnaire created as a part of the research for this thesis relies on this aspect of Internet communications and was designed with it in mind. In several cases, the survey was passed by one responder to friends or coworkers. Nearly all responses included the original text with the answers added in the appropriate location. Web sites and home pages are also constructed using code obtained by copying an original located elsewhere. Copies are made quickly and easily by selecting the desired text in the browser and copying it to a text editor. Such behaviour is not only condoned, but is encouraged and facilitated by the software. As an

example, Netscape even provides a feature that allows its users to select any picture from anywhere on the Internet and copy it for use as the "wallpaper," or background in the Windows environment.

Competence occurs through the active assimilation of the learned behaviour. In his essay, "Human Mind in Society," Hans Furth explains that active assimilation is the way in which people "assimilate their society and become its active and co-constructing members" (264). Furth's premise, based on the earlier work of Piaget and Vygotsky, is that there exists an "evolutionarily evolved human capacity for society and culture" (264). Eventually, people develop a "system of operatory logic and communication powerful enough to coordinate mental objects in relation to reality and to society" (Furth 265). Furth suggests that Piaget, "not unlike Vygotsky, suggested social cooperation and open, unrestrained discussion as the contingent frame of further development" within a society (265). Furth cites the intrinsic human ability to produce "shared meaning as in the speech of society or private meaning as in private fantasy" to be the "one psychological power at the developmental origin of human societies" (266). Furth expands on the significance of this function:

> In short, whereas in the usual discourse society/culture is presented as something foreign [to

> be learned] from outside, *i.e.*, exogenously, Piaget's constructive theory emphasizes the endogenous process of active assimilation. Here too language and communication are the key . . . Endogenously equipped with this frame [humans] are in a position to assimilate the specific features of their own society, including language, customs, rituals, ideals, values -- none of these could be acquired without a prior grasp of a societal frame. In this sense I speak of a *desire for society* as an innate ontogenetic direction of our evolutionary endowment. (267)

This theory stresses that humans possess an inherent "desire for society." Just as the society establishes the linguistic norm of the community, language and communication are the critical components in the cyclical process that is the formation of a society. That is to say, language and communication *facilitate* the assimilation of the customs, rituals, ideals, and values of the society.

Netizens are predisposed, either by nature or by practice, to assimilate the culture of the Internet. Lacking the social contexts and hierarchies of more traditional modes of communication, Internet users express themselves in a fashion more closely resembling thought -- Vygotsky's thinking out loud, or in the this case, virtual thinking out loud -- and which therefore mirrors egocentric speech. This would seem to confirm Vygotsky's position that egocentric speech does not evaporate as children reach adulthood. Instead, adults learn to censor their own speech. If the need or mechanism for self-

control is removed, the result is obvious. The behaviour is reinforced or further stimulated by the speed with which the messages are prepared. This outcome of Internet communication was noted during the early stages of ARPANET development. Licklider and Vezza's previously cited recollection takes on added significance in terms of the present analysis. They write:

> [I]n an ARPANET message, one could write tersely and type imperfectly, even to an older person in a superior position and even to a person one did not know very well, and the recipient took no offense. The formality and perfection that most people expect in a typed letter did not become associated with network messages . . . Indeed, tolerance for informality and imperfect typing was even more evident when two users of the ARPANET linked their consoles together and typed back and forth in an alphanumeric conversation. . . . [Additionally] one could proceed immediately to the point without having to engage in small talk first . . . (as qtd. in Hardy)

Messages are streamlined and abbreviated, in a large part, out of necessity. This was especially the case during the infancy of the Internet. The memory capacities of the few available computers was extremely limited, which meant that the length of messages had to be kept to a minimum. The physical size of the computers and the amount of power they required reduced the number of locations able to house them. The cost to operate the computers, usually by rental or lease on an hourly basis, was substantial and further restricted their

accessibility. All of these factors necessitated extremely brief communications.

The importance of necessity as a motive in psychological functions cannot be overlooked, as Leslie Smith elaborates: "Necessity is standardly defined as that which could not be otherwise -- a proposition is necessarily true only in the case that its negation could not be true. This state of affairs contrasts starkly with any truth whose negation is merely not true. Necessity is essential to good mathematical understanding and deductive reasoning" (261). Michael Glassman provides additional insight:

> Motive is at the base of all activity. It is the impetus to take action in the world. The motive or the need, is what drives all organisms to action. Yet it has a unique and complicated quality in the human that is different from its quality in all other animals. The human is the only animal that can have a conscious understanding of motive and what it means in terms of action. The human is the organism in which there is a 'noncoincidence' of motive and goal. The human is the only organism in which the motive is affected by a personal sense. Nevertheless, the motive is always based on objective reality . . . (323)

The environment dictated the need to communicate in a fashion entirely different from previously accepted norms. The nature of the environment also facilitates the manifestation and continuation of the behaviour.

It is well worth noting that William Millard has coined the term "chrono-economic stress" to describe the situation dictated by necessity. This

phrase refers to

> . . . the psycho-linguistic effects of an online writer's awareness of the limits to the time, bandwith, money, attention, and any other resources that he or she can devote to any given piece of discourse. If rhetoric is "the economics of attention, the allocation of a scarce resource," as Lanham has defined it (The Electronic World 64), then Internet rhetoric operates under conditions of extreme scarcity." (159)

Chrono-economic stress, then, is one of the contributors to the reduction of the effects of socialization which occurs when people get in front of a keyboard and connect to the Internet. Several factors make up chrono-economic stress. Internet connections are carried primarily over phone lines and frequently have a fee structure based on phone charges. ISPs generally charge for use by the minute. Off-line editors, such as Eudora and Pine, were developed to allow users to download all of their email at once and then disconnect. They can read and respond to selected messages without being connected, thereby saving money. Once the task is completed, they simply reconnect and dispatch outgoing messages. Although this may slow the process down by removing some of the stress of having to read and respond while remaining connected, and therefore accruing additional charges, every email message requires time to receive or send and therefore costs. Time is another consideration in this

equation. Most people do not have the time to respond or even read every email message.

The Internet environment is based almost entirely on language and communication. The physical and chrono-economic limitations of the system initially created the necessity and motive for thinking out loud. The success of this method of communication, coupled with software that allows perfect copies to be made every time, ensures that this behaviour continues through the processes of transmission and assimilation. Messages like the rec.models.railroad post sent by someone who calls himself The Unforgiven frequently highlight the phenomenon.[1] This message supposedly deals with a train derailment in Germany. However, the egocentric speech cannot help but creep into the message:

> Sorry...just a joke I was thinking of I heard on the radio a few months ago...
> One of the guy's on the morning show was talking about Clinton...he said something like "...Clinton sex scandal - day two...he's still screwed"...I found it rather humourous and when ever I hear "Day two" I think of

