

The Seeds of XLCHC

Vanessa Gack & Noah Finkelstein

**The Laboratory of Comparative Human Cognition
University of California, San Diego
La Jolla, California**

DRAFT
DO NOT QUOTE

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I. Origin of the System: 1978-1987

The raison d'être of LCHC: how does culturally organized experience influence the development of human beings? According to my understanding of the methodological requirements for addressing this problem, cross-cultural research will be most powerful when well educated, highly motivated "natives" of different groups cooperate in comparative research under conditions of equality.

-Interim Carnegie Report

By 1984, two years into the Reagan-Bush era, we had lost virtually all of our minority group faculty, our research concerns were explicitly rejected by federal funding agencies, and were denied post-doctoral funds on the grounds that there was insufficient minority group faculty

-XLCHC Welcome Document

Structurally, electronic networks remove several of the obvious avenues for prejudice. Since the electronic message medium is currently restricted to text, the visual cues to race, [sex], gender, and age are absent.

-PS23 1/2/84

The Seeds of XLCHC Development

The Laboratory of Comparative Human Cognition (LCHC), as it was founded in 1971, is a program of research and training in cultural psychology. As such, one key function of LCHC is to act as a center for information exchange and cooperation across institutional barriers. As early as 1984, the information exchange program divided itself along the following lines: 1) Networking among institutionally separate groups, 2) Selected cross-national cooperation, and 3) Publication through the LCHC Newsletter (*Carnegie*, p. 41). Set against a backdrop of intra-office, intra-university, and inter-academic computer networking, XLCHC (the Extended Laboratory of Comparative Human Cognition) emerged as a natural extension of LCHC and its goals of mutual

collaboration. XLCHC evolved to meet the challenges that LCHC was facing.

Computer access allows XLCHC to transcend the barrier of geographic space to allow communication between institutionally separate and culturally diverse groups. The term "extended" serves as a reference to increased access by both new and old members of LCHC, the physical laboratory. "In the summer of 1983 we initiated XLCHC, a satellite-based message system through which various research groups which have been affiliated with LCHC in the past and share an interest in one or more of its on-going research projects could interact over problems of mutual interest" (*Carnegie*, p. 36). LCHC was already an existing and influential network of academics as described by a fellow:

The network provides tangible support for the growth that comes through keeping in touch with Lab scholars and others...It seems to me that much of the extraordinary influence that the lab has had over the years comes from the intense commitment to mutual-help; to a fluid shifting set of roles to which very little attention is given to the formal disciplinary and status concerns that impede education in general and interdisciplinary work in general (*Carnegie*, p. 32).

XLCHC formalizes this network by allowing perpetual and asynchronous participation by members regardless of ethnicity, location, or position. In the summer of 1983, an experiment connects school children in southern California and Fairbanks, Alaska via electronic messaging, UCSD and the University of Alaska.

Associated with LCHC, the Scollon connection illustrates the dual function of the evolving XLCHC. Scollon, a visitor to LCHC, returns to the University of Alaska where he conducts research on the use of micro-processors in education, thereby broadening the research base of a now expanding LCHC. Scollon's research foreshadows the

pending XLCHC culture:

Electronic mail systems are set up within universities, businesses, and governmental agencies on the assumption that it is *chronos* [clock governed time] governing their operation. They are valued for their speed and efficiency of operation. It is often the case, however, that these message systems become the culture for the growth of complex networks of highly informal *kairos* [geared to appropriateness]-timed communication both within the institutions and others who have somehow gained access (QNLCHC, July 1983, Vol.5, #3).

Time and space limitations transcended, the network is allowed to expand in other directions, evolving new properties and forms of interaction geared toward the needs of XLCHC participants. The success of this project is a pre-eminent example of this non-local type of cooperation, proving that coordinated education through microprocessors is not only possible in theory, but feasible in practice.

Changes in lab composition cement the need for extended non-local LCHC communication. A series of pernicious funding setbacks and ideological shifts undermine the lab's commitment to cultural diversity. The psychology department's decision to terminate a permanent Black colleague greatly undermines the program. "Although [Alonzo] Anderson stayed on to do excellent research, his lack of access to graduate students and the total lack of leadership for minority students in the department cut away from one element of our program" (*Carnegie*, p.39). The lab gets caught in a vicious circle. They are unable to obtain funding for multi-cultural projects without diversity and unable to obtain diversity without funding:

The net effect of these changes was to undermine the principle of division of authority which had underpinned LCHC since its founding. Minority group research faculty continued to analyze data and write, but they could no longer conduct field research which provided a training context for fellows. Only grant proposals that de-emphasized social factors in favor

of individual change, or which promoted new technologies in a culturally neutral way won support (*Carnegie*, p.40).

