NAVAJO CYBERSOVEREIGNTY:
DIGITAL DINE' WEAVING THE WORLD WIDE WEB
INTO AN ORAL CULTURE

by

Frances Vitali

Emporia, Kansas

April 2000

A Dissertation
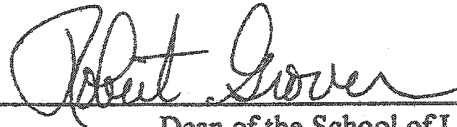Presented to
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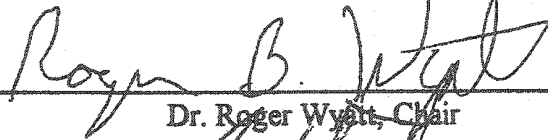
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Doctor of Philosophy

The School of Library & Information Management

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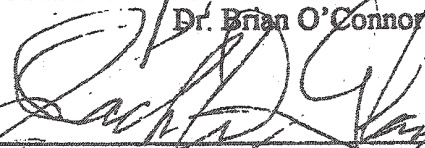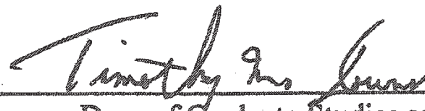Dean of the School of Library
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To forget one's indebtedness is the greatest crime a person can commit. – Simon Bolivar

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I am thankful to all who have helped and supported me in the process of the dissertation research. Your generosity, support, kindness and wisdom have been appreciated and have contributed to the final product. To those individuals who have provided me with exceptional challenges, I say thank you for strengthening my personal stamina, determination, and convictions.

~

If you want to share a vision or tell the truth, you pick up your pen and take your chances. – Nikki Giovanni

~

Treasures of the heart are the most valuable of all. - Nichiren Daishonin

~

Navajo Din4 leaders, chapter officials, community members, educators, and advocates, who so unselfishly give of yourselves to the People, it is an honor to know you. "Baa ahéhee' nisin" to:

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* Lake Valley Senior Citizens Center staff and elders;

* Lake Valley Navajo School principal, students, faculty and staff;

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* Navajo Communications External Affairs Manager Francis Mike

* Robert Moore (Navajo) and Dianne Guitterez (Navajo) formerly of ATIIN, one of the first Native American cyber-trade businesses in New Mexico;

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* Research mentor Dr. Joanne McCloskey for her guidance;

* Dr. Paul Zolbrod for honing my path into orality and literacy;

~

Great ideas spring not so much from noble intelligence as from noble feeling. - Fyodor Dostoevesky

~

~

You must do the thing you think you cannot do. -- Eleanor Roosevelt

~

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Intelligent and kind people are beautiful. They inspire trust and a sense of reassurance in those around them. - Daisaku Ikeda

~

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Being deeply loved by someone gives you strength, while loving someone deeply gives you courage. - Lao-Tsu

~

Thank you to Michele J. DeLese for providing a comfortable home, care, nurturance, support, and friendship - a true benefactor! Your continual encouragement and love contributed to maintaining a healthy and happy balance during the doctoral research experience.

~

The stories we tell not only explain things to others, they explain them to ourselves. - Donald Norman

We are chords to other chords to other chords, if we're lucky, to melody. - Joy Harjo

~

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Title

Navajo Cyber-Sovereignty:
Digital Diné Weaving the World Wide Web
into an Oral Culture

abstract approved

Brian C. O'Connor & Roger B. Wyatt
Dissertation Directors

Abstract

Cyber-sovereignty emerged as the primary issue during the process of Internet connectivity within a rural community of the Navajo Nation. This qualitative, case study approach explores cultural and technological obstacles between Diné (Navajo) community members and available computer technology within Lake Valley, New Mexico. The researcher was as much part of the process as the community residents in actively confronting the issues of technological change.

Digital Diné is a pun and a working metaphor. Diné know themselves as the Five-Fingered People. Diné have a long history of incorporating implements and techniques of other cultures into their own. Farella (1984) describes this cultural fusion as "incorporativeness, so that entire technologies can be integrated into the culture without causing basic changes, and the culture can be adapted relatively easily to changing conditions" (p. 196). Thus, Digital Diné reflects a persistent association with technology, the current use of Internet technologies, and historical self-image.

Orality and literacy, as contrasting and complementary technologies, intersect with the new communication technologies of the WWW or web culture. Orality, literacy, and the WWW are technologies that differ according to the context of their usage and users. Web technologies, as extensions of visual, aural, tactile, and oral space, share characteristics of orality, and may be more accessible for use as a tool by Diné (Brian O'Connor, personal communication, October 8,1997). The new communication technologies and the process of "becoming digital" (McLellan, 1996; Negroponte, 1995) may share metaphorical relevance with cultures that value orality.

CHAPTER ONE: INTRODUCTION

Opening Vignette
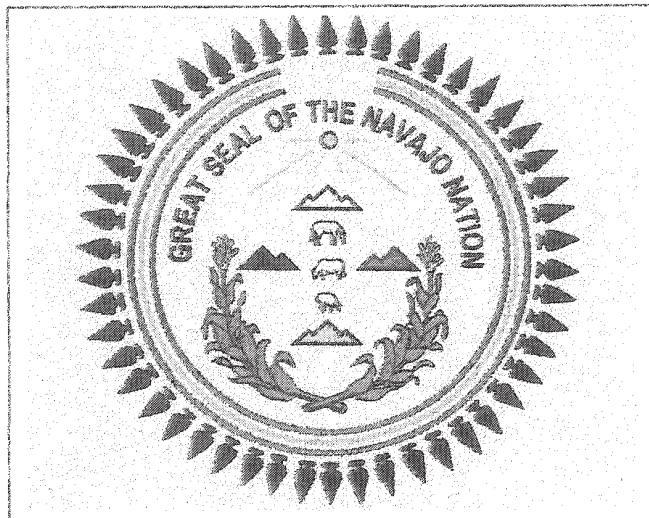
<u>Figure 1</u>. Navajo Nation Seal. See Appendix A for symbols.

Southwest fiction author, Tony Hillerman, (1988) captured the nuances of telephone service and quality on the Navajo reservation in <u>Thief in Time</u>:

Until recently telephone calls between the world outside and

Chaco had traveled via Navajo Communications Company telephone line.

From Crownpoint northeast, the wire wandered across the rolling

grassland, attached mostly to fence posts and relying on its own poles only

when no fence was available going in the right direction. This system

made telephone service subject to the same hazards as the ranch fence on

which it piggybacked. Drifts of tumbleweeds, winter blizzards, dry rot,

errant cattle, broke down both fences and communications. When

operating, voices sometimes tended to fade in and out with the wind

velocity. But recently this system had been modernized. Calls were now

routed two hundred miles east to Santa Fe, then beamed to a satellite and rebroadcast to a receiving dish at Chaco. The space age system, like the National Aeronautics and Space Administration which made it possible, was frequently out of operation. When it worked at all, voices tended to fade in and out with the wind velocity. Today was no exception. (p. 99)

Although Navajo Communications Company (NCC) telephone service and quality have improved over time, in 1999, telephone service on the Navajo Nation remains lacking in some areas. There are still chapter houses and communities without any phone service or infrastructure. On the Navajo response time to emergency 911 calls is slow because messages are intercepted by several other parties before reaching their intended destination. For example, 911 calls are received first by county sheriffs and then transferred by U.S. West to Crownpoint Police Department (Jean Whitehorse, May 9, 1999). Jean Whitehorse addresses the existing digital divide:

The Navajo people are at the crossroads living in two worlds: traditional and modern. But should our people suffer and be penalized and live with hardships and inadequate services? Should our people be treated any less humanely because of the life-style they choose to live in remote areas on their land? NCC's only concern is the profit margin. How much value should be put on a life? Yes! It's difficult in dealing with modern technology in the remote areas when funds are not available. What we need now is a means of working together and progress to better the life of our people with other alternatives. As an enrolled member of the Navajo Nation, I'm addressing these issues and concerns on behalf of the people

who deal with inadequate services with the communication system in general. The Diné people have encountered oppression, dealt with it and survived, and now we are dealing with bondage, with budget cuts at the grass roots level due to lack of funding. Now where do we stand as a Sovereign Nation, and how are we exercising our self-determination act? (Jean Whitehorse, Digital Council Fires, May 15, 1999)

Context of the Research

I have been observing Lake Valley community and the emerging communication technology with personal curiosity since the early 1990s. This intrinsic case study reflects a systematic research endeavor in trying to understand the information technologies through the sometimes competing and other times complementary technologies of orality (face-to-face communication) and literacy (text-based communication) within Lake Valley, New Mexico, a rural community within the Navajo (Diné) Nation. See Figure 2 and Appendices C1 and C2 for an indication of the rural nature of the community.

The case study of Lake Valley itself emerged in place of the original research proposal once I became part of the process of getting Lake Valley connected to the Internet and become the Gates Foundation pilot project site monitor. I could have completed a research project at Diné College-Crownpoint campus where there is a computer lab with Internet connection, students, and community members who use computers regularly. I have learned a great deal from my association with these students, staff, and faculty. Some of their voices are represented in the body of the research.
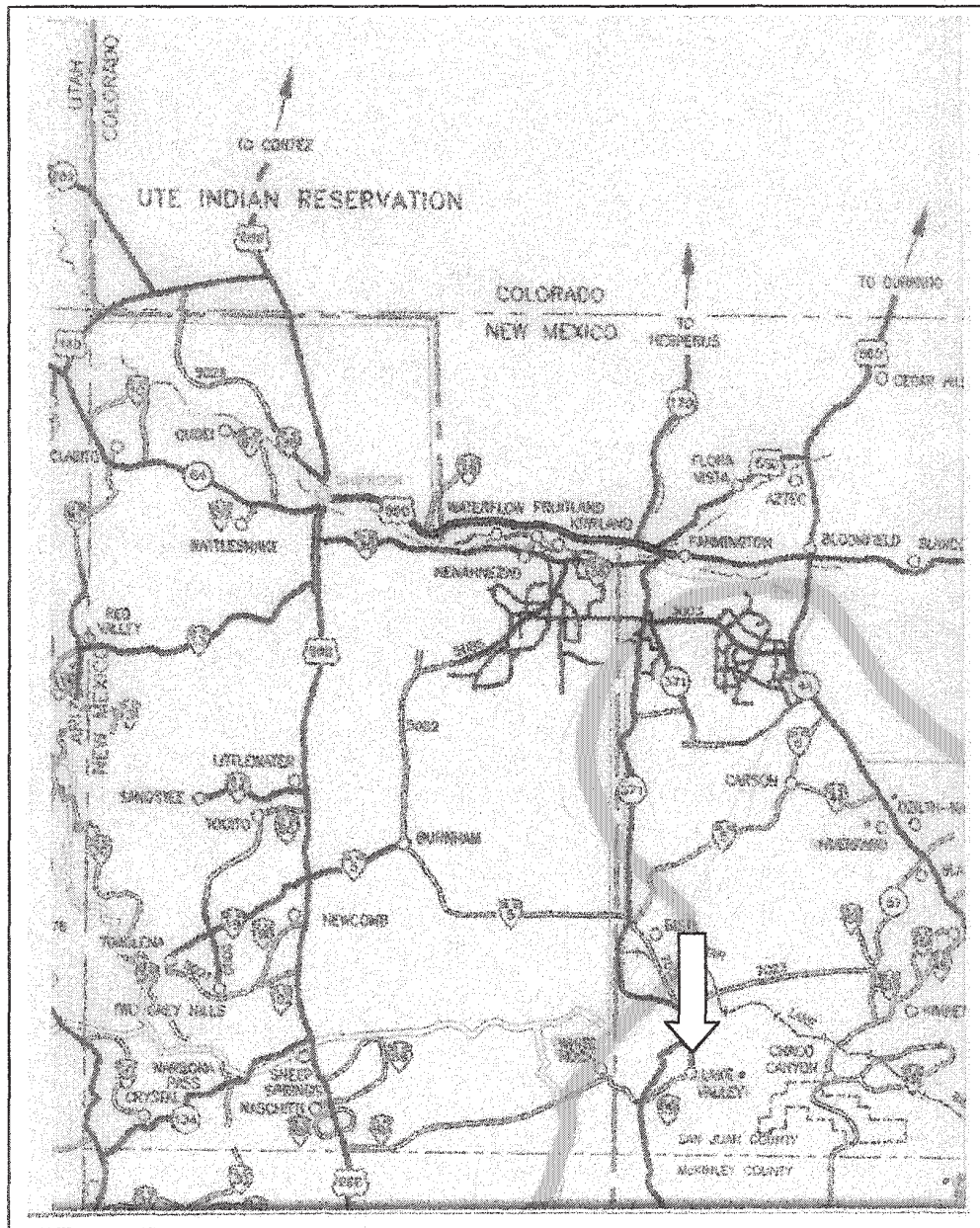
Figure 2. Bureau of Indian Affairs map showing Lake Valley

However, I chose the path of greater resistance. This case was also chosen because of the researcher's familiarity and experience of having lived six years as a guest within the Navajo Nation teaching for the U. S. Bureau of Indian Affairs (BIA). My experience as a guest and educator on and near the Navajo Nation has not only prepared me for the fieldwork experience; it has also committed me to contributing something of value to the community. In the Navajo way, the meaning of k'e establishes the significance of relationships extended to relatives, friends, and all other beings, and underlie the actions of cooperation, solidarity, and kinship (Witherspoon, 1977; Farella, 1984). In the brief time from August 1998 to March 2000, I have again been residing in the community of Lake Valley, NM, trying to get a sense of what is happening within and around this community as computers and software - office suites, CD-ROMS, Internet, WWW, E-mail, chatlines - infiltrate the community college, elementary schools, and individual homes.

Peshkin (Stake, 1994) describes intrinsic case study where the interest is within the case itself. This perspective also reflects the nature of the technological issues within this community, for each community represents a unique social, cultural, political, educational grouping that is best approached on an individual basis. During the course of the research, I have heard the comment that Rural Indian America is no different from any other place in Rural America. The lack of infrastructure building because of inadequate telephone lines and fiber optics determines economic wealth, sustainability and development within a community. What remains different is the sociological and cultural impact of technology in the lives of the people it serves. Lake Valley community in Rural Indian America is a case unto itself.

Other than knowing the place of the research, I was not certain what my case study was going to be. However, in time, events occurred that provided a natural progression to pursue. Often it seemed I was in the right place at the right time as events unfolded around me. There are two components embedded in the case study, following Baldwin's (1993, 1995) suggestion that research should transcend looking at only obstacles to connectivity and focus more on interaction.

I have been a participant observer during most of the research, and at other times, direct observer, informant, and advocate. It was not until very recently that I began to discover the voice, the form, and style in which to tell the story. My goal has always been to preserve the voices, events, interaction, and dynamic as accurately as possible. However, this is an interpretation; my interpretation with my own biases and inadequacies. My goal is not toward grand generalization, or theory building. I admit there are many complexities, which I still do not understand, at the same time understanding there are even more complexities, which have been overlooked without intention. I confess, as Cleary (1991), that this research process has not been "without emotion" (p. 26), however, it is an honest representation.

What follows does not represent a completion of a journey but a stop along the way. These frozen frames help to illuminate the exploration, similar to the patterns that emerge during the beginning stages of making a rug. This research represents a moment to stop and reflect before returning to the unfinished rug on the loom.

Problem Questions

I was curious as to why Lake Valley Chapter House for four, going on five years, had yet to be connected to the Internet. I was a school librarian at Lake Valley Navajo School (LVNS) at the time of the "Collections and Connections" House Bills 2 and 19 legislative initiative introduced by New Mexico Senator, Leonard Tsosie and its eventual passage by the New Mexico State Legislature. A major provision of New Mexico Senate HB 19 was committed to providing tribal libraries and chapters with networking technology for universal access. In 1995, Lake Valley chapter was a recipient of a computer workstation through this funding. I questioned what was taking Lake Valley chapter so long in getting their Internet connection.

In April 1999, Lake Valley chapter became a pilot project site for the Bill and Melinda Gates Foundation New Native American Access to Technology Initiative. With the availability of this new computer workstation, in addition to the New Mexico State Library computer workstation, my research agenda unfolded when I was invited to be the pilot project site monitor at Lake Valley Chapter House.

Native American Access to Technology Program

Recognizing that Native communities in the United States often have their own unique information and training needs, the Bill & Melinda Gates Foundation is working with tribal leaders, librarians and educators to address specific needs. The Foundation is developing a program to place public access computers in public areas on reservations. The goal of this grant program is to provide access to technology in order to address the growing digital divide among Native Americans. This program will empower Native communities by providing access to digital information resources, access to tools and technology to preserve local culture and heritage, and opportunities for communities to teach each other digital skills. Currently under development, the Native American Access to Technology Grant Program will first be offered to Native communities in the Four Corners area.

Figure 3. Portion of the WWW site for grant program.

The intention of the Gates initiative from the very beginning was to relate the technology to the user "in a context that is respectful of your culture and people.(personal communication, Jean Whitehorse, April 13, 1999) A primary question for the foundation and for my own work was: how would the community use the computer? Jessica Dorr, Native American Access to Technology Initiative Grant Program Manager, was interested in how the Gates' computer would be used; and also anxious to hear any suggestions and recommendations raised by community members themselves about the software programs and computer workstation.

It was also in April 1999 when the Internet was connected for the New Mexico State Library computer at Lake Valley Chapter House. (See Figure 4) With that development I was able to frame my primary questions. How would the Internet be used by Lake Valley community members? How would oral culture intersect with World Wide Web culture? How would the Navajo tradition of incorporating new technologies put its signature on web technology?

Figure 4. Lake Valley Chapter House WWW presence begins.

Navajo Culture and Technology as the Focus

Understanding the interactions of cultural technology and communications technology within a Navajo context, this study is framed within a deep analysis of culture, history, social, and technical dimensions. The year and a half-long study was a reflexive investigation of the community and the people who comprise it, exploring:

- the obstacles in obtaining Internet connectivity within one community in rural Indian America

- the interaction of computer technology and Navajo (Diné) culture as Navajo define themselves

Technology also played a role in the dissemination process, for the dissertation is a web-based research product that will be accessible to a wider audience. Giving back something to the community in representing and sharing the research achievements was considered important to the research design.

I was situated in a place and at a time that was, and continues to be, very exciting. The reason I was there was not because I had a dissertation to finish, but because I am a member of this community, the community of Lake Valley. Community residents asked how are they going to get computers and Internet access? There is greater access to advanced emerging communication technology within educational institutions, federal and tribal agencies. However, personal accessibility is limited due to the cost prohibitive long distance rates existing in rural areas of the Navajo Nation. Students are depending on adults and the Navajo Nation to catch up with their technological needs. Considered children at risk, the digital divide, poses even greater risks to their educational and

personal futures. Navajo computer specialist Devona Devore (Personal communication, March 13, 2000) further explains: "Chapter officials need to realize how important and necessary technology is to our children" [on the Navajo reservation].

Centered in the community, often events, people, and situations presented themselves to me rather than my searching them out. Honoring the cyclical nature and significance of diurnal time, directions, and geography, this research journey is represented as traveling along the Four Sacred Directions, beginning in the East.
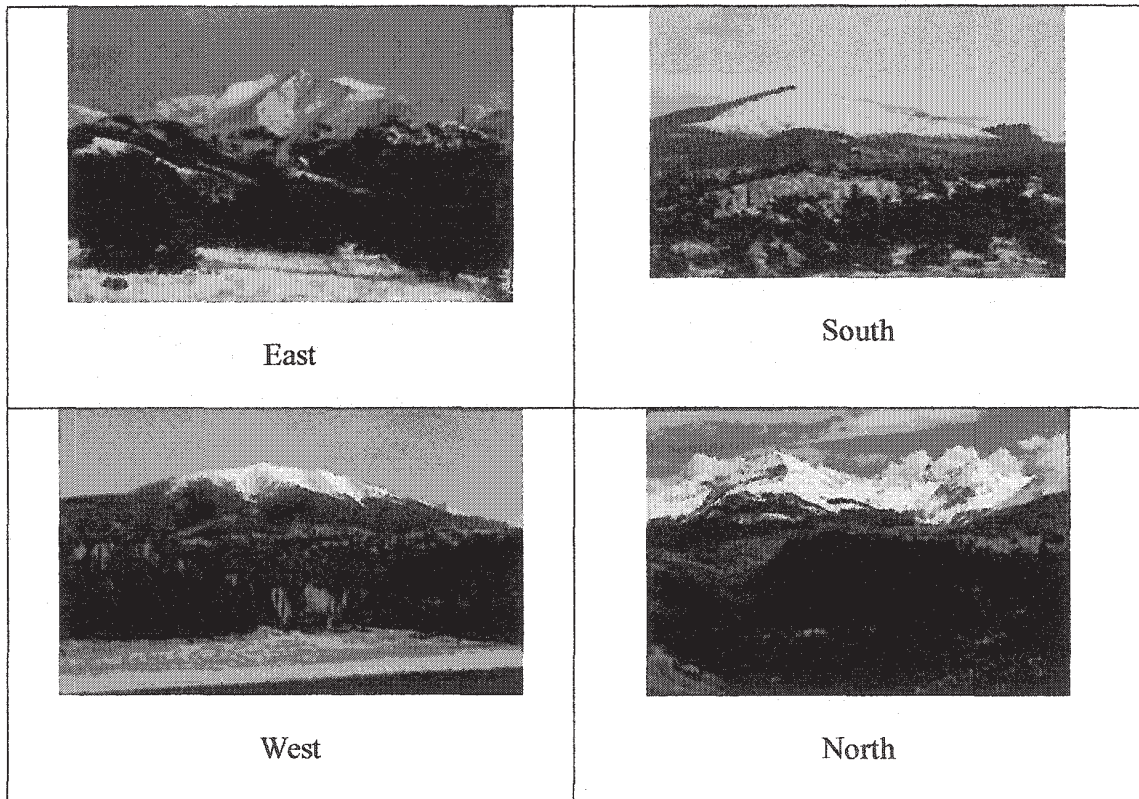
Figure 5. Four Sacred Mountains, adapted from Navajo Nation WWW site

Themes emerging from the collection of data were related and framed with consideration to the Sacred Geography of the Four Directions and Four Sacred Mountains. (Aronilth, 1991) Themes were placed within the context of the particular Direction to which it correlated. Accordingly, each theme is represented by its corresponding color. In this way, the research product honors Navajo land and perspective.

Again, in honoring Navajo perspective, the process of weaving became a symbolic mode in which to work within my 'text-ile' exposition. This analogy seems fitting since "dah'iistl'o" literally means "progressing from the ground up" (Willink and Zolbrod, 1996, p. 2) with the thoughts, attitudes, and style of the weaver incorporated into the weaving process.

The Bill and Melinda Gates Foundation Native American Access to Technology Pilot Project contributed a vital thread in the weaving of this case study. The pilot project was another color of weft cord passing through the framed warp. Elders, adults, children, adolescents, mentors, and educators have also contributed a thread to the way this rug was woven and its resulting story. The story and dah' iistl'o would remain incomplete with any one of these vibrant elements missing.

The Bill and Melinda Gates Foundation pilot project provided a means to begin weaving a case study of Lake Valley community that complemented what already existed. It was an emergent design.

Historical Context: Technologies of Orality and Literacy

In honoring both communication technologies of orality and literacy, each perspective serves as a foundation for understanding the new information technologies. The insider's perspective, representing the tradition of orality, values the origin story as the primary cultural-historical past of Diné; and the outsider's perspective, representing the tradition of literacy, details the archeological and anthropological research as the ascribed history of the Southwest (Faris, 1996; Turner, 1981). Just as there remain questions from the archeological and anthropological literary perspective concerning Navajo history, there remains no single definitive version of the creation or origin story. "The idea of multiple versions helps to identify a fundamental characteristic of orality (Personal communication, Paul Zolbrod, March 9, 2000).

Navajo Language: Oral Perspective

Navajo origin and creation narratives reveal more than where Navajo originated and lived. Diné origin story describes the journeying of early ancestors through four prehistoric worlds due to internal chaos and conflicts. Throughout their adventures, the forerunners to the Navajo metamorphosed into other entities; were assisted by the Holy People; and learned proper ways of living in the world and proper social relations with others (Aronilth, 1991; Faris, 1996; McNeley, 1988b; Schwarz, 1997; Yazzie, 1971; Zolbrod, 1984).

The journey is characterized by the upward movement from darkness to light-- through black, blue, yellow, and white worlds--eventually arriving at Dinetah, the "homeland of the People" (Tapahonso, 1993, p.7), or "place of emergence" (Schwarz, 1997, p. 17) on the earth's surface of the glittering fourth world (Acrey, 1988; Aronilth,

1991; Faris, 1996; McNeley, 1988b; Roessel, 1983; Yazzie, 1971; Young, 1978; Zolbrod, 1984). Aronilth (1991) describes the place of emergence as the fifth world, the changeable world.

Soil taken from the sacred mountains of the underworlds created the sacred geography of Navajo land whereupon the Holy People, invisibly occupied and presently still remain. The presence of the Holy People allows for the flexibility of the oral tradition within the six sacred areas on the earth's surface; it is a symbol of their powerful and life-giving forces as they continue to guide and protect Diné. (Aronilth, 1991; McNeley, 1988b)

According to some established traditions, it was the fourth world where the Holy People created the Nihookaa' Diné (Earth Surface People) and created the four clans of Diné as the "five fingered people" distinguishing them from their ancestors (Aronilth, 1991). Abbreviated as Diné and T'aa Diné, this appellation refers to 'The People', 'The Indigenous People', who are bound to the Sacred Earth, Holy People, and the Universe (Diné k'ehgo na' nitin dóó Óhoo'aah bá ilá Diné ~ Child Teaching Manual, 1996).

The Holy People created First Man and First Woman who in turn created descendents of their own with the assistance of the Holy People (Aronilth, 1991; McNeley, 1988b; Schwarz, 1997). The Holy People bestowed First Man and First Woman with a language, name, clans, shadow, and an identity, and the couple were responsible for establishing the proper life conditions for all future creations (McNeley, 1988b; Aronilth, 1991). Changing Woman, the adopted daughter of First Man and First Woman, eventually assumed leadership from her First Parents, and in time, recreated the original four clans during her sojourn to the West. According to the origin story, "Naa

baa hii Diné" (Aronilth, 1991, p. 77), meaning warrior and hunter, was the name given by

the Sun--father of the Twin warriors--to identify the Navajo sons of Changing Woman.

Sa'ah naagháí bik'eh hózho, the primordial relationship between earth and sky, is the

eternal and universal presence of life forces that govern movement, action, and language

(Aronilth, 1991).

DINÉ BISODIZIN BEE HADAHAAZT'I'IGÍÍ
Diné Introductory Prayer

Kodóó Hózhǫǫ dooleeł
From here, there shall be Blessing
Nahasdzáán Shimá, Yádiłhił Shitaa'
Mother Earth, Father Sky
Hayoołkááł, Nohodeełⁱiizh
To the direction of the Early Morning Eastern White Dawn, Southern Blue,
Nohootsoi, Chahałheeł
Western Evening Yellow, Northern Darkness Night
Sisnaajini, Tsoodził
To the Spirit of Eastern Blanca Peak, Southern Mount Taylor,
Dook'o'oslííd, Dibé Nitsaa
Western San Francisco Peak, Northern La Plata Mountains,
Dził Ná'oodiłii, Ch'óol'íí'
Huerfano Mountain, Gobernador Knob
Shichei Haashch'ééłti'í, Shichei Haashch'é'óóghaan
Grandfather Eastern Talking God, Grandfather Western Talking God
Yoołgai Asdzáá Shimá, Asdzáá Nádleehí Shimá
White Shell Woman My Mother, Changing Woman My Mother
Naadą́'ałgai Ashkii, Naadą́'ałtsoi At'ééd
White Corn Boy, Yellow Corn Girl
Yódí Ałtaas'éí, Niłⁱiz Ałtaas'éí
Jewely made with different colored stones, Sacred prayer stones of different colors
Tó Ałtaashchíín, Tó Biyáázh
Water of different forms, Son of Water
Tadídíín Ashkii, Aniłt'ánii At'ééd
Corn Pollen Boy, Corn Beetle Girl
Si'ah Naagháí Bik'eh Hozhǫ
I shall be in Harmony, walk in Beauty, and live in Happiness with all things that exist
Hózhǫ náhásdlíí'
There is Blessing
Hózhǫ náhásdlíí'
There is Blessing
Hózhǫ náhásdlíí'
There is Blessing
Hózhǫ náhásdlíí'
There is Blessing

Office of Diné Culture & Language, 1992, Division of Diné Education, (520) 871-7660

Figure 6. Example of font modifications for representing Navajo words.

Sa'ah naagháí bik'eh hózho is the basis of life, prayer, ceremonies, and song (Walter, 1998). Created by the Holy People, language--originated first through thought, animated by sound, and voiced through language--developed throughout the four worlds (Aronilth, 1991). As a result, the minds and thoughts of the Holy People are reflected within Diné language and embodied through Diné people. After the emergence of Diné onto the fourth world, First Man and First Woman are credited with the creation and development of Diné communication through ceremonies, prayers, songs, education and instruction (Aronilth, 1991).

The Holy Ones predicted the development of many subsequent races and languages, with all living creation capable of learning any language(s) all related to one common ancestral source (Aronilth, 1991). The influence of other languages, cultures, education, and lifestyles on Diné after the time of emergence added diversity to cultural knowledge and to the understanding that Diné language is sacred and powerful. (Aronilth, 1991)

The Holy People guided and established the pattern of life and identity through the clan system that is considered the root and foundation for Diné (Witherspoon, 1975; Schwarz, 1997; Farella, 1984; Aronilth, 1991). The relational kinship within the Navajo universe of Holy People, five fingered people, animals, plants, rains, winds, minerals, and mountains are expressed as k'e-a solidarity of compassion, cooperation, unselfishness for each other (Faris, 1984; Schwarz, 1997; Witherspoon, 1975).

The following contemporary poem stylistically honors the value and sacredness of Navajo language. The poem, Saad, (Language) (Jim, 1996) was translated from Navajo to English by Alice, T. George of White Rock, New Mexico.