[1]Internet users often adopt aliases, nicknames, and even personae to enhance the overall anonymity of the environment. Additionally, the number of characters permitted in email addresses is limited, forcing most names to be abbreviated should anyone wish to keep one. Both of these factors can only increase the amount of freedom felt by Internet users.

```
that...sorry... . . .
>>Well...it's "ICE train derailment -
day 2"...hehe...and the news says german
>>rail officials are going to impose
speed restrictions, to prevent further
>>accident's like this. . . .
>What's the "hehe" for ?
(<3576e3f7.0@n3.idirect.com>)
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The passage includes the earlier messages, indicated by ">" and ">>," that led to the revelation regarding the meaning and source of the "hehe".[2] The post is immediately identifiable as an instance of egocentric speech because its meets the minimum criteria: "(1) a lack of communicative effectiveness to others or (2) an apparent lack of intent to communicate with others" (Zivin 15-16). Further, The Unforgiven's first message contains a match for Piaget's first type of egocentric speech: echolalia, or repetition. Echolalia is characterized by the often "completely unconscious" imitation of others' words (Thought 35). The motivation for, or function of, echolalia is "the pleasure of using words . . . for the sake of playing with them," and also "for the pleasure they give" (Thought 35). In neither instance does the originator of the echolalia consider the position of the person receiving the communication.

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[2]Email editors give responders the option of including the contents of previous messages in their responses. Text from the most recently preceding message is indicated by a "<" at the beginning of each line. If the text is included in more than one subsequent reply, a "<" is added to each line for every time the line has been sent again.

The Unforgiven intends to mimic laughter with the "hehe" and show that he is joking. However, a joke is seemingly inappropriate given the context of the situation: the day before this message was sent a high-speed commuter train in Germany crashed while traveling at a speed of approximately 200 km/h with a resultant loss of at least twenty-nine lives. But, people will try to be humorous in any circumstance when given the right environment. After studying the use of humour in various settings, Michael Mulkay concludes that "Highly structured situations restrict and confine humour, both in scope and quantity. Humour blossoms [however] . . . when the course of social interaction is neither prescribed by convention nor regulated from above" (173). Moreover, the intent of the joke is not immediately obvious. It is only in response to a question regarding the nature of the joke that readers become aware that the joke is not about the crash. In reality, there is no joke for anyone except The Unforgiven.

By his own admission in the follow-up post, The Unforgiven's incongruous lines manifest themselves because "when ever I hear 'Day two' I think of that [previous and unrelated joke about Bill Clinton]". Vygotsky's faithful student, Alexander Luria (1961) adds insight to this behaviour based on his continuation of Vygotsky's work. Luria writes:

> It [egocentric speech] was first a kind of verbal orientation to surroundings, as it were, reflecting the surrounding objects and checking the possibilities of using them to find a way out; and then it began to spread beyond the confines of the immediate situation, various systematized and generalized signs of the child's previous experience appearing in his [or her] egocentric speech. (33-4)

The words "Day two" were a repetition of the earlier humour that became a part of The Unforgiven's experience and evoked the unrestrained inclusion of a second form of egocentric speech as the "hehe".[3]

In Gail Zivin's terms, this second type of egocentric utterance is described as "Speech that accompanies action, often describing the action, the object of the action, or a desire for something" (17). This falls into Piaget's second category of egocentric speech, monologue. He explains that this kind of speech occurs when the speaker is "impelled . . . to speak as he [or she] acts" or to "use words to bring about what the action itself is powerless to do" (Thought 36-7). Clearly, this attempt to communicate falls into the former

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[3]One of the recurring types of message seen on the CNET listserv, a distribution list for fans of Canadian National Railways, is a listing of trains passing through various locations. These often include such extraneous information as when and where the sender went to eat between trains (a particular sender went so far as to include "laid cable at Rotten Ronnie's" (email to author, 11/97)). One can only surmise that the additional information is contained in the posting because the originator of the message was quickly recounting the day's events and in effect remembering out loud.

Piagetian category. However, since the *faux pas* of the original message and its subsequent explanation were committed in the view of others -- at least two, the questioner and the current author -- it is more appropriately given the Piagetian label of collective monologue. Zivin explains that collective monologues are

> [e]ssentially the same in content as monologue itself but is marked with some indication that the child intends to interest or thinks he is interesting others in his thoughts or activities. Thus it is communicative in intent, but it is not effective as communication. To be so classified by Piaget [as collective monologue], this speech must take place in the presence of others. The motivation for (or function of) collective monologue is simply the feeling that one is being interesting to others. (17)

Other than the fact that The Unforgiven is older than the limit of seven proscribed by Piaget for the use of egocentric speech, Zivin's depiction applies. When one considers the Vygotskian belief that egocentric speech "should be able to be re-evoked by older people of all ages . . . [since] it has not disappeared. It has simply gone underground" the model is even more apt (Zivin 20). The unique demands of Internet communications cause a significant portion of the posting to be, in fact, egocentric speech.

Additionally, Zivin asserts that the major area of commonality between the Soviet and the Swiss psychologists is that "both writers characterize the

child as speaking socially inappropriately, and both writers refer to the child's lack of awareness about refraining from utterances that are not well adapted to others' understanding" (25-6). The result is "socially inappropriate utterances that reflect what the child was thinking" (25). The message was but one of several on the topic of the train derailment. As a result, all of the messages within this thread are vying for the attention of readers and therefore a response before their allotted time on the host server expires. Once again, Jakobson's phatic function of language is analogous to egocentric speech.

On first reading, Zivin's definition might seem like accurate but harsh condemnation of The Unforgiven and others who post items on listservs, Usenet, or other Internet forums. However, the inherited and learned nature of Internet communication elicits such behaviour. Margaret Daisley remarks that "conferencing is a medium that seems to encourage a sense of informality, to encourage a natural tendency to 'play around' with language" (108).[4] In her networked classroom, Daisley notices an "overuse of exclamation points!!! and CAPITALS and . . . breathless tangents . . . which seem to give the impression of *thoughts*" (108). Christopher Holcomb maintains that such conventions of network discourse are actually intended to "capture the rhythms and

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[4]Please see p.9 for a description of conferencing.

inflections of speech" (7). The apparent contradiction between Holcomb and Daisley can be explained by the phenomenon of egocentric speech, which matches both sets of criteria. That is to say, egocentric speech is speech which is physiologically external, but psychologically internal. Since its primary function is social in both Piagetian and Vygotskian terms, the analogy becomes more clear. The "breathless tangents," as we shall see later, in Laura Sullivan's project, and the ubiquity of ellipses serve to strengthen the impression that the person typing the message is doing so in parallel with the thought process. The thought process is not internalized but is instead externalized. Therefore, it is only natural that Holcomb finds that people "use a feature of written discourse (typography) to mimic features of oral discourse (pitch and stress)" in the absence of "paralinguistic cues such as vocal inflection, gesture, and facial expression" (7). The absence of these cues is one of the obstacles of Internet communications that allows egocentric speech to be "re-evoked by older people of all ages". Internet discourse, then, becomes a rhetoric of spontaneity.

In the absence of phatic or paralinguistic signs -- *i.e.*, body language -- from which 91% of communication is gleaned, the only recourse left to the originator of a message is to think out loud (Sheckel). No visual clues are provided from which guidance or information as to the receiver's position can

be gained. The sender is then forced to assume a subject position him/herself or to imagine a nonspecific other as the reader. In either case, the sender, like the children Piaget observed, does not always "attempt to place himself [or herself] at the point of view of his [or her] hearer," (Thought 9). Thus, the transmission can be seen as self-directed or not directed at all. Both of these are inherent traits of egocentric speech as outlined by Piaget and Vygotsky.

The lack of authority emphasizes the egocentric nature of Listserv, Usenet, and even email communications, and often results in (strongly) conflicting views on virtually every topic of discussion. As one of Connery's correspondents comments:

> [The Internet] works at its worst when one is looking for a difference of opinion. When I first joined the net, I subscribed to discussion groups for arabic society hoping to discuss the Koran with educated Arabs. Wrong move. It's mostly a lot of screaming between poorly educated, unintelligent people on both sides. (as qtd. 172-3)

The effect is that many people are "screaming" simultaneously wishing to be heard or merely for the sake of saying something.[5] One technical feature of emails, the Usenet, and Listservs is the ability to include the text of the

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[5]In Netspeak, screaming (or shouting) generally refers to the use of ALL CAPITALS for emphasis in messages. However, flames and other inflammatory messages are usually considered to be screaming.

previous message in a response.[6] This feature is intended to replicate the follow-up memo often (formerly) used in interoffice communications. However, computers also offer the ability to cut, correct, or otherwise edit the original text. Eventually, threads become convoluted so that they are unrecognizable to virtually anyone but the sender.[7] The group of people screaming at each other then resembles the collective monologues Piaget notes. For example, a quick search yielded over 1400 different messages, each vying for attention or offering an opinion, regarding a train derailment in Germany (Dejanews). Thus, thinking (screaming) out loud persists even in the public sphere. As Connery notes, "In discussion outside the institutional parameters or established purposive conversation (business meetings and the like), conversation exists for its own sake and it proceeds freely, unregulated by either a success orientation or instrumental or rational efficiency" (174). The anonymity, lack of authority, and other factors remove the social conventions and hierarchies that shape normal written or conversational communications. The sender is free to express him/herself in virtually any desired manner

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[6]Please see note on p.50 for a more complete description.

[7]Please see note on p.11 for a description of threads.

without the danger of any serious repercussions.[8] Furthermore, the speed with which thoughts are conveyed via the keyboard and the "chrono-economic" stress Millard describes only serve to encourage users to "think out loud" in a very real sense. The necessity for speed and the ability to achieve rapid response times removes many of the normal vetting processes that occur during the normal progression of thought to speech.

As has been mentioned elsewhere, the use of abbreviations characterizes both egocentric speech and Internet messages. Internet users employ such shorthand denotations primarily to speed up the process of sending a message. However, Connery cites two examples which have an important secondary purpose. He writes:

> Two common abbreviations on the Internet, "IMHO" ("In my humble opinion") and "my $.02" ("my two cents worth") actively de-authorize the writer, signalling that the accompanying opinion is meant to further -- not to stop - the conversation. Readers of successful and long-running lists are no doubt familiar with a wide range of similar, though less formalized or conventionalized gestures that often either precede or conclude a post. . . . The

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[8]In 1993, Jake Baker, then an undergraduate at the University of Michigan, used "a woman student's real name in a sexual torture fantasy posted to a Usenet group" (Stivale 141). The university expelled Baker for his posting of a most pernicious variety of what is most generously termed egocentric speech. However, all criminal charges against him were dismissed.

> absence of such cues may trigger flames because of the suspicion that the author is claiming to put forward the definitive response which will end the discussion. (175)[9]