XLCHC, while unable to remedy funding issues, allows for continued communication and coordination among culturally diverse X-LCHC members. Heterogeneity is maintained, if only at a distance.

Expanding cross-cultural composition proves to be a less formidable obstacle for XLCHC than retaining inter-cultural diversity. Pre-existing connections coupled with advances in communication technologies pave the way for international computer links. The Japanese, for example, come on line with a "Welcome U. of Tokyo" message in June of 1984 via Bitnet.

Organizing and engaging in joint activities with our Japanese colleagues has been greatly improved because of XLCHC. Information may now be exchanged between LCHC and Japan in a matter of days. Previous to XLCHC, over a month was required for written exchanges between LCHC and Japan (*Carnegie*, p. 36).

Two weeks after the Japan connection, Italy comes on line. Denmark and Spain follow shortly thereafter. The following year yields links with Finland, Mexico and Russia [see timeline]. The result is transnational communication, expressed from the outset of the network:

At present there is ongoing discussion on the nature of cultural mediators and problems of power and access that includes people from several ethnic groups located in several parts of the world. XLCHC has provided us with a unique sort of multicultural forum (*Carnegie*, p. 36).

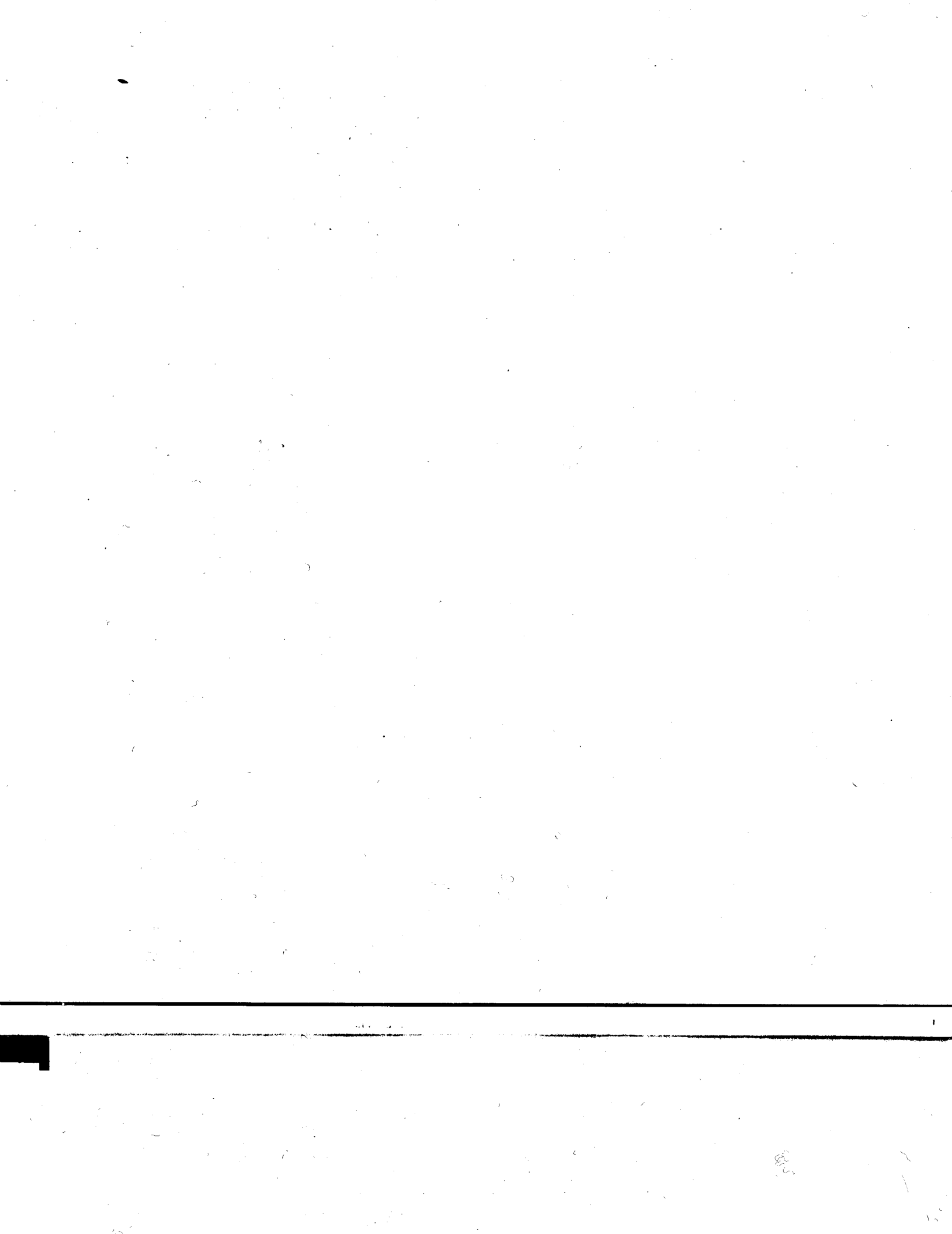
Forming "international working groups which have functioned effectively despite the impediments of distance, money and political conflict" (*Carnegie*, p. 41), XLCHC is a major area of success for LCHC.