Saad (Language)

The beginning of time, I was here
Yesterday, I was here
Today, I am here
Tomorrow, I will be here
It was named when I came

> I am Language
> I am Holy Language
> I am the Holy Language

my thoughts
my plans
my prayers
my talk

> I am Language
> I am Holy Language
> I am the Holy Language
> I am different among everything

Because of me thoughts are different
Because of me plans are different
Because of me prayers are different
Because of me songs are different
Because of me Language is different

> I am Language
> I am Holy Language
> I am the Holy Language

> Because of me we value mixed life
> I value mixed handicrafts
> I value precious stones
> Because of this I give myself to the Holy People

Earthly People are Holy
Earthly People are Special
Earthly People are generous
Inside of this we succeed
Life and my people are increasing
Because of this I give myself to the Holy People

I am Language
I am Holy Language
I am the Holy Language

It was named when I came
Tomorrow I'll be here
Today I am here
Yesterday I am here
The beginning of time I was here

I am Language
I am Holy Language
I am the Holy Language
(Jim, 1996, p. 3)

Literary Perspective

In the literary historical perspective, Diné are considered Athabaskan-speaking people who migrated from the north as foraging hunters and gatherers (Acrey, 1996; Bailey & Bailey, 1986; Iverson, 1981; Roessel, 1971; Young, 1968). Although there are many questions about the arrival of the early Navajo in the San Juan River region, archeologists and anthropologists posit the Navajo Athabaskan migration to the Southwest Dinetah--place of emergence--as early as 1100 and as late as 1500 AD (Roessel, 1971).

During the time of the Spanish and Mexican colonization, settlers interacted with Diné in fluctuating periods of war and peace. During the 1600s, Spaniards referred to Diné as Navajo, a Tewa word meaning cultivated fields (Acrey, 1996; Goossen, 1995). Archeological and anthropological evidence also corroborates the impact of other cultures upon Navajo lifestyle: pottery-making, weaving, religious concepts and social practices as a result of Puebloan technology; introduction of horses and sheep as a result of Spanish technology; silver-smithing and weaving as a result of Mexican technology

(Acrey, 1996, 1994; Bailey & Bailey, 1986; Iverson, 1981; Roessel, 1971; Schwarz, 1997; Young, 1968). Navajo economy and lifestyle gradually changed from farming and hunting to herding in the 1700s and early 1800s with horses becoming valuable modes of transportation rather than a source of food (Bailey & Bailey, 1986).

American colonization of the Southwest territories and subsequent wars escalated with the removal of Diné to Bosque Redondo or Fort Sumner, New Mexico, in 1863. This internment, intended as a cultural learning experience in which Diné would "acquire new habits, new ideas, new modes of life", was considered a devastating failure (Iverson, 1981, p. 9). The signing of the Treaty of 1868 ended incarceration and Diné agreed to return to a reservation of 3.5 million acres in New Mexico and Arizona in exchange for federal food, livestock, education, and health care. (Acrey, 1998; Young, 1978)

The Stock Reduction era of 1933 to 1940 by the federal government was presented as an attempt to curtail overgrazing and erosion of reservation land. Navajo Nation Council chairman, Ahkeah has called this, "the most devastating experience in Navajo history since the imprisonment at Fort Sumner from 1864-1868" (Iverson, 1981, p. 23). Federal officials talked only with the men, although the women owned the sheep. After a period of purchasing the livestock, government agents simply shot the animals and left them. The rational intention of the federal government was considered an irrational plan by Diné where sheep, horses, and cattle "had always been the basis of wealth and security within the culture" (Young, 1968, p. 234). Such actions resulted in suspicion and mistrust of the government, as well as, traumatic cultural, psychological, and economic consequences for Diné. (Acrey, 1998; Faris, 1996)

World War II was a major turning point in Navajo history that "changed Navajo life forever" (Iverson, 1981. p. 47) ushering in opportunities that would not have otherwise been available to Diné. The need for Navajo Code Talkers, war-related employment, and exposure to the Euro-American and Anglo-American world created a critical mass of cultural change. Cultural change affected Navajo language, as well, with Haile, Reichard, Mitchell, and Sapir as the forerunners of developing Navajo as a written language. The monumental work of Young and Morgan in the standardization of Navajo orthography is still used and recognized as the "Young and Morgan alphabet" (Lockard, 1996, p. 45). The accelerated rate of change for Diné since the 1950s to the present has affected almost every cultural aspect including: politics, religion, material culture, and social and family structure (Bailey & Bailey, 1986).

According to Bailey & Bailey (1986), mandatory non-Navajo education of Diné children impacted Navajo lifestyles and attitudes more profoundly than that of any other economic change, exposing students to cultural alternatives. With a high tolerance for cultural diversity, Diné language itself has remained "distinctively Navajo" (Iverson, 1981, p. 5). However, Diné leaders, elders, and educators are concerned about language and cultural preservation. Former Navajo Nation chairman Albert Hale admitted concern about the preservation of Diné culture and language when almost fifty percent of children enter schools on and off the Navajo reservation without understanding or speaking their mother tongue (Diné Culture and Language Curriculum Framework, 1991).

Bilingual and cultural education involves the walking between two different worlds - orality and literacy -two different ways of thinking, acting, and speaking. Begaye-Campbell (1998), an engineer at Sandia National Laboratories remarks

"Sometimes it's difficult to move between two worlds" (p. 1). For Diné students, the heart of bilingual and bicultural education is the understanding of their Navajo identity because all future success is dependent on knowing their culture, language and who they are (Roessel & Roessel , 1998).

A Navajo student attending Harvard University, detailed in McLaughlin's (1992) case study about Navajo literacy, expresses herself and the issues best in an open address to her high school alma mater:

> *We should be proud to say we can read, write, and think Navajo* [student's emphasis]-not just speak it, but be able to do all four! It's a rare ability. …We need to learn how to deal with this assimilation process yet maintain our identity as Navajos. We have to learn that just going out into the "white man's world" doesn't mean that we have to lose our identity. Be appreciative that Mesa Valley is trying to provide a medium so transitions from red to white and white to red will be easier. (p. 166).

As tri-sovereigns with federal, state, and tribal citizenship rights, Diné have a long history of adapting technology from external cultures (Acrey, 1996, 1998; Bailey & Bailey, 1986; Iverson, 1981; Kelly, 1970; O'Brien, 1989; Young, 1968, 1978). Politically, Diné were never organized under any one central leader until the relatively recent emergence of the Tribal Nation government in the 1930s. However, at the local level, head chiefs--Naat'áanii--served as traditional leaders within small communities with Barboncito, Narbona, Manuelito, and Largo as some of the most notable leaders (Bailey & Bailey; Young, 1978; Acrey, 1996).

Contemporary Diné

At present, the Diné reservation encompasses 25,000 square miles, the land size of West Virginia, extending through New Mexico, Arizona, and Utah, with a resident population of approximately 166,000 (Rodgers, 1997). Orality is the primary mode of communication with one-third of Diné Navajo speaking only and the remaining bilingual Navajo and English speaking (Arivso, 1996). Contemporary issues facing the Nation share a basic resemblance to those of thirty years ago: sovereignty recognition, economic solvency, mining of natural resources, tourism, unemployment, health, alcoholism, and education issues (personal communication, Ray Baldwin Louis, August 19,1998).

The Navajo Nation recognizes its sovereign and independent status as a state exercising "all governmental powers and authority which does not specifically give up to another nation or government with consent of the Navajo People." (O'Brien, 1989, p. 93) The concept of sovereignty lies in the determination to solve your own problems and to live according to your own choices (Josephy, 1985). Navajo Nation Chief Justice Robert Yazzie referred to the words of Barboncito, who told General Sherman 'to solve our problems requires our language, tradition, songs, stories, and spirituality to live' (1998). Current President Kelsey Begaye is using Roosevelt's New Deal as a template for reviving Navajo prosperity in the middle of the "the Great Depression of the Navajos" (Begaye, 1999) politically, economically, culturally, and technologically.

Drawing on its cultural history and diversity, the Navajo Nation is eclectically fusing non-Navajo influences in establishing relevancy and meaning within Diné lifeworld, as evident in figure 7. Louis (personal communication, August 19, 1998) emphasizes one of the greatest concerns of economic developments within the Navajo

Nation is the protection and preservation of Diné culture and way of life. In the context of

technology, Louis acknowledges:

> The world is all over the reservation now. And we have to, instead
>
> of running away from it, we have to use those to our advantage in some
>
> way. It is quite a big challenge.
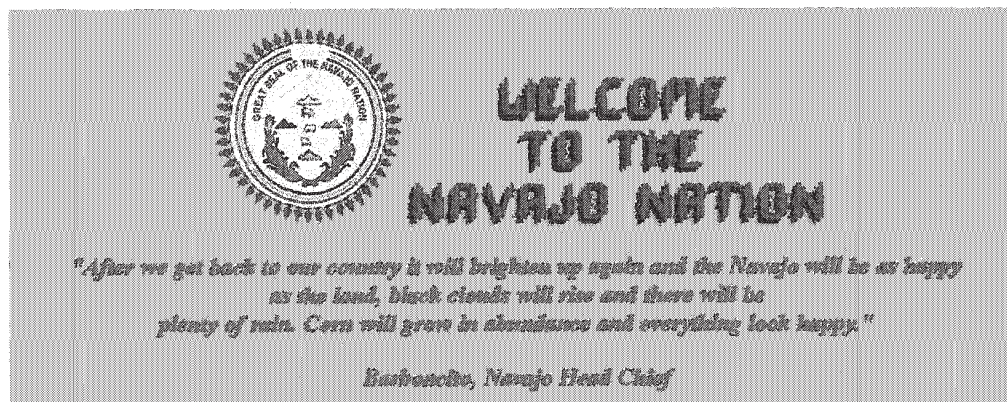
Figure 7. Home page of the Navajo Nation WWW site.

The significance of technology is recognized within the Navajo Tribal Council,

the central government of the Navajo Nation. The Agency Network Program is currently

designing a Nation wide computer network system that will eventually link all 110 local

communities-chapter houses-and schools with the Tribal Council, Bureau of Indian

Affairs, Diné College, Indian Health Services, and other service providers (Arviso, 1996).

The Navajo Nation has a tribal home page maintained by The Agency Network Program.

In promoting American Indian accessibility to the information technology and

telecommunications, the New Mexico State Library, through legislative funding,

currently provides Internet connectivity, Internet and computer training, and technical

support to tribal libraries and chapter houses in New Mexico's Apache, Pueblo, and

Navajo communities. The Gates Foundation has targeted the Navajo Nation's chapter houses as potential recipients of technology and telecommunications assistance through the Native American Access to Technology initiatives and grants. See Appendices 4, 5, and 6 for details of the Gates Foundation grants.

Navajo Culture and Technology

Already one can find instances of family members and friends huddled around the screen of a laptop computer and watching a video with state of the art speakers in a traditional hooghan powered, not by indoor electricity, but by a generator. What is more typical at present is the exposure to chatlines, Internet, E-mail, PowerPoint, interactive games, word processing programs, to name a few. Baldwin (1995) admits that for even the smallest of American Indian groups in the most rural of locations have at least a computer, printer, and telephone.

Within the Navajo Nation, there exists a continuum of people who use computers spanning all age groups with various technological skills: Navajo-owned computer businesses and computer programmers; computer literate elementary, high school, and college students; Navajo Nation chapter houses equipped with computers for community use; adults checking e-mail accounts, chatting, or using the Internet to look up financial investments; webmasters designing and maintaining the official Navajo Nation website and commercial sites; and telecommunications advocates in the New Mexico State Legislature.

> One need only drive from Window Rock to Tuba City and see
> satellite dishes next to hooghans [sic] to know that the reservation is
> changing. (Baldwin, 1992, p. 52)

Diné College instructor, Keith Anderson, captured a similar site, which he included on his course website with the following excerpted caption: "The image exemplifies one of the many ways in which Navajo people may employ technology in the promotion and perpetuation of their traditional language and culture". (See Figure 8.)
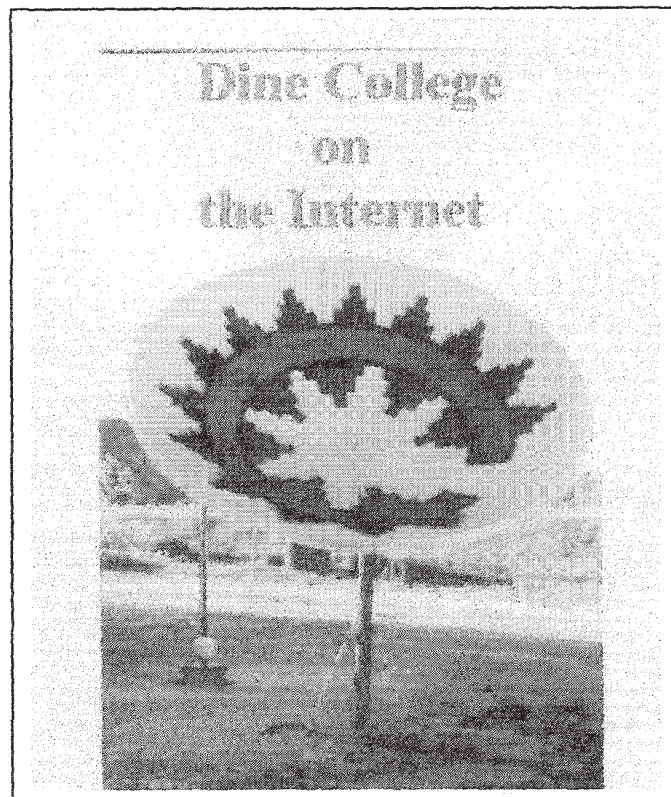
Figure 8. Satellite dish with traditional basket design.

Diné, as the five fingered people, have historically shaped technology for their use. (Aronilth, 1991, p. 60) The way pickup trucks are used now instead of horses; how traditional weaving looms are constructed with available materials on hand, such as pipes, rods, lumber; and the enthusiastic use of computers at college, high school, and elementary educational settings are examples of such technological integration.

Farella (1984) describes this fundamental characteristic as "incorporativeness, so that entire technologies can be integrated into the culture without causing basic changes, and the culture can be adapted relatively easily to changing conditions" (p. 196). Although a pun and not intended as humorous, Digital Diné is offered as a working metaphor that reflects a persistent association with technology.

Navajo culture is an amalgam of traditional culture, non-Navajo culture, majority culture, modern education, and technology while at the same time preserving its basic cultural heritage. This observation has become accepted common knowledge by Navajo and non-Navajo alike. See Figure 9 for a current example.

We do have a lot of problems …one of the vital issues is a sense of self-esteem. …The stories I tell [do not] deal with the classic mythical stories. …[I deal] with new technology and new elements coming in to Navajo society. …We have to learn whole new ways of doing things and we cope with it through humor.
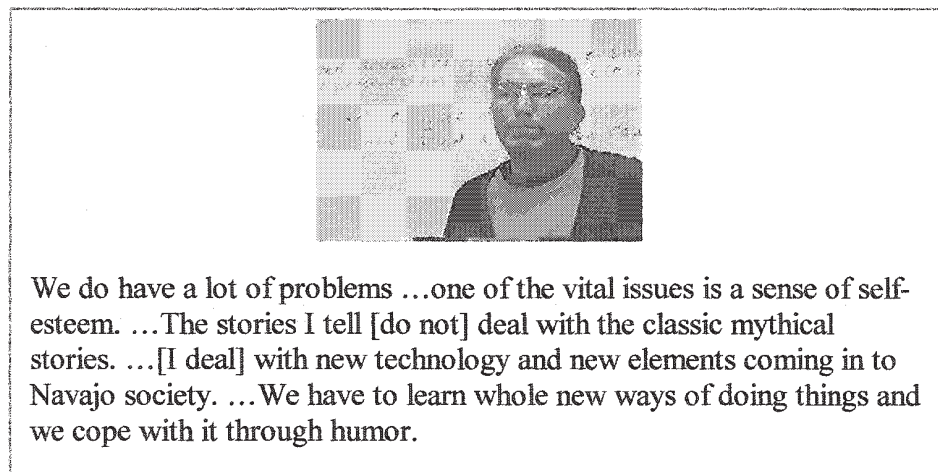
Figure 9. Larry King, Navajo story teller comments on humor

McCloskey (1998) highlights the common unifying thread of cultural resiliency and persistency as that which permeated the child rearing practices of three generations of Navajo women. Bicultural influences of lifestyles, education, and wage work within historical contexts affected women's choices in distinctive yet culturally similar ways (McCloskey, 1998). Smith (Ndahoo'aah, 1994) aptly describes this cultural fusion/distinction: "blending the new with old to make something the Navajo way is not a

new concept in the culture" (p. 3). Acrey (1998) claims: "today, this mixture of traditional culture, modern education and technology is bringing the Navajo Tribe rapidly towards its goals of self-determination and progress without totally destroying their basic cultural heritage" (p. 299).

Orality and literacy, as contrasting and complementary technologies, intersects with the new communication technologies of the WWW or web culture. Orality, literacy, and the WWW are technologies that differ according to the context of their usage and users. Web technologies, as extensions of visual, aural, tactile, and oral space, share characteristics of orality, and may be more accessible for use as a tool by Diné (Brian O'Connor, personal communication, October 8, 1997). The new communication technologies and the process of "becoming digital" (McLellan, 1996; Negroponte, 1995) may share metaphorical relevance with cultures that value orality. Becoming digital explores the complementarities of orality and literacy along side the newer emergent communication technologies within cultural contexts and frameworks.

There is a need to look more closely at how indigenous people are using and being impacted by the new emergent, advanced communication technologies (Delgado and Becker, 1998; Mander, 1991; Baldwin, 1999; May, 1991). This is also an opportunity to study orality. The Benton Foundation (Native America, 1999) reports that telecommunications and computer technology "is no longer a rarity" (p. 4). However, "technology is becoming more common in Native America communities, although many still lack the resources to acquire and use it" (Native Americans, 1999, p. 4).

Technology as a Part of Culture

Technology and culture are inextricably connected (Carey, 1988). Technology is a part and not apart from culture; new technology reshapes the culture by creating new contexts and environments; and language evolves from this interaction of culture and technology (personal communication, Roger Wyatt, September 8, 1996).

Communication technologies and their relationship to culture is the study of change (Hall, 1990). This change, Negroponte (1995) and Weston (1994) claim is less about information and content and more about community and relations. The investigation of communication technologies involves the interactions within social contexts, the technologies themselves, and the resulting relationships as socially created products and processes (Carey, 1988; Couch, 1996; Finnegan, 1988; Johnson, 1966). "The Internet is mostly about people finding their voice, speaking for themselves in a public way, and the content that carries this new relationship is of separate, even secondary, importance" (Weston, 1994, p. 3). Wiegand (1989) describes the relationship between communication technologies and people as "a delicate balance" (p. 107).

Chapter Two: Research Assumptions and Context

Communication, Culture, and Language

Communication, culture, and therefore, language, are the vantage points, which frame this research. Social, cultural, and critical theoretical lenses contribute to the concern of who is doing the theorizing, thus allowing for the articulation of the participating voices. The nature of this research is committed to the empowerment of underrepresented perspectives.

The epistemological perspective for this inquiry accepts certain theoretical precepts. All phenomena are complex, indeterminate, impermanent, and perspectival. The diversity of human phenomena is represented in the existence of multiple perspectives, experiences, and realities. Some realities and perspectives are not respected with equal value, thereby, becoming marginalized, silenced or disenfranchised. Inherent within all cultures is the human capacity to conceptualize within symbol systems. Language, as a universal cultural system, defines human action and identity. Language, in the form of stories, represents powerful dramas for learning and transformation as a result of individual, social, and cultural problem solving. The text-laden language of literacy represents a different perspective than that of orality. Paul Zolbrod describes Western thinking as 'synthetic' (starts with the parts and forms the whole), while Navajo thinking is 'analytic' (starts with the whole, then looks to the parts) (personal communication, February 13, 2000).

Social Symbolic Systems

Culture, according to Geertz (1973), is a set of constructed symbol systems, which serve as templates or models for perceiving, informing, and reacting to information within the hearts and minds of people. Reality, as the collective beliefs and values as social systems, differs for each culture and subculture (Glazier, 1992; Gardner, 1983, 1993; Finnegan, 1988; Couch, 1996; Hall, 1990; Smith, 1990).

The symbol systems of narrative, drama, and stories are the root of human action as "universal cultural activity" (Turner, 1982, p. 86). Geertz (1983) explains how the interpretive study of culture represents an attempt to acknowledge "the diversity of ways human beings construct their lives in the act of leading them" (p. 16). Human action and interaction are represented by social meta-commentaries, which are the stories a culture tells itself about itself (Geertz, 1980; Turner, 1982). Story, as a human technology, is a cultural artifact, an expression of experience, with the power to create, define, and extend knowledge (Rietz, 1998).

Drama as Human Experience

The inherent drama of human action is documented by Goffman, 1983; Turner, 1982; Bollman & Deal, 1991; Ortner, 1978; Kilger, 1991; Laurel, 1991; Pfaffenberger, 1992; Meyrowitz, 1985; and Turkle, 1995, 1984. Goffman's (1983) social interaction theory stages the social self as a theatrical self, playing a multiplicity of roles. Studying "dramas of living" (Turner, 1982, p. 87) helps analyze conflicts within social systems. Bollman & Deal (1991) relate how central the human experience of stories is within organizational cultures in conveying meaning, belief, and solidarity. Ortner (1978) refers to "cultural performances" in which people dramatize "the essence of their culture" (p. 1).

With the emerging communication technologies, Kilger (1994) identifies the virtual self as a virtual corollary to an individual, socially recognized and represented by a multiplicity of digital information sources. Pfaffenberger, inspired by Victor Turner's narrative social dramas, views human technological activity within cultural paradigms as "technological drama" (1992, p. 514). Laurel (1991) also uses the theater metaphor to describe human-computer interaction as a dramatic collaboration involving the technological artists in creating the software programs and the human agents for whom the software is being designed. The new situational contexts created by technological dramas become what Meyrowitz (1985) refers to as "cultural logic" (p. 45), with adaptation happening almost unconsciously in the process. Turkle's (1995) research continues to inform how computer technology, as "psychological machines" (p. 78) is redefining human identity, thought, and image.

Diné Symbolic System

McNeley (1988a) explains that traditional Diné philosophy of life and learning is rooted in oral traditions. Oral stories help define one's self in the world, in the culture, and in relationship with others in the community (Schwarz, 1997). Oral stories become psychological tools within Navajo culture.

Schwarz (1997) defines oral stories as cultural technological extensions--compressed metaphoric accounts--that translate knowledge and experience. Schwarz further explains the meaning of oral tradition for Diné, writing:

> Contemporary Navajo turn to the stories making up Navajo oral histories
> as the most important sources of information about their world, for these
> stories contain the ancestral knowledge that is the charter for life...These

narratives tell more than simply where the Navajo came from and where

they have been; they constitute a philosophical system that underlies the

cultural construction of every aspect of the Navajo world (1997, pp. 16).

According to Navajo philosophy, a person is an extension of nature with everyone

and everything related and interconnected within the continual cycle of transformation

(Farella, 1984; McNeley, 1988a, 1993; Schwarz, 1997). Wilson described oral tradition

metaphorically as "a kind of web in which each strand is part of the whole. The

individual strands are most powerful when interconnected to make an entire web, that is,

when the stories are examined in their entirety. Each of our stories possesses meaning

and power, but is most significant when understood in relation to the rest of the stories in

the oral tradition" (1997, p. 108). Offering a traditional perspective, Wilson concisely

defines oral tradition, which is inclusive of oral history, as "the way in which information

is passed on rather than the length of time something has been told" (1997, p. 103).

Dynamic cultural changes continue to influence Diné as a culture mediated with

symbolic systems of oral technologies and literary technologies. The concepts of

differentiation, change, and impermanence are recurrent themes within Navajo tradition

(Farella, 1984; Schwarz, 1997). Transformation and impermanence inherent within the

cultural system are also representative of the WWW as a dynamic and changing

environment. Technology, culture, and social action are mutually causal and monistic

interrelationships (Robinson, 1994).

Changes within Navajo culture, paradoxically, are epistemological strategies to

remain traditional--an altering of technology to maintain their traditional epistemology--

according to Farella (1984). Understanding of how cultures develop knowledge and use

emergent communication technologies as an extension of this knowledge is reliant upon cultural empiricism as viewed within a cultural framework (Meyer, 1998).

Technology and Culture

If communication and culture are viewed "as a continuous symbolic process" (p. 203), as Katz (1982) suggests, then the flow of any cultural process is saturated with change, transformation, and impermanence and is framed within cultural contexts (Farella, 1984). Hakken (1993) establishes that the interrelationships of the new communication technologies must be contextually framed within cultural perspectives. Whatever the "information work" (Dertouzous, 1997, p. 53) performed, it occurs within cultural contexts.

How research is represented, the content of representation, and the verification of the integrity of the description are issues that must be placed within the cultural perspective (Geertz, 1973). Hall (1995) describes a processual study as a "mesodomain analysis" (p. 399), which considers the complex and simultaneously changing relationships of social action, historical, and structural frameworks over time. Goffman (1983) confirms the need for such deep analysis since "all elements of social life have a history and are subject to critical change through time, and none can be fully understood apart from a particular culture in which it occurs" (p. 9).

Participatory Action Research

Qualitative, participatory action inquiry provides a framework for pursuing the dramas inherent in the technology and the people who use it. The understanding of the interaction of cultural technology and communications technology within the Navajo

context is framed within a deep analysis of culture, history, social and technical dimensions.

Research is a sensitive issue. Navajo are, and have been, one of the most studied, and perhaps, not coincidentally, exploited groups of the American Indians (Scott, 1998). Recently, the Navajo Tribal Council has enacted the Navajo Nation Cultural Resources Protection Act and the Navajo Nation Cultural Resources Protection Act Tribal Council Resolution which provide policies, procedures and requirements for conducting archeological, anthropological, ethnological, and medical research within the Nation to protect and respect cultural tradition, knowledge, and property. Essentially what is expected of anyone conducting research within the Navajo Nation is to be committed to the people and respectful of the culture and language (Jasperese & Noyes, 1998).

Scott (1998) asserts: "our way of life has been exploited" so there are three prominent research issues: what will be researched; how it will be researched; and what is sensitive within the culture. Noyes (1998) states "the equation of sovereignty outweighs academia" and, therefore, research ethics are paramount and must "vouchsafe the sovereignty of the Nation." The Navajo Nation endorses participatory action research since it is a systematic inquiry, which encourages collaboration with those being studied for the purposes of communitarian service, empowering others, and effecting change.(Jasperese and Noyes, 1998).

At the heart of this interpretive research inquiry is the concern with process and product: cultural epistemology and language, communitarian service, reciprocity, reflexivity, sharing of the product, and respect of knowledge (Lincoln, 1995; Smith, 1997; Stake, 1994).

Navajo Epistemology

The notion of what constitutes research must be defined by those being researched (Jasperese and Noyes, 1998). To many Diné, research means investigation as in police work and thus has a pejorative connotation. The concept of research from Diné perspective is viewed as learning that is internalized and lived-- a process whereby one learns about one's self and one's environment (Jasperese and Noyes, 1998).

As one of the most researched groups among American Indians, Diné became historically objectified through technology. Within the field of anthropology, the use of photography influenced the consideration of the discipline as a social science because such a technology could capture the complexity of social, cultural, and ethical contexts (Faris, 1996). However, Faris (1996) illustrates that photography was not a "neutral technology" (p. 15), for Diné were objectified through non-Navajo perspectives which often resulted in distortions of cultural sensibilities and sensitivities.

According to the discourse practice of Faris (1996), "the" is not used as a definite article when preceding the proper nouns Navajo or Diné. In this way there is less propensity for objectification and more of an intention to establish a relationship as interactive participants in the research project. Benally (1998) explains that everything studied within traditional Navajo ways, is spiritually rooted. In maintaining cultural lifeways, language, research, and learning, there is an understanding that anything you take on has roots that live and affect you (Silversmith, 1998).

The benefits of research need to be extended to wherever Navajo people are--on and off the reservation. Technology plays a role in the dissemination process. The Navajo uranium mining oral history project resulted in a book, exhibit, archive, and website

which were ways for the information to revert to the people whom it concerned (Brugge, 1998). Giving back something to the community and using oral tradition in the telling of the participants' stories were critical aspects of their research design.

Reflexivity and Limitations

Emergent design reflects the process in which the research and researcher evolve as information is generated. Situations, events, and experiences are understood from the participant's perspective with the researcher maintaining the insider stance (Geertz, 1973) or experience-near (Turner, 1981) point of view. The insider stance situates the researcher also as a participant who could be transformed in the process of engaging in the fieldwork experience (Emerson, 1981). Such an approach reveals a more authentic way of empowering those living the experience and reflecting on "what did I learn?" instead of "did I learn what I expected to?" (Howell, 1994, p. 31). Use of third person pronouns in a dissertation is conventional, however, because I was a participant observer and assumed this role, it will be my discourse practice to use the first person pronoun.

Emergent design is concerned with the insider's view of who is theorizing. As a person of color, studying another culture of similar oppression, the question of who is theorizing is of concern, personally and academically. Such a design allows for the spontaneity, flow, and direction the research will take; will accommodate a variety of experiences; and will allow for monistic research recognizing relationships between inquirer and participants (Lincoln, 1995).

Indeed, during the research inquiry, reflexivity of the researcher became a key constraining and facilitating variable reliant upon my ability to handle emergent design alterations (personal communications Jack Glazier, August 8, 1998).

Case study is defined as a bounded and integrated system (Stake, 1995). This particular case is a doubly bounded system not only in time and place, but is bounded by the Navajo culture inherent within this rural community of the Navajo (Diné) Nation. Intrinsic case study relies on the case itself to "reveal its story" (Stake, 19994, p. 237), wherein, the interest lies within the case itself. This perspective also reflects the nature of the technological issues within this community, for each community represents a unique social, cultural, political, and educational grouping that is best approached on a case by case basis.