Another example of such a virtual gesture is "<g>" ("<grin>"). The "<g>" is generally used to signify sarcasm or tongue-in-cheek humour which is not intended to offend anyone. Others use emoticons that look like a sideways version of the proverbial smiley face, ":)" for similar purposes. When used in the fashion described by Connery, the emoticons and abbreviations indicate a willingness on the part of the sender to work through the problem at hand; *i.e.*, to resolve whatever (potential) disagreement exists in a rational manner rather than through a series of flames. This is analogous to the childhood use of egocentric speech in the presence of an authority figure, usually an adult, while the child attempts to perform a task. Donald Meichenbaum provides the example of his seven-year-old son, David, who likes apples, but is "disposed to spitting the skin on the floor" (347). While at a "beauty parlour" with his mother, David is given an apple to keep him occupied (348). On one occasion, David was directed to put the skins in an ashtray that was "constructed so that

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[9]A flame is an angry or insulting message about a person or an earlier message. Flames most often occur in the Usenet medium because most newsgroups are not moderated. However, flames can and do occur in other forms of public messaging and in emails.

you had to press a button to open the top" (348). Meichenbaum explains: "David then spontaneously performed two acts simultaneously. He spit the apple skin on the floor, looked at it, and then while picking it up and depositing it in the ashtray said to himself 'Bappy . . . door . . . all done.' This sequence was repeated . . ." (348). Meichenbaum adds that "bappy" is David's word for garbage. More importantly, "door" is his shortform for "the concept 'open,' such as opening doors, bottles, envelopes, pockets, and so on" (348). The purpose of David's egocentric utterances is self-guidance as the behaviour is copied and then repeated. Additionally, cues as to the direction of the problem solving methodology are garnered. The effect of the egocentric speech is enhanced by the use of abbreviations. The use of such shorthand denotations speeds up the communication process so that it more closely resembles and is able to keep up with the thought process. Clearly the learning mechanism and the function of the egocentric speech are the same for David *and* adult Internet users.

The authority figure in many instances is the would-be flamer. Newcomers, or Newbies in Internet vernacular, and posters of volatile topics (abortion, religion, pornography, etc.) are often the victims of flames. Connery cites a veteran Internet user's advice for Newbies in regard to flames. However,

in this description, the apparent authorities more closely follow Piaget's reductive definition of egocentric speech. The veteran advises:

> Don't let yourself be intimidated by people who are trying to get others to take it [the discussion] off-list on the grounds that it doesn't interest them . . . or that any of that other stuff that really just serves the general purpose of announcing that their superiority is to be duly acknowledged and accommodated . . . (I don't think it occurs to them that they are putting others down because they are concerned rather with putting themselves up.) They talk as if . . . they are the voice of the "silent majority." They are not. Like all the rest of us they represent nothing but themselves. (as qtd. 177-8)

Piaget posits that egocentric speech in its simplest form is speech merely for oneself. Nothing could be more aptly placed in this category than belittling, attacking, and denigrating others only to make oneself appear more important by comparison. The last line, "they represent nothing but themselves," could not be more appropriate as many posts appear to be speech for the sake of speaking.

Nevertheless, such all capitals expressions as IMHO, IIRC, and LOL perform a greater function than simply substituting for "body language".[10] The

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[10]The abbreviations IIRC and LOL are short for "if I recall correctly" and "laughing out loud," respectively. IMO, or "in my opinion", is also commonly used. Other similar abbreviations include FWIW ("for what it's worth") and BTW ("by the way"). An anecdotal example is that although he

first example, an abbreviation for "in my humble opinion," is often used by people "whose opinion is anything but humble" and is "sometimes more accurately rendered as IMNSHO (in my not so humble opinion)" (Delphi). These abbreviations are frequently used to preface a statement in order to convey the seriousness, or lack thereof, with which the opinion is being delivered. They also signal that the person giving the opinion is seizing the opportunity to give voice to his or her thoughts on the subject. Since others with Internet access may or may not desire to read the message, even if sent directly as an email, the intent on the part of the sender to communicate is unimportant and often neglected. In this regard, the communications meet the transitory condition that egocentric speech "may occur in order verbally to contact or interest others (in collective monologue)" and the two *defining* conditions that it is overt as well as "not [being] modified to meet the communication needs or expectations of an audience (should there be one)"

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seems to be the only one to do so as yet, the author often uses WRT. This is short for "with respect to" and is in fact an unconscious and abbreviated -- and therefore egocentric -- utterance. Its current use stems from the earlier experience of frequently using this expression when solving mathematical problems in applied partial and ordinary differential equations.

(Zivin 21).[11] The latter condition is met because the opinion is delivered unabashedly, without reference to any particular group or person. This situation exists, as Kenneth Rubin explains, since speech-for-self fulfills a "parasocial will to communicate" but not a "genuine communicative intent" (266). This aspect of the use of abbreviations and other typographic features in Internet communications, then, overshadows and precedes their function as paralinguistic substitutes. They are the product of a parasocial communicative intent as opposed to the direct communicative purpose that is implicit in their use as paralinguistic cues.

The following item, "Americans and Hockey," was posted to several newsgroups and functions in the fashion previously outlined.[12] It takes the

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[11]In her comparison of Piaget and Vygotsky, Zivin lists twelve characteristics of egocentric speech by which the psychologists' theories can be measured. The twelve categories are: (1) self-directedness, (2) self-regulation, (3) isolation, (4) motivation by noninhibition, (5) motivation for effect, (6) motivation for social communication-contact, (7) modification for effective communication, (8) diagnostic indication of developmental level, (9) transitoriness, (10) overtness, (11) semantic versus motoric mechanism, and (12) spontaneity (21-2, 28-9). Numbers 3, 4, 6, 7, 10, 11, and 12 are defined similarly by both psychologists.

[12]It should be noted that posts like the one included here are most often intended to be one person's impassioned position on a given subject. However, trolls also occasionally present themselves, especially in the Usenet environment. A troll is a person (or message) who tries to create a stir by sending an outrageously inflammatory message in the hope that it will elicit a

form of a breathless rant by a Canadian hockey fan who is frustrated by what he sees as the demise of the national sport. He begins:

> Now I know there's some American's who love this sport, so please don't be offended by this post. (reader discretion is advised)
>
> You know, there isn't much that annoys me, but when things do, I complain. One thing I see, is the number of Americans who mock hockey. They have almost all the teams, and yet they don't give a damn. I read some of the posts saying how it sucks, and the Americans don't give a damn, bla bla bla, and it makes me sick. (news:3587F782.581D)

Eventually, the language becomes more heated. What began with a very apologetic disclaimer and the subject "Americans and Hockey" instead becomes an all out assault on the Fox network, expansion, Gary Bettman, and fringe players. The post continues:

> They let the FOX network make glowing hunks of shit, they let the networks control when the faceoff is, there are fucking TV timeouts during the game. . . . Gary Betteman is great, he fucks up the game by giving shit places like Tampa Bay and Carolina teams, when it's obvious it isn't a hockey town and half the people don't know where Canada is,

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large number of responses. The "Canada Sux" thread during the summer of 1997 is an infamous example. Egocentric speech in either Piagetian or Vygotskian terms accounts for a significant proportion of the message, but cannot fully account for trolls.

> but then he decides that the rules need changing. (news:3587F782.581D)

Rubin states that in the Vygotskian view, egocentric speech reflects "the child's dependence on verbal stimuli to promote thinking and to mediate or regulate behaviour" (266). In the case of the passage above, the verbal stimuli provided by the previously typed words enhance the frustration level of the (adult) sender as the message progresses and thereby increase the intensity of the language. Thus, the language being expressed serves the additional purpose of actually accompanying the physical action of typing the message.

As was previously demonstrated, the user's experience influences the content of the egocentric utterance. This feature reveals itself in the form of the seemingly quintessential Canadian fear that "half the people [in America] don't know where Canada is". This statement is followed by the grammatically, if not thematically, unrelated statement "but then [Bettman] decides that the rules need changing". This is in keeping with the egocentric tendency of the outburst. Luria (1969) writes: "Because it is 'speech for oneself,' serving above all to fix and to regulate the intellectual processes, and because it has a largely predicative character, inner speech necessarily ceases to be detailed and grammatical" or even coherent (143). Grammar is set aside due to the high speed and spontaneity with which the utterances are being transmitted to the

keyboard. Time is not taken to be careful with spelling or with punctuation or even with sentence structure. As the rant continues, it becomes even more incomprehensible to anyone but the originator. He elaborates:

> No offense, Capitals fans, but Washington isn't much of a hockey town. I read the Post occasionally on newsstands, and even listening to the games, where there were no sellouts except for the final game, and half the fans were for the Wings, they didn't do much. (news:3587F782.581D)

Although it is more than evident that the author of this diatribe is angry, the exact target of the message is unclear. The author assumes the reader knows what he is complaining about in the message. This is especially true in the second sentence with its vague pronoun reference and unclear subject.

In their study, "Egocentrism in Children's Telephone Conversations," Amye Warren and Carol Tate refer to this type of (mis)communication as an "egocentric error" (253). An egocentric error is the mentioning of information not shared by both parties in the communication exchange. This kind of error is considered egocentric because the person making the error implicitly fails to take into account the position of the person receiving the message. Warren and Tate found that errors of this type are frequently committed during telephone conversations, "but only rarely during face-to-face interactions" (257). The

most common form of egocentric error is a reference to visual information, "such as gestures, without accompanying verbalizations or statements, such as 'Look at this.'" (253).[13] Warren and Tate note that these errors are frequently "unforced," in that they occur during "topic initiations rather than responses to specific adult queries" (258). They provide the following example from their study, in which children used a telephone to speak to their grandparents:

Alice:	"I got a green one" (opening topic)
Grandmother:	"You got a what?"
Alice:	"A green one"
Grandmother:	"A green one . . ."
Alice:	"There's a baby out there" (points out window)
Grandmother:	"There is . . ."
Alice:	"Is a baby out there"
Grandmother:	"My goodness"

(258)

Alice's grandmother cannot see the baby because she is not in the same location as Alice, nor does she know what the green thing is. The Unforgiven's mention of the Bill Clinton joke constitutes just such an egocentric error. It occurs in the form of topic initiation, but only he knows the topic. Similarly

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[13]While they may occur in egocentric speech, abbreviations such as "rotfl" ("rolling on the floor laughing"), and "lol" ("laughing out loud"), as well as "smiley faces" like "8-)" (smiley with glasses), and ";-)" (the winking smiley face) do not qualify as egocentric errors. Interestingly, they serve as both the gesture and the accompanying verbalization.

the angry hockey fan's swift changes of topic from Washington Capitals' fans to the Washington Post to listening to the Stanley Cup playoffs result in his "unforced" egocentric error.

Swift changes of topic often occur during the life of a thread. Such changes are sometimes noted in the subject line of the message header. The new topic is followed by the old topic, with "was" inserted between the two. This process can result in the commission of egocentric errors. One thread on rec.models.railroad began with someone mentioning that the future father-in-law of the "Drew Carrie" (sic) character, on the television show of the same name, is portrayed as a model railroader. Eventually, the thread changed into a catalogue of famous people who own model trains. Then the following post was added:

```
I can't resist adding this one to the list of famous people with model
trains. Reichsmarshal Herman Goering had one of the largest, if not the
largest, layouts in the world in his home.

I guess Andy Harman et al aren't the original model railroad Nazis!
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(3566755B.543E@ican.net)

The author admits that he "can't resist" the urge to contribute his thoughts to the list. This indicates that he is aware that he is "thinking out loud". The egocentric error occurs because the sender supposes too much. He assumes that everyone is aware of several factors that combine to make the joke work:

Herman Göering really was a model railroader; Andy Harman and other well-known modelers who are vocal in their dissatisfaction with inaccurate models are referred to as "proto-nazis" or "model railroad nazis"; the preceding reference is based on the "soup nazi" of *Seinfeld* fame; people reading it will recognize it as a joke.[14] As with the errors committed by The Unforgiven and the hockey fan, these egocentric errors are "unforced" and unintentional. The use of emoticons, such as the ":)" or "<g>," can help to eliminate egocentric errors or at least indicate that the sender is attempting to be humourous. However, the errors will still occur because the sender does not fully consider the potential audience. It may be argued that authors of messages, like authors of literature, cannot ever fully consider their audience. However, the major difference between the two genres is that Internet communication, by design, takes on the form of a conversation or personal letter between two parties; literature does not. Literature works within a canon that holds assumptions of form while the Internet appears to function more like speech or letter writing. However, in conversation and in correspondence the sender has the knowledge

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[14]In model railroad parlance, the full-size item being modelled is called the "prototype" and is often shortened to "proto". Thus, "prototype modellers" are those who attempt to match every detail of the original in their models. "Proto-nazis" are those who show little patience for any other style.

of a receiver and an expectation of a response. In these latter regards, Bruce Dorval explains that "without agreement on speaker-listener roles, the 'window of opportunity' for a narrative is very narrow, even when it exploits common ground explicitly arrived at" (141). Literature functions differently by placing author and listener in a different relationship with each other. The assumed form for Internet discourse is spontaneity.

After three more paragraphs of rant, the hockey fan's previously cited polemic ends with the incongruous, albeit normative salutation, "Best wishes" (news:3587F782.581D). The closing is followed by the author's name and a link to the location of his personal web page, "http://www.interlog.com/~malofy/habs". The link indicates a desire for confirmation through contact. People who access the site will have read the message and used the link.[15] The latter is clearly part of a signature file, as the full address of the link is cumbersome and difficult to type repeatedly. Originally, signature files were intended to be the Internet version of the customary signature at the end of a letter or memo. They are small files that

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[15]Internet providers generally charge for web sites based on the size of the files stored on the server and the number of times the site is accessed, or hit. Therefore, it is possible to know exactly how many hits the site receives each month.

are meant to save time and simplify communications by automatically reproducing the items that (primarily) email users would type at the end of nearly every message: *i.e.*, name, address, phone number, email address, and other associated impedimenta.

Lisa Tremont, an Internet stockbroker trying to attract clients, attaches her full address and a disclaimer to the end of the "spam" messages she sends.[16] Ms. Tremont's file reads:

```
This is a responsible email being sent by -
K.M.A. 4401 Vineland Road, Orlando Fl 32811 Tel. (407)422-6784.
Email remove@lightswirl.com. The above statement complies with
section 301 requirements relating to transmissions of unsolicited
commercial electronic mail. To remove your name from our mailing
list immediately, please refer to the statement at the bottom
of this message.

---------------
We are currently consolidating our many mailing lists and need
to update our databases. Our records indicate that you may have
inquired in the past. If this is not the case, please reply
with "REMOVE" in the subject field to never receive email offers
from this vendor.
```

(email to author, 21 June, 1998)

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[16]The name "spam" allegedly was inspired by a Monty Python sketch (Delphi). Generally, the term refers to unsolicited messages -- usually ads or promotions -- sent by bulk email software, using addresses collected from newsgroups. Common themes include: stock tips, finding lost money, genealogy, and earn thousands from home. Altering one's reply address is a typical spam prevention technique since the processes of collecting addresses and sending spams are often automated. For example, many subscribers to "Ican.net" write "EYEcan.net". Curiously, users often point out in their signature files that they have altered their return address, leaving them open to manual spam techniques.