XLCHC also supplements some of the limitations of the *Quarterly Newsletter of the Laboratory of Comparative Human Cognition (QNLCHC)*. In *A Note to Contributors, Readers, Journal Editors and Faculty Evaluation Committees*, the editors address some of the misconceptions and problems associated with the Newsletter:

We are a newsletter, not an official archival journal. We are a forum for trying out ideas that fall between the accepted ideals of a good deal of academic discourse on human cognitive processes... In many cases, we would be proud to have written materials that our colleagues have submitted. But we do not edit for standard canons of research and we do not view ourselves as appropriate gatekeepers of academic quality. In like manner, we do not view articles here as "last words," but rather as "first thoughts" that the writer wants to get some feedback on and which we judge to be of interest to the community defined by the thematic interests of the Newsletter. May all join in making the enterprise useful, not straitjacketing. *QNLCHC* (Oct. 1981, Vol.3, no.4 issue)

XLCHC as computer mediated dialogue is a direct response to the limitations of printed text in the exchange of information. The effect of electronic communication is to eliminate some of the constraints of printed text: lagtime in printing, difficulties of widespread distribution, lack of dialogue, and extreme formalization. In order to meet some of the fundamental criteria of information sharing, printed text must forego other fundamental elements. Basically because of distribution constraints on printed text, either time, distribution sites, or interactive discussions must be sacrificed. Because of delays in production and distribution of printed text, the medium becomes one of more formalized ideas rather than the pre-formed notions from which the formalization comes.

The creation of an informal, diverse, widespread, and timely forum appears unreachable in any other medium. Computer conferencing proves a useful tool for preparing materials for publication. The XNRC conference, for example, is one of



LCHC's electronic conferences which runs from December of 1984 to June of 1985. [this foreshadows the development of subgroups]. It runs over a commercial network, the Source, and allows for individuals to post messages for all to read and respond, the electronic analog of an infinitely large bulletin board to which all participants are allowed access. Dozens of academics from around the U.S. participate in the conference which ultimately results in the Publication of Contextual Factors in Education. Exchange of information becomes a powerful tool in and of itself, "creating nothing more than a set of new possibilities" (*Lounsberry*, p. 4) through the constant process of "re-mediation".

Re-mediation equivocates many on-going processes in XLCHC. Messages mediate between ideas while the computers function as tools to mediate between people. XLCHC operators organize the network system. In a collective message, E-mail mediators elaborate their role: "we rethink, replan, reschedule, etc." (ps19, 12/15/1985). XLCHC's virtue stems from its flexibility as a re-mediating system. Time and space limitations absolved, XLCHC serves as a perpetual re-mediator:

It seems to me that we would want XLCHC to offer different uses to different users at different times. It could provide descriptions of on-going projects, proposals, grants, interest groups, some history and image of the future. It should allow a user to come in and log into something he/she can understand, participant, modify, etc. [and] leave messages [that] would be directly copied, saved, and sent to the addresses (ps7 [Duranti], 08/30/1984).

While serving as a perpetual re-mediating device, tensions between centralization and distribution arise as XLCHC grows in size and activity.

Environment of Growth

XLCHC develops symbiotically with the rapidly changing environment of the Communication Department at the University of California at San Diego (UCSD). Crucial to this early development is the formulation of the Communications Department as an endeavor across disciplines:

Communications at UCSD is an interdisciplinary effort, drawing upon the strengths of the social sciences such as anthropology, linguistics, political science, psychology and sociology. In their courses, communications students will master theories, concepts, and methods for dealing with the study of interaction at the political, societal, group, and individual levels (Catalogue, *Carnegie* p.16).