Stake (1994) considers case study as "both the process of learning about the case and the product of our learning" (p. 237), which includes the personal perspectives of both researcher and participant within the interpretation. The goal was not discovering grand generalizations, theory building, or refining theory. Balance and variety were important sampling considerations, however, the opportunity to learn was considered a primary concern in the purposeful sampling procedure. (Stake, 1995)

The research was not intended as an inquiry into Navajo linguistics; however, language was pivotal since it is the heart of Navajo culture. The study admittedly is restricted by my own limitations. Acknowledging my non-Navajo and privileged status, I was not championing an issue but to using this position to benefit the study, the participants, and Diné culture. Howell (1994) suggests the cloak of privilege may be worn as a "costume" (p. 29) to garner attention for those whose power is jeopardized.

Ethical Considerations

Wilson (1997) lists ethical concerns when conducting research within Native American communities, which require honest evaluation on the part of the researcher:

- ❑   question your positionality and the motives behind the desire;

- ❑   know the language out of respect for the culture;

- ❑   how well is the culture known;

- ❑   who will benefit from the research;

Lincoln (1995) and Nason (1996) suggest standards for accountability and commitment:

- ❑   the research product represents honesty and authenticity of the work itself and that of the researcher;

- ❑   the research benefits the community in which it takes place;

- ❑   the researcher and research participants share in a respectful and trusting collaborative relationship;

- ❑   the researcher respects information shared;

- ❑   the researcher shares the privileges and rewards with those who made the research possible.

Returning to the Navajo community, in which I had lived and worked for six years, and Navajo Nation in conducting this research, is a way to give back something of value that honors Diné culture, tradition, and language. It is also a way to contribute something of value within the scholarly research community.

The research was approached with Navajo sensibilities. Throughout the project, ongoing dialogue with Navajo storytellers, teachers, students and friends was maintained. The methods of Schwarz (1997), who conducted fieldwork research on the Navajo reservation, served as a reference model. Navajo mentors were consulted for guidance, clarification, and direction during the research. Since language is a community's tool for meaning, I continue learning the Navajo language and social system out of respect. A

Navajo ceremony was requested by and performed on me to ensure success and guidance during the research experience.

Research Product

At best, the research conducted within this context addresses a miniature--a sliver--of the social complexity involved in the interaction between Diné cultural technology and how it is related to twenty-first century technology. Diné culture provides an appropriate and familiar setting in which to explore the intersection of orality, computers, and the WWW from a unique perspective. The goal of the case study was to learn more about the issues and complexities involved in Lake Valley community's access to computer technology, including Internet capabilities. The process was a "discovery learning" (Stake, 1999, p. 240) experience. Through thoughtful, systematic interpretation, and guidance, it is decidedly my understanding of the case, which is detailed here. In trying to let the case tell its own story, the style and representation reflect its teller-the researcher (Stake, 1995; Atkinson, 1992). Admittedly, I could not tell the whole story, and chose for this setting the best possible telling I could make. The presentation of the research as a web-based product is a way of sharing the completed research project with participants, collaborators, and community members, on and off the reservation, in addition to the scholarly community.

The Researcher's Story

As a storyteller, I present a case where I performed alongside the characters; this, too, has to be recognized as part of the discourse. I have been observing Lake Valley and the emerging communications technology since the early 1990s when I was a teacher and librarian at the Lake Valley Navajo Elementary School for six years. This intrinsic case

study reflects a systematic research endeavor in trying to understand the information technologies through the sometimes competing and other times complementary technologies of orality and literacy within Lake Valley, New Mexico.

My role in the Lake Valley, New Mexico community, yielded access to the field had that already been established. Informal conversations were initiated with the Lake Valley Chapter community service coordinator, and through an unexpected course of events, the community of Lake Valley became a case study setting for the research exploration. The Native American Access to Technology Pilot Project provided a valuable impetus to the research agenda.

This has been an emergent "discovery learning" of myself, others, and issues along the way (Stake, 1994, p. 240). The fieldwork experience from the beginning was an exercise in flexibility and reflexivity. I returned to the community of Lake Valley after being away for two years. I had to re-acclimate myself to my community and to the contextual phenomenon I was studying. Feeling a part of this community, I was not comfortable "conducting a research project" for *my own* professional and personal gain. The research project would have to benefit *the community* as well. This is the Navajo way exemplifying "k'e" the valued relationship of solidarity, cooperation, family, and relatives (Witherspoon, 1975; Farella, 1984).

I have been a participant observer during most of the research, and at other times, direct observer, informant, and advocate. Lincoln (1995) recognizes the psychological and emotional states involved during and after the research experience as "critical subjectivity" (p. 238). Similar to Cleary (1991), this research process has not been "without emotion" (p. 26), however, the product is a fair representation.

Method of Data Gathering

An ethnographic fieldwork permit is on file with the Navajo Nation Historic Preservation Department (NNHPD) in Window Rock, Arizona. The Institutional Review Board at Emporia State University approved the research and consent forms. All participants signed consent forms agreeing to work with the researcher and to identify whether or not they wanted their names to be used in the work (Schwarz, 1997; personal communication, NNHPD, August 3, 1998; October, 21, 1998). See Appendices D1 - 6.

Data collection originated from structured and unstructured interviews, direct and participant observations, cultural mentors, web-generated and other documents. Interviews, observations, documents, and conferences served as the primary source of the data. Data from each of these sources were coded systematically--open, axial, and selective--heeding the necessity to preserve the credibility of participants and to avoid biasing responses and observations (Cresswell, 1998). The point at which data became reiterative or redundant, in that it no longer provided new information, signified impending closure to the field work research. Corroboration of evidence through triangulation of data from the multiple sources also signaled time for closure.

To ensure validity, multiple sources of information were sought to provide a variety of perspectives for an in-depth analysis. Redundancy of data gathering also helped to establish reliability in the process (Creswell, 1998; Stake, 1994; Fidel, 1992). Integrity was also established through the personal relationships between researcher and other contributors. The quality of these relationships contributed significantly toward understanding (Fidel, 1992). Outside interviews with Navajo scholars, educators, cultural mentors, and computer consultants contributed to the data gathering within the fieldwork

experience. Cultural mentors served as sounding boards to help process what was seen and heard in the field. These interactions contributed to the integrity of the data collection. When and where appropriate and possible, interviews were tape recorded and later transcribed as data for coding.

Method of Data Analysis

The procedure for a holistic analysis began by transcribing the raw data from the interviews, direct and participant observations, and personal documents into written documents for coding. The coding paradigm for the data involved the procedures of open, axial and selective coding in identifying and organizing the raw data into an analysis of themes (Creswell, 1998; Glaser and Strauss, 1967; Stake, 1995). Reflective memos were recorded as written documents in analyzing the data. The process reflected a collaborative research style as a means of ensuring contributions from multiple perceptions to verify meaning, observations and interpretations (Stake, 1994). "Member checking" (Stake, 1995, p. 115) was used in the data analysis process, whereby, those who contributed to the account were asked to review a rough draft for accuracy.

The voice, form, and style of how to tell the story surfaced after the data gathering stage. My goal has always been to preserve the voices, events, and dynamic as accurately as possible. However, this is an interpretation - my interpretation with my own biases and inadequacies. The transformation of the data into narrative language resulted in the case study product as cultural story (Richardson, 1995) transferred to a CD-ROM format. The case study is also available in a text and web page format to disseminate the research enterprise in a more accessible medium for the contributors, Navajo people on and off the reservation, and others interested in this area of study.

Communication and Culture

Carey (1988) asserts that culture is synonymous with communication. The ritual view of communication values culture, relationships, the meaning of interactions, and the nuances of how the reality of experience is understood, disseminated and then celebrated (Carey, 1992). In contrast, the transmission view has been historically associated with persuasion, dominance, oppression and control. According to Greer (1982) "a thorough analysis of the environment is a fundamental precursor" (p. 6) to understanding the ways in which people communicate, process and use information within any given community.

Communication is culturally distinct through the symbolic technologies of language, art, music, dance, movement and gestures as extensions of ourselves. (McLuhan, 1964; Gardner, 1983, 1993; Smith, 1990) Influenced by Canadian economic historian Innis, McLuhan (1964) explains by using the phrase, "the medium is the message", (p. 7) that the tendency of any technology, as extensions of ourselves, is to gradually create totally new environments. Culture, as a medium, is a dynamic, adaptive, problem-solving system, which translates forms of knowledge into other modes of knowing through communication technologies. (McLuhan, 1964; Capra, 1982) Meyer (1998) advocates acknowledging cultural empiricism when studying a cultural epistemology that has been suppressed by the majority society and educational system. Jackson (1991) asserts:

> for years...Diné wisdom has been excluded, ignored and rejected
> as a legitimate body of knowledge for our children. We have always
> thought the bilagaana way and failed to maintain that Diné wisdom is
> equal to any and all other knowledge. (p. 1)

New Communication Technologies

The emergent and seemingly ever-changing communication technologies of the Net or Internet and World Wide Web (WWW) are described by McLellan (1997) as a "multi-sensory panoply of nonlinear communication options (text, audio, video, animation, graphics, real time, and virtual reality)" (p. 1-2). The creative potential of the Internet and World Wide Web (WWW) continues to surpass print with greater audio, oral, video, tactile, and interactive enhancements and capabilities (personal communication, Roger Wyatt, May 9, 1997).

Burke and Ornstein (1995) herald the new communication technologies as "instruments of freedom" (p. 311) in reviving the indigenous knowledge that has been largely undervalued and displaced by past technologies. Dyson (1997) extols the empowering and liberating characteristics of the new communication technologies as they "hand" us the responsibility to govern ourselves, think for ourselves, express ourselves, and to educate ourselves (p. 2,4). McLellan (1996), crediting Negroponte's (1995) book title, suggests that "being digital" (p. 5) focuses on people who use the technology.

In the process and as a result of the process, the voice of authenticity drives the technology, for "everyone brings their own story to technology" (personal communication, Roger Wyatt, August 30, 1996). McLellan continues "being digital" involves the technological competence of "adapting the technology to oneself, one's context, one's goals." (1996, p. 18) As the technologies are incorporated into our lives, we also become transformed by these very technologies. (McLellan, 1996, p. 19)

Universal Access

The National Information Infrastructure Advisory Council (NIIAC) in two published reports, encouraged leadership within United States communities "to move rapidly to provide all individuals the opportunity to access and [to] use...the Information Superhighway" (KickStart Initiative, 1996, p. 5). KickStart Initiative provides an extensive list of telecommunications community resources in print and online. Native Networking (Casey, Ross, and Warren, 1999) provides an updated listing of AI/AN telecommunications resources.

The term "information highway" refers to the components of communication transmissions involving physical, electronic, digital, wireless, satellite, and human resources in the creation, management, and flow of information. (A Nation of Opportunity, 1996, p. 13) More specifically, 'information highway' is also referred to as telecommunications, information technologies, or communication technologies including: computer networking; videoconferencing; computers and software; telefacsimile; broadcast radio; cable TV; digital, satellite, cellular, microwave or wireless capabilities (U.S. Congress Office of Technology Assessment, 1995, p. 2; A Nation of Opportunity, 1996, p. 13; Kicksart Initiative, 1996, p. 7).

One of the key issues identified in the Nation of Opportunity (1996) report is universal access. Historically, universal service, based on the Communications Act of 1934, meant POTS - plain old telephone service. With new and emerging telecommunications technologies, "the traditional concept of universal service must be redefined" and "will take on a different meaning to include the evolving array of basic communications and information services ubiquitously available" (p. 31).

However, the challenge of providing all Americans with basic communication and information services remains an economic, social, and federal concern. Jensen (1999) defined the meaning of telecommunications:

telecommunications means more technological means, which means you serve your needs better socially, politically, culturally, and economically. And to do this you need telephone access.

Building telecommunications infrastructure in rural areas is considered cost prohibitive from an economic and business stand point (Francis Mike, personal communication, June 23, 1999; Jensen, 1999), which is the main reason these areas remain technologically underdeveloped and challenged. The recommendation for addressing disparity in the accommodation of universal access and service in A Nation of Opportunity (1996) reads: "Government should act when commercial and competitive forces are failing to achieve the goals of universal access and universal service. Government should lead by example in the use of the Information Superhighway for offering and using information services" (p. 11). The United States Department of Agriculture E-Rate Rural Utilities Service (1998) is taking action to help bridge the "digital divide". Schools and libraries in rural areas with the lowest telephone penetration rates; lowest computer ownership rates; and lowest on-line access rates are eligible for E-Rate assistance. Substantial E-Rate discounts are available to schools and libraries with telecommunications service providers being reimbursed by the government for participating in the program.

Communication Technologies and American Indians/Alaskan Natives (AI/AN)

Former New Mexico Congressman Bill Richardson (Democrat) acknowledged in a field hearing about universal access for the National Telecommunications and Information Administration in Albuquerque, NM: "...across our country there are pockets of neglect where an already under-served population continues to wait for the promise of modern communications." (1993, p. 1) Within New Mexico, Richardson (1993) documented that in some areas over ninety percent of the population had no telephone; over sixty percent of Native American households on reservations and in pueblos had no telephone; and geographic, climatological, and cultural idiosyncrasies present unique challenges to building the communications infrastructure. Harris, May, and Baldwin (1993) responded in an opinion paper for the same hearing that: "Indian America is a very special situation and should be treated very differently from other ethnic communities." (p. 1)

This different treatment is with consideration to:

- ❏ the lack of basic telecommunications infrastructure on many reservations;

- ❏ the need for tribal nations to participate in building or improving their own communications infrastructures;

- ❏ poor understanding within the communications industry of changing Native American communities;

- ❏ the reality that almost half of all American Indian people live in rural communities and on reservations.

In the Office of Technology Assessment (OTA) <u>Telecommunications Technology and Native Americans</u> (1995), Figure 10, it was further noted:

...if Native Americans, collectively, do not gain better

understanding and control of this technology, the result could be to further

undermine Native culture, community, sovereignty, and self-

determination. (p. 2)
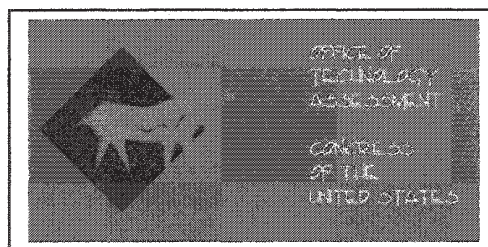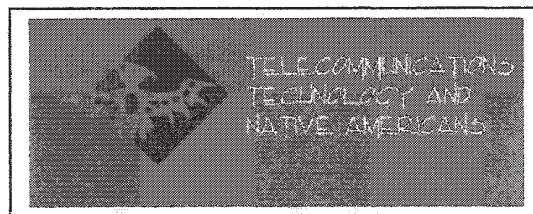
Figure 10. Cover Art for O.T.A Report.

Figure 11. Oneida Web site emblem.

The Oneida Indian Nation in New York was the first American Indian/Alaska Native nation to establish their presence on the WWW. (See Figure 11) An excerpt from their welcome home page reads:

This technological advancement provides another opportunity to tell our unique story-both in history and of today. The Oneida Nation is perhaps one of the only Indian communities in the United States to progress economically, and succeed commercially, while retaining our traditional system of government, and our culture. (Oneida Home Page)

Progress in Native American Telecommunications credits the pioneering efforts of individuals and organizations, such as:

- George Baldwin, Professor of Sociology at California State University at Monterey Bay Seaside and director of the Institute for Community Networking;

- Michael Wilson, Professor of English at the University of Wisconsin;

- Randy Ross, President of American Indian Telecommunications, a non-profit advocacy and policy study group in Rapid City, South Dakota;

- James Carey, Native American legal advocate with Morrison and Foerester;

- LaDonna Harris, Native American advocate and founder of Americans for Indian Opportunity (AIO);

- Garry Trujillo, creator and webmaster of NativeNet;

- □ NITI, National Indian Telecommunications Institute, providing telecommunications advocacy, technical, and educational support and training in NativeAmerican rural and reservation communities and schools;

- □ Benton Foundation, committed to the democratization of the evolving communications environment in solving social problems (Berry, 1999; Casey, Ross, Warren, 1999).

The OTA's <u>Telecommunications Technology and Native Americans</u> (1995) reported remarkable enthusiasm in telecommunications use by Native Americans. This publication was the first federal report on American Indian telecommunications representing grassroots efforts of American Indian activists, advocates, and researchers who realized the potential, as well as the risks, of the new communication technologies. Given the risks, challenges, and potential of the communications technology, Jensen (1999), of the Federal Communications Commissions Office of Communications Business Opportunities, concludes that "for the most part, Native American communities have decided it's too important not to have it".

Since the OTAs publication, two follow-up resources, in particular, have built on the work of their landmark predecessor. Native Networking: Telecommunications and Information Technology in Indian Country, (Casey, Ross, & Warren, 1999), published by the Benton Foundation, serves as centrally located reference tool for information about Native American telecommunications and information technology. The Assessment of Technology Infrastructure in Native Communities (1999) was a four month survey by researchers at New Mexico State University to determine the problems in infrastructure building in Indian country. Although Native American telecommunications activities and

presence is increasing, the gap widens with the rate of change within the majority society

(Telecommunications Technology and Native Americans, 1995, p. 7).
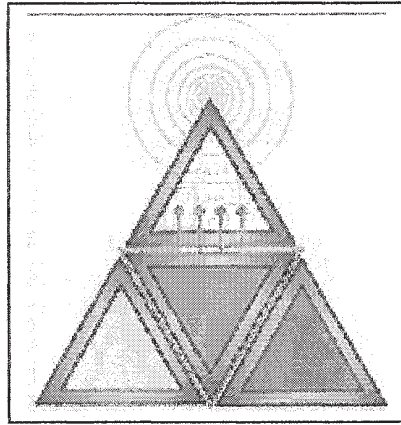
Figure 12. Cover art for New Mexico State University study.

Significant work of Baldwin (Planning & Evaluating, 1998) and May (1991)

identify the "single issue of access" as the reason for American Indians' and Alaskan

Natives' (AI/AN) low participation rates online. Baldwin explains: "Native people,

especially in rural and reservation locations, have less telephones per capita than the

general population, less access to television, less access to libraries-in general less access

to information. In 1992, of the 550 federally recognized tribal governments, not one had

an official on-line presence and of the 30 tribally controlled colleges, none were present

on the net" (p. 5).

AI/AN and Web Culture

Of the 553 federally recognized tribal nations, 100 tribes had official web pages

for public access as of August 1998 (Native Networking, Casey, Ross, & Warren, 1999).

Wilson (1999) observed the use of the web in establishing the political presence of the

three candidates running for chief in the most recent Choctaw elections. Each candidate

had their own web page featuring campaign platform and biographical background. "TV gives you instant celebrity status; the web provides interactivity and grass roots support in getting the news out about the potential political candidates" (Wilson, 1999).

Baldwin (1995) acknowledges that, although not always accessible, communication technologies were valued: "history shows that American Indians recognized that Western communication technologies were powerful weapons for cultural expansion. While tribes understandably resisted the development by the Western invaders of such communication technologies, they also made numerous attempts to assimilate them" p.2-3). Baldwin considers the sociological dynamics between the new communication technologies and AI/AN users "as the latest chapter in the history of Native assimilation of communication technology" (p. 4).

Contrary to Mander's (1991) observations about TV viewing in remote Northwest Alaskan Native villages, more recent research has documented TV viewing and perceptions of AI/AN as contributing to an important part of their lives (Baldwin, 1998). Keith (1995) explains that the use of communications technology is less a concession to dominant mainstream culture and more a confirmation that increasingly more American Indians value the use of this technology within their world. Mitten (1995) asserts the necessity for "Native voices to be heard without the filter of the news media and other interpreters" (p.1). At the heart of this explosion is the liberating and empowering potential for perspectives and points of view to be presented as they are; not as others think they should be.

Cisler (1998) contends that the most significant reason for the presence of indigenous groups on the WWW "is to provide information from a viewpoint that may

not have found a voice in the mainstream media" (p. 20). Cisler also acknowledges that the reference to "digital divide" may be too simplistic a term and "will not help solve the problems of inequity." (2000, p. 2) Stenbaek (Smith and Cornette, 1998) contends "to be master of one's own media is to be master of one's own fate" (p. 29). However, more research is needed in documenting how the new communication technologies are impacting American Indian communities (Baldwin, 1998).

Burke and Ornstein (1995) suggest the new communication technologies are becoming "instruments of freedom" in the reaffirmation of cultural perspectives and values. (p. 311) Baldwin (1998) asserts that even though advances in communication technologies are handing more opportunities and challenges to tribal nations, schools and colleges, communities and individuals in mastering the skills necessary in becoming digital, access and absorption remain problematic (p. 5).

Recognizing the importance of the new communication technologies for their people, tribal leaders will need to assert tribal cyber-sovereignty and self-determination in deciding issues of cultural policymaking concerning: information access, infrastructure building, cultural resources, and cultural tradition (Baldwin, 1995; Casey, Ross, Warren, 1999). Native American listservs, as early as 1990, recognized the potential of the networked community in communicating as tribal entities with tribal identities.

Listservs, newsgroups and bulletin boards computer-mediated communication systems promulgate cultural and ethnic contexts in order to maintain an authentic sense of community and "culture of information" (Baldwin, 1995). The initial four hours of work involved in creating the Oklahoma Choctaw bulletin board is still being sustained four years later as members, in and outside of Oklahoma, continue to discuss tribal issues

(Wilson, 1999). Founded in 1990 by Americans for Indian Opportunity, IndianNet, is recognized as the first national Indian-owned interactive information network for the benefit of AI/AN and is now maintained and operated by Native American Public Telecommunications (Native American Public Telecommunications, 1998).

Ethnic fraud, i.e., impersonating the ethnic identity of another, is common on many AI/AN listservs and bulletin boards. Baird, (1998) documents how WBS, a Native American chat room, protect their chat room environment from those pretending to be Indian wannabes by policing participants. Foster (1999), moderator of the Iowa Tribal Members' Page, wants to protect the privacy and the preservation of cultural and intellectual rights by considering what parts of the tribal site should be accessible to non-tribal members. In establishing an official tribal web site, the members have more control of their public image, tribal identity, and cultural property.

The "electronic migration" (Baldwin, Public Access, 1995) is an extension of the already existing communication technologies by AI/AN for AI/AN. American Indian Radio on Satellite (AIROS) is the only native owned and operated public satellite radio program service exclusively with Native programming for Native American stations and is now available via the Internet 24 hours a day in RealAudio (Bellindo, 1998). Native American Public Telecommunications (NAPT) and formerly the Native American Public Broadcasting Consortium) executive director Blythe describes AIROS as "a unique vehicle for reaching Native America and others interested in Native culture" (Thomas, 1999). Native American Calling, a talk show radio program, distributed nationally by AIROS via satellite and Internet, is becoming "a live electronic talking circle" by creating

an instantaneous forum for discussion" (McKosato, 1999, p. 8). See APPENDIX WWW
for a sample listing of web sites by, for, and about Native Americans.

Orality and Literacy

Diné language is a tonal and holophrastic language, wherein a word represents an
entire phrase. (Araviso, 1996; Zolbrod, Personal communication, March 24, 2000).
Speakers impart and derive meaning and understanding from using auditory nuances of
the spoken language (Arviso, 1996). Prior to 1961, no standardized alphabetical system
existed for the Navajo language (Arviso, 1996; Emerson, 1996; Henderson, 1996; Holm,
1996; Lockard, 1996; Silentman, 1996). Tapahonso (1993) explains that Diné are known
by their use of language and the value of the spoken word is respected as cultural wealth,
knowledge, and prestige. (p. xi)

The cultural/communication process of Diné involves the two pivotal
technologies of orality and literacy. Navajo culture would be considered a culture of
secondary orality (Ong, 1982). Zolbrod (personal communication, October 11, 1997)
suggests that Navajo culture still retains a "powerful residue of preliteracy". In contrast to
a primary oral culture where there is no knowledge of writing or print, Navajo culture is
mediated with radio, television, video, telephone, and computers, which depend on print
and writing. Literacy complements orality - there can be no literacy without orality.

As Ong suggests, the orality of any language is both basic and permanent, for
"writing can never dispense with orality. Oral expression can exist and mostly has existed
without any writing at all, writing never without orality" (1982, p. 7-8). History provides
an eloquent example. In recalling the events and details of the Navajo Long Walk and
imprisonment between 1864-1868, Navajo oral tradition remains more accurate and

reliable than written accounts documented in the Army annals, citing oral history as "precise", "vivid", and "eloquent" (Roberts, 1997, p. 56-57).

ORALITY Navajo Culture	LITERACY Non-Navajo Culture
orality is universal	literacy is a recent technology
secondary orality has mediated technologies	text based (chirographic and typographic)
learn by imprinting	learn by studying
knowledge exists within person	knowledge exists within books
situational or contextual thinking centered in human action	abstract thinking centered around impersonal labeling, itemizing, categorizing
oral narrativity organizational structures (mnemonic style, ritual formula, repetition)	literal narrativity organizational structures (linear, sequential)
sound incorporates (unifying, holistic, harmonizing tendencies)	writing & printing isolates (analytic, reductionist, dissecting tendencies)
knowledge and thinking referential to human activity; analytic	knowledge devoid of human action or content; synthetic

Table 1. Matrix of Orality & Literacy (Adapted from Ong, 1982.)

Hrynyshyn (Zellen, 1998), referring to the impact of the WWW and Aboriginal people of the Northwest Territory, describes web technology as an ideal complement to oral traditions surpassing print media in blending audio, video, graphics, and text. Aboriginal musician and writer, Lepine, anticipates that multimedia will provide alternatives to written literacy that will enrich orality (Zellen, 1998). Wyatt (personal communication, May 7, 1998) affirms that language is continually evolving with the confluence of technology and culture. Tapahonso (1993) confirms this with a Navajo

illustration: "The value of the spoken word is not diminished, even with the influence of television, radio, and video...People are known by their use of language" (xi).

The qualities of text and orality are coalescing to become a distinct communication technology. Wyatt (personal communication, April 18, 1999) suggests chatlines are merging certain characteristics with orality, referring to it as text modified by conversation, and pondering if it will become conversation modified by text.

Diné Cultural Contexts

McLaughlin's (1992) research explored, from a cultural perspective, how a Navajo community used and thought about English and Navajo written languages. McLaughlin suggests that Navajo and English literacies are framed and constrained by social, historical, and cultural contexts, which must be considered in understanding oral and literate perspectives. MacBeth (1994) explores the nuances of spoken and written language during an English lesson in a Navajo classroom involving a "crisis in representation" (p. 322).

Documenting the history of the impact of uranium mining on the Navajo reservation, Brugge and Benally (1998) relied on oral history accounts for its efficacy in letting those affected "speak for themselves" (p. 17). A book, videotape, exhibit, written materials in Navajo and English, and a virtual gallery on the WWW were chosen as the media for accessing the information intended for Navajo and non-Navajo audiences, on and off the reservation.

Arviso (1996) investigated the use of spoken Navajo in a user interface computer design, which demonstrated the benefit of incorporating oral Navajo over oral English. Arviso suggests that further investigation is necessary in determining "the most effective

and efficient interface design for Navajo users" (p. 38). Navajo students and elders at Monument Valley High School in Utah (Ndahoo'aah, 1994) collaborated in an intergenerational math project creating original designs via computer technology which were then produced to make woven rugs, baskets and beadwork. In the process, students learned about traditional culture, the elders' stories, the particular art form and techniques. Fusing Navajo culture, traditional arts, and computer technology provided a mutual learning experience for students and elders, as well as an opportunity to share knowledge--shi'naaelye'.

Spooner and Wiley (1998) have developed The Navajo Sentence Machine, an interactive CD-ROM product, designed as an educational tool for assisting students with pronunciation, spelling, grammar, and syntax of the Navajo language. The software program features the complementarity of text and audio, intended to be playful and fun for students to read, hear, and speak Navajo (personal communication, Craig Spooner, February 17, 1998).

Within the Navajo context, computer technology is gaining more prominence. A growing number of Navajo artists promote their work via web technology. Morgan (Burke, 1996), a computer science graduate from Crownpoint Institute of Technology, believes that without undermining Navajo culture, the combination of technology and tradition may be advantageous to Diné. Instructors of Navajo students at Diné College have observed a high percentage of student engagement on chatlines, and observe with interest this communication phenomenon (personal communication, Mark Bauer, October 23, 1998; Keith Anderson, November 19, 1998).

The review of the literature suggests that the issues related to connectivity in AI/AN rural communities extend beyond those of technological barriers and address the sociological impact of the new communications technology. The literature on AI/AN connectivity issues situtates Digital Diné within a complex and dynamic web. Technological barriers are not the only concern. Social-cultural impacts are neither simple nor mono-directional. Closer examination of the particular case of Lake Valley Diné culture is now in order.

Chapter Three: Description of Case

Telecommunications Landscape and Obstacles

Addressing tribal officials and Congress, President Clinton (Clinton Talks Indian, 1998) recognized and honored tribal sovereignty and the government-to-government relationships:

> Long ago, many of your ancestors gave up land, water, and mineral
>
> rights in exchange for peace, security, health care, education from the
>
> federal government. It is a solemn pact. And while the United States
>
> government did not live up to its side of the bargain in the past, we can
>
> and we must honor it today and into the new millennium" (p. A6).

President Clinton directed action to be taken in balancing the playing field concerning technology necessary for tribal economic development, commenting:

> It will ask the Department of Commerce to work with the Interior
>
> Department and with the tribal governments to study and develop a plan to
>
> meet the technology infrastructure needs of Indian country. No tribe will
>
> be able to attract new business if it doesn't have the phone, fax, Internet,
>
> and other technology capabilities essential to the 21st century. (Clinton
>
> Talks Indian, 1998, p. A7).

The Assessment of Technology Infrastructure in Native Communities in July 1999 was the outcome of President Clinton's directive.

The telecommunications landscape of Lake Valley is impacted at the federal, national, state, local, profit, and non-profit levels against a backdrop of political sovereignty. The issues in surpassing the obstacles and barriers to universal access

involve all these players working with an attitude of cooperation, Jensen (1999) invoked

at the Digital Council Fires Conference in Albuquerque, New Mexico May 1999. (See

Figure 13.) Each level is explored in providing background to the case of Lake Valley

community.