Tremont's signature is an attempt to lend credibility to the unwanted message by providing a physical address to go along with the email address. Ultimately, the "spams," especially if received in large numbers, create the impression of a virtual collective monologue. The "spammers" send their messages to everyone on their lists. No attempt is made to discern an audience. Rather, they are akin to barkers at a carnival. Many people include the threat of litigation in their signature files in the hope of warding off spammers. For instance, The Unforgiven's signature file contains his address and a warning for would-be spammers. He closes his messages:

```
Drew (The Unforgiven)
(Also "Idiot Railfan" and Metallica fan)

The Black Cube Inc. - Webspace design

tbc@cryogen.com
http://www.geocities.com/paris/leftbank/4426
ICQ Network - 11231552
Pager: (416) 793-3712 - Leave a short message.
(Long distance charges may apply)

Pursuant to USC 47, there is a $500 per incident charge for each and
every piece of Unsolicited Commercial Email (UCE) sent to this or any
of my other addresses.  Sending UCE's to any of my addresses implys
general acceptance of these terms.(<3576e3f7.0@n3.idirect.com>)
```

Like Lisa Tremont, The Unforgiven cites a United States statute regarding unsolicited mail. However, the "416" area code in his phone number indicates that he works (and therefore probably lives) in the Toronto area, in Southern Ontario, *Canada*. Thus, his threat is functionally irrelevant. This flexing of the

virtual muscles is another incidence of echolalia in that it is merely a (grammatically incorrect) copy of similar messages attached by American citizens.

In addition, a large number of Internet users have taken the opportunity to include links to personal web sites, favourite quotations, and graphics to their signature files. For instance, The Unforgiven's signature file mentions that he is also "'Idiot Railfan' and Metallica fan," along with the location of his (unfinished) home page, "http://www.geocities.com/paris/leftbank/4426". The present author's brother changes the quote in his signature file on a monthly basis. This is presumably to keep it interesting for people to whom he frequently sends email. He currently signs:

```
-k
--
.....................................................................
KEN OUELLETTE                                  email: ken@coredp.com
C.O.R.E. digital pictures                      http://www.coredp.com

      "If you are hearing this, it means I've failed... this time!"
                  (insert evil chuckle)
                    -Megatron of the Decepticons
.....................................................................
```

(email to author, 16 July 1998)

This type of signature file meets the criteria for egocentric speech listed earlier. It fulfills the phatic function by indicating to readers that there is a personality rather than a machine at the other end of the communication. This behaviour is a trait of collective monologues in that the sender is trying to verbally

"contact or interest others" (Zivin 21). Certainly, one risks committing an egocentric error in this case.

The personal web sites that are often included in the signature files also function as collective monologues. Richard La Londe, of Spokane, Washington, maintains a site which details his family and their lives. He includes such information as the story of the construction of the "family sand castle," and pictures of the "the new fence" (La Londe). Occasionally, personal web pages dealing with similar subjects, such as the Montréal Canadiens and British comedies, are linked to form a "web ring," or loop of connected sites. People entering the ring at any point can proceed through all member sites by selecting the appropriate links. Thus, the individual addresses combine to create a larger collective monologue. Web ring members operate under the premise that their sites will receive more hits because people who are interested in previous sites *might* be interested in theirs. Bruce Dorval explains that "the [only] difference between social and nonsocial monologues is that the former are designed to achieve social participation" (133). A more elaborate and extreme example of a web site owner acting in the belief that she is interesting to others can be found on Ana Voog's site, http://www.anacam.com. Using a few strategically located video cameras, Ms. Voog broadcasts her life in real-

time over the Internet. While this type of online voyeurism may have an appeal for some audiences, the site also serves primarily as an advertisement for Ms. Voog's musical career. This type of self-promotion certainly falls into the same category as spams.

More importantly, signature files, like personal and even some corporate web sites, are almost never aimed at a particular audience. For example one responder to the German rail accident thread attaches the following signature file to his email and Usenet messages:

"(Urup) Island belongs forever to Japan as long as the Heaven and the Earth will exist" - from the text of a stele built by G. Tomiyama and U. Fukayama in the middle Kuril in 1801. To know more about Sakhalin and Kuril, please visit http://ourworld.compuserve.com/homepage/flsoft/
(news:3576e3df.16215792)

Hyphens, periods, or extra hard returns are used commonly to separate the text of the signature. A physical separation of the signature allows readers to recognize immediately that the signature is an unrelated text outside of the body of the message. The entire purpose of this signature file is to attract the attention of readers in the hope that they will go to the site and ultimately sympathize with the stated cause. The signature also performs as an unconscious -- by virtue of the automation provided by the software -- verbal accompaniment to the action of creating the message and contains familiar

material gleaned from the sender's experience. Further, the use of signature files is learned through imitation due to the perfect copies made every time the file is invoked. This strengthens the behaviour by making it more automatic for the user. Therefore, signature files cannot help but exhibit the characteristics of egocentric speech.

As mentioned elsewhere, several factors initially contributed to the formation of the environment that encourages the use of streamlined text. The stripped-down communications have several implications of their own. These only serve to increase the likelihood that Internet users will "think out loud" when they send messages. As Millard mentions,

> This metacommunicative minimalism, in combination with other distinct features of Internet writing -- the customary economic constraints on connection time (and thus on personal patience), the delayed response of the audience, or the uncertainties ensuing from the consciousness that Internet communities are new enough to lack clear social protocols -- as well as the general underlying tension between conceptions of language as a transparent medium for serious work or a dense material for ludic performance -- implies that online [writing] is conducive to anxiety, wrath, and vendetta. Flaming, in short, is exuberantly overdetermined. (147)

When referring to the users' consciousness that Internet communities lack protocols, Millard contends that users are aware that one wrong word, the

impression of a wrong word, or the whim of another user will result in angry responses, or worse, flames. In spite of the apparent freedom of the Internet, the factors Millard outlines, along with several others, create the stress necessary to further induce the netizens to use egocentric speech. For example, one rec.models.railroad regular writes about the joy he received from his brand new models:

> I just wanted to share my excitement with everybody. I picked up my ABBA set of Proto2000 ATSF Pas at the store today. I put in my reservation for them in December, and the finally arrived. I think this is the only set of PAs I'm going to get, because they're a little old for my era, but I've always wanted something in the Warbonnet scheme. The only negative is the printed on number boards on the side, but the units are still beautiful. Life Like really did a great job on these. Hope everybody else enjoys theirs too. Have a great week!
> (news:Pine.SOL.3.91.980602140430.13052A-100000@godzilla1.acpub.duke.edu)

This entire posting could be considered egocentric speech under either Piaget's or Vygotsky's definition. The user is not directing his speech toward a specific audience other than model railroaders, in general, and is simply expressing his own joy to "everybody".[17] In the text, he even alludes to the fact that he is thinking out loud, and wants to "share his excitement with everybody" . He also mentions the flaw in his locomotive models in the knowledge that

---

[17]In this case, "everybody" includes those who model a different scale (of the twelve standard scales) than that of the locomotives in question (H0). The sender also includes those who model an era other than the 1950s, and a country other than the United States.

someone would disagree vociferously with his opinion.