This organizational framework necessitates good communication between departments:

Computer networking has been a basic mode of cooperation among LCHC members on the UCSD campus since the laboratory moved to UCSD because of the distributed office space assigned to us, our close relations with people in various departments, and the fact that many of us spent time in the field, making coordination difficult. With seed money from UCSD and cooperation from our colleagues in the Center For Human Information Processing (CHIP), this messaging activity expanded at a steady pace, spreading to homes and remote locations as communications software added to our microprocessors made remote messaging practical (*Carnegie*, p. 35).

XLCHC arises, not as an innovation, but as a product of the system's new awareness of its pre-existing potentialities.

Intricately linked with the expansion of XLCHC is the internal development of the communication department and its capabilities. The Winter of 1985 yields a new COM/HIP 175 class on computer networking. "One of the repeated positive comments about the class is that it teaches you to use human resources" (Class Evaluation, ACCESS, Cole 12/85). Plans for the following quarter included an EIES account to supplement the Source Account, a UNIX account, a 198 "big siblings" class, and a hired

media clerk. Of special importance is the established funding for the classes and the addition of a paid media clerk. These costs distributed, networking moves beyond the scope of LCHC. This early expansion yields many diverse products:

- A new INC (Informative Networks on Computers) publication lists links to Pitzer and to Charles Crook in England
- A live chat with the Soviets (2/7/86)
- a KIDS project (Kids from Lowell - w/Kids in NY)
- a CRTNET (Communications Research and Theory Network) project and a DEAFNET project (INC, Vol.1, Jan 24, 1986).
- Classrooms interaction with Pistoia and Tanzania over educational projects

In January, though, James Levin, an instrumental force in the development of these networking capabilities, leaves. Despite his departure, the program continues to grow and prosper, a testament to its strength and independence.

Networking at UCSD promotes new kinds of interaction and thought that lay the basis for XLCHC development:

Following the model for acquisition of basic literacy, we have come to treat the computer as a kind of prosthetic device for the acquisition of more complex higher psychological functions: improving systems of logical memory, inference, and problem solving...At the same time, artful arrangement of interactions **between** activity settings both amplify and serve as a conduit for new goals within activity systems. (*QNLCHC* . July 1989, Vol.11, #3, p.49). *Note: This Newsletter is, itself, a product of computer networking.

Another LCHC electronic conference, in July, 1986, the MOST Conference, exemplifies the kinds of new frontiers that networking explores. Built as a "bridge", literal translation of the word, MOST is a conference that was designed to invite participation between American and Soviet researchers on the topic of "Computers, Communication, and Education" over the Source. The MOST Conference begins as an allegorical

discussion about bridges/communication. Interestingly enough, MOST is the conversation that lays the foundation for a later series of Soviet-American projects over the Source involving the relation between computers, communication, and education . Here, theory and practice blur. From these early experiences, grows much of the philosophy and goals of the newly reflective XLCHC.

The Technology

Experimentation with different types of technologies characterizes the early development of the XLCHC. One of the main constraints at the time, though, involves affordability. XLCHC's goal of connecting a diverse group is reflected in an attempt to make technology a non-issue by making it affordable. As XLCHC expands, it tests the bounds of the technology. While providing more potential, this expansion proves to be increasingly expensive and trying. As a result, connectivity becomes less an issue of affordability and more an issue of reliability and accessibility. Communication between different countries and among different systems exacerbates the lack of standardization between different levels of networking technology. Critical to the development of XLCHC, then, are advances in communication applications.

The success of the Defense Advanced Research Projects Agency Network, ARPA Net, more than a decade prior to the development of XLCHC demonstrates the viability of computer network application and leads the way for inter-university communication. [Similarly, independent development of links between MIT and CUNY??? expand to

become the BITNET. Both ARPANET and the BITNET flourish becoming more powerful as their value and potential become recognized ...check bitnet] Ironically, the E-Mail that later characterizes these systems, initially appears as a mere adjunct. Wide area networks that connect universities and research sites across the nation are established to allow for mass data transfer, functions that evolve into ftp (file transfer) and telnet (remote login) features. Electronic messaging, however, is not considered as a valuable means of communication. It is only after the widespread use of the electronic messaging that e-mail is recognized as an essential element of networking.