Figure 13. Home page of the Digital Council Fires WWW site.

Federal Level -- Federal Communications Commission (FCC)

The FCC is an independent regulatory agency created by Congress with a mission

of ensuring equitable and fair communication practices and services. The National

Telecommunications and Information Administration (NTIA) is a part of the executive

branch in the Department of Commerce advising the president about creative solutions

concerning a wide range of telecommunications issues (Robinson, 1999). The FCC and

NTIA work in a close partnership.

Eric Jensen, Deputy Director and Indian Laison, FCC Office of Communications

Business Opportunities (OCBO) is responsible for directing the outreach efforts of FCC

to Indian communities. Jensen indicated at the Digital Council Fires Conference that due

to the high cost in rural areas, Native American communities were totally left behind and therefore "are the hardest hit in access" (1999).

Also, Jensen emphasized that the telecommunications infrastructure, comprising topography, geography, utilities, right-of-ways, and power line considerations is defined by the human inventory of those who need and use the services provided by the infrastructure. Jensen refers to the "human tragedies" of not having access and lack of telephone services: "There are critical stories where houses burn, people die because of inadequate telephone access". (1999) Available federal and state subsidy programs are not being adequately disseminated. As Jensen remarked:

> there is a lack of knowledge of associate program services that
>
> subsidize tribal individuals. [those]who should know are unaware of this.

The FCC has established universal service programs to provide affordable access especially to high cost telephone service populated areas; schools and libraries; rural health care, and low-income consumers. Mounting attention concerning the lack of infrastructure development preventing universal access in Indian Country becomes more obvious through advocacy at the highest levels of government. The FCC Office of Communications Business Opportunities (OCBO) initiated public hearings on January 29, 1999 and March 23, 1999 to hear formal testimony from the Southwest tribal communities concerning obstacles to telephone service.

Navajo Nation Council Delegate, George Arthur, had this comment at the end of his panel discussion delivery at the January 29, 1999 FCC Public Hearing:

> I have appeared before many panels and panel discussions before
>
> many federal agencies throughout my representation of the Navajo Nation

in the past eight years. These hearings occur sparsely. They are more than

years apart before you get return responses. We sit at these type[s] of

discussions with no feedback and, most often, no awareness of what the

decisions have been made on such hearings. I would request of the

chairman and the commissioner and Congressional delegates that if there

is any solutions that can be broadly initiated, that the tribes and their

representatives be continuously appraised of these so-called solutions.

And I would look forward to participating on behalf of the Navajo Nation

or relaying any such information back to the speaker of the Navajo Nation

council. Thank you. (p. 43)

The response of these public hearings, resulted in the FCC publishing two Notices

of Proposed Rulemaking (NPRMs): FCC to Explore Ways to Extend Terrestrial and

Satellite Wireless Services to Individuals Living on Tribal Lands (FCC 99-205) and

Promoting Deployment and Subscribership in Unserved and Underserved Areas,

including Tribal and Insular Areas (FCC 99-204). These two FCC NPRMs are

specifically concerned with alternative ways to resolve the unserved, inadequately served,

and under-served population in Indian Country, and to elicit comments and responses on

how to implement effective strategies and solutions. Jensen (1999) stated that the federal,

state, local, and telephone companies are involved in determining the issues, barriers, and

subsequent solutions in serving Arizona, New Mexico, Pueblos and Navajo Nation

populations. Summarizing the results of the public hearings in January and March 1999,

Jensen said the concern is still "universal access, which is not filtering out to rural and

reservation areas" (Digital Council Fires Conference, May 1999).

National Level -- National Indian Telecommunications Institute (NITI)

Who responds to these NPRMs? Lisa Nelmida, Development Director of The National Indian Telecommunications Institute (NITI) (Figure 14) and moderator of Digital Council Fires Listserv distributes information to the participant members about telecommunications related events in Indian Country. The Digital Council Fires Listserv was a way to keep conference participants informed about Native American telecom activity and to serve as a supportive network for those actively working in this area. Lisa Nelmida sent the following e-mail message as a reminder to the Digital Council Fires Conference members:

Lisa Nelmida: "Hello, Just a reminder about the FCC deadlines on the two Indian telecommunications initiatives. As you know, these FCC forays into Indian Country are groundbreaking events. So it is very important for Indians to respond to these overtures. (October 28, 1999)

Karen Buller is the CEO and President of the National Indian Telecommunications Institute (NITI) funded by public and private grants. NITI is committed to utilizing communications technology "to provide American Indian, Native Hawaiian, and Alaskan Native communities with extensive educational tools, equal opportunity and a strong voice in self-determination" (NITI mission).

Karen Buller and NITI staff are advocates, trainers, educators, and experts concerning telecommunications and Native Americans. Karen Buller's presence and NITIs reputation are recognized at national conferences and conventions, FCC public hearings, and news programs as spokespeople for the telecommunications issues affecting Native Americans in Indian Country. NITIs services include: developing a

cultural curriculum model; web site design training; web site hosting; GIS/GPS,

computer building, and networking for educators and community members.
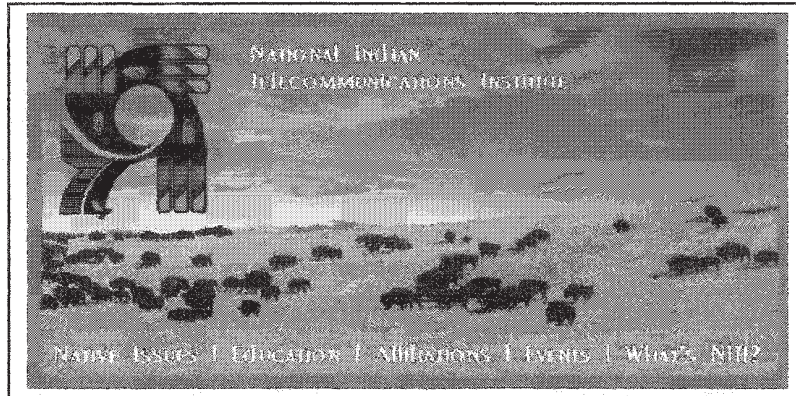
Figure 14. Home page of NITI WWW site.

Buller, National Indian Telecommunications Institute (NITI) in an interview with

Jim Lehrer, expressed the need for "greater government subsidies and more generosity

from phone companies. But phone company officials say they can't afford to shoulder the

high costs of stringing phone lines to remote areas. The FCC has held hearings on

providing assistance to Native Americans without phone service" (p. 5).

In an April 12, 1996 FCC testimony Buller stressed "that competition does NOT

work in isolated, extremely rural areas". Rural Native American communities such as

Lake Valley are among the "least connected" having the lowest telephone penetration,

lowest PC-ownership and lowest on-line access rates (USDA Rural Utilities Service,

1998). According to Karen Buller's April 12, 1996 FCC Testimony:

Telephone penetration is at its lowest among Rural Native

American communities. While national statistics show Native American

Rates in the 80 percentage range, anecdotal evidence would indicate a

much lower rate. The Navajo Nation, for example, hits estimates as low as

40%. I live in New Mexico and the counties where Pueblos and Indian reservations are located, have dramatically lower telephone penetration rates. Many phone lines on Navajo are so low in quality they will hardly carry a voice signal—let alone a data signal. Most reservations do not have 911 or other customer service options.

The New Universal Service Fund (USF) is a provision of the 1996 Telecommunications Act insuring affordable and accessible phone service for consumers in rural areas. Karen Buller, in "Overcoming Obstacles to Telephone Service for Indians on Reservations," presented before the FCC (DA 99-201/BO Docket No. 99-11), points to the inaccuracy of studies within states wherein rural areas are averaged along with larger urban areas:

> Study areas are often determined as entire states. Tribal land should be their own separate study area. Telephone costs and penetration numbers are currently determined by averaging within a study area. In New Mexico, Albuquerque, which has a very high penetration rate is averaged with communities like Grants, Crownpoint, San Ildefonso Pueblo and Picuris Pueblo. By averaging the underserved communities with the larger urban areas, a false story is told. Universal service fees should be based on the exact areas of the tribal land. (January 29, 1999, p. 2)

State level -- New Mexico State Library Tribal Libraries Program

Former librarian at University of New Mexico Native American Studies, Rebecca Azen, noticed the exclusion of library services for Native Americans with the introduction of New Mexico State Legislature Bills 635 and 636 ("Collections and Connections") in 1994. The momentum that followed has been the Rosa Parks of action and awareness that continues today towards universal access within the state.

With combined efforts of the NMSL Karen Watkins, Barbara King and Joe Sabatini; Native American Libraries Round Table and chair, Lee Platero; Native American Studies Acting Director, Alison Freese; Native American Studies librarian, Rebekah Azen; New Mexico State Senator and tribal libraries advocate, Leonard Tsosie; New Mexico State House of Representatives David Townsend; and tribal librarians who offered testimony that shaped the bill, among others, the revised "Collections and Connections" Senate HB 2 and HB 19 were introduced and passed in the 1994 New Mexico State Legislature. HB 2 appropriated $50,000 for the establishment of an Office of Native American Community Libraries to provide comprehensive consultation services. HB 19 appropriated $500,000 "to provide computer networking capacity, improve library staff skills and provide programs and staff necessary to integrate Native American community libraries into the state library network system"(Azen, 1994, p. 24) for New Mexico's Apache, Pueblo and Navajo communities -- twenty-two Native American tribes in New Mexico: nineteen Pueblos, Mescalero Apache, Jicarilla Apache, and Navajo.) In other words, the bills sought to begin to address universal access issues and to begin to bridge the "haves" and "have-nots" within tribal libraries in the state.

NMSL has played a significant role in partnering with Native American communities. Tribal libraries and access to information were considered inadequate by most standards primarily because provisions for them were not a state responsibility and no agency within the federal government was funded to provide services (NCLIS, 1989).

Joe Sabatini comments:

The New Mexico State Library (NMSL) has always been an active supporter of any bill that will bring better services to the under-served. NMSL has been dedicated and committed to this principle. With this bill anyone can go anywhere to any library, community center, and can have access to information anywhere. (Interview, April 11, 1996)

In 1997 NMSL Tribal Libraries Program was established as an information, resource, and training center for tribal communities. Currently, a total of thirty-three communities house NMSL Tribal Libraries Program public access computer workstations with computer training offered on a regular basis, and on-site technical support as needed. Computers with Internet connectivity are offered toll-free Internet access accounts. NMSL Tribal Libraries Program also provides consulting and training in library development and collection development services. See Appendix E.

NMSL realized libraries do not exist in the Navajo Nation to the extent they do in other areas such as the Northern Pueblos, so chapters were seen as practical and logical options. Azen refers to libraries as a western phenomenon and one that represents a whole different perspective for Native American communities. This requires the creation of another kind of librarianship that addresses Native American needs specifically (Personal communication, April 29, 1996). Typically college tribal libraries, elementary,

and high school libraries constitute the libraries in a community. Due to infrastructure problems in remote locations, it took two years for the program to gain momentum, and many problems still continue to challenge the staff. In 1996, Senator Tsosie carried the Omnibus Reauthorization Senate Bill 248 before the New Mexico State Legislature extending expenditure period for the Native American Libraries Project.

Joe Sabatini relates:

Omibus Reauthorization was passed in February 1996, reauthorizing the state to finish expenditure of money that was already appropriated in 1994 since it would take longer than the allotted two year appropriation to spend the 1994 money. Neither the state library nor the Native American Library projects would have expended the money in 1996 from 1994. (Interview, April 11, 1999)

In 1998 Senator Leonard Tsosie acquired an increased permanent funding allotment for the NMSL Tribal Libraries Program, which will be directed toward library development and enhanced communications technology at tribal sites.

Bill Pfeifer, owner of Pfeifer Computing Solutions in Albuquerque, is contracted by the NMSL Tribal Libraries Program as a technical consultant. He, along with Mike Sandoval, maintain the chapter and tribal libraries computers, provide training, and technical support. Chapter house computers with Internet connectivity will soon be using a local Internet Service Provider instead of a toll number. Rick Lutz, co-founder of Kid's Kollege and originator of the Computer Boot Camp, (Appendix F) identifies New Mexico Technet as "Rural Southwest's Solution. For where we are, it's a good deal" (personal communication, July 27, 1999). New Mexico Technet is a private non-profit

company founded in 1984 to serve business, government, and education with communication and information within the state. In 1985, the National Science Foundation selected New Mexico Technet as the Internet hub in New Mexico. Currently operating at a T-3 capacity, "Technet now serves as the primary connection point to the Internet for other Internet Service Providers, businesses, government and private users in New Mexico" (Welcome to New Mexico Technet). New Mexico Technet provides available networking resources for educators who may otherwise be prevented from having free and easy access to the Internet and online information through New Mexico Network for Educational Communications (NEDCOMM).

Non-Profit Level -- Gates Library Foundation

The Gates Library Foundation was founded in 1997 by Bill and Melissa Gates to tackle the emerging digital divide, and public libraries were considered the vehicle for the distribution of funding, technical assistance and training. Grants revolve around partnering with state library agencies, schools of library science, library systems, and state local libraries in expanding public access to technology and digital information in low-income communities in the United States and Canada (Heil, 1999).

The state of New Mexico was considered eligible for the statewide partnership, having a poverty rate of at least 19 percent, along with Arkansas, Kentucky, Louisiana, Mississippi, and West Virginia (Gates, 1997). The New Mexico State Library and Navajo Nation have been recipients of Gates Library Foundation Statewide Library Partnership 1998 grant awards (Gates, 1998).

The Gates Foundation has also identified alternative information centers other than libraries as viable locations for technology access to digital information. The Gates

Center for Technology Access is piloting a new Native American Access to Technology

Program grant. (See Figure 15.) Since libraries on the Navajo reservation are not

plentiful, chapter houses were determined as the equivalent to a community center for

public access to computer technology and digital information. Lake Valley was chosen as

the pilot project site to determine how community members used the Gates computer;

what information and/or software programs community members requested; and what

recommendations community members suggested. This information contributed to the

drafting of the grant application program and process that was presented on June 3, 1999

in Crownpoint and on August 26, 1999 in Nageezi and Narbona Pass. The intent of the

initiative is to equip all 110 chapters within the Navajo Nation with computers with

Internet access for public use. In doing so, the tribal facilities will be able to serve as

information centers. The Gates Foundation Center for Technology Access has used the

NMSL Tribal Libraries Program as a guide for starting the Native American Technology

Access Grant Program.

Bill Gates to donate funding to Navajos

Program to fund high-tech projects

LARRY DI GIOVANNI
STAFF WRITER

WINDOW ROCK, Ariz. — All 110 chapters within the Navajo Nation stand to benefit from an as-yet undisclosed amount of grant funding for high-tech projects, courtesy of Microsoft founder Bill Gates.

During a telephone conference Friday morning from Window Rock, Ariz., plans for the Native American Access to Technology Program were announced by Jessica Dorr, program coordinator for the Gates Foundation, and Teresa Hopkins, director of the Navajo Division of General Services.

The purpose of the program is to provide American Indian tribes in the Four Corners with an opportunity to bridge the digital divide. After developing the Native American Access to Technology Program last December, Bill and Melinda Gates met in person with Navajo Nation President Kelsey Begaye last month, Dorr said.

Begaye said he recently traveled to Seattle, Wash., to meet with the foundation. He said integrating technology onto the Navajo Nation is part of the five strategic directives he has given to his division directors.

"They will be sending out a

(p. A1)
■ See **Navajos** A3.
Feb. 21, 2000 / Daily Times

Navajos

(Continued from A1)

team to take a look at what we have on Navajo Nation regarding technology," Begaye said Monday. "After their visitation, they will go back and they will decide how much money they will give us toward technology."

Initially, chapters stand to benefit from the Gates Foundation through donations of computers and Internet access. More opportunities involving software training and telecommunications upgrades are also possible.

In reference to computers and Internet access alone, "obviously there is a greater need than that," Dorr said.

"If we can work it the right way ... hopefully the goal is to have all 110 chapters receive something," Hopkins said. "Basic connectivity" to phone lines is a problem in remote areas of the Navajo Nation, she added.

Dorr said the Gates Foundation will meet in March with tribal officials, where foundation representatives will give actual demonstrations of technology intended for the Navajo Nation. A two-year grant program is envisioned.

"That's still open to input," Dorr said.

To ensure that the greatest technology needs are met, Hopkins said the nation's Divisions of Education and Community Development will be working with the Gates Foundation. Computers and Internet access provided by the foundation could be geared toward K-12 education or toward e-commerce, Hopkins said. Diné College may also benefit from the Native American Access program.

Chapters will likely start the application process in April that will allow them to receive between two and four computers per chapter, Hopkins said.

"By June we may have an announcement of how many communities have applied and been awarded," she said.

In 1998, The Navajo Nation Library received technology benefits from the Gates Foundation.

Hopkins said she was not certain if the Gates Foundation would be able to help establish a teleconferencing system allowing individual chapters to view Navajo Nation Council delegates in action from their own computers. That, along with future tribal elections to be conducted via computers, has been advocated by Begaye.

Friday's announcement of the Native American Access to Technology Program grant process complements announcements earlier this month of high-tech projects headed to Shiprock. The announcements — made by Larry Foster, Begaye's top adviser — include a $1 million U.S. Department of Navy grant for computer training, called the Delta One Project; a "call center" in conjunction with IBM that would create 300 jobs; and a census data center.

Figure 15. News story of Gates Foundation involvement

The Native American Access to Technology Program was presented to chapter representatives on June 3, 1999 and August 26, 1999 on the Navajo Nation. There are three main components of the grant basically consisting of:

1. Basic Access to Technology Grant -- Basic grant for

everyone to create information resources within each chapter;

2. Content Creation and Storage – A digital content creation

station with scanner, digital camera, digital video, voice recording, and

color printer for creating and storing information;

3. Training Lab and Academic Stipend – Computer lab of up

to 11 computers for training community members involves the

commitment of a student lab manager

(personal communication, Jessica Dorr, June 3, 1999).

These are non-competitive grants that will require more buy-in at the higher

levels. The two-way partnership involves considering each tribal community as an

individual case with individual needs; and in return, providing the necessary technology

to connect and equip chapter houses with resources they need.

For-Profit Level: Navajo Communications Company (NCC)

Navajo Communications Company (NCC) is a local exchange carrier (LEC) (and

not a long distance carrier) providing telephone service to customers living on the Navajo

Nation spanning 26, 000 square miles in the three states. NCC is a wholly owned

subsidiary of Citizens Utility Company (Citizens) operating in Arizona, New Mexico,

and Utah, in addition to the White Mountain Apache Reservation and the Hualapai Indian

Reservation in Arizona.

Since all telegraph companies originally operated as monopolies, the Bureau of

Indian Affairs (BIA), prior to 1969, controlled the telephone system on the Navajo

Nation. Thirteen exchanges provided telephony for its facilities and employees. In 1969,

the BIA telephone system was sold by request of the Navajo Nation to GSTC with the

Navajo Nation owning 20% of the company. In 1981, the remaining 20% of the Navajo

Nation share was sold to CP National who purchased NCC. In 1986, ALLTELL acquired NCC and NCC Systems. In 1995, Citizens Communications acquired NCC. NCC and Citizens Communications are used interchangeably now (Francis Mike, Jan. 29, 1999 FCC Public Hearing).

With a telephone penetration rate of approximately 22.5%, NCC provided communication service to 23,344 customers in 1998. Presently, NCC houses one toll center and 39 exchanges (12 in New Mexico, 24 in Arizona, and 3 in Utah) with 7 communities representing 70% of the total business; leaving 30% representing extremely small communities. The NCC's network is 100% digital comprising wire and wireless technology: 630 miles of aerial cable and 870 miles of buried cable, of which, 121 is fiber optics, with 21 Microwave Repeaters and 3 BETRS radio systems (June 23, 1999). See Figure 16 for partial coverage map; see Appendices G1-4 for complete infrastructure maps.

The administrative headquarters, including an Operator Service Center, Call Center, Engineering Department, Cable TV (CATV) and Two-Way Radio operations, and Frame Relay service, is located in St. Michaels, AZ, with four outlying district offices in Tuba City, Chinle, and Fort Defiance, Arizona and Shiprock, New Mexico. NCC has a total of 137 employees of which 93% are Native Americans and bilingual (Francis Mike, Jan. 29, 1999 FCC Public Hearing; Digital Council Fires, May 15, 1999).

Francis Mike is Navajo and a native of Kayenta, Arizona on the Navajo Nation. Francis Mike is Citizens Communications/NCC Manager of External Affairs for New Mexico, Arizona and Utah area. Mike, who is also known by colleagues and associates as Spanky, has been involved in the telecommunications industry for 20 years.
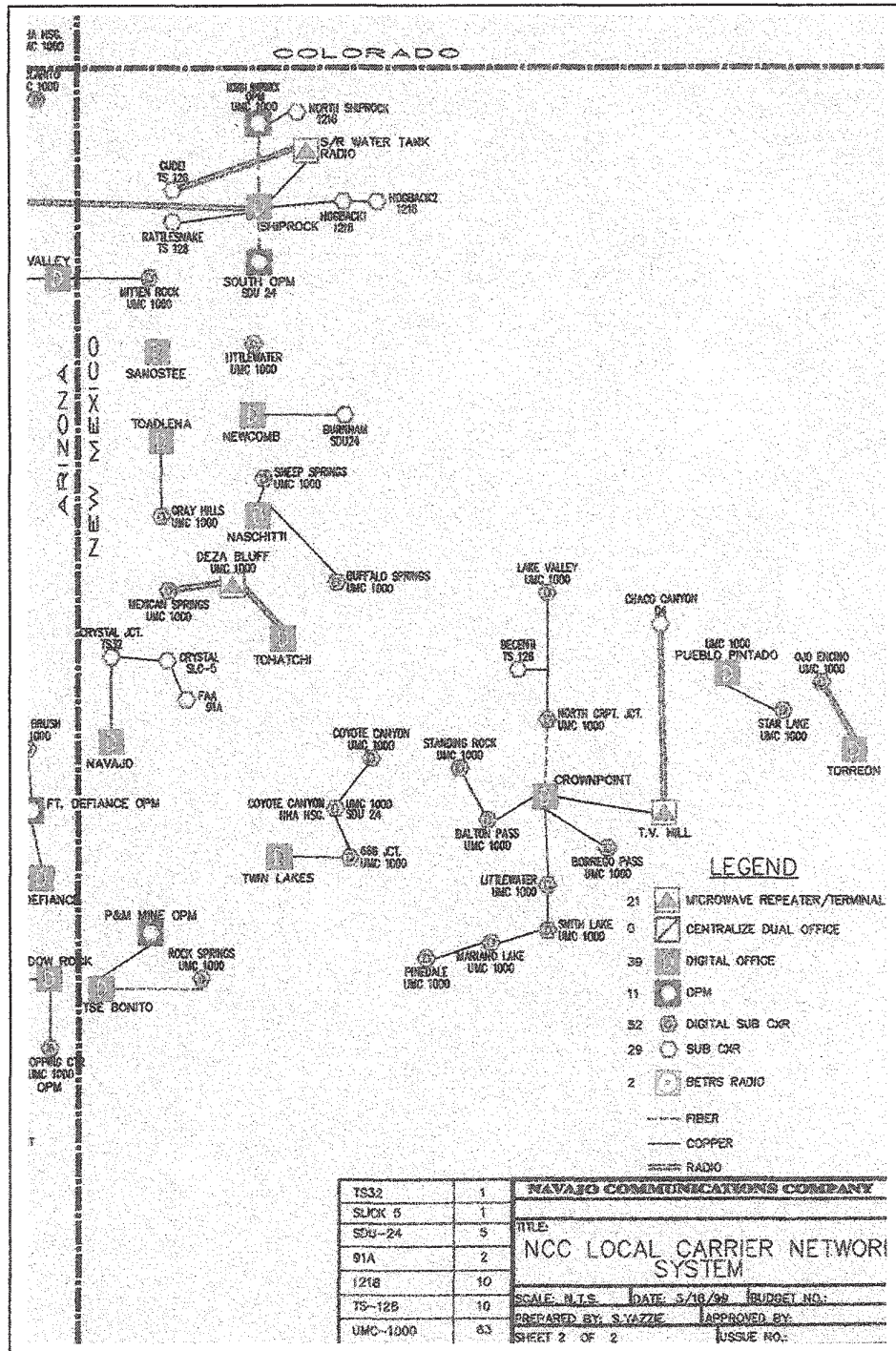
Figure 16. Portion of NCC Local Network (See Appendices G1-4 for full maps)

Mike receives some criticism in his position representing a for-profit business enterprise in the midst of inherent telecommunication needs and issues within rural tribal communities, such as the Navajo Nation (Sept. 2, 1999). He notes:

We get beat up about this a lot of the time. I've been doing this for so long, it doesn't bother me anymore. This isn't good either because you need to get out there and be enthusiastic, but you get numb to it. (Sept. 29, 1999)

Francis Mike also explains:

All telegraph companies started as monopolies but telephone laws have now made it possible to open us to competition. As a business, we have to go by a rate of return. We can only make so much money. Like US West, we use it to return to customers to reduce customer rates. We have less customers than entire Gallup community. If we were making more, then our rate of return would balance out to help reduce our rates. (Digital Council Fires, May 15, 1999)

There are an estimated 2, 852 residents living in Crownpoint (Chapter Images, 1996). There are "no more than 1000 customers in Crownpoint and we can't ask the remaining base of customers in New Mexico to offset this [cost]" (Digital Council Fires, May 15, 1999). Mike does not see the universal service fund as a panacea for universal nor equal access, especially within the Navajo Nation:

It's not. Everyone believes that universal services can satisfy all the needs of everyone. But you still have to run a business. All right, yes, it helps offset the construction costs of high areas. But in the same picture you've got to understand. You've got to pay up front. After you install the

equipment, you have the ongoing costs in maintaining that. So, in so much

as it helps, and I really do appreciate it, you still need to make correct

business choices to put service in that people...can utilize. (June 23, 1999)

On a similar theme Mike asserted:

Universal Service can help resolve the problem. However, the

problem still remains. US West set up universal service to reduce rates and

costs for rural access. NCC in 1998 received 4.25 million in universal

service funds but given the capital and operating budget, it us still not

enough. Therefore, universal service is not an answer to all problems.

(Digital Council Fires, May 15, 1999)

Francis Mike offered an alternative solution, which involves advocacy and

community involvement:

We need to get to the ear of the president. If Jean [Whitehorse]

continues to talk about the needs in the communities, changes can be

made...(Digital Council Fires, May 15, 1999).

NCC Issues

Dual taxation and right-of-way issues are major concerns of NCC. "The

telecommunications industry is a highly regulated industry" (Casey, Ross, and Warren,

1999, p. 12.) Trying to understand the business, federal, and regulatory demands is

similar to a game of Monopoly where one regularly lands on the community chest before

passing GO. Francis Mike notes:

Out here on the reservation businesses are dual taxed. This filters

down to the businesses and private industry—reservation and state. We're

owned by a tribe with dual taxation status. $1.4 million dollars on the customer base is paid to the state. (Digital Council Fires, May 15, 1999) During a later conversation Mike elaborated:

NCC gives $800,000 in taxes to the Navajo Nation, half of which is NCC business activity tax and a third of that half is a possessory interest tax. The balance of the remaining tax is cable taxes including business interest, possessory, and franchise taxes... When I gave my presentation [to Kelsey Begaye], I posted a bill like you did [referring to the researcher's presentation at the Digital Council Fires, May 15, 1999] and showed the 'enacting laws' we're responsible for. I had to get across the federal, state, and tribal taxes enacted that reflects in each bill the local residents and businesses have to pay--not to NCC--but that are enacted through federal, state, and federal taxes. [Looking at each item on the bill] I showed them that's how many President Clinton has proposed and how these excises are put on everybody's phone bill. (September 2, 1999)

In his presentation at the Digital Council Fires (May 15, 1999) Francis Mike explained some aspects of a typical phone bill:

The residential phone bill is $23 [monthly]. Tell people and Navajo people that other things are tacked onto their bill, such as FCC, 911 service. 911: it is a common statement 'we pay for 911 and we don't have it'. 911 is NOT [emphasis by speaker] a function of the phone company. It was implemented about nine years ago as a state status mandate that LEC had to collect 911 service fees from all customers.

Therefore, NCC is mandated by state law and the money is given to the state as revenue. (May 15, 1999)

The Navajo Nation is asking exorbitant fees for right-of-way acquisition (Francis Mike, Digital Council Fires, January 29, 1999). The most popular right-of-way issue is the hold up of a fiber optics connection from Coyote Canyon to Crownpoint. This one right-of-way issue has been a contention for several years now. Ed Morgan of Pinedale Chapter, said: "...the fiber optics were completed two or three years ago but couldn't get to Crownpoint and Coyote Canyon" (April 12, 1999).

Francis Mike met with Kelsey Begaye, Navajo Nation president on September 1, 1999 to discuss the right-of-way processes that are holding up the laying of the fiber optics throughout the Navajo Nation. "They want so much money for right-of-ways so NCC can't get through these right-of-way-issues." (Interview, September 2, 1999) Mike is advocating getting rid of the microwave towers and installing fiber optics. His recommendations to the Navajo Nation president were to pursue:

1. joint utility easements where NCC can pay more reasonably because "we [NCC] don't mind paying taxes."

2. the use of highways that already have right-of-way. Instead of dealing with new right-of-ways, use what's already created.

(Interview, September 2, 1999)

Francis Mikes points out: "Our counterpart in White River Apache does not have these problems" (Digital Council Fires, May 15, 1999). He also addresses some of the barriers to telecommunications infrastructure development:

❑   The Navajo Nation makes it so stringent to start a business, forcing people to pursue businesses in Gallup and Farmington where the infrastructure already exists.

❑   Young people are not involved and like the rest of the US are apathetic.