This seemingly harmless post elicited several types of responses, ranging from agreement and similar excitement to the anticipated and nasty flames. The latter came from people who thought the piece was spam and therefore was wasting time, space on the server, and ultimately money and people who wholeheartedly and emphatically disagreed with the original post. One vehement responder writes: "Finest in what sense? The numberboards seem undersized to my eyes. Not to mention some glaring mistakes. . ." (35754F60.287E@avici.com) and "I feel bad for anyone who gets stuck with them" (3575A8D8.2FB2@earthlink.net). Some of these must be considered to fall into the realm of egocentric speech in the Piagetian sense, since they exhibit a form of one-upmanship and know-it-all type behaviour as each successive sender attempts to find either more flaws or more virtues in the model. The Internet is a natural home for such discourse. Millard explains:

> Print culture . . . dissociates language from the oral world, with its immediate social contexts, implicit hierarchical decorum, and constant phatic reinforcement. By abstracting the sender and receiver of message in space and time, print media allow the transmission of messages that would be, if not exactly unthinkable, at least nearly unperformable in an oral situation. The medium of electronic text further facilitates such performances [while eventually allowing the receivers the

> opportunity to respond and escalate a debate]. . . . Online culture, however, if only through its temporal accelerations and chrono-economic stresses, compounds the dissociation of sender from listener. The immediacy of response typical of online exchanges does not lend itself to dispassionate, considered scholarship, nor does the ephemerality of an online persona. (147-8)

Stated another way, Millard recognizes that the formats of the Internet provide a medium in which traditional social conventions no longer apply. In Piagetian terms, the vetting of thought before it is expressed as socialized speech does not occur in Internet correspondence. The dissociation of sender from listener is due to the fact that the sender does not consider the position of the listener. Therefore, Internet correspondence is often unadapted, or egocentric, speech.

An interesting side effect of the tendency of Internet users to "think out loud" is the assumption by other Internet users that this is exactly what is happening when someone posts a new article or puts up a homepage. The result is that authorial intention on the part of the creator or originator of the message or website is rendered irrelevant. For example, in her essay, "Cyberbabes: (Self-) Representation of Women and the Virtual Male Gaze," Laura Sullivan finds that the hypertext she created for a Cultural Studies class at the University of Florida did not receive hits from the audience she hoped to reach. She laments, "I envisioned other academics viewing it, linked as it was

to the class home page, as an example of innovative classroom activity. . . . [However,] I quickly discovered how wrong I had been to assume the insularity of my project in such a public environment as the Web " (190). A part of Sullivan's site, http://www.ucet.ufl.edu/~sullivan/longhair.html, details the frustrations she experienced while trying to grow long hair and includes a photograph of a model with long hair. The brief biographical outline provided with the "Cyberbabes" article reveals that Sullivan is a doctoral student and her areas of interest are "Marxist and feminist media theory, the discourse of beauty, women and technology, electronic pedagogy, and autobiography" (202-3). Full exploration of Sullivan's site confirms that the "long hair" page is part of a larger project that encompasses all of her areas of interest. Curiously, the site was located by Frank Ploenissen, an admitted long hair fetishist, who includes a link to Sullivan's and other sites devoted to long hair from his own. Sullivan's long hair page apparently receives countless hits from this link. Most of the people who access Sullivan's site assume that the woman in the picture is in reality Sullivan. The following email, complete with one of the ubiquitous emoticons, illustrates this fascinating phenomenon:

> Hi,
>
> I read your hair story *grin*, loved the part about your bangs sticking straight out of your head. I am a

> big fan of long hair and hair cutting stories. Is the picture on that page you currently? (190)

Sullivan's experience indicates that Ploenissen and others make the assumption that she is essentially thinking out loud for any and all to hear, but no one in particular is intended. In fact, Ploenissen's links to other pages has the effect of creating a collective monologue on long hair. There is a common element in each site -- the long hair -- but each is distinct from the others in the group.

Sullivan's long hair page only enhances the overall feeling that someone is thinking out loud, incomprehensibly, on a seemingly bizarre topic, because she did not initially provide links to the rest of the project. The links were added later in a vain attempt to show accidental visitors the actual purpose of the page. The long hair page is only one of several seemingly unrelated pages in a large project. The purpose of each is completely obscured until the entire work has been viewed so that the entire site is its own collective monologue. This feeling is created immediately upon viewing of the home page of Sullivan's site. The hypertext essay begins with a pair of quotations:

> . . . it is a matter--desire beyond desire--of responding faithfully but also as rigorously as possible. . .
> Jacques Derrida, Given Time:I. Counterfeit Money, (30)

> . . .The program of libidinal revolution is political

> only to the degree that it is itself the figure
> for social revolution. . . . Indeed, radical politics has
> traditionally alternated between these
> two classical options or "levels," between the image
> of the triumph of the collectivity and
> that of the liberation of the "soul" or "spiritual body."
>
> Fredric Jameson, The Political Unconscious, (73)
> (http://www.ucet.ufl.edu/~sullivan/longhair.html)

Although one might be a student of Jameson and Derrida, the rationale behind the inclusion of the passages is not immediately obvious. Perhaps Sullivan intends the quotes to appear as though they simply rolled off the virtual tongue because that is the impression.

This impression is confirmed later in the page. Following a map of Florida and a table of headings meant to explicate the project, Sullivan writes:

> FLORIDA?
>
> ted bundy family vacations Jerry's ritz crackers and peanut butter Disney World the wreck the beach jelly fish the beach seminole indians ponce de leon old people old people who run over and kill people because they can't drive palm trees mega-police radar miami salsa spring break in Destin parties Vodka, bullfrogs, pot, muscle relaxers, hash, (acid) getting tan couples BB, Kevin, Bob, Gordon macaroni and cheese, milk, and a lost opportunity the women ted bundy killed another time in Destin cocaine lifeguards fake friends with lots of makeup escaping a hurricane buying my brother beer
> (http://www.ucet.ufl.edu/~sullivan/longhair.html)

The ramble above is unabashedly thinking out loud. The self-directed all-capitals interrogative "Florida?" points to this fact. Part of Sullivan's project is her own personal anecdotal experience as a resident of Florida. The content of

the passage is everything that comes to her mind when she thinks of Florida. Sullivan's soliloquy is analogous to a situation Vygotsky relates:

> Alongside the purely expressive function of egocentric speech, its tendency to simply accompany [activity], this process *becomes thinking in the true sense of the term*. It assumes the function of a planning operation or the function of resolving problem that arises in behaviour. . . . speech becomes inner psychologically before it becomes inner physiologically. Egocentric speech is speech that is inner in function. It is speech for oneself, speech on the threshold of becoming inner. It is already half incomprehensible to others. At the same time, however, it is still external in a physiological sense. There is no evidence which would indicate that it is being transformed into a whisper or any other kind of semi-soundless speech. (Works 1, 114)

While some may argue that Sullivan is, in actuality, employing the narrative device, stream-of-consciousness, this is not the case. A more fitting comparison would be a word association exercise. In these games or studies, the subject says the first thing that comes to his or her mind when he or she hears another word. Sullivan's string is self-consciously performative, but like GITREKKER's practice sessions, it is contextually an egocentric utterance. As such, without having read Sullivan's essay before seeing the website, the author of the current project would have had no clear concept of the entire meaning of the site. Its own accessibility *via* links from other pages (or search engines) obscures the

message. There are hypertext links to other pages from within the ramble but they provide little help. This occurs because each additional page is its own word association based on the word or phrase that forms the link.

Finding information is another aspect of the Internet's environment that necessitates "thinking out loud" in a manner similar to that exhibited in Laura Sullivan's site. While the desired information may be available somewhere on the Internet, a site's Universal Resource Locator (URL) -- *i.e.*, its address -- or links to the specific site may not. A site is simply one voice in a large-scale collective monologue until someone finds it. The user must then use a "search engine," a utility that will search the Internet, an Intranet, database, or a site for keywords selected by the user and return a list of links to sites that have matches[18]. Search engines, such as Yahoo, Lycos, Metacrawler, OpenText, *etc.*, require users to participate in a process that resembles a word-association game. This is true for both the web site designer and the person trying to find the site. When building a web site, programmers include a string of text containing the searchable keywords for that site and/or register the site and its

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[18]Intranets are similar to the Internet in that an intranet is a network of networks that uses the IP. However, intranet nodes are within a single organization such as a large corporation, are generally closed to the Internet, and are accessible only to organization members.

keywords with one of the search engines. The designer attempts to provide keywords which relate to the site. At the same time, the programmer must anticipate the words that might be used by people looking for the kind of information contained in the site in order to ensure that it receives hits since only one word is needed for a match. For instance, Dick Skillen, a consulting engineer specializing in networks, has a keyword list that reads: "Electronic, commerce, connectionless, network, architecture, Engineering, consulting, telecommunications, Electrical, IEEE, Telephone, Pioneers, Skillen, computers, NT, China" (www.interlog.com/~dskillen). The words may be placed in a random order since they are intended to be "thought out loud" by people searching for the kind of service Mr. Skillen provides.