As with the large scale development of most systems, a need for standardization soon arises. What were once wholly independent systems begin to connect and merge. As computer networks begin to proliferate and interconnect over the following ten years, TCP/IP, a universal communication protocol, evolves to meet the need for standardization and is officially adopted by Military Specs in 1983. With such an advance come vast developments in connectivity and world accessibility with the Internet. In a similar time frame, UNIX, an operating system for mainframe computer systems, is distributed and roots in most academic and research environments providing a competitive alternative to the older VMS operating system. Both the Berkeley developers of UNIX and Sun Microsystems bring the TCP/IP protocol into widespread use.

Meanwhile, as operating systems and communication protocol develop, LCHC begins to exploit the booming potential of computers. As LCHC relocates to UCSD in 1978, lab members are given access to the university mainframe computing facilities.

Lab members use the Hazeltine 'dumb' terminals to connect to the main computing center. While the mainframes offer many new opportunities, they are still somewhat difficult to work with; they are slow, frequented by 'down-time', and offer little better quality print than the typewriter. As LCHC begins to use its first micro-computers, Apple]['s, the domains of the micro and mainframe computers are blurred. In the earliest stages, the benefits of the computing power of the mainframe is appealing for larger scaled work (statistical analysis, word processing, and e-mail). It is clear, however, that the micro-computer will become more significant as its abilities develop. With the development of UCSD Pascal, it becomes more efficient to use the local computers (Apple][s) to write documents. Electronic mail, however, remains the specific domain of the mainframe computers.

Intra-campus electronic communication, as well as developing potential for inter-campus mail, merits strong ties between the micro and mainframe computers. This connection becomes integral to the workings of the lab. Electronic discussions begin as a useful replacement for informal memos and lab meeting summaries and evolve to provide a more efficient means of communication in a variety of areas. The use of alias lists and multiple addressees allow for a simple means of including a wide range of participants. An alias list allows a user to simplify the addressing procedure by storing an alias or nickname for frequently used addresses. Multiple address lists, in like fashion, provide a user with the ability to mail multiple persons (the same message) at once. In an unprecedented fashion, an individual may now contact hundreds (or thousands) of other users in a matter of moments. Many such 'memo' lists develop at

LCHC and UCSD: labsum (participants of the weekly lab meetings and a precursor to xlchc), lchc (members of the lchc community proper), ACCESS (students participating in the communications networking and independent projects), and xlchc. In fact, the lab. becomes so associated with electronic messaging that archiving of these various messaging lists begins. A rather cumbersome and time consuming process of archiving evolves into a more efficient and consistent process as the power of microcomputers increases. XLCHC begins a consistent recorded history as the Apple II's give way to Macintosh and IBM personal computers.

XLCHC expands, crucially dependent upon a variety of networks. The initial base of ARPA net, later melded into the Internet, is not sufficient to reach the wide range of participants of the eXtended Lab. of Comparative Human Cognition. An early avenue for international networking is the Source. Because of its satellite access, the Source is both far reaching and expensive. Communication with the Soviets is first made through the Source. Other networks such as IGC, and EIES prove to be useful in their ability to connect with diverse groups in a more cost efficient manner. Indeed, most connections with foreign participants begin with a commercial service such as the Source or EIES. However, domestic connections are almost exclusively through the Internet or Bitnet. National development of these two systems provide links to most all of the major American universities and research sites. As existing systems, supported by the government and institutional sponsors, the Internet and Bitnet provide a 'free-ride' for electronic communication. As the domains of the Internet/Bitnet and commercial systems overlap, the far more economical route of the Internet/Bitnet appeals. Because

most international academic and research institutions now have Internet or Bitnet access, XLCHC is solely comprised of participants on one of these two systems.

Central Mediation of Network Structure

XLCHC is to provide wide access to information. This may be achieved electronically in a variety of ways: listserver or reflecting account, direct mail, or conferencing/bulletin board system. All systems except for direct mail require a centralized hub or clearing house. A listserver or reflecting account requires that participants join the system, and send all correspondence to a central account which will, in turn, re-route the message to all individuals who have previously voiced interest in the network. Direct mail would require all individuals to message all interested parties in a public note. That is, any participant would directly mail all other participants interested in the said topic. This system, however, can only work on a small scale as it requires each participant to possess an up to date list of all network participants. Finally, a conference or bulletin board network, allows any participant to post messages that all other participants may see. This too requires a central location for the 'posting' of messages. The greatest difference with a bulletin board system is that it requires the participants to go to the messages rather than the messages going to the participants. XLCHC exercises the benefits of a centralized reflecting account; with relatively low upkeep at the central hub, individuals are required to do no more than read their electronic mail in order to participate on in the network.

The early non-standardized nature of computer networks coupled with the rise