❑   At the FCC Public Hearing (January 29, 1999) the following statistics were mentioned:

    ❑   low penetration telephone rate in New Mexico

    ❑   44% unemployment rate

    ❑   56% below poverty level

    ❑   54% lacking sewer and septic systems

    ❑   more people have cable TV than telephone

Mike views the lack of infrastructure development as a disadvantage to the education of Navajo students. He points out:

With economic development being aggressively pursued by the present administration, the building of the infrastructure will follow…Until the Navajo Tribe does it [economic development] and rectifies it by building the infrastructure, in the meantime, we've got to give young people exposure to computers. We're missing the boat. If education facilities don't have Internet; if they don't have access to computers and Internet, they've [students] got beaten up twice. I applaud the BIA and what they are doing on the Internet. (June 23, 1999)

Mike suggests that what is needed is for people to gain a better understanding of telecos and to keep up with the changes. In this way:

we all would be in a better position to help communities and the telco itself" "But, we, on Navajoland are burdened with regulatory reports, BIA leases, large amounts of paperwork, inundated with over regulation. Customer studies report that our customers pay 2 months for the cost of regulation and service. That is, NCC is over- regulated and more so on Navajoland." (Digital Council Fires, May15, 1999)

Francis Mike recommends that people's involvement can lead toward a beneficial change by: understanding the process; getting involved in the political process; talking to the new leadership in support of technology; doing something about the problems rather than just talking about it. "Get involved in local government. Tell them what's happening. We now have an opportunity to make change, so speak louder"(Digital Council Fires, May 15, 1999).

Tribal Sovereign Level

The Navajo Nation encompasses 25,000 square miles and extends into Arizona, New Mexico, and Utah with a population of 172,000. The Navajo Nation has a three-branch system of government consisting of 88 council member delegates who represent the 110 chapter communities, which are divided within five geographic agencies (Arthur, 1999). The panel discussion testimony by Navajo Nation Council Delegate, Honorable George Arthur, during the January 29, 1999 FCC Public Hearing, highlights pertinent information about the Navajo Nation and some of its technology issues:

The Navajo Nation first language is spoken in most homes with a figure of 82 percent. Navajo culture and religion beliefs are still dominant. There still is a lack of resources to provide infrastructure. Examples are, 51 percent of all residents do not have indoor plumbing. 48 percent lack complete kitchen facilities. 54 percent still use wood as their major heating source, with natural gas as a second. 77 percent of the residents at the Navajo Nation do not have telephone service.

Issues that we have in the development of information technology: Based on the July '98 report from the Navajo Communications Company, who is the sole provider of telecommunications systems within the Nation, 10,757 residential lines, 10,269 business lines. There are a total of 56,000 plus housing units on the Navajo Nation. The residential penetration rate of the telephone service is less than 25 percent. The Navajo Nation government expends $2.6 million per year for business lines. Residents expend about $2.5 million per year for residential lines. Please note that these figures do not include long distance charges.

It is estimated that it costs $57.15 per month for one party business line, $15.90 per month for a one party residential line. These figures are not accurate because they reflect the average cost of other rural telephone companies and other tribal entities that serve reservation areas in Arizona. (FCC Public Hearing, January 29, 1999, pp. 38-43)

At the same hearing, New Mexico Senator, Leonard Tsosie (1999), reminded the participants that building the infrastructure within tribal communities is a federal trust commitment:

> I would argue that extending the Internet services and fiber optics is a federal trust responsibility. Because what you do is…you are going to do health care service through this. You are going to do social service through this. You are going to get legal information through this. And many other things. This is a federal trust responsibility.

> If we don't take this federal trust responsibility seriously, nothing will get done. We will contribute to the digital darkness in Native American communities in the next millennium, and along with that, we would contribute to depriving Indian people of their precious rights."
> (FCC Public Hearing, January 29, 1999, p. 22-23)

In 1992, during President Peterson Zah's administration, The Navajo Nation council members passed legislation:

> Mandating the creation of an open information environment among the governmental entities of the Navajo nation Government; and to assign responsible parties to coordinate the use and development of computer technology to accomplish the open information sharing environment (Navajo Nation Council Resolution, CYJ-34-92, 1992, p. 1).

The open information system would allow for the effective coordination of the three branches of government—executive, judicial and legislative (Teresa Hopkins,

Personal communication, April 9, 1996). The resolution declared a general policy for the open information environment on the use and development of computer technology:

It is understood that through the use of modern management techniques and computer technology it is possible to promote the sharing of data and information throughout the Navajo Nation Government including the chapter level. It is further understood that the concept of distributed processing can be used to accomplish the establishment of an overall computer information strategy" (Navajo Nation Council Resolution, CYJ-34-92, 1992, Attachment{#C}).

The Agency Network Program, in fulfilling this strategy, was created with the responsibility of building a community network of information sharing (Teresa Hopkins, Personal communication, April 9, 1996). The Agency Network Program has an official Navajo Nation web site.

Kelsey Begaye, current president of the Navajo Nation is building upon the Nation's past initiatives and planning for the Nation's new millennium. Ray Baldwin Louis, former public relations officer at the Navajo Nation Office of the Legislature, Speaker of the House, described Begaye as:

a strong advocate of technology development and using those resources to our advantages and being able to look into the future and make projections to help meet the needs of the Nation (Personal communication, August 19, 1998).
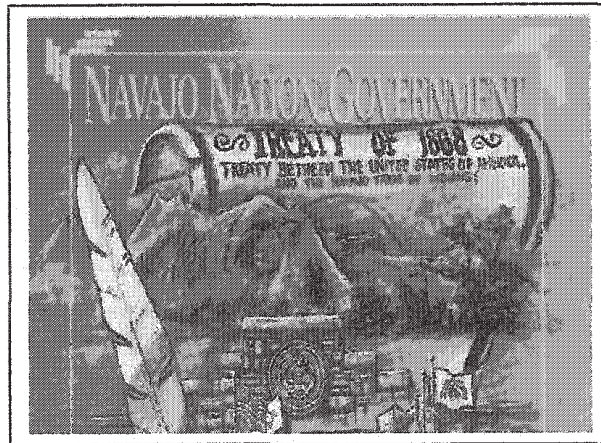
Figure 17. Navajo Government link from home page of the Navajo Nation WWW site

Even as Speaker of the House, prior to being voted Navajo Nation president in

1999, Kelsey Begaye, was an advocate of technology development for serving Navajo

people (Personal communication, August 19, 1998).

Ray Baldwin Louis stated:

Technology is going to play a big part of any development that will

be taking place in the future. And we've begun a process, mainly through

the initiative of the Office of the Speaker. And we have an Agency

Network Office, connecting all the chapters on the Navajo Nation through

computers with central government in Window Rock so that each chapter

will have the ability to check in on their budget...So that is beginning to

be a big push. And I know our speaker is very concerned about that area

and a big advocate of developing our capabilities in the field of

technology. (Interview, August 19, 1998)

Navajo Nation President Begaye (1999[2]), in his State of the Navajo Nation Address declared:

> It should be our goal that every Navajo become computer literate
> in the next ten years. …Advances in worldwide technology must not
> create a bigger gap between the rich and the poor, must not leave our
> People further behind economically, and must be used to increase and
> solidify our economic output. (p. 11)

The Begaye administration has stressed the importance of two areas in particular: economic development and technology (Personal communication, Teresa Hopkins, September 28, 1999). Begaye is providing a framework for transforming the Navajo Nation government and Navajo society based on Roosevelt's New Deal in 1933.

Navajo Nation President Begaye (1999[2]) elaborates on the New Deal concepts in his State of the Nation Address:

> Roosevelt and Congress, working together, turned America around
> for most of its people but left Native Americans to struggle along for
> another 70 years…Fellow Navajos, in 1999, the State of the Navajo
> Nation, is in many ways worse than during the Great Depression. The
> Navajo Nation has never been out of a far deeper depression and it is time
> to face this fact head on. While life has improved for some Navajos,
> Navajo unemployment is a staggering ten times higher than the United
> States and almost twice the unemployment rate during The Great
> Depression. Many Navajo homes still do not have water and electricity
> and refrigeration – a[n] urgent concern because of the epidemic we are

facing in diabetes....Too many of our people go to bed hungry, lack

inadequate housing, transportation, education, and technology. Our People

face another just as deadly threat to their wellbeing, discrimination.

(p. 2-3)

Economic Development

Infrastructure development is first necessary for the Nation's safety and well-being. Whiterock and Casamero Lake Chapter Houses still have no telephone lines. The estimated cost of a telephone line for Casamero Lake is $30,000 (Teresa Hopkins, Personal communication, September 28, 1999). Navajo Nation Council Delegate George Arthur explained how 911 is nonexistent in times of emergencies (January 29, 1999 FCC Public Hearing). In the settlement of Rincon Marquise, 28 miles east of Whitehorse Lake, community members still struggle with inaccessible roads and lack of electricity and domestic quality water. George (Diné Hamlet, 1999) remarked "there's human tragedy going on out there on a daily basis" (p. A-5).

While the development of the infrastructure will provide for human basic needs, it will also provide an economic investment for the Nation. Teresa Hopkins, Navajo Nation Director of General Services, explains that the infrastructure must be in place for any significant kind of business ventures to take hold. Hopkins explained to Eric Jensen of the FCC: "Failure to have good, basic telephone service results in a lack of economic development opportunities" (Jensen, 1999). Lacking an infrastructure — power lines, phone lines—economic development is thwarted.

With an unemployment rate of 43 percent, transforming the Navajo Nation will involve removal of obstacles to economic development that promote self-sufficiency and

economic recovery. Many Navajo weavers are self-sufficient, earning a good living from the sale of their rugs. The Crownpoint Rug Auction is one such business enterprise upon which some weavers rely. However, there are few Navajo-owned business from which to choose. President Kelsey Begaye comments: "I am informed the shortest book in the entire world is the book titled A Complete Listing of Navajo Owned Businesses, that the book is so small it could be printed on a single page." (Begaye, 1999[2])

In 1998 the Navajo Nation established Tribal Business Information Centers in Window Rock and Chinle, Arizona to assist potential business entrepreneurs with advanced business development resources (John, 1999). Ecotourism is considered a practical business option whereby culture and business are combined and not at the expense of the other (McIntosh, 1999). Tourism is sought and in a way that protects the cultural values and environment. The Navajo Nation may become the gateway to a majority of natural and cultural attractions within the Four Corners Area. (Interview, Ray Baldwin Louis, August 19, 1998)

Potential Navajo business entrepreneurs attended the American Indian Tourism Conference in Albuquerque, August 1999. Sally Begay (Heil, 1999) said "there is a demand for bed-and-breakfast operations because smaller communities on the reservation don't have motels" (p. A3). Lorena Anderson, also a participant at the conference, said: "For so long non-Navajos have been telling our story…[t]ourism is a way for us to share our culture from our perspective" (p. A5).

Several Navajo owned businesses are emerging: Roland's Navajoland Tours, a bed-and-breakfast is owned and operated by Roland Cody Dixon from Monument Valley, Arizona. Largo Navajoland Tours is owned and operated by John and Brenda Largo. The

Big Juniper Ranch near Chinle, Arizona is a campground operated by Milton Chee, who also offers cultural lectures for visitors. Chee plans to advertise his business via the Internet. Padilla Computers is a computer business owned and operated by Curtis Padilla from Lake Valley.

Louis explains:

Economic development is connected with technology. So we are encouraging our young people to take advantage of this. And we do have some Navajos who are pretty well rounded in that area. There are some Navajo companies already running their own computer services and then they're offering to become part of this development. So that's coming…and all this has caught on to the Navajo Nation within the past fifteen years, not only with computers, but with satellite, television. And even in the remote areas of the reservation, you'll see a hogan and a big satellite dish…It's quite comical to see that, but, you know, the world is all over the reservation now. And we have to, instead of running away from it, we have to use those to our advantage in some way. It's quite a big challenge. (Interview, August 19, 1998)

Technology

With the Gates Library Foundation Statewide Library Partnership grant in 1998, eleven Gates computers are available in the Navajo Nation Library located in the Tribal Museum. The Internet connection will be made available through line sight of towers (personal communication, Teresa Hopkins, September 28, 1999). Hopkins explains:

They are not connected to the Internet yet because of — not

political reasons — because of a natural obstacle – a tree, a big cottonwood

tree. The tree is too dangerous to remove, so we are looking into trimming

the branches back enough. …Currently there are 12 dialup phone numbers

within Window Rock for tribal use connecting the Legislative, Judicial,

and Executive branches of government. The hub in Window Rock

connects to a T-1 line in Albuquerque. (Interview, September 28, 1999)

The Agency Network Program is hoping to implement the goal of the Navajo

Nation becoming a local Internet Service Provider within Window Rock by year 2000.

Hopkins elaborates:

The projected plan is to put in 100 more phone numbers for public

use. We usually start with the farthest out locations first: Tuba City,

Kayenta, Shiprock, and Crownpoint. Once income is generated, we can

add more. The Navajo Nation participated in and has purchased available

air space in FCC auctions extending into Gallup and Flagstaff. (Interview,

September 28, 1999)

Through the purchase of and extension of air space, the Navajo Nation would

become a Local Multi Distribution Service (LMDS) as wireless local Internet Service

Provider for the Navajo Nation. The Navajo Nation is also considering becoming its own

telecommunications company in the near future. Teresa Hopkins explains:

The Navajo Communications Company (NCC) makes $15 to $20

million dollars a year just off the Navajo Nation in toll charges and long

distance calls…The Navajo Communications Company makes all of their money off the Navajo People. (interview, September 28, 1999)

In doing so, Hopkins points out regulatory and cyber-sovereignty issues and asks:

If we were to become our own regulatory entity, if there is a dispute with a telephone company and the state, my understanding is the [state] regulatory commission would come in. The question is who will come in to resolve issues within a tribal nation. There is a regulatory and sovereignty side. (interview, September 28, 1999)

Hopkins explains the frustrations of the regulatory environment:

The biggest frustration are the rules. On the Navajo reservation, the whole situation changes because you have to consider social, cultural, physical terrain. We all have these factors to consider. In some places all these factors will not apply. Some [telcos] are taking a proactive approach…investing money into remote areas. (interview, September 28, 1999)

Local level – Lake Valley Chapter House

Lake Valley (Be'ak'id Halgaii, meaning white flat area of lake) is a small but diverse community near Chaco Canyon National Park in the Northwest part of New Mexico, with a land size of approximately 83,573 acres. It is situated approximately half way between Crownpoint and Farmington on the Vietnam Veterans Memorial Highway, also known as the Bisti Highway of New Mexico Route 371. The estimated population, according to the 1997 Navajo Nation projection, is 438 (Rodgers, 1996). Since Lake Valley community has no post office, community members either use Crownpoint or

Farmington postal offices. Lake Valley has two trading Posts: Tsaya Trading Post sells gas, propane, groceries, sundry goods, and video rentals. A public telephone booth is available across the road. Savage's Trading Post provides a variety of services: second hand shop, auto parts shop, catering, wedding gown rentals, special occasion floral and balloon deliveries, photography portraits. Employment within Lake Valley includes:

- Lake Valley Chapter House (LVCH),

- Lake Valley Preschool,

- Lake Valley Navajo School (LVNS),

- La Vida Mission -- a Seventh Day Adventist School.

Many community members supplement their income by selling hand-made artwork and/or prepared food independently. Many residents are self-employed artisans – rug weavers, silversmiths, potters, and bead workers, to mention a few. LVNS and La Vida Mission provide local employment opportunities. LVCH provides temporary employment positions for community members.

The community revolves around LVCH and LVNS as shown in Figures 16 and 17. All students attending K-8 LVNS are Navajo. Students graduating from LVNS have several choices in attending high school, either in Crowpoint, Ft. Wingate, Farmington, Bloomfield, Shiprock, or Aztec. Some students receive waivers to attend school Riverside Indian Schools in Oklahoma and California. Local post-secondary schools are:

- Diné College – Crownpoint and Shiprock,

- Crownpoint Institute of Technology,

- San Juan College – Farmington

- University of New Mexico -- Gallup and Farmington branches.
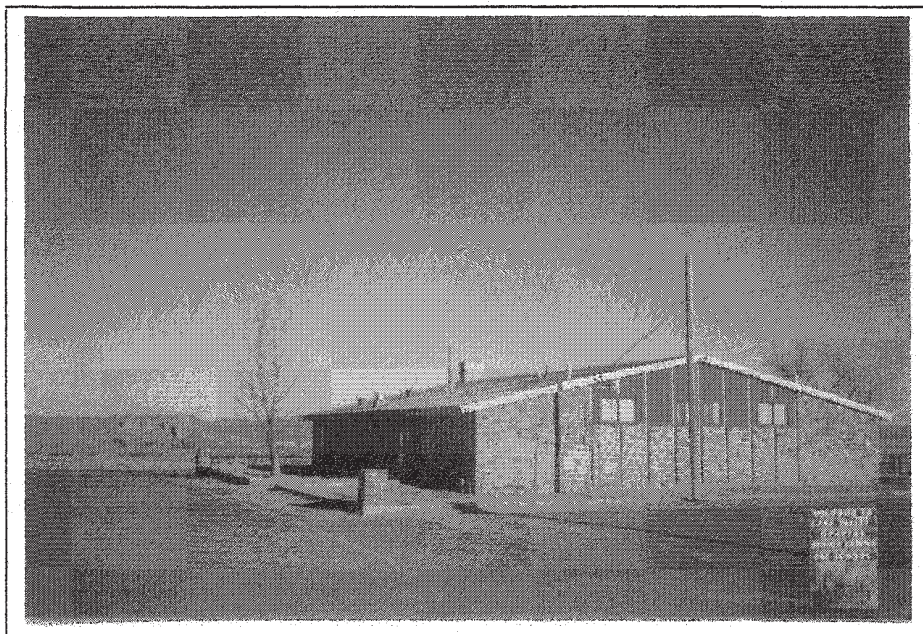
Figure 18. Lake Valley Chapter House

Figure 19. Lake Valley Navajo School

Students and community members have access to computer technology at school and libraries. The public libraries in Farmington and Gallup have Internet connections. Farmington Public Library is the recipient of a Gates Library Program Grant to set up a computer lab for the community.
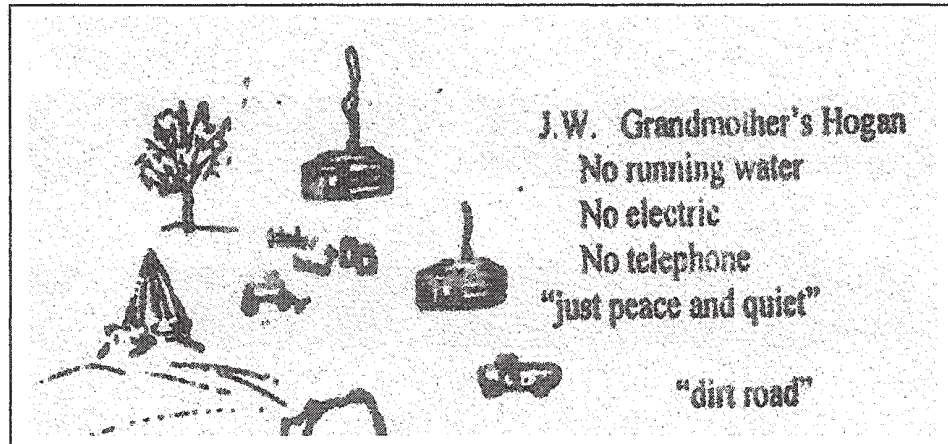
Figure 20. Hogan illustration by Jean Whitehorse

Although living in a remote location, students are affected by trends seen in Farmington, Albuquerque, and Gallup. Influences such as gangs and drugs are not prevalent but do exist. The community is small but spread out. Hogans and other homes are scattered throughout the community, as sketched in Figure 20, with family sites clustered more closely together. Most community members raise sheep, as pictured in Figure 21, while others raise sheep along with cows and/or horses. There are few farmers in the area compared with the past history.
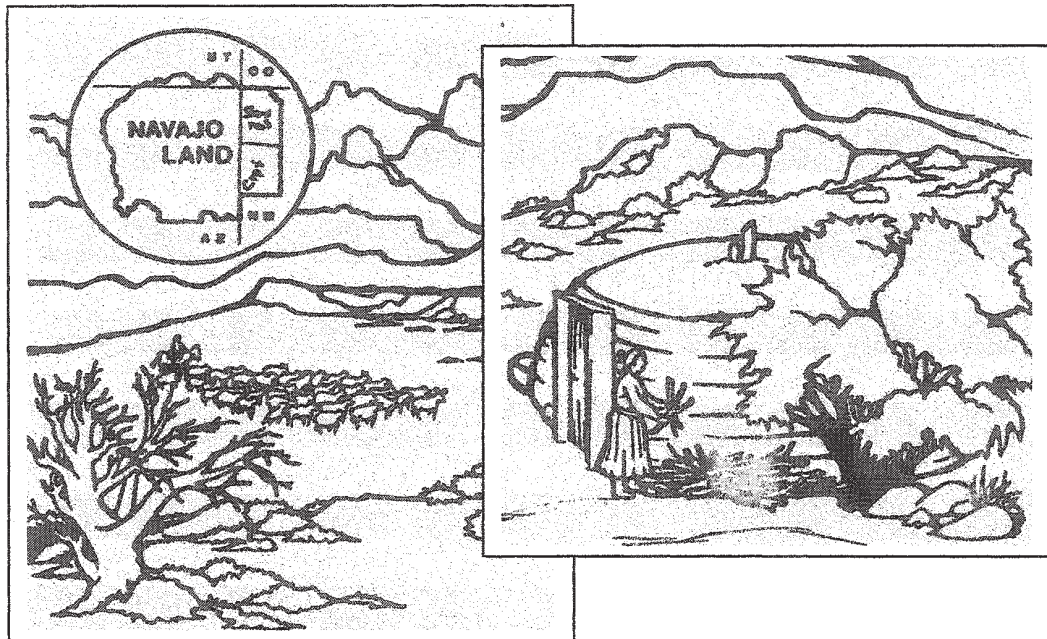
Figure 21. Navajo reservation images by Jean Whitehorse

The telecommunications infrastructure is limited. Located near the chapter house, the Navajo Housing Authority has 40 housing units built for community occupancy on a sliding fee scale based on family income. Bureau of Indian Affairs Lake Valley Navajo School has 15 housing units for school staff on the school property. In both of these housing units electric powers lines are available. Jean Whitehorse illustrates the infrastructure in Figure 22. Also, see Appendix H.
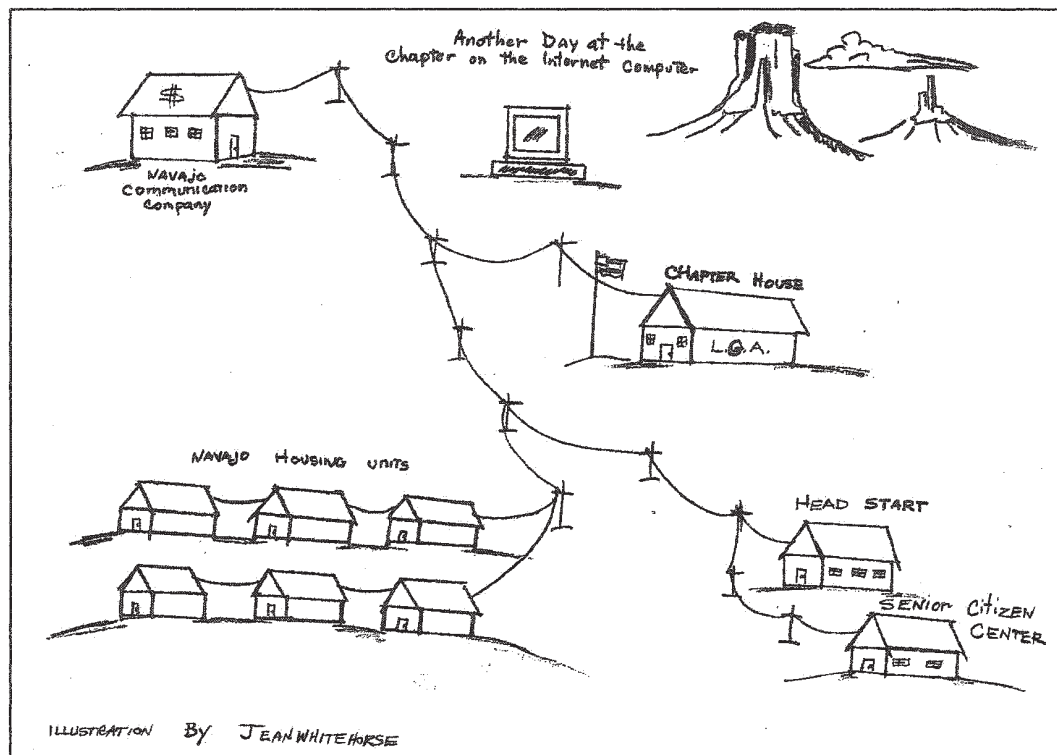
Figure 22. Lake Valley telecommunications infrastructure as sketched by Whitehorse.

The estimated number of private phone lines in Lake Valley averages between 40 and 45. Navajo Communications Company (NCC) is the only local telephone service provider. Estimated percentage of Lake Valley residents without access to a private telephone line in their homes is 90 percent. Lake Valley Navajo School has four telephone lines, including a Fax line with possibility of three more telephone lines in the near future. There are three telephone lines at La Vida Mission with a toll free Internet connection. Savage Trading Post has no telephone and uses one cellular phone with a long distance provider in Farmington. Tsaya Trading Post has one telephone. There is only one public pay telephone in the Lake Valley community.

The cost of one telephone line per month for Lake Valley Chapter House is approximately $30. The Internet connection per month is approximately $72. The estimated percentage of the administrative budget that is spent for telephone and telecommunications costs totals approximately 60 percent. There are no T-1, frame-relay, or point-to-point presence lines and no wireless network.

What is a chapter house? The most obvious aspect of chapter houses is their distance from each other representing various geographical landscapes and involving a great deal of travel in between them. A chapter is a political unit comparable to municipality or city hall. Each chapter reflects the community in which it exists, and therefore, is quite different. Chapter officials deal with issues of land rights and management, health, education, and welfare for their community comparable to any city council. Each chapter has a Council Delegate who represents their chapter's interests in the Navajo Nation Council. The number of Council representatives is determined by the size of the chapter voting populace. Lake Valley Chapter House has been certified as a chapter since February 14, 1956.

In 1998, three years after former Navajo Nation President Albert Hale's proposal, the Local Governance Act (LGA) was passed by the Navajo Nation Council as an initiative for local empowerment at the chapter level. This decentralization of authority allows chapters autonomous municipal power and responsibilities over local concerns as individual tribal governing entities. Each chapter's LGA certification will be based on a comprehensive strategy that meets the standards of accountability and responsibility to local citizens. After certification, a chapter may determine its own form of government (Begaye, 1999).

The accomplishments of self-sufficiency in tribal governance have been modeled by Kayenta Township Commission. This self-sufficiency has been hailed as the exemplar for other chapters. Kayenta Township, which is self-supporting receiving no federal funding, was an award recipient of the Harvard Project on American Indian Economic Development for their tax initiative (Navajos Win Governance Awards, 1999).

Chapter Four: Analysis of Themes

Technical Difficulties

The Internet connection at Lake Valley Chapter House was down more than it was up. After June 20, there was no Internet service and there still isn't. This lack of connectivity is frustrating to those community members who were used to accessing the Internet. See Appendix I.

When Irene Benally came to the chapter house, fortunately Lake Valley had their Internet connection. Unfortunately, because of the blustery weather conditions, we couldn't access it. Irene spoke about our local telephone carrier:

Irene Benally:

Our telephone isn't working today and it was out yesterday. Any time we get wind like this [very windy and blustery], our telephone goes down. I thought when we got our telephone service that it would be better than not having it. But it's more of a nuisance....My daughter lives in Phoenix and she doesn't pay the extra charges we have to on our phone bills with Navajo Communications...Navajo Communications needs someone to compete with them. I find that using my cell phone is cheaper. Cell phone, COMNET, I think is the name, and it covers a large area. From here to Newcomb is a local call. From Farmington to Nageezi is a local call. You pay, I think, a dollar, for extra charges – long distance. You learn on your cell phone to say 'Get me this'; 'I need this'. I don't like to get personal calls on my cell. Not on my cell. 'I'll see you soon so we can talk for two hours'. (April 29, 1999)

Four months of paid Internet service that was not used, seems wasteful to Etta Tso, Community Service Coordinator. Etta has contacted Navajo Communications Company to ask for a four- month credit for the chapter house. The chapter house will now take over the Internet monthly payments as of November 1999.

Pfeifer, considers other alternatives to phone lines as "the best option for this area" (June 15, 1999). Pfeifer explains that along the local corridor of Interstate 40 and Interstate 25, there are a lot of local service providers. But chapters such as Lake Valley are not accessible to these. NMSL Tribal Libraries Program has an exclusive account with campuscwix, which provides an Internet dial-up 800 number for chapters and tribal libraries in the program. It would be more cost effective if chapters and tribal libraries were to use a local dial-up Internet Service Provider such as New Mexico Technet rather than a toll-free 800 number (Bill Pfeifer, June 15, 1999). Dave Basham suggested that Lake Valley Chapter House and community invest in satellite technology, thereby bypassing telephone lines (November 23, 1998).

"In theory it shouldn't be that hard" referring to the process of Internet connectivity (Interview, Marc Richards, April 10, 1999). Marc Richards, computer technician, offered some possible alternatives for Internet connectivity at Lake Valley Chapter House, other than Navajo Communications Company (NCC):

- Foreign Exchange (FEX) from Gallup would be a toll-free call. FEX lines are a flat rate billing so monthly charges would be predictable.

- Establish an 800 number or buy an 800 number line from Navajo Communications Company (NCC).

- ❑ Frame Relay Multipoint and Multiplexing communication point-to-point. It is circuit dependable and reliable in transmitting all data, which is why such a system is used by ATM's and Stock Exchanges.

- ❑ DirecPC Satellite, although intended for individual use, it can become a networking system when accompanied by Helius software.

Another Internet connectivity option would be consideration of Diné College as an ISP remote access server to Lake Valley Chapter House. However, Crownpoint campus does not have the capacity for this kind of service at the present (Dave Basham and Keith Anderson, April 6, 1999). New Mexico Technet is another practical option for a local Internet Service Provider.