Interestingly, the list of searchable terms need not relate directly to the site. An anecdote from the author's experiences illustrates this aspect of "web surfing" which is best described as a collective monologue. Searching for "Detroit Tigers" resulted in several pornographic sites being included in the list. In an effort to receive more hits by contacting more people, and circumvent firewalls designed to stop them, these sites had added the names of

every major professional sports team to their searchable strings.[19] As in the case of www.yahoooo.com (which is unrelated to www.yahoo.com and is, in fact, an adult, or pornographic, site), provision is often made for potential typographical or spelling errors by clever programmers or site administrators.

Search engine interfaces, or the parts of the program in which queries are entered, are designed with "thinking out loud" in mind. The proverbial activity of "surfing the web" is based entirely on people entering the first thing that comes to mind into a search engine's interface and following the links wherever they lead. Metacrawler, one of the oldest search engines, allows users to choose one of three criteria for searching their keywords: "all" for a list of sites with matches for all of the keywords entered; "any" for a list of sites with matches for any of the keywords; "phrase" for a list of matches for a specific phrase. OpenText's interface allows users to add a nearly infinite number of lines in order to increase the number of search terms and combinations.

The Metacrawler site provides an interesting feature, known as Metaspy, which allows users to view strings currently being searched by the engine.

---

[19]Firewalls are security interfaces between a closed network (such as an Intranet), or a node and the outside Internet. Corporations use firewalls to protect their information and ensure that employees are not misusing resources. Parents and educators use firewalls like NetNanny and Cyber Watch to keep pornographic material away from children.

Metaspy provides surfers and designers with a list of items to copy in their owns strings, and updates it every *fifteen seconds*. Like nearly all search engines and a vast number of Internet sites, Metacrawler is accessible to all Internet users and is free of charge. Public sites like search engines and online news sources rely instead on advertisers for their income. The result is a jumble of banner advertisements breaking up the screen and vying for the attention of users. These collective monologues have become such an intrinsic part of contemporary communications that they have in turn been copied by television broadcasters. For example, CablePulse24, the all-news network of Toronto's CITY TV, generally divides a television screen into *nine* separate portions to broadcast its barrage of information. The collective monologue is no longer the exclusive domain of children. Rather, it is an integral part of our culture.

Research into the behaviour, or phenomenon, of egocentric speech is only associated with young children. However, Warren and Tate's study of the egocentric nature of children's telephone conversations provides an appropriate analog for adult users in the Internet environment. Warren and Tate write:

> Although telephone conversations occur naturally and frequently in children's everyday experience, the cognitive demands of phone conversations may be similar to those of traditional referential

> communication tasks, and children performed similarly poorly. The lack of visual contact and/or the greater physical restraints of telephone conversation appear to be a heavy cognitive burden for younger speakers, which results in deficient, and sometimes unadapted, communication. Conversely, much of preschoolers' apparent communicative sophistication in ordinary face to face interactions may be attributable to shared context and visual regard, since without these supports, conversation quickly degenerates. (260)

Warren and Tate's references to children and telephones could easily be replaced by references to people and the Internet. Developmental psychologists in the Vygotskian tradition allow that egocentric speech "is predominantly internalized by 7 or 8, but can be re-externalized by obstacles at any age" (Zivin 23). Unfortunately, the adult manifestation of this phenomenon remains unexplored in psychological literature.

However, it would appear that the Internet environment provides several of the stimuli required to "re-evoke" egocentric speech in older people of all ages. The Internet has profoundly affected the ways in which people use language. In "Hacking Away at the Counterculture," Andrew Ross fears that "The growing interest among scientists in developing computer programs that will simulate the genetic behaviour of living organisms points to a future where the border between organic and artificial life is less and less distinct" (109). As

his essay was written in 1991, Ross writes from the perspective of someone still living during the Cold War. In the current reality, his statement is more of a prophecy than a warning. When one considers that for Vygotsky, "the cognition of a child took shape in the context of language use in conversational interactions . . . and thus that thought and language were inextricably linked," the Internet may be a major step along the path of integrating human thought and human speech with computers (Harré & Gillett 44). For people with special needs, like Stephen Hawking, this may already be the case. A computer keyboard serves as an interface between the mind of the sender and the screen of the receiver, allowing unprecedented efficiencies in communication. The Internet brings this possibility to millions of homes, schools, offices, and even coffee houses.

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Appendix A: Survey, Data, and Analysis

Survey

Please note that your name will be erased from this email before any of the data is retrieved.

Age:
Gender:

Please rank each of the following statements from 1 to 5 using the following scale

1	2	3	4	5
Never		Sometimes		Always

1. I read email every day.
Rank:
2. I talk out loud to myself when I am working with a word processor.
Rank:
3. I type faster than I think.
Rank:
4. I use abbreviations in emails or memos that I send to friends.
Rank:
5. I use my computer to keep in touch with colleagues.
Rank:
6. I use my telephone to keep in touch with friends.
Rank:
7. I use smiles :) or other symbols when sending emails.
Rank:
8. I enjoy receiving emails with secret codes or new smiles.
Rank:
9. I think out loud when working on a problem.
Rank:
10. I think faster than I can write long hand.
Rank:

11. I write snail-mail letters to keep in touch.
Rank:
12. I mumble to myself when reading written instructions such as a computer manual.
Rank:
13. I read emails out loud without really noticing.
Rank:
14. I use my computer to keep in touch with friends.
Rank:
15. I use the telephone to keep in touch with colleagues.
Rank:
16. I have a specific person in mind when I post an item on the Internet.
Rank:

Debriefing

Thank you very much for completing the survey!

The thesis that the survey data supports is entitled _The Collective Monologues of Cyberspace_. This project intends to examine Internet communications based on the theories of Jean Piaget and L.S. Vygotsky. Piaget and Vygotsky attempt to describe the way in which people, especially children accompany a multiplicity of tasks with self directed speech: ie., thinking out loud. The theorists differ primarily in regard to the use of such speech by adults: Piaget contends that this disappears before adolescence while Vygotsky maintains that adults continue to think out loud given the appropriate setting. My thesis, then, explores the ways in which the faceless, fast-paced, streamlined, and often abbreviated nature of Internet communications mirrors "thinking out loud."

Any comments or questions would be greatly appreciated.

Thanks again,

marc.

Raw Data and Calculations

q2	q3	q4	q7	q8	q9	q10	q12	q13	q16	total
2	5	3	2	2	2	5	2	1	4	28
4	2	4	2	2	4	3	2	2	2	27
2	2	3	3	3	2	5	2	1	4	27
1	5	2	2	3	2	3	2	1	4	25
2	2	1	2	2	5	5	1	1	1	22
2	5	3	1	1	2	4	1	1	3	23
1	3	3	2	1	3	4	1	1	5	24
1	5	2	3	1	3	5	3	1	3	27
1	4	3	1	1	2	4	2	1	4	23
5	3	3	4	3	4	5	4	3	3	37
4	2	5	3	2	4	3	3	1	3	30
1	5	1	1	1	2	1	3	1	3	19
3	5	3	1	1	3	5	5	3	3	32
1	3	3	1	1	1	3	3	1	2	19
3	5	4	1	2	1	5	1	1	5	28
4	4	4	1	2	4	3	4	1	5	32
2	4	4	2	2	4	4	3	2	3	30
2	3	1	1	2	3	3	2	3	1	21
5	1	5	4	5	5	2	1	1	5	34
1	5	4	2	2	2	4	4	4	3	31
3	4	3	3	2	2	4	2	1	3	27
2	3	4	4	3	4	5	2	2	1	30
1	5	3	4	3	3	3	1	1	3	27
2	4	5	2	1	2	5	2	1	2	26
2	4	3	5	3	2	5	2	2	2	30
3	4	4	5	4	4	5	1	1	4	35
3	3	2	5	3	1	5	2	1	5	30
1	4	3	2	1	3	2	1	1	3	21
2	4	2	2	1	2	5	2	1	5	26
1	4	4	4	2	2	5	1	1	3	27
2	5	5	5	5	4	5	2	1	3	37
1	5	4	1	2	1	5	1	1	5	26
4	3	5	5	4	4	5	4	5	3	42
3	5	4	1	1	5	5	4	1	3	32
1	5	2	2	1	2	5	1	1	2	22