Crownpoint Institute of Technology (CIT) announced at their Internet Open House on September 17, 1999, that community members would be able to access the Internet locally for a nominal fee. CIT President Tutt is developing a small business plan, that if there is enough interest, CIT will become a local Internet Service Provider for the Crownpoint community (Interview, James Tutt, September 17, 1999). During the open house, (Appendix J) computer demonstrations creating email addresses and designing web pages were offered to visitors by Mt. Taylor web design consultants.

Technical difficulties prevented community members from using the Internet involving the modem and phone lines. Another technical difficulty involved the lack of transportation to a computer training course for high school and college students during the summer 1999.

Although the distance from Lake Valley to Crownpoint is only 37 miles, it was a deterrent for Lake Valley students in the Summer Youth Employment Training Program

to participate in the Computer Boot Camp sponsored by Kid's College at Diné College —

Crownpoint. Rick Lutz, founder of the Computer Boot Camp and Rick Begay, Director

of Crownpoint Work Force Development Program which oversees SYETP, worked as a

team to sign up students from Lake Valley for the Computer Boot Camp.

Rick Lutz emphasized three important features of the program for students 14 to

21 years of age:

> It will give students an edge on technology, helping them become
>
> prepared academically. Students will earn a free computer for their very
>
> own after working at least 100 hours learning the intricacies of how to:
>
> install software programs; download and programs and files from the
>
> Internet; upgrade computers; and use the various programs on their
>
> computer. Students will have Navajo computer technicians as their
>
> instructors and role models. (Rick Lutz, May 27, 1999)

The SYETP coordinator at Lake Valley who interviewed perspective students for

the SYETP saw the merits of the computer training: "I think my supervisor will go for it

because when you think about it, this is educational training, which our program stresses.

Our kids need to know this kind of information (Interview, Emil Benally, May 27, 1999).

Lake Valley students did not attend the Computer Boot Camp in Crownpoint

solely because of lack of transportation to and from Crownpoint Mondays through

Thursdays for the six-week length of the program. Although the $179 registration fees

would have been paid for students eligible for the SYETP, all students who were eligible

and interested did not attend the Computer Boot Camp, which was a half an hour ride

away from Lake Valley.

Lake Valley parents expressed interest in their children attending the Computer Boot Camp next year. Rick Lutz, aware of the popularity of the Computer Boot Camp this summer may consider hosting a Computer Boot Camp at Lake Valley in the future once computers and equipment are available (May 27, 1999).

Perception

CIT President Tutt (1998) emphasizes the importance of technology as a tool throughout Navajo history – one that can empower oneself and one's identity. Excerpt of the president's Congratulations to our Graduates address delivered to the 1998 CIT graduates:

> Your graduation for Crownpoint Institute of Technology means that you have built a bridge to the 21st century's world of technology. We Navajos have always used technology. When our ancestors made a planting stick to plant corn, when they fashioned a bow and arrow to hunt game, when they tightened a drum or formed a flute to make music, when they built a loom to weave rugs-when they did any of these things, they were using technology...Technology is a means of problem-solving. That is, you see a need for a better way to do something, so you make the tool to do it with. Our ancestors, then, were technologists: agricultural technologists, environmental technologists, musical technologists, textile technologists...But knowledge is power. As we embrace technology, as we learn to use these new tools and teach our children to use them, we empower ourselves and validate our Navajo identity (p. 2).

The perception of computers varies generationally. In studying the interaction of computers, two sources suggested to look at it from generational perspectives, that is, how is it perceived by youths, adults and elders.

Curious as to why the long wait for the Internet connection at Lake Valley Chapter House, Keith Anderson (April 2, 1999) suggested that it was not so much ignorance as it was attitude. There may be a perception that the Internet may, in fact, create more work and therefore, fear. Keith Anderson recounted that instructors at Diné College campuses were reluctant to use the Internet for this very same reason. Francis Mike related his experience working with tribal members and the Internet:

> You start showing them things that they can access on it, then they
>
> perk up. I don't think they have the full range of understanding of what a
>
> resource, a fabulous resource it is, particularly in rural America.
>
> (interview, June 23, 1999)

Emil Benally explained the perception of computers by elders:

> They think of it as television because it is very similar. Television
>
> exposes them to a lot of things that are not good. Elders [typically 60 years
>
> of age and up] think of the olden days in the 20s, 30s, 40s. They think it
>
> was better then. They think the current illness and troubles are brought on
>
> by technology, such as viruses. Even computers have viruses. They want
>
> to follow the traditional path. They are cautious of the new technology.
>
> (interview, May 27, 1999)

The Lake Valley Chapter House President, Edison Tso said he had intended to take the Internet out of the chapter house. However, after attending a chapter meeting at Smith Lake where Senator Leonard Tsosie talked about the Internet, he changed his mind. He is going to let it stay now. Lake Valley Chapter President Tso talked of plans to build a new building adjacent to the chapter house as a computer facility to house the Internet computers so people could use it after chapter hours and to employ someone to monitor it. He will budget these plans for the next fiscal year (April 5, 1999).

Once the Internet was connected, Etta Tso would refer to it as "Your Internet". I would try to reestablish "Our Internet." I soon realized that 'your' was not a personal singular possessive pronoun but a collective pronoun – a cultural and historic pronoun referring to something outside of Navajo culture. "Your Internet" was yet another outside influence to reckon with creating havoc upon persistent Navajo culture; another outside influence to use advantageously while balancing Navajo culture; another outside influence to ignore?

"Your Internet" refers to an outside technology that is being used by the People. It is also common knowledge that Navajo culture adapted outside technology with a distinctive degree of eclecticism. As Bonnie Yazzie, Navajo weaving instructor at Diné College – Crownpoint expressed it: "We, Navajos are great adapters" (May 11, 1999).

Lake Valley Chapter House officials have experienced using either the Gates computer or Internet access. Officials and adults may not understand computer technology themselves and may feel intimidated by it. However, they know it is important to their children and young people for their future education. The elders, on the

other hand, are skeptical of anything from the outside because "it was not made for us"

they think (Jean Whitehorse, November 8, 1999).

<div align="center">*"Not Made for Us"*</div>

There is no Navajo word for computers or the Internet. The Internet represents a

conceptual chasm since there is no word in Navajo for this new concept. Lucinda Begay

described the Navajo counterpart of computers as béésh lichíí' or metal (as in copper

wires) writing (May 10, 1999). Luci Tapahonso (1993) refers to a "verbal dexterity" as a

confluence of Navajo language and technological influences. Tapahonso (1993) notes:

> The value of the spoken word is not diminished, even with the
>
> influence of television, radio, and video. Indeed, it seems to have enriched
>
> the verbal dexterity of colloquial language, as for instance, in the names
>
> given to objects for which a Navajo word does not exist, such as "béésh
>
> nitsekees" or "thinking metal" for computers and "chidí bijéí " or "the
>
> car's heart" for a car battery. (p. xi)

When trying to explain computer technology to her mother, by comparing the

new technology to the old, Jean explained:

> There's no word for computers. There's no concept. This is how I
>
> explained computers to my mother: The TV is nílchi'i naalkidí meaning
>
> "hearing air that brings in the picture". I explained the monitor similar to a
>
> TV screen. I explained the computer keyboard is like a typewriter (béésh
>
> bee ak'e'elchíhí). The Internet is like a phone (béésh bee hane'í) – you get
>
> that message but it's like bringing up all other messages on the screen. I'm
>
> still trying to explain the FAX machine. (Jean Whitehorse, April 12, 1999)

Karen Buller (1996) quoted a Navajo grandfather who requested that NITI do a computer workshop at his chapter house:

> He asked me to come and give a computer/Internet demonstration
> to the chapter house leaders of the reservation. I asked him what he would
> like me to show. He said, "I don't know, I know nothing about computers
> or your Internet. All I know is that my daughter went away to college and
> now she won't come home. Maybe if we bring technology to our
> reservation, our children will come home.
> (FCC Testimony, April 12, 1999)

Receptivity

Whitehorse's job with the NMSL Tribal Libraries Program is to encourage Internet connectivity in chapter houses where the concept is still foreign. An indication of just how "foreign" the concept is can be seen in a conversation with Bill Pfeifer in which he recounts the time when a Lake Valley chapter house employee jokingly asked "Can that computer take me home?"(interview, June 15, 1999)

> Eustace Etsitty explains why Lake Valley elders avoid the computer room:
>
> They are scared of this technology. They won't come on their own.
> They have to be invited. You can show them how useful it is to them; and
> how they can get information they need without having to travel.
> (May 19, 1999)

Although mass media has helped make the world more familiar, the concept of what the Internet is, is still lacking to many. Jean Whitehorse notes:

I would say that all of the chapters are mostly attended by

elderlies, and hardly any young people. So any decisions made by chapters

are made by them (elders). It was hard for them to understand why chapter

community service coordinators wanted the Internet. Their thinking was

we don't want anything from the outside because it's not made for us.

Some chapters found it hard to convince their chapter members about the

Internet…For things like the computer, it's just something that isn't for us.

That's the way the elders thought about it. (November 8, 1999)

Fears

Whitehorse travels to many chapter houses explaining the New Mexico State

Library Tribal Libraries Program computer and Internet possibilities. She explains:

One way that I explain it is by saying what the chapter members

want at the chapter house is not new. It's already in your homes on your

TV. Your kids rent all kinds of movies. Anytime there is anything

introduced, there's good or bad. It can be used in a good way to get things

the chapter needs. I always use the veterans as an example. There are

things happening at the national level and by the time you get the

information filtered through the community, the benefits are gone…This

[technology] is not new, being exposed to things. It's in your own homes.

I bet every one of you have a TV. You can use it [computer technology]

either way but you have to monitor it. You still need to keep an eye on it

[technology]. I have to explain there's good and bad connected with it.

...Chapter officials and community elders are not that educated. Two communities didn't approve computers for their chapters. About a year ago, I decided I didn't want to push it [NMSL Tribal Libraries Program]. If they request, I help them. When I presented at the Parents Learning Technology in Gallup I just told them [parents] if they need to use computers after work, a lot of chapters have them. The chapters who have computers are more modernized. It's up to the community to decide. I'm not really going to say 'take it because it's free'. For that reason, I don't want to push it at the chapter level. I feel I'm going to be the one responsible for anything that happens. I'm going to be held liable...In a way I feel I'm really putting a strain on people at the chapter. They can always come back and say to me, I was the one who was responsible for what happened if anything goes wrong. I'm not pushing anymore. People are hearing more about computers with Y2K. In fact some of the chapter officials are asking me 'why all of a sudden is everyone coming up with new computers?' They're confused with all these free computers. Even some of the chapters were saying 'what's going to happen in a year or two after we get the Gates computers?' They're thinking ahead into the future about this." (November 8, 1999)

Jean Whitehorse does not want to push the technology onto any community, feeling that others may blame her for the negative side effects that may occur. Jean is referring to the Littleton, Colorado incident where the Internet is associated with the hate

crimes that occurred. However, she reminds chapter members that this technology is already pervasive in their homes; it is already there.

Discussing the Internet with other tribal librarians at a NMSL Tribal Libraries Program computer training session, Whitehorse relays her fears about the Internet:

> One thing that bothers me now is what's in there? What will the kids get out of it. If this happens, I'll get the blame. If it gets into wrong hands, I'm the one who will be put on the spot. That's what I'm worried about now. That's why you need to be there and monitor what's going on. (May 6, 1999)

Mike Sandoval visits many chapter houses in his work as the NMSL Tribal Libraries Technical Consultant. He concludes that "somebody [adults] should be there [in the chapter houses] to supervise" community computer activity. (personal communication, November 4, 1999) Sandoval also thinks it a good idea to post in the computer/Internet area some kind of policy stating that the library or chapter house is not responsible for the content of information found on the Internet. Sandoval also notes:

> We should expose students to it [Internet] and then that way, they're not as curious. If you tell them not to go into the cookie jar, they'll go anyway. If you open the cookie jar together...you can teach them what's out there and what to expect. (interview, November 4, 1999)

While many parents are scared of computers and reluctant to use them because they "might break something" (Eustace Etsitty, May 19, 1999), there are deeper issues that involve the content to which children may be exposed. Lake Valley parents react to the publicity of Columbine High School (Gunmen Execute Classmates, 1999):

- Shirley Jim, whose daughter attends Farmington High School: "I'm scared of the Internet." (May 1, 1999)

- Irene Benally who considers whether her daughter should have access to the Internet: "Maybe it's that it isn't that important. Not having all that is protecting her [daughter]. You can look at it that way, too. There's too much trash on TV...If they know how to use the Internet, they can explore that too." (April 29, 1999).

Irene Benally talks with Etta Tso about the growing influence of gangs and gang-like behavior--wannabees:

Irene Benally: Nothing is really them. I see a lot of this stuff – just copying others and outside influences from TV. They really don't know. They have to copy it. I travel around a lot in my job. Kids are copying what they see on TV. It hurts me when I see water towers marked with graffiti. I saw one that said "the East End and West End."

Etta Tso: They lack a sense of identity.

Irene Benally: They lack a sense of spirituality. Our children are fragile. They lack parental involvement in their lives. BIA [Bureau of Indian Affairs] students are in the dorm Mondays through Fridays for 24 hours a day. Parents have their children on weekends.

(conversation, April 29, 1999)

Gates Computer as a Community Work Tool

Background

Gates Library Foundation's presence is noticeable within the Navajo Nation. The Navajo Education Technology Consortium (NETC), a consortium of K-12 public school superintendents, Bureau of Indian Affairs or contract schools, state educational organizations, and higher education institutions serving Navajo students, received funding from a Microsoft Grant for the professional technology development of teachers. The NETC also received a 1997 Challenge Innovative Technology Grant (Casey, Ross, Warren, 1999). For local media coverage, see Appendices K1 - 4

Gates Center for Technology Access has identified "tremendous telecom issues" on the Navajo Nation and "Gates can bring strength to the table" (Willem Scholten, June 3, 1999). Also important is that Gates run parallel with NMSL and not to interfere or supersede them. Scholten admits in meeting information community needs, GCTA may have greater flexibility as a nonprofit organization than the NMSL, as a state institution (June 3, 1999).

The Gates Foundation is using the New Mexico State Library Tribal Libraries Program as a template for their Native American Access to Technology Initiative with a goal of equipping all 110 chapter houses on the Navajo Nation with computers starting in New Mexico first and then to Arizona. The ten computers in Window Rock's Tribal Library acquired through the Gates Library Foundation are not accessible to people in Shiprock, Lake Valley, and the other 108 chapter houses, according to Jean Whitehorse. Jean emphasized to Jessica Dorr that the best approach in meeting universal access needs would be to go chapter by chapter. Figure 23 shows Gates equipment in place.
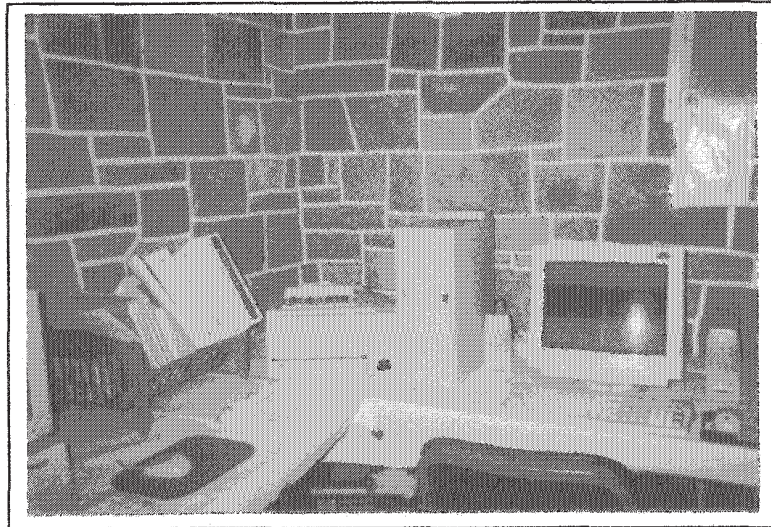
Figure 23. Gates computer at Lake Valley Chapter House.

One distinguishing feature of the Gates Center for Technology Access partnership within the Navajo Nation was to place the computer in front of a community and ask them for feedback – how could it be changed to better fit their needs. Gates was very interested in community responses and suggestions for improving the interaction between the technology and people using it; and in knowing about the community it was serving. My role as the pilot project site monitor was to facilitate community members' use of the Gates computer workstation, while at the same time, observing the interaction and making note of member suggestions, comments, or problems.

Gates Center for Technology Access Grants Program Manager Jessica Dorr and Gates Center for Technology Access Executive Director Willem Scholten returned to Lake Valley in a month's time to hear feedback about the pilot computer at Lake Valley. The programs seemed to be relevant with a high usage of "Microsoft Word", "Encarta Encyclopedia", "Desk Publisher", and children's programs. Community members were more prone to use the computer when I was there in the computer room. They would

have preferred a color printer over the available black and white printing. "Encarta Encyclopedia" which has web links would have been more complete and useful if an Internet connection had been available. Since the Gates Foundation visit by Jessica Dorr, (Figure 24) Grant Project Manager, the Crownpoint Police Department, Navajo Nation Veteran's Office and Head Start Program have inquired about the benefit of, and necessity for, obtaining computers for their respective organizations through the Gates Foundation Native American Access to Technology Grant Initiative.
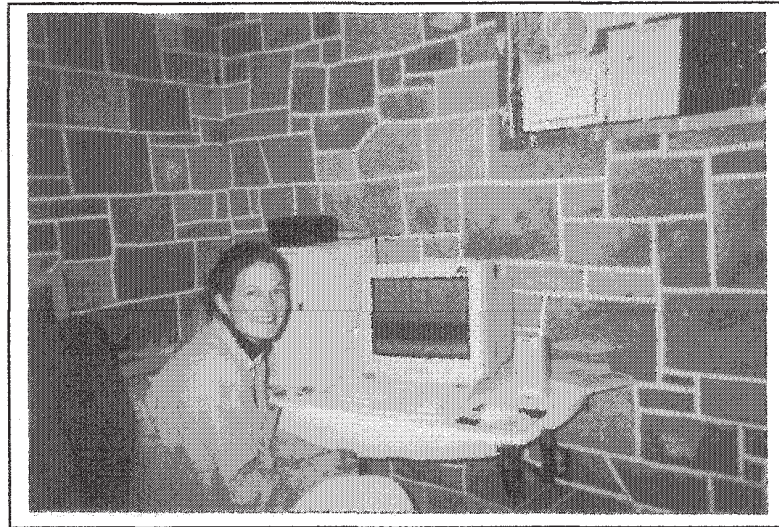
Figure 24. Jessica Dorr, Gates Foundation Grant Project Manager

First Day with Gates Computer

By mid-morning of April 1, 1999, Jessica had installed the Gates computer software and printer and provided a short orientation to me about the available 38 software programs. The programs were divided into five sets of profiles with supporting software: Children, Art, Big Print, Adult, and All. When the computer was ready for community access, Etta Tso was the first chapter official to try the Gates computer.

Etta, Figure 25, came in to try the new computer program. She sat down and tried "Fripples to Go" and "Barney's Farm". Etta became not only amused but also engaged as she sat at the computer reading and interacting with the software. At one point during a musical game of listen and recall, she said to the janitor, who was also watching "which one, Ben?" Etta was trying to replicate the musical instruments played by the musician at a drum set. As time went on she was able to more accurately identify the musical sequences. In "Barney's Farm", Etta typed in the wrong answers to the addition examples and then laughed as the animated characters provided the correct solutions. Etta was called away on chapter business.
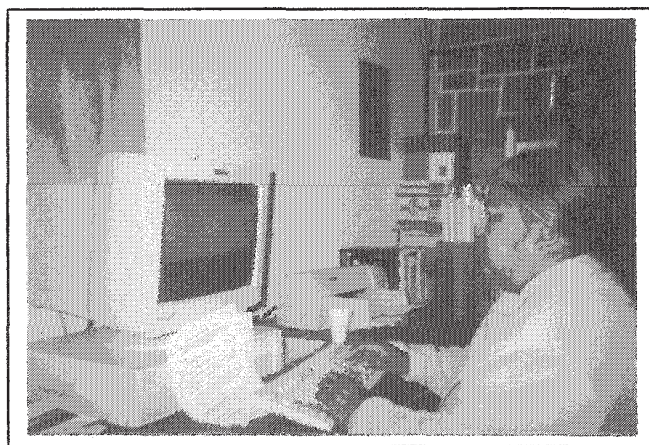
Figure 25. Etta Tso at Gates computer, Lake Valley Chapter House

Etta returned to the computer room and asked about the Grandma and Me program. So Jessica invited her to play. She sat down and became engaged as Jessica told her she could click on certain objects to animate them as each page of the story was told. Etta laughed, smiled, and looked at us as the animated crab squeezed the boy's finger on the beach, place stickers on the background image, or listen to the story in English, Spanish, German, and French, highlighting words and pronouncing them. Eventually Etta

was called away again and left to attend a meeting. She commented that these programs would be good for preschool and Lake Valley Navajo School children.

Jason Chee, Navajo Artist (Figure 26) was invited in to use the computers. He reminded us that this computer technology is based upon the simple technology of the abacus. Evelyn, the chapter clerk typist, said when she wasn't so busy, she would try it. Before Jessica left the chapter house that day, she reassured us that it would take a while before the computers would be used by more and more people.
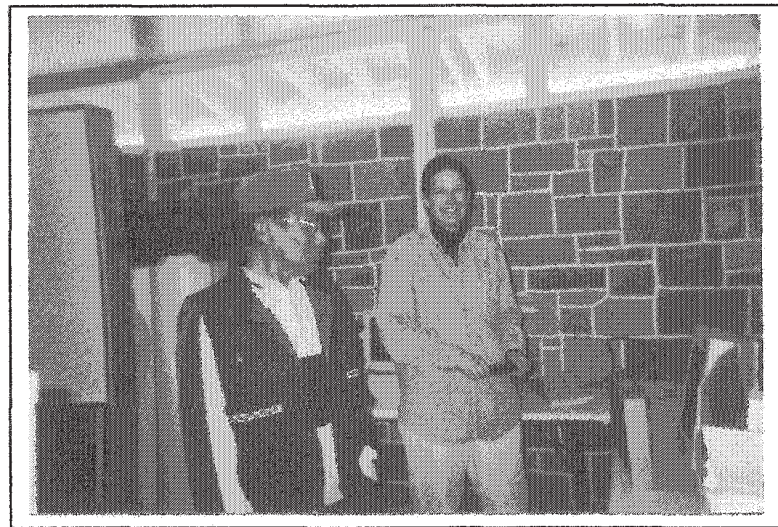
Figure 26. Jessica Dorr and artist Jason Chee at Lake Valley Chapter House

Daily Usage

Lake Valley community members day by day did come to the chapter house to specifically use the computer, while others were invited to use it in addition to the other reason(s) that originally brought them to the chapter house. From April 1 to September 29, 1999 approximately 188 names were logged in for using the Gates computer. This is a modest amount since many people did not log accounts of their visits. The most popular

programs accessed were: "Microsoft Word", "Encarta Encyclopedia", "Desk Publisher", and All — referring to 'checking out' the 38 available software programs.

Many times I was learning alongside the community members, becoming acquainted with the various software programs. While working together on Desk Publisher, Jacqueline Shorty commented: "I am learning from you and your mistakes" [referring to the researcher] (April 26, 1999).
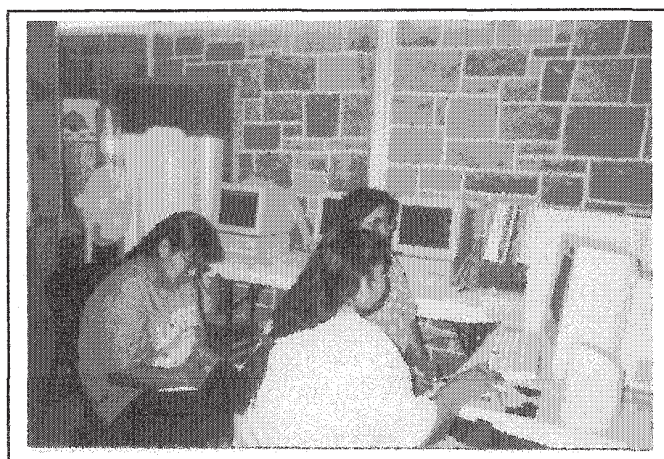
Figure 27. Adult GED students using Gates computer.

Lauren Harrington, a Diné College – Crownpoint intern working with Lake Valley GED students was concerned that students were not asking questions during tutorial sessions which involved textbook review. GED students from the Lake Valley community were invited to use the algebra and geometry software programs at the chapter house, as shown in Figure 27. When several students worked at the Gates computer on the algebra program, I noticed how open and inquisitive they were to ask Lauren for help. The students interacted more, comparing problem results, chuckling, and talking softly to themselves and to each other (April 8, 1999).

Figure 28. Community member Irene Benally at Gates computer

Community members, as shown in Figure 28, worked on "Desk Publisher" making graduation programs, announcements, invitation and cards; family invitations, seasonal fliers, and posters. Students came in after school to use the computer for homework assignments and to explore the programs. Parents and their child(ren) would sit together visiting various programs. Lucinda Begay and her two children worked together at the computer. Lucinda learned how to use the mouse, with her children coaching her through the Mouse Tutorial program. Students and staff from Lake Valley Navajo School made use of the Gates computer during and after school.

The preschool children came as a class to use the early childhood programs. On one such visit the preschool children watched Mercel Meyer's "Grandma and Me". Several mothers attended with their children. After the children left, the mothers stayed and played at the computer replicating the same activities the children had previously done. They laughed at the story, clicked on the objects in the story just as the children had done, and tried their hand at building sandcastles using the mouse (April 27,1999)

Students in the Summer Youth Employment Training Program (SYETP) working at Lake Valley Chapter House also made use of the Gates computer. SYETP youth worked at Lake Valley Chapter House in work assignments such as office assistants, carpentry building, and grounds maintenance. Students who were interested in adding a computer component to their schedule, independently worked on a chosen software program, which they wanted to learn. During the students' lunch breaks they could be seen watching early childhood programs such as "Grandma and Me", "Green Eggs and Ham", "The Cat in the Hat", and "Barney". The students working on a map of Lake Valley resident homes printed clip art selections for the community map. At the end of their program, several students prepared a PowerPoint presentation about each student in the program. The Lake Valley SYETP supervisor observing a student using "Microsoft Word" replied: "These young people, they really know how to operate those machines" (June 22, 1999).

On another occasion, Herbert Succo said:

I have been doing this summer youth program for about 14 years now. I took off the last four years. But when I think about kids doing carpentry, I think it's not enough for our kids. I think of myself as 'kind of old fashioned' with computers and all. Kids should be learning more about computers. (July 8, 1999)

The "Encarta Encyclopedia" was a popular program that would be used to introduce the Gates computer to community members. The Navajo Reservation and World Languages were searched often. Listeners would take delight in hearing basic Navajo words spoken, in addition to listening to other spoken languages. Under "Navajo

Reservation", there was a photo with descriptive text. However, the photo was a picture of a summer shade house, and the descriptive text referred to it as a hoogan, which was improperly pronounced. Etta Tso and I drafted and sent a letter to "Encarta Encyclopedia", directing their attention to this inaccuracy and inviting them to Lake Valley for photographs of hooghans. (Appendix L.)

As monitor of the Gates computer pilot site, it was my responsibility to see how local residents used the technology and to field comments and suggestions as to how to better adapt it to their needs. I also assumed the role of connecting community members to information that may be pertinent to them via the various software programs. I often looked up information on request; sat side by side a community member at the computer; or let others explore independently, answering questions only when asked.

Alta Dodge had a specific question: to look up Sydenham's chorea, a childhood syndrome. Her granddaughter was stricken with this illness. Navajo Nation Vice-President Taylor McKenzie, a former surgeon, told Alta that Sydenham's chorea is an illness and not a disease that can last from six weeks up to six months. We looked in "Encarta Encyclopedia" where she read about it. Content, Alta walked away saying, "That's what Taylor McKenzie also told me." (April 26, 1999)

My role as a Gates computer monitor was just that, monitoring how it was used and noting suggestions and comments from community members on ways to improve its use. A color printer was a conventional request. People missed the color seen on the computer screen compared with their black and white printed copy, especially if working with program such as "Desk Publisher" and "Encarta Encyclopedia".

Internet Computer as a Community Work Tool

Mike Sandoval, the New Mexico State Library Tribal Libraries Program

computer technical consultant, referred to the Internet as "No Man's Land" (May 6,

1999). On April 13, 1999, the Lake Valley Chapter House Internet phone line was

activated to No Man's Land. Lake Valley Secretary/Treasurer Alta Dodge, who lives in

Fruitland responded "I'm surprised you got it out here in the desert" when she heard

about the chapter's Internet connection (April 26, 1999).
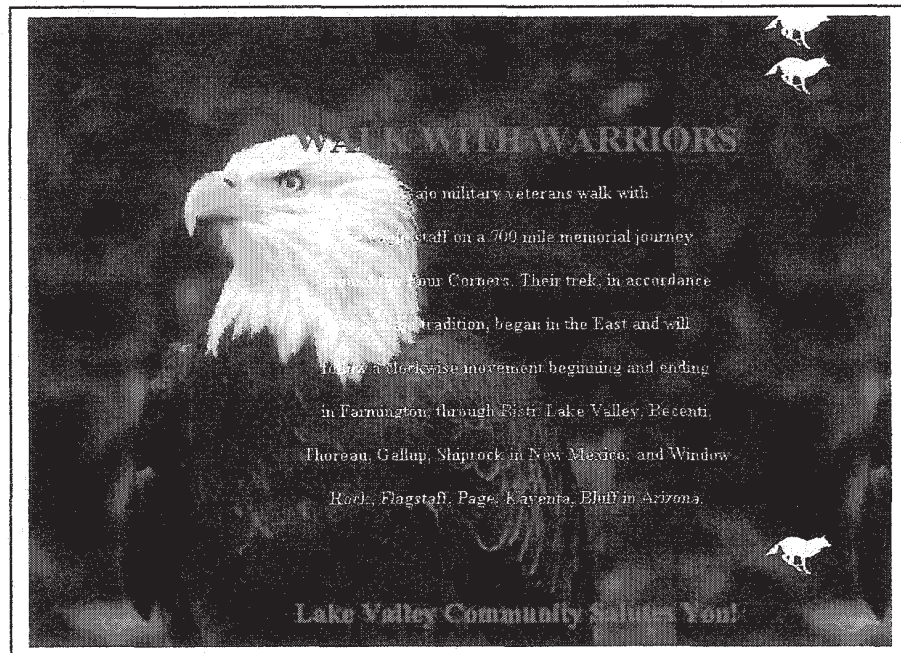
Figure 29. Walk with Warriors WWW site home page.

Following the advice of elder Valdez, I saw an opportunity to demonstrate the

beneficial capabilities of the Internet. On May 7, 1999 Veterans with Walk With

Warriors were visiting Lake Valley Chapter House en route on their annual month long

journey across the Navajo Nation. If the warriors could see themselves reflected on a web

page, the Internet could be seen as a practical and meaningful communication tool in

which to honor the WWII to Desert Storm veterans. (See Figure 29.) Several visitors came into the computer room to see the page after Lake Valley Council Delegate, Raymond Tsosie, made an announcement to the visiting warriors. Very few warriors came in to see it. I displayed the site, which was rather bare and devoid of graphics and color, promising to add more graphics and color in time. The veterans were asked to check on the status of the web site during their travels.

On the same day, Council Delegate, Honorable Raymond Tsosie, said while looking at the Internet: "it's amazing, fantastic". When he realized we had Internet capability, Raymond Tsosie showed me a letter with his letterhead about the New Mexico State Legislature's passage of a House Bill allocating monies for construction of a new Lake Valley senior citizen center. Tsosie requested that I find this bill on the New Mexico State Legislature's home page. The House Bill 0002 was found on the New Mexico State Legislature's website. A printed copy of the section concerning the Lake Valley senior citizen center was given to Council member Raymond Tsosie. During his presentation to the warriors and other attending guests, Councilman Tsosie mentioned information about the bill (May 7, 1999).

Daily Usage

Dear Frances,

Thank you for getting me on the E-mail program. I hope to get used to my E-mail, and sending and receiving letters with friends. Thanks a lot again. Have a good day.
Sincerely yours,
Lucietta

April 21, 1999

Figure 30. Nine free email accounts were established by students and adults.

Community members approached the Internet with specific information they wanted to know about. Others approached the Internet as a tool to be shown how it works through observation and hands on experience. I found this research question particularly interesting. A request to look up a Navajo Puberty Ceremony on the Internet was not only a good reference question, but it revealed that the ceremony would be on the Internet. Perhaps the little time before the report was due prompted such an inquiry. Searching the Internet, the only reference was to the book, Kinaalda' Ceremony by Monty Roessel. The student was specifically looking for a recipe for kneel down corn cake. As it turned out, the student's aunt and another Navajo teacher at Lake Valley Navajo School were asked the question and together they listed the ingredients for the recipe to complete her niece's assignment (May 24, 1999).

Jacqueline Shorty, the Crownpoint Health Representative for Lake Valley community, searched the Internet for information about diabetes and hypertension. The times Jacqueline wanted to use the Internet, there was trouble getting on and she would leave without accessing the information she needed. In those cases, I would then use the Internet at Diné College library to find relevant information to give her.

One of my goals for having Internet connectivity was the creation of Lake Valley Chapter House home page. Lack of time and Internet access prevented this from happening until October 1999. There has been no Internet connection from June 20, 1999 until the time of this writing. The Internet modem and Internet phone line were damaged by a lightning storm. (We didn't know that during severe lightning activity, surge protectors are not as useful as the removal of the plugs from the main electrical sockets in the wall.)

Although a NMSL technical consultant replaced the modem, it took four months to do so. Etta Tso and I have both called Navajo Communications Company about the Internet phone line, which has not been fixed as of this writing. The chapter house homepage was started on my home computer when I received my Internet connection from New Mexico Technet on August 13, 1999. Eventually, Lake Valley Chapter House homepage will involve more contributions from chapter officials and community members.

A financial aid web site was created early on since that was a specific request of how the Internet could be used to assist the community. The Financial Aid website for college students was developed as an aid to finding alternative funding sources. Many Lake Valley college students do not receive ample money from the chapter or the Navajo Nation Scholarships for their college education.

Confluence and Balance of Two Worlds

What is the role of technology in balancing the two linguistic and cultural worlds of language and culture? How do Navajo youth identify themselves in a balanced manner with computer technology?

Chief Manuelito, who negotiated in the Navajo Treaty of 1868 at Bosque Redondo, recognized the importance of retaining cultural ways while at the same time adapting new ways (Pavlik, 1990). In 1893, Chief Manuelito stressed that education was the ladder and encouraged Navajo people to climb it toward success (Pavlik, 1990; Wilson, 1998). However, Manuelito meant education as a balance of knowledge; not where one system was learned at the expense of the other (Wilson, 1998).

Navajo parent, Edward Begaye (Winik, 1999), spoke of the importance of balancing both worlds for his children:

> You want to make your children like a double-edged axe…Sharp on both ends, English and Navajo. If you learn only one side, like the white man's way, you'll be lost on the other. You want them to be sharp on both sides (Winik, 1999, p. 6)

Winik (1999) continues: "That is the dilemma for many American Indians: how to be sharp on both sides, balancing both worlds" (p. 6). Wilson (1998) explains:

> Committed students must learn to combine Western education in balance with Native wisdom and knowledge and construct a thought process for our own people that civilization can neither surround, penetrate, undermine, or circumvent. (p. 25)

Irene Lutz, Director of Diné College -- Crownpoint branch emphasized to the GED students in accomplishing their goals:

> Commit yourself to education. Commit yourself to do it for yourself. Don't ever let the white man tell you what to do. You tell them what to do. That's what we were told by my parents." (May 4, 1999)

Rick Lutz concedes that "economically and professionally, to be successful, young people have to leave the reservation" (June 26, 1999) due to the lack of available job opportunities. On the other hand, Baldwin Louis indicated that Navajo youth are needed to infuse the Navajo Nation with new blood; new ideas; new ways of doing things; solving problems; and dealing with long standing issues (August 18, 1998).

However, this grappling and straddling within two world paradigms can be complex. Paul Zolbrod construes the advantage of such a complexity in a comment to a Crownpoint Diné college student: "Remember, when you speak two languages, you're as smart as two people." (May 4, 1999) Ruby Benally, a University of New Mexico-Gallup campus student shares her perspective:

> I feel so fortunate to be of two cultures – Navajo and Bilagaana.
> The written languages of both are a challenge, but in my mind I am the
> best of the two. (July 22, 1999)

Educational and professional settings expose this cultural struggle. Rachel, Etta Tso's niece, returned to college, Fall 1999. Her niece, who thinks in a traditional sense, explained to Etta that she was surprised to find herself learning to think differently. When in school, Rachel was able to step away [Etta physically demonstrates this by stepping aside and standing in a different spot where she had been standing] and think in a totally different way. Her niece confided to Etta that she now knows what her aunt is talking about when she says to Rachel: "people think I'm weird" (Etta Tso, September 8, 1999). Etta is referring to her ability and experience in negotiating between Navajo thinking and non-Navajo thinking settings.

I have heard Etta say that "sometimes people think I'm crazy or weird." I asked her to explain this. Etta Tso responded:

> I'll give you an example. At the school board conference, NASBA
> [Navajo Area School Board Association], the speaker asked, 'What makes
> a child important?' The way I thought about it was a child is a product of a
> man and a woman. The child is from each one. It is a gift to them. The

parents teach the child values, language, culture, and proper ways of behaving. I was going to put my hand up and answer. And it's a good thing I didn't because the people on the other side of me said "Academics." [Etta hits the palm of her hand up against her forehead.] It's a good thing I didn't give my answer...Those people were thinking more in the western world. Even with my own family, this happens. Someone will be talking...and I'll think 'Who taught you that?'"

Vitali: Etta, you are used to walking easily between both worlds.

Tso: [gestures while speaking, positioning herself in two places] They [NASBA] were only speaking from the western way. This is the way I think first [traditional perspective]. (conversation, July 19, 1999

Begaye-Campell (1998), engineer at Sandia National Laboratories, expressed it as: "Sometimes it's difficult to move between two worlds but I know who I am and I know where I came from" (p. 1).

Ruby Benally connects her personal strength to her Navajo ancestors:

My discernment of feeling in touch with ancestors, gives me a special quality about me. This bit of ancestor veneration, I take as an encouragement. They are as close as how their blood flows through me. They were determined to make it so that I could be the first to get a college education. There are many behind me in this endeavor." (July 30, 1999)

Students are interested in pursuing computer-related careers and professions. Technology is seen as a ladder into the academic and professional world where students

will continue to compete now and in the future. CIT graduate Agnes Cayantineto delivered this excerpted graduation speech at the 1998 American Indian Higher Education Consortium (AIHEC) conference:

> In the world of technology, it's harder and harder to know what the future holds. We know only that vast change is coming, and we have to be ready for our journey into cyberspace…Today, education is the seed we plant, and we nurture it by hard study. When setbacks face us, we fight them the way our ancestors fought the weeds, so that they can't choke the growing crops. Our diplomas, our certificates, our college degrees and the education they represent mean that we will reap the harvest of the future and eat of it fully. These documents, these little pieces of paper that signify so much, are our tickets to ride. We don't use planting sticks and grinding stones anymore. But I think our ancestors would be proud of the way we're learning to use the tools of the future." (Agnes' Turn, 1998)

Digital Diné

James May stated:

> In Indian America we have two major information problems; others have little accurate information about us from our perspective, and we have poor access to information from others which could benefit us."
> (OTA, 1995, p. 32)

Use of the communications technologies by more Native Americans may change this disparity.

Luci Tapahonso (1993) wrote:

> For many people in my situation, residing away from my
> homeland, writing is a means for returning, rejuvenation, and for restoring
> our spirits to the state of hozho, or beauty, which is the basis of Navajo
> philosophy. It is a small part of the "real thing," and it is utilitarian, but as
> Navajo culture changes, we adapt accordingly." (p. xii)

Web sites are a utilitarian way to communicate within the Navajo community as well as with the greater outside community. There are a growing number of computer savvy college students, working adults, artisans, business people, and professional webmasters within and outside of the Navajo Nation who are making their digital presence known. The Navajo digital landscape can be made more evident by looking at some of the existing sites, as listed in Appendix M.

Oral Perspective

Elders observe from afar and always with a traditional perspective. Etta Tso comments: "Elders see things from a traditional view in traditional ways" (April 5, 1999).

Hozho is balance, harmony, happiness, and aesthetic beauty and understood as natural recurring forces observed in the daily cycle of life (Willink and Zolbrod, 1997; McNeley, 1988; Witherspoon, 1977; Farella, 1984). When traders made specifications for a rug, the request was always carried out, with the weaver managing to retain her cultural self in the process. Navajo weaver, Minnie Becenti (Willink and Zolbrod, 1997) explains:

> We did what the trader said to do...But we also managed to do
> what we wanted. We managed somehow to retain a little bit of our own
> ideas. We found a way to stay true to our own patterns. (p. 25)

Emil Benally relates a story about a road analogy:

>I was raised by my grandparents. My grandfather once told me
>once that good and evil are one. It's like a highway with a line down the
>middle. You can go either way up or way down the highway, but when
>you veer too much on either side off the road, it is not good...I was taught
>that both good and evil are one. I see this, too, with computers.
>(May 27, 1999)

Emil Benally had been involved in earlier telecommunication efforts for local GED community members when he served as a chapter official in Sanostee. However, currently, Emil is the only one in his office, as an Educational Development Officer (EDO), who does not use a computer. (May 27, 1999).

Former School Board President Milton Chee, wrote in the 1994 School Board Manual as two of fourteen student/teacher outcomes:

1. Children need to know that the technological/telecommunications age has both balance and imbalance. Computer skills must be balanced by traditional values.

2. Use the tools of this new age to develop global balance through children who will be our adult protectors later in life.

Traditional values, inherent in Navajo oral histories and cosmology, are cultural technology serving as a guiding template of how to act in the present and future. Schwarz (1997) explains the significance of Navajo oral tradition:

>Contemporary Navajo rely on the stories of the oral tradition as the
>most important sources of information about their world, for these stories

contain the ancestral knowledge that is the charter for life…These

narratives tell more than simply where the Navajo came from and where

they have been; they constitute a philosophical system that underlies the

cultural construction of every aspect of the Navajo world (p. 16-17).

At the 1995 National American Indian/Alaskan Native Summit (Summit Draws

Consensus, 1995), a Navajo student attending Arizona State University, described her

first learning experiences as her "first classroom in the university of life":

> I grew up in a hogan. I really didn't like school, because it took me
>
> away from my grandmother and family, the place of my roots. The elders
>
> fought to keep our language, culture and land. We must recreate this
>
> knowledge in our schools. Elders hold the message on how to survive.
>
> (p. 9)

When Emil Benally conducted the first day orientation of the SYETP for Lake

Valley youth, he introduced himself in Navajo and English saying:

> Late back in the years I was born in 1949. I just turned 50 years.
>
> Our bedding was goat and sheepskins. Every summer I used to take care
>
> of my grandfather's sheep. I graduated from Ft. Wingate High School at
>
> 17. I started my own business where traders used to buy off me. In 1985, I
>
> moved back to the reservation. . . as a youth counselor. (June 21, 1999)

Emil drew a circle on the whiteboard, explained the traditional values of each of

the four directions, beginning in the East, and how they related to work and the youths'

work attitude during their summer employment. Emil continued, explaining, the five

fingers as an analogy of working together:

We all have five fingers to write with...A lot of things you can do with your fingers. [Emil explained fingers work together.] Your fingers are like your mind in working together. You will use your mind...to see what you're doing...I expect all employees to work together...You are all my people and I want you all to get ahead. Let's work together and pay attention to each other...I am encouraging you to get your language back and learn how to speak it...You are the young people who are going to change the whole system on this reservation. It's not every day that we present ourselves in front of you like this. (June 21, 1999)

The students' orientation of how to proceed during the next six weeks was approached with reference and deference to the sacred geography and the five fingers. This perspective offered the proper framework in which to approach and to conduct themselves in their work. The Sacred Geography of the Directions of the Four Sacred Mountains proceeds in a circular motion always beginning in the East:

- ❑ Thoughts -- Nitsahakees in the East — Sisnajini -- Blanca Peak-- Spring – Male – White Shell – Birth

- ❑ Planning -- Nahat'a in the South — Tsoodzil – Mt. Taylor – Summer – Female – Turquoise – Youth

- ❑ Life -- Iina in the West — Dook'o'oosliid – San Francisco Peaks -- Autumn – Female – Abalone Shell – Maturity

- ❑ Self-confidence -- Siihasin in the North — Dibe' Nitsaa – Winter – Male (Aronilth, 1991,1996)

Advocacy

Jean Whitehorse, a woman of five generations, is of the Towering House Clan, born for Bitter Water Clan whose grandparents are of the Salt and Zia Clans. Jean is a grassroots advocate for change in her roles as American Indian Movement (AIM) veteran, Smith Lake legal representative, Smith Lake health board member, Navajo Code Talkers Association secretary, Farmington Walk with the Warriors Association member, storyteller, in addition to her work as the library Associate with the NMSL Tribal Libraries Program. Jean enjoys her work with the NMSL Tribal Libraries Program because it places her at the community level as an advocate for change.

Whitehorse notes:

> I'm at the community level. I know where the needs are. It's like a triangle – state, tribal, and community. It puts me there where I serve my purpose. (April 12, 1999)

She is confronted with chapters' telecommunication problems daily. Among some of their issues are: right-of-ways and high cost of telephone rates. Whitehorse took the opportunity to ask Navajo Communications Company External Affairs Manager Francis Mike questions about these issues at the Digital Council Fires conference May, 1999:

> Whitehorse: In the checkerboard areas, the right-of-way issues, are there any alternatives we can work with? Is putting up towers more costly than phone lines?

> Mike: Towers are buffs in remote sites. If we put in a redundancy site, we can have commercial power. However, this reduces the money we have for the Navajo Nation. Capacity is better. Fiber optics. Placing it on

existing roads and highways, the right-of-way becomes self-serving versus going to bluffs. Satellite and wireless are becoming available.

Whitehorse: Why is our phone bill so high in Lake Valley?

Mike: Do yourselves a favor and go to Lake Valley. It's a beautiful drive on a dirt road…Volume creates reduction in cost for the end user. Each community is different with different telecommunications needs. To compare Washington to Crownpoint makes no sense. Crownpoint is different and economics come into play. On the Navajo reservation, seven communities represent 70% of business, so 32% are extremely small. When you come to the Navajo Nation, it is a little different because other tribes don't have what we have. (May 15, 1999)

Jean is a strong advocate not only because she works for the NMSL in assisting chapters with their Internet connectivity. Jean sees the need for chapter leaders to become educated in the value of this communications technology, if not for themselves, for the sake of the children in their communities. Gates is offering solutions to real problems that Jean is confronted with on a daily basis and can do little about.

In her position as Library Associate for the Crownpoint Training and Outreach Center, she is sometimes restricted as an employee for the New Mexico State Library, a state agency. Recently, Jean won a professional battle by speaking up at a tribal libraries meeting about her dilemma in front of the ones restricting her and the ones who could support her.

Jean knows that cooperatively partnering and networking are more successful approaches than dutifully keeping within the boundaries of her office and job

responsibilities. Jean sees the immeasurable benefits because she is confronted with obstacles on a daily basis. Jean is the networker, the resource person, and liaison between the chapter houses and the outside resources in connectivity. If the Internet and computers in Window Rock are not accessible to all, they can be at the chapter houses.

Whitehorse attended the FCC Public Hearing January 29, 1999 where she addressed the panel participants:

> Our problem is that some of our chapters out in the Eastern Agency have this state-of-the-art equipment but there is no phone lines. And I was just talking to the gentleman that was talking up here about…how Navajo Communications is progressing with all these projects. But I asked him, "Where is the progress? I don't see any of it in our area." We're on party lines, and you can't hook up internets on party lines…Back in August I read in the paper – it's called Indian Country Today, and in there it says "Clinton Speaks Indian", and he addressed some points about if the tribe wanted to progress, that, you know, a lot of these technologies, especially economic [would benefit from technology]. You need phone lines out there. You need fax lines out there. You need internets out there. That's the only way we can make it. But if we don't have phone lines out there, we're not going to do it. It's not going to happen…And I hope that…when you hear all these problems from the leaders and then from the phone company, they sound so good, but that's not true….I hope you make a change. And most of the leaders that were

sitting up here, they're new into these offices. We elected some of these

new faces because we want change. Thank you. (p. 59-60)

After reading her transcript of her delivery during the FCC Public Hearings –

January 29, 1999, Jean commented "that doesn't even sound like me" (April 29, 999).

Jean expressed that at other meetings she has attended, portions of what she had said are

left out of the reports because:

I talk about the true stuff and [people don't like to hear it]. I noticed that when

they send me the portion of their report, what I've said is not included

(October 13, 1999).

In a presentation delivered to Gates Center for Technology Access staff in Seattle,

Washington, February 1999, Jean addressed some of the technological issues affecting

tribal communities in New Mexico:

It is crucial that we teach our children about their distinct past

while educating them to adopt into the mainstream of the "super highways

of technology", while exercising our Indian Sovereignty by achieving our

economic independence in our communities. Throughout the state's multi-

tribal communities, over half the population is under the age of 25. Our

children must master today's needed job skills, which means traveling

along the information highway in addition to having access to computers.

Current conditions in the pueblos and on the reservation make it difficult

for individual families to afford home computers or to buy children books.

So for us, an up-to-date telecommunication wired into the tribal libraries

and chapter house's becomes all the more crucial if our children, our

future leaders of Indian communities, are to make the progress demanded

of them, and if they are to become full partners in New Mexico's diverse

cultural mix. (April 12, 1999)

At a tribal libraries meeting in July 1999, Jean Whitehorse explained the dilemma

she finds herself in as a state employee "putting [her] job on the line by trying to tell

people about what Gates has to offer. She elaborates:

In front of Joe Sabatini, Ben Wakashige, Leonard Tsosie, Ray

Begaye, I said they told me I can't be advocating for them [Gates] But I

told them I know about Indian communities and know their needs. I have a

limit to these meetings. That's where the boundary is. I'm trying to help

the chapter houses. I know what they need. Alison, my boss, says 'that's

what it has in the state regulations.' There are other things of interest that

concern our program [NMSL]. I know what information Gates is trying to

get out but my hands are tied. How can I not be involved when I know

what they need. It shouldn't be like this. If the community is interested, I

should be able to help them. (August 30, 1999)

After presenting her dilemma, New Mexico State Librarian Ben Wakashige,

remarked that changes can be made in the state regulations as a state employee. Senator

Leonard Tsosie agreed that if Jean's work involved serving tribal communities, there

should be no obstacles for her. Jean noted the irony of her situation:

I have obstacles and here I'm trying to break barriers for others and

I'm having my own obstacles now…"Now I'm working more with

Jessica. That's how I got to schedule Jessica to go to the meetings at

Narbona Pass and Nageezi. That's how these meetings came about. It's a fighting battle every day [of what] I'm up against. If there's a problem, I always think of ways to get around it. If there is a decision I need to make now, I take care of it and tell them later what I did to benefit the community's interest. (August 30, 1999)

Jean sees the complementarity of both programs working to connect the Navajo Nation chapter houses. Although Jean primarily concentrates on the Eastern Agency, she knows that she must extend her vision to other agencies, such as Shiprock. Jean replied to Jerry Bennett of the Educational Technology Improvement Plan Project (ETIP):

At the chapter level it's like a survival game. I know we're always behind. Gates may be a one time thing. (October 10, 1999)

Gates has indicated that the Native American Access to Technology Grant Program (NAATGP) is 3-year project. Currently, less than half of the chapters in New Mexico are represented in the NMSL Tribal Libraries Program. (See APPENDIX NMSL Tribal Libraries Program.) Jean Whitehorse notes:

Out of 19 chapter houses in the Shiprock Agency [Northern Agency], only Newcomb, Shiprock, Sheepsrings, Nenahnezad, and Upper Fruitland are a part of the NMSL Tribal Program. That is 5 out of 19! In Crownpoint, there are 11 [chapters] with the NMSL Tribal Program out of 28. In total, there are only 23 chapters out of 53. I want everybody to be on. (August 17, 1999)

Jean recommended to Jessica that she attend the chapter community service coordinators meeting to present the Native American Center for Technology Access because not enough chapter leaders attended the June 3, 1999 meeting where she introduced the draft grant proposal (August 18, 1999). Jean networked with the chapter coordinators in Shiprock and in Nageezi in preparation for Jessica's visit. Jean asked New Mexico Representative Ray Begaye to support the potential of Gates and to communicate the opportunity of the initiative to the chapter coordinators at their Shiprock meeting in Narbona Pass.

Jean Whitehorse to Representative Begaye:

Gates has the money and resources. They have everything. You need to be there to back me up....You need to be there to tell them that the equipment, funding, and training is there. (August 17, 1999)

Jean proceeded to work on the presentation at each of the locations, commenting:

Part of the plan is to do a demonstration at Sheepsrings [Narbona Pass] and then continue the meeting at Nageezi. You know, just like me, they need to see it to understand it – like a show and tell. Just like you needed to do with Lake Valley Chapter House. The Internet is not even a Navajo word. (August 18, 1999)

The Gates computer from Lake Valley Chapter House was transported and used for the demonstration. Unfortunately, Jean was sick that day and could not attend the meetings. Jean asked me to give a report of the meeting at the Tribal Libraries meeting, September 30, 1999. See Appendix N for text of the report.

The Benton Foundation (1996) indicated that "the private sector, an array of non-government entities including nonprofits, must be the builder; Communities are key to access and learning; Government has a critical role as catalyst; and Individuals must take charge" in the deployment of universal access.

Nonprofits and state agencies are coming to the rescue in trying to equalize the racial ravine, digital divide, inequitable deployment of telecommunications in Indian Country and Navajoland. Los Alamos and Sandia National Laboratories have partnered with the Navajo Nation in providing educational technology programs and projects (Ray Begaye, August 26, 1999). Technet provides free Internet accessibility for New Mexico educators. The Educational Native American Network (ENAN) for the past ten years has been actively focused on providing Bureau of Indian Affairs schools, students, teachers, and administrators with networking capabilities and technical support. The Education Technology Improvement Plan Project (ETIP) and Navajo Education Technology Consortium (NETC) are partnering in Navajo Nation school communities.

The Crownpoint Pilot Project or Navajo Nation Networking Project as it was also referred, was an earlier networking partnership intended to develop the telecommunications infrastructure and pave the way for universal access for Native Americans in New Mexico. The collaborators included: Office of New Mexico State Senator Leonard Tsosie, Navajo Community College, Navajo Nation, Crownpoint Institute of Technology, Los Alamos National Laboratory, Lawrence Livermore National Laboratory, National and Space Administration, University of New Mexico, Northern Arizona University, and Crownpoint Indian Health Services, Electronic Pathways, the National Science Foundation, Department of Energy, among others (OTA, 1995; Tsosie,

1994). The Crownpoint Pilot Project never materialized as planned, however, this telecommunications initiative spawned other partnerships toward infrastructure building.

Under the aegis of Dave Basham, the Diné College Navajo Learning Network (NLN) forged ahead with the spirit of the Crownpoint Pilot . The Navajo Learning Network (NLN) was a start in building the infrastructure for high performance computing from within the Navajo Nation (Elayne Walsteder, April 26, 1996). The three year -- extended to four year project-- was funded by the National Science Foundation (NSF) and National and Aeronautics and Science Administration (NASA) linking all the Diné College campus centers; establishing college Internet via fiber optics, microwave towers, and satellite technology; and providing training and technical support.

Gates Foundation and NMSL

The Native American Center Access to Technology (GCTA) Initiative is now assuming some of the responsibility of the NMSL Tribal Libraries Program in equipping and connecting chapter houses and communities with computers and the Internet. Jean Whitehorse pointed out that people from chapters are calling her asking what's the difference between receiving the Gates computer and a NMSL Tribal Libraries computer? To which Jean replies:

> You can apply for both, but Gates has more to offer – more
>
> software programs; technology upgrades; more computers per site
>
> (September 16, 1999).

Lake Valley could apply for two computers; however, the request has to be justified by the size of the community population. The way Jean understood it, if chapters are unable to pay for certain funds such as computer supplies, Internet monthly charges,

Gates may be able to assist them. One constant that is shared by both Gates Center for Technology Access and NMSL Tribal Libraries Program is the stipulation that computers must be accessible to the community. Community access is a priority.

The Northern tribes in the Pueblos are further ahead in their library development. Gates Center for Technology Access is working towards developing online library systems within these libraries. Jean pointed out:

> Navajo chapter houses are not this far along. Navajo chapters have an additional responsibility. Sometimes the attitude is "as long as it's free, go for it." But they don't consider things like the need to attend computer training; providing computer maintenance and supplies; appropriating money in the budget for Internet fees. It was Leonard Tsosie who said training was to be a part of the program [NMSL Tribal Libraries Program]. (September 16, 1999)

Parents Learning Technology (PLT) (Appendix O) is a non-profit parent organization trying to bridge the barrier between parents and school (Kathryn Kenneth, September 26, 1999). The goal is providing technology training to parents by parents so they can become more actively involved in their children's education and school experiences. Jean Whitehorse attended a meeting of the Parents Learning Technology on September 30, 1999 to inform parents that chapter houses have available computers which are there for them to use.

The Navajo Nation is involved in several telecommunications partnerships. Teresa Hopkins, Navajo Nation Director of General Services briefly described them as:

- Department of the Navy Delta One Project. The project goal is to identify 100 Native American people within the U.S. and to train them to become programmers. The Navajo Nation will become a project site where Navajo people will be trained. Local colleges, such as Crownpoint Institute of Technology (CIT) and others will serve as training locations. Four individuals from Shiprock, Crownpoint and Window Rock will be identified to complete the course curriculum and the Department of the Navy will pay for training.

- IBM Microsoft. IBM Microsoft is planning on providing Microsoft training on NT and all applications in addition to setting up a training curriculum.

- votenow.com. The Navajo Nation is working with the company, votenow.com, who is investing a quarter of a million dollars in trying to get people to vote in the state of Arizona. Votenow.com, Gates Foundations and Arizona Voting are partners in equipping Arizona sectors with computers and printers in time for the March 11, 1999 target date of the pre-presidential election online. This initiative is a pilot to see how successful voting by computers can be in communities where geographic, cultural and bilingual factors are obstacles to voting turnout. The Navajo Nation, Arizona portion and Havasupai are the two target areas because of their remoteness.

Computers will be set up in the chapters with voters having an option either to use print or computer ballots. Generators will be provided for chapter houses without electricity. The preference for print and computer will be noted and the statistics generated from computer voting will be an added benefit. Figure 31 shows Internet primary voting in action.

❑ School of Osteopathic Medicine -- Scottsdale, Arizona. The goal of the partnership program is to write a program in the health field as Navajo determine it to be. One person from each five agencies already in the health field who has a Bachelor of Arts degree may qualify. The School of Osteopathic Medicine may eventually provide a clinic equipped to deliver telemedicine services, training, and internships.

❑ NextWave Telecom. The Navajo Nation and NextWave are considering a partnership whereby the Navajo Nation would own the company and NextWave would handle daily operations. The Navajo Nation plans to expand their LMDS license by purchasing more air space in Southern Utah and Western Arizona. (September 23, 1999)

Figure 31. President Kelsey Begaye votes over the Internet

Chapter Five: Assertions and Interpretations

Introduction

My original plan was to look at Navajo oral culture and how this orality would intersect with and inform web culture. I found the concept of sovereignty emerged to, outline the telecommunications landscape locally, nationally, and federally.