1	1	1	1	3	3	5	3	1	3	22
1	5	1	1	1	3	5	2	1	4	24
1	5	5	1	1	1	5	1	1	2	23
3	5	1	1	1	3	5	2	1	5	27
3	3	4	3	3	3	3	1	1	3	27
2	4	4	2	2	2	4	1	1	4	26
3	4	4	4	3	4	5	3	2	2	34
1	5	3	2	1	4	5	1	1	4	27
3	3	4	5	4	3	3	4	2	3	34
1	2	3	2	1	4	5	1	1	5	25
1	3	2	3	2	4	5	3	1	4	28
2	4	4	2	2	3	5	2	1	5	30
3	5	2	1	2	4	5	3	1	2	28
2	4	3	3	4	3	5	3	1	3	31
1	5	3	3	2	1	5	2	1	2	25
1	1	4	5	4	1	5	4	1	5	31
1	5	3	1	2	2	5	1	1	5	26
4	4	3	4	5	5	5	4	1	5	40
3	5	5	4	2	4	5	3	2	2	35
4	5	3	1	3	3	4	3	1	5	32
2	5	4	1	2	2	3	4	3	2	28
3	2	5	5	4	3	5	2	1	2	32
1	5	5	5	4	2	5	2	1	3	33
1	5	3	1	1	3	5	1	1	3	24
5	2	4	4	4	5	5	2	5	2	38
1	4	4	1	3	2	5	1	1	1	23
3	3	4	2	3	3	5	5	4	4	36
1	3	4	1	1	2	3	2	1	2	20
1	5	3	1	1	3	5	1	1	3	24
3	4	2	1	1	4	4	3	1	5	28
1	4	4	1	3	2	5	1	1	1	23
5	3	3	1	3	5	4	5	4	3	36
2	1	2	1	2	2	5	2	1	4	22
3	3	5	4	3	3	4	1	1	3	30
2	5	3	1	3	3	1	3	1	1	23
3	2	3	2	3	4	5	4	3	5	34
3	4	2	1	1	4	4	3	1	5	28
3	4	2	1	1	4	4	3	1	5	28

1	3	4	2	2	2	5	1	1	4	25
2	3	5	3	2	2	3	3	2	5	30
1	2	4	4	5	2	5	1	1	3	28
1	3	1	3	2	2	4	3	1	5	25
1	5	3	1	1	1	5	3	1	3	24
1	2	4	4	5	3	1	2	1	2	25
3	3	4	5	5	4	4	2	2	3	35
2	5	4	4	1	2	5	3	1	5	32
2	5	2	1	2	3	5	4	1	5	30
2	5	5	4	3	5	5	3	2	5	39
2	5	5	5	2	4	4	3	1	5	36
3	1	4	3	3	2	5	1	1	5	28
2	3	4	3	4	2	5	3	1	5	32
4	5	3	2	2	3	4	1	1	5	30
3	3	3	1	1	3	5	3	1	5	28
4	5	2	3	1	4	5	4	1	3	32
3	5	4	2	1	4	5	3	2	5	34
sum										
199	340	299	222	208	263	391	212	128	313	2575
average										
2.21	3.78	3.32	2.47	2.31	2.92	4.34	2.36	1.42	3.48	28.61
standard deviation										
1.16	1.23	1.13	1.42	1.21	1.11	1.02	1.13	0.91	1.28	4.98
minimum value										
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	19.00
maximum value										
5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	42.00
error variance										
1.34	1.52	1.28	2.03	1.45	1.24	1.04	1.29	0.83	1.65	24.82

Analysis

Variable name obtained	Represents	Value
μ	The average of the total score of all participants	28.61
s	The standard deviation of the sample (n-1)	4.98
n	The sample size	90
df	Degrees of freedom in calculation	89

Statistical tables used to find the critical value of t were obtained from Methods in Behavioural Research by Paul C. Cozby. Mayfield Publishing Company, Mountain View California. 1993.

In the survey design, questions 1, 5, 6, 11, 14, and 15 were meaningless questions intended to disguise the true direction of the thesis. These questions, called distractors, prevent people from guessing what it is you are looking for, and answering in the way they anticipate you would want. In an attempt to decrease the chance of someone simply choosing 5 all the way down or 1 all the way down, two of the questions were stated in a negative fashion, *i.e.*, "never" instead of "always" (questions 3 and 16). Thus, to analyze the data the values from the questions were reversed. Finally, the remaining ten questions were entered and analyzed individually to look for bad questions. Only the overall measure or tendency of the survey was of use for this thesis.

The first key point is H(0), or the null hypothesis In our case, if Piaget is right, all people should indicate that they never talk out loud, etc. Therefore,

they should all have answered 1 to every question. Since there are ten useable questions, the AVERAGE score of all participants should be equal to 10. Thus our H(0): X=10. The alternate hypothesis is that Piaget was not right, and we do all speak to ourselves aloud etc, therefore H(1): X>10. Notice that we stated >10 rather than ≠10. It cannot be less than 10. Therefore, our analysis is on a single-tailed normal distribution curve.

If s=4.98, X=10, and μ = 28.61, we calculate a t score t= (X- μ)/s.

It turns out that our calculated t=3.7369.

From the table for one-tailed t, with df>60 and <120, and a significance of .005, t=2.6385

Since our calculated t score is higher than the table value for t, we are **99.5%** sure that H(0) is NOT TRUE. In other words, egocentric speech does not disappear completely.

If we want stronger proof than this, we analyze the next level. If Piaget is even PARTLY right, then people will answer between 1 and 3 on every question, giving us an average of 20 as a score on the test. We want to measure if our observed group mean is significantly higher than this. This time H(0): X=20 and H(1):X>20.

s=4.98, X=20, and μ = 28.61, calculate the t score again.

This time, our calculated value t=1.7289.

From the table for 60<df<120, 0.05 significance, t=1.6645.

Since our calculated t score is higher than the table value for t, we are 95% sure that our new H(0) is NOT TRUE either.

What does all this say? Realistically it means that not only do people agree with the questions, but they agree relatively strongly (3 out of 5). Psychologically speaking, the only thing we have proven is that the opposite is not true (always the result).

Possible sources of error are:

- Question 13 had a very low rank, and was probably mistakenly read as not *noticing* that one was talking aloud.

- The surveys were not given to a random sample of people, therefore we could only really state that our thesis is true for this group alone. *i.e.,* computer/Internet users.

-Not enough respondents included age and sex, thus no correlations between answers and these variables could be measured, it may in fact be that only men think aloud.

- Finally, as always, there is always the possibility that we have measured a third and unrelated variable. To demonstrate this with an obvious example, we could find that people around the world who own televisions also live longer. It might be mistakenly reported that television owning causes longer life, when in reality the third variable of enough money to own a television is more likely to be related to longer life through better ability to afford medical attention.

- The final source of error is probably also the most obvious. Many people can either talk aloud without really noticing, or realize they are doing so, and be embarrassed to admit it. Piaget's teaching is influential enough that there is a stigmatism attached to talking aloud.

The following anecdote from Peter Wieck, from the Wharton School at

the University of Pennsylvania, provides evidence of this last point. Wieck writes:

> I do not at all denegrate "talking to one's self" at any level. But to instruct one's self in (relatively) automatic tasks, reading aloud other than to "taste" the sound of words, those sorts of behaviours have, in my experience, have been indicative of several things in rank order (my opinion and anecdotal only):
>
> 1. Intellectual laziness
> 2. Short attention span
> 3. Unrestrined memory
> 4. Intellectual rigidity

(email to author 2 July, 1998.)

While Wieck's statement seems to be a condemnation, it is actually confirmation of the influence of Piagetian thinking in Western society.