The U. S. has frequently changed the dynamic of its relationship with Indian nations from international sovereigns, domestic dependent nations, wards in need of protection to quasi-sovereign governments (O'Brien, 1989; Cohen, 982; Deloria, 1985; Josephy, 1971). These shifting perspectives reflect the changing attitudes and reinterpretations concerning Indian policy. "Tribal-federal relationship began as an equal relationship between two independent sovereigns" (O'Brien, 1989, p. 257). Today this relationship is considered as a trust relationship existing within a government-to-government setting, although many tribal people within tribal nations believe that the tribal-federal relationship has never changed, for they continue to be sovereign nations

In 1993, Baldwin (Rayl, 1993) documented the presence of a pan-Indian movement with emerging communications technologies as: "we're weaving all right, but it's gone beyond blankets to information" (p. 48). As Warschauer (2000) observes: "The Internet does not introduce totally new ethnic dynamics, but rather magnifies some that already exist" (p. 9). The telecommunications landscape impacts the political, economic, and cultural dimensions of sovereignty for Native Americans, and in this case, the Navajo Nation, as a nation "existing as an independent State" (Oxford English Dictionary, 1991, p. 79). Hence, the appellation of "cybersovereignty" by Casey, Ross, and Warren (1999, p. 15) seemed an appropriate case title description.

Cyber-Sovereignty and Infrastructure Building

With an average yearly income of $6,352, the telephone is seen as a luxury compared to other basic needs (Assessment of Technology Infrastructure in Native Communities, 1999; DiLucchio, 1999). A simple task of delivering a new iMac computer to a 13 year-old Ganado Middle school contestant winner on the Navajo Nation turned into a more complex story due to the lack of telephone and electicity in the home of the student (Reid, 2000). Myra Jodie's story is a pertinent example of the intersection of advanced emergent technology and the lack of infrastructure development on the Navajo Nation. The Navajo Communications invested $58 million for the laying of fiber optics throughout the Navajo Nation ten years ago.

And they're worried about laying wires?" How is the laying of fiber optics going to help a culture who is suffering with health issues of diabetes, alcoholism, domestic violence, unemployment and other pressing issues of life? (personal communication, Michele DeLese, Sept. 8, 1999).

Developing the infrastructure of water, sewage, power lines, telephone lines, and roads must come before developing any telecommunications infrastructure. One is contingent upon the other. Technology infrastructure building is realized in economic development potential. (Assessment of Technology Infrastructure in Native Communities, 1999) The more advanced the telecommunications infrastructure – fiber optic cables, satellite, microwave relays – the more opportunities for economic development. The vicious cycle of lacking capital to invest in infrastructure building is caused by the lack of generating capital from economic development opportunities. Without the infrastructure in place, economic development opportunities will be lacking

(Assessment of Technology Infrastructure in Native Communities, 1999). In addition, technology is a long-term investment that requires continual updating.

Teresa Hopkins asserted to the Navajo Nation Council: "Technology is an ongoing investment which you'll never pay off. It's a long term investment and once you buy it, it's old." Concerning building the infrastructure, she said: "We have to do it or else we'll always be playing catch up." (September 28, 1999)

The 1999 Assessment of Technology Infrastructure in Native Communities report reveals a trend that technology infrastructure in Native communities is worsening instead of improving in many cases because of a vicious cycle. The poor economic base is unable to generate infrastructure investment, and thus is unable to sustain successful economic development. The question remains: what is the impact of such a comprehensive and well- researched document that follows on the heels of the 1995 Telecommunications Technology and Native Americans report basically outlining the same issues? A Native American Telecommunications Act of 1997 (Casey, Ross, Warren 1999) was introduced in the U.S. House of Representatives to specifically define and implement universal service for Native American communities. Telecommunications in Indian Country involves cyber-sovereignty, tribal telecommunications, and sovereignty issues confounded with state and federal regulatory authority.

In 1999, FCC public hearings were conducted in New Mexico and Arizona to address obstacles and issues to telephone service in Indian communities resulting in two significant Notice of Proposed Rulemaking (NPRM): Promoting Deployment and Subscribership in Unserved and Underserved Areas, Including Tribal and Insular Areas and Extending Wireless Telecommunications Services to Tribal Lands.

The Begaye administration is focused on technology and economic development as priorities of his presidential goals. The Navajo Nation, as a tribal sovereign, is responsible for providing basic, accessible, affordable, educational telecommunications services for those who wish to use them. A community needs analysis would be beneficial in determining the real nature of the needs and how to provide for them (Casey, Ross, Warren, 1999). A Navajo Nation Technology Assessment has been completed and continues to be revised.

The Navajo Nation is preparing for tribal telephone ownership in the near future in partnership with NextWave Telecom, thereby improving services for their own communities. When Gila River Telecommunications, AZ, became a tribally owned telephone company, telephone penetration within their Native American community increased from 40% to 80% (Casey, Ross and Warren, 1999; Karen Buller Overcoming Obstacles to Telephone Service for Indians on Reservations DA 99-201/BO Docket No. 99-11).

The intention of the Navajo Agency Network is to connect all 110 chapter houses to the central government in Window Rock. With the initiatives such as Gates and the New Mexico State Library Tribal Libraries Program, in addition to what already has been achieved by the Navajo Nation, Diné College, other outside agencies and organizations, the infrastructure is being built from within and will continue to be. The New Mexico state motto is crescit undio: "grows as it goes", which is the way Joe Sabatini viewed the investment of the New Mexico legislative in 1994 (April 11, 1996). The partnering initiatives within and outside the Navajo Nation, profit and nonprofit organizations, are

contributing to universal access and a greater equal access momentum, which will continue to grow as it goes.

Advocacy and Partnerships

Dr. John Mullen relayed to Francis Mike how the relationship of all the players involved in understanding telecommunications infrastructure building and the communities who use them was "compared to a pile of sticks and you pull at one end and don't realize that it is connected all the way at the other end" (Digital Council Fires Conference, May 15, 1999). All levels -- governments, profits, non-profits -- are involved in the solution. The NMSL Tribal Libraries Program was the result of concerted legislative action. Karen Buller recognizes high cost services needed to support rural Native American communities in universal access cannot be driven solely by commercial and profit gains. Non-profit organizations, such as, Gates, AOL, and Gateway, are aggressively contributing to the solution as well as the many organizations and initiatives mentioned and not mentioned in this research.

Outside collaborators, who are willing to bring technological resources, have to understand the communities in which they serve. Sensitivity to what the needs of the community are before installing any technology is a prerequisite of not only commonsense and economy, but of human respect. Gates Center for Technology Access sent representatives to the Digital Council Fires Conference in May 1999. Tribal Libraries Associate Jean Whitehorse and Tribal Libraries Consultant Alison Freese traveled to Seattle on April 10, 1999, to meet with Gates Center for Technology Access staff to discuss tribal community issues and universal access.

The voices of advocates at all levels will continue to drive the message to intended ears. Theresa Hopkins, an advocate for telecommunications infrastructure building, is working throughout the levels of nation, state, federal, profit and non-profit toward for changes to enhance economic development within the Navajo Nation. At the National level Karen Buller and National Indian Telecommunications Institute (NITI) is a telecommunications advocate, lobbyist, lecturer, and trainer. The New Mexico State Library Tribal Libraries Program is committed to tribal communities information needs and universal access. Joe Sabatini of New Mexico State Library Legislation and Intellectual Freedom Committee, said of Senator Tsosie who spearheaded the efforts with others:

> These politicians cleared the way for future leaders who see new
> ways to benefit their people in broader ways. Tsosie has a broader vision.
> He's aggressive and willing to make alliances rather than breaking them.
> (April 11, 1996)

At the local level, Teresa Hopkins encourages community members to practice their local governance and speak up and act on ways to make changes even if it involves going to another local service provider other than Navajo Communications Company for better service (September 28, 1999). Jean Whitehorse urges chapter coordinators to speak up and inform Gates Center For Access Technology of what their specific needs are – phone lines, phone bill, Internet connection -- when applying for their Gates computers.

Digital Diné

Partnerships are emerging to assuage the digital divide, racial ravine, digital darkness of which earlier mentioned sources document. Now, there is no excuse for rural

Native American communities, such as Lake Valley, not to take advantage of the increasing available opportunities. However, all efforts should be approached with caution as to the overall benefits and long-range benefits. Cisler (2000) questions the efficacy of the term 'digital divide' because "masking the complexity of both online users and the Americans offline by using such a simplistic phrase will not help solve the problems of inequity" (p. 2). With technology, it is easier to predict the rate of change than the effect of change. Technology is a double-lane highway encompassing both good and bad, remembering Emil Benally grandfather's story. Technology is not a panacea that cures all. Any technology affects the user with the option to enhance or not to enhance the way something is done. The sociological question is what happens to those who do use it (personal communication, Roy Howard, October 2, 1998).

Communication technologies are becoming a vehicle for more people to tell their own stories their way. www.navajoland.com, www.navajos.com, and www.NAVAJO2000.com are recognized not only for their aesthetic layouts but also for content and how they are establishing a virtual community by and for the Navajo community inside and outside of Navajoland.

Navajo language video on Diabetes, "Horse Song" was filmed in Cove, Arizona, on the Navajo Nation by an all-Navajo cast of actors. The video will be in Navajo and English (Heil, 1999).

The Place Name Project at Diné College-Shiprock is an online oral history of significant places on the Navajo Nation. A map of the Navajo Nation is pictured and places are linked to information and location in Navajo. Those interviewed requested specifically that their words NOT be translated and only wanted these names to be heard

in Navajo (Personal communication, Keith Anderson, December 4, 1998). Etta Tso (November 3, 1998) and Olson Juan (October 30, 1998) suggested looking at communication technologies across generations in order better to understand the interaction, impact, and significance. McCloskey, (1998) also acknowledges the differences among generations in her study of Navajo mothers.

Bila' ashdla'ii, five finger people, Digital Diné are technologists, they have and will continue to be. The Nihookaa' T'aa Diné é, the Earth Surface People, were given this name by the Holy People who distinguished them from their ancestors by their five fingers and use of fire (Aronilth, 1991; Diné k'ehgo na' nitin dóó Óhoo'aah bá ilá Diné ~Child Teaching Manual, 1996). Each digit represents a mental, physical, spiritual, and emotional correlation. Diné is the shortened 'slang' version of this appellation (Favie Padilla, June 9, 1999). The use of these fingers has been an integral part of the history of Nihookaa' T'aa Dinéé to the present. The technology of weaving has remained relatively unchanged. Designs are not written down or drawn. They remain in the head and imagination of the weaver. The framework of the loom is solid, constant, and ever changing as life itself, which is the template on which to hang thoughts and actions.

Deputy Director Eric Jensen of FCC OCBO understands "There is a balance of preserving traditional ways and how to cope with the contemporary world" (1999). The Internet has been described as the information superhighway. Emil Benally learned from his grandfather that life was like a highway. Benally admitted it took him a long time to figure out what his grandfather meant by this analogy. This analogy may be applicable for those of us who will travel the Internet like a highway, making sure not to go too far

on either side of the road while learning its meaning along the way. So, too, in time, will the intrinsic and extrinsic lessons of the superhighway be learned.

This case study has no conclusion. This intersection of research provided the opportunity to study Lake Valley community members' access, use, and interaction with emerging communication technologies of computers, Internet and WWW. Using the analogy of a Navajo rug once again: although a rug may be completed, there is no end to the thoughts and ideas that may be woven into future rugs. Similarly, the weaving of this case study story indicates a completion of a cycle that is evolving and ongoing.

Closing Vignette

What emerged from this case study in the Lake Valley Community is a consideration of computers as a bridge between two worlds -- oral and literate; traditional and western; personal and technological. Communication technology will enhance the interaction. Only time will tell the outcome. There were four worlds prior to the Fifth World -- the Glittering World -- we are in now. Migration from each world was the result of some cataclysm caused by its inhabitants (Morris,1997; Schwarz, 1997; Yazzie, 1971; Zolbrod, 1984). The Glittering World we are in is described in two conversations as:

Whitehorse: It's like sand you can see all around you and then shiny,

shimmering things like shiny glass appearing out of nowhere.

Vitali: What do the shimmering, shiny glass things out of nowhere mean?

Whitehorse: It's like your imagination. (Sept. 27, 1999)

Then by Olsen Juan as: Like snow, you stare at it and makes you

confused. People will become so confused by this sparkling snow effect

that it will change our lives to the point that our life as we knew it, will

never be the same. Maybe they're talking about technology. Maybe

technology represents the glittering snow. (October 30, 1998)

Lake Valley Navajo Chapter House appropriated money in its fiscal

budget 1999-2000 for the Internet connection phone line. The Lake Valley

rug remains unfinished as it continues to be woven with the present day

Glittering World fibers--diyogí--out of the minds, needs, and imagination

of its weaver technicians.

AUTHOR EPILOGUE

For ten years, Lake Valley Navajo School (LVNS) Principal David Atanasoff with the help of his son has been preparing the school's telecommunications infrastructure with cables, hubs, and routers so LVNS would be ready for eventual Internet access and Local Area Network (LAN) system. (Personal communication, David Atanasoff, April 14, 2000) The Bureau of Indian Affairs Educational Native American Network (ENAN) access was available, however, the "telephone system was very slow and was not very conducive to learning" (Personal communication, David Atanasoff, April 14, 2000). LVNS lost out on several satellite bids for the school and was exploring affordable alternatives for Internet connectivity.

On March 13, 2000, Digital Council Fires listserv distributed an announcement from Marcia Warren, Department of Commerce Senior Policy Advisor for Native American Affairs, briefly described President Clinton's New Markets Tour addressing issues related to the digital divide and encouraging profit and nonprofit collaboration in providing telecommunications opportunities to lessen digital inequality (ALA, 2000) (See Figure 32.)

FROM DIGITAL DIVIDE TO DIGITAL OPPORTUNITY
A NATIONAL CALL TO ACTION

Access to information technology and the Internet and the ability to use this technology effectively are becoming increasingly important to full participation in America's economic, political and social life. While computer and Internet access has exploded in recent years, America faces a "digital divide"— a gap between those who have access to Information Age tools and the skills to use them and those who don't.

America has an important choice to make: we can allow unequal access to deepen existing divisions along the lines of race, income, education level, geography, and disability -- or we can use technology as a powerful tool to help make the American dream a reality for more people. To help create digital opportunity for more Americans, we must create strong partnerships between government, industry, and the rich mosaic of America's civil society -- including educators, labor unions, librarians, civil rights leaders, faith-based organizations, foundations, volunteers, and community-based organizations.

As companies, non-profit organizations and individuals, we are committed to taking concrete steps to meet two critical national goals: (1) Ensuring Access To 21st Century Learning Tools For Every Child In Every School; and (2) Expanding Digital Opportunity For Every American Family And Community. We pledge to support these two goals.

GOAL ONE: 21ST CENTURY LEARNING TOOLS FOR EVERY CHILD IN EVERY SCHOOL
For children to succeed, they need to master basic skills at an early age. A critical element of this is the need for information and technological literacy. To help achieve these aims, we must focus on a comprehensive approach to integrating technology into teaching and learning while recognizing that -- as powerful as technology is -- it is no substitute for an inspiring teacher or a loving parent. Together, we must:

1. Connect every classroom to the Internet

2. Ensure that all students have modern multi-media computer access, ideally at a ratio of 1 computer for every 4-5 students

3. Ensure that teachers are technologically literate and can integrate technology into the curriculum

4. Make available high quality educational software and online learning resources

GOAL TWO: DIGITAL OPPORTUNITY FOR EVERY AMERICAN FAMILY AND COMMUNITY To ensure that no family or community is left behind, we must:

1. Set the long-term goal of making home access to the Internet universal

2. Bring technology to every community -- urban, rural, and Native American -- through Community Technology Centers and high-speed networks

3. Give adults the skills they need to use information technology and compete for jobs in the IT sector

4. Motivate and inspire more people to appreciate the value of "getting connected"

Figure 32. "From Digital Divide to Digital Opportunity: A National Call to Action"

Goal two "From Digital Divide to Digital Opportunity: A National Call to Action"

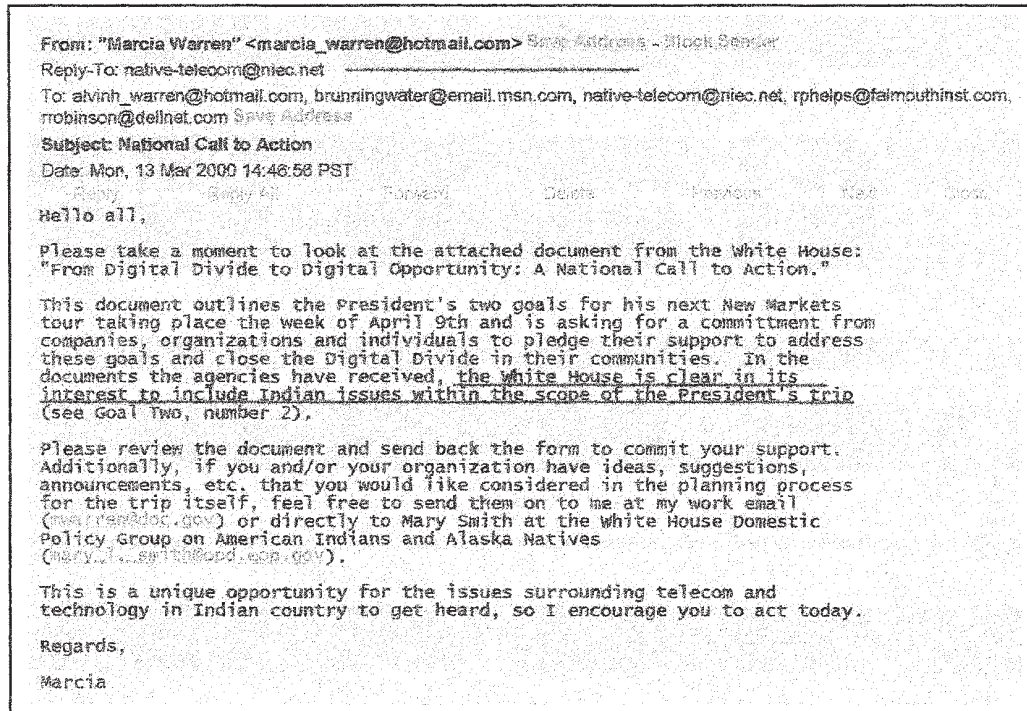includes telecom issues affecting Native American communities. (See Figure 33.)

Figure 33."From Digital Divide to Digital Opportunity" - Warren email

I responded to this email on behalf of Lake Valley Navajo School with the

following email to Marcia Warren and Mary Smith:

> In response to the President's "Digital Divide to Digital Opportunity: A
> National Call to Action", Lake Valley Navajo School has completed our
> pledge of support. (Please see attachment below.)
>
> We, also, cordially invite President Clinton and entourage to Lake Valley
> Navajo School in the Northwest part of New Mexico on the Navajo Nation
> during the week of April 9.
>
> The experiences of telecom activity and obstacles in the Lake Valley
> community have been documented in a dissertation research study
> (available at - http://vitali1868.tripod.com/AUTHOROUTLINE.html).
> Also, Lake Valley was the Navajo pilot project site for the Bill & Melinda
> Gates Native American Access to Technology Initiative.

Lake Valley (http://lakevalley190.tripod.com/lakevalleyindex.html) is an example of a rural community in Indian Country trying to become connected in the midst of many challenges - cultural, economic, infrastructural.

Our school is K-8 with approximately 140 students who, although are considered "at-risk" children, are similar to any other students in any other school. However, the lack of Internet connectivity to the outside world is perhaps one of the glaring differences in their educational setting.

We invite President Clinton to Lake Valley Navajo School and community to meet with students and community members. We would be honored to host their visit, no matter how short the time frame.

A map of where Lake Valley is positioned is included in one of the attachments.

Please feel free to contact me, if needed.

The events that transpired were an example of how local, sovereign, national, federal, and profit levels worked collectively in addressing the issues of Internet connectivity for a rural school on the Navajo Nation. Tachyon, a wireless telecommunications company, contacted LVNS and was directed by William Mehojah (Karrick, 2000), Deputy Director of School Policy in the Bureau of Indian Affairs Office of Indian Education that LVNS was going to receive a Tachyon satellite dish plus a one-year paid subscription. On April 11, Tachyon technicians installed a satellite dish on the roof of the LVNS building.

LVNS became the center of media attention with Tachyon President John Koehler visiting LVNS to oversee the installation of the satellite dish and to speak with the junior high school students. (See Figures 34 & 35.)

Marc F. Henning/The Daily Times
Tachyon Inc. President John Koehler (left) helps Sherannah Chee, 12, surf the Web Wednesday at Lake Valley Navajo School after logging on Tachyon's wireless Internet service.

Figure 34. Tachyon President Koehler visits LVNS on April 12, 2000.

Figure 35. Newspaper coverage of Tachyon satellite link at LVNS.

Marcia Warren (Personal communication, April 14, 2000) replies with an email

about the LVNS satellite gift. (See Figure 36.)

From: MWarren@doc.gov Save Address - Block Sender
To: francesvitali@hotmail.com, mary_l._smith@opd.eop.gov Save Address
Subject: Congrats!
Date: 14 Apr 00 15:24:43 EDT

Mr. Vitali,

I am so pleased to hear of your good news. I did indeed pass on your information to Mary Smith, and she is definitely the one that deserves your thanks. She does a lot of good work for Indian country and this is one example.

I'll be attending the event on Monday and hope to meet you in person. Please keep me up to date on the activities of your school, especially now that you're "uplinked!"

Regards,

Marcia Warren
Senior Policy Advisor for Native American Affairs
U.S. Department of Commerce
202.482.1974 (tel)
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---------- Original Text ----------

From: S=francesvitali/C=US/A=INTERNET/DDA=ID/francesvitali(a)hotmail., on 04/14/2000 3:54 AM:

Dear Mary & Marcia,

On March 17, I responded to the forwarded document from the White House - From Digital Divide to Digital Opportunity: A National Call to Action.

I completed a pledge of support for Lake Valley Navajo School (LVNS) in New Mexico and sent it with an invitation for President Clinton to visit LVNS and meet with students and community to discuss obstacles to telecommunications connectivity.

Last Wednesday, April 5, our school principal, Dave Atanasoff, received a call from Tachyon, Inc. of San Diego, CA, indicating that he had been directed from the President's office to install a satellite dish at LVNS.

It is a tremendous gift for which our school is very grateful. I am trying to understand the story as to how it all happened. I would like to document it for LVNS students, faculty and community, and for my dissertation research, as well.

As the school librarian, it is a very significant event which deserves telling and sharing, but it has been difficult to piece the information together.

Mary & Marcia, did you forward our email to the President's office and, if so, what happened after that? I would appreciate if you could help me understand the full story so that we can pass it on and celebrate it as our LVNS technological historical event.

Thank you for your assistance in any way, Marcia & Mary!

Figure 36. Marcia Warren's congratulatory email.

To test the Internet connection, two students from LVNS participated in a teleconference on April 17 with President Bill Clinton during his visit to Shiprock, New Mexico. (See Figure 37) The transcript of the conversation is available from the White House WWW site at: http://www.whitehouse.gov/WH/New/New_Markets-0004/20000417-1.html

Figure 37. President Clinton uses Internet to talk with LVNS during visit to Shiprock,

New Mexico. White House photograph.

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APPENDIX A: Navajo Tribal Seal Symbolism
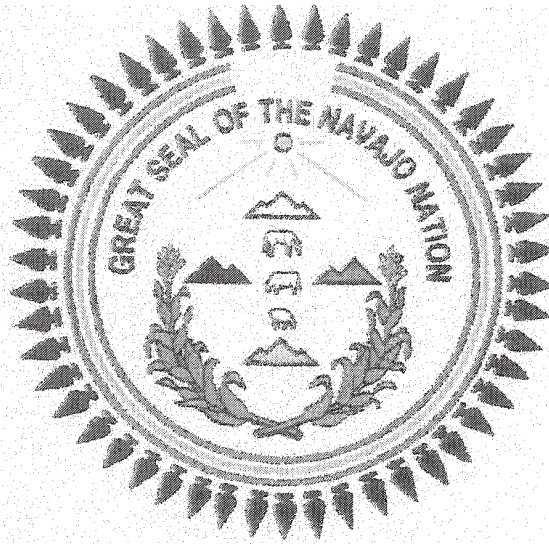
THE NAVAJO TRIBAL SEAL

The Great Seal of the Navajo Tribe, designed by John Claw, Jr., from Many Farms, Arizona was officially adopted by the Navajo Tribal Council on January 18, 1952 by Resolution CJ-9-52.

The 48 projectile points outlining the seal symbolize the tribe's protection within the 48 states (as of 1952). The opening at the top of the three concentric lines is considered the east; the lines represent a rainbow and the sovereignty of the Navajo Nation. The rainbow never closes on the tribe's sovereignty immunity. The outside line is blue, the middle is yellow, and the inside is red.

The yellow sun shines from the east on the four mountains sacred to the Navajos. These mountains located at the cardinal points, are in their ceremonial colors; white in the east represents the White-Shell Woman; blue in the south represents Turquoise Woman; yellow to the west represents Abalone Woman; and black to the north represents Jet Black Woman.

Two green plants, symbolic as the sustainer of the Navajo life, decorate the bottom of the seal, with tips of the yellow pollen which is used in many Navajo ceremonies. In the center are a sheep, a horse, and a cow which symbolizes the Navajo livestock industry.

The Navajo Nation Council in May 03, 1988 amended the Resolution CMY-18-88, Section 101, changed the wording on the Great Seal from the "Great Seal of the Navajo Tribe" to "The Great Seal of the Navajo Nation", and added two (2) additional arrowheads (Hawaii and Alaska) outlining the seal signifying the Navajo Nation's protection with the fifty (50) states.

APPENDIX B: Definitions of Key Terms

Culturally rooted

Navajo culture remains culturally rooted within the oral tradition, Navajo cosmology and epistemology. The oral tradition--its symbols and metaphors--are valued and respected as knowledge relevant to living in the contemporary world.

Digital Divide

Although used as a general term in recognizing the technological inequality of those 'who have' and those 'who have not', Cisler (http://www.athenaalliance.org/cisler.html) notes that the term is too binary a way of looking at the related issues of connectivity. Information about the digital divide is available through the U. S. Department of Commerce National Telecommunications and Information Administration (NTIA) at http://www.ntia.doc.gov/ntiahome/digital divide/factsheets/native-americans.htm

Dine' culture

Dine' have experienced many changes, culturally, economically, politically, and technologically. The significance in adapting external innovations from the Spanish, Spanish American, Ute, Zuni, Pueblo, Apache, Comanche, Mexican, Mexican American, Euro-American, and Anglo-American cultures remained in the freedom to choose or reject such innovations into their lifestyles. Whatever the borrowed innovations and technologies, dine' creatively rendered them uniquely Navajo (Acrey, 1988; Bailey &

Bailey, 1986). The historical legacy of dine' also includes the lack of choice in forced assimilation and tolerance of foreign ways, innovations, education, and lifestyles, resulting in resilient cultural survival.

Greco-Western

Our modern thought, rooted in the Greek style of thinking--alphabetical, logical, sequential, and analytical--is embodied in reading, writing and literature. This pattern of thinking has served as a "standard system" (Burke & Ornstein, 1995, p. 71) for the creation, dissemination, organization, transmission, and use of information within the dominant society. The literate word has represented power, authority and status in dominating our thinking. However, the complementarity of thinking involves an analytical, critical, and fragmentary perspective parsing information into parts, and the synthesizing and unifying perspective of relating to information as a whole (Burke & Ornstein, 1995).

Interfaces

In the theory of information transfer, individuals and society dynamically shape the processes in the creation, dissemination, organization, diffusion, and use of information (Achleitner & Grover, 1988; Greer, 1987). The focus is on the role and activity of the individual within an environmental or cultural context, considering culture, language, and technology as essential dynamics of the communicative process.

Orality & Literacy

Ong explains that in primarily oral cultures, knowledge is revered and respected. Those who have it or "specialize" (1982, p. 41) in conserving it are the ones who can tell the stories of the past. Conversely, writing and printing, remain external to storing knowledge traditionally, thereby deflating the status and power of the knowledge conserver as storyteller (Ong, 1982).

Navajo culture, according to Ong, would be considered a culture of secondary orality (1982). Contrasting a primary oral culture where there is no knowledge of writing or print, Navajo culture is mediated with the technologies of radio, television, telephone and computers which are dependent upon writing and print (Ong, 1982). A Navajo analogy may describe the relationship between orality and literacy: all are born "into" orality and born "for" literacy.

In the Navajo culture one is born into the mother's clan but born for the father's clan. Traditionally, the mother-child relationship represents a stronger bond than that of father-child. However, both dynamics of relational kinship are considered fundamental to the Navajo system of solidarity (Witherspoon, 1975). The same complementarity exists between orality and literacy. Such a symbiotic relationship is mutually causal in that literacy can enhance orality in restoring, preserving, and extending cultural memory and consciousness within technologizing cultures (Ong, 1982).

Research

From Dine' perspective, learning is internalized and lived. The concept of research is viewed as a learning process whereby one learns about themselves and the environment around them. Within a research context, any research includes: understanding yourself; the need to look at your positionality; reasons for undertaking the research on the Navajo Nation; and an understanding of the environment, inclusive of people, traditions and technology (Jasperse, 1998).

Symbols

Symbols refer to "processes of representation" situated within the context of social acts, interactions and relationships (Couch, 1996, p. xiv). Symbols are interpretations as shared understandings or emerge as interpretations of shared understandings within social contexts. Evocative symbols refer to traditional forms of communication such as orality and spoken language preferences, and referential symbols refer to the printing and writing forms of literacy (Couch, 1996).

Technology

Information technology describes the information handling systems as both product and process. The socially created conventions are symbol systems for communication associated with representing, collecting and storing of information (Finnegan, 1988). The information technologies of speaking, writing, printing, computers, WWW, and satellite dishes are designs for communicative action that have the potential to transform the people and situations in the process (Couch, 1996).

Cultures are not passive systems and nor are the environments in which technology is used for the intended purposes of sharing, communicating and celebrating meaning, cultural values, and beliefs.

The information technologies of computer and telecommunications are based upon the U.S. National Information Infrastructure (NII) description as "a seamless web of communications networks, computers, databases, and consumer electronics that will put vast amounts of information at user's fingertips" (Griffith, 1994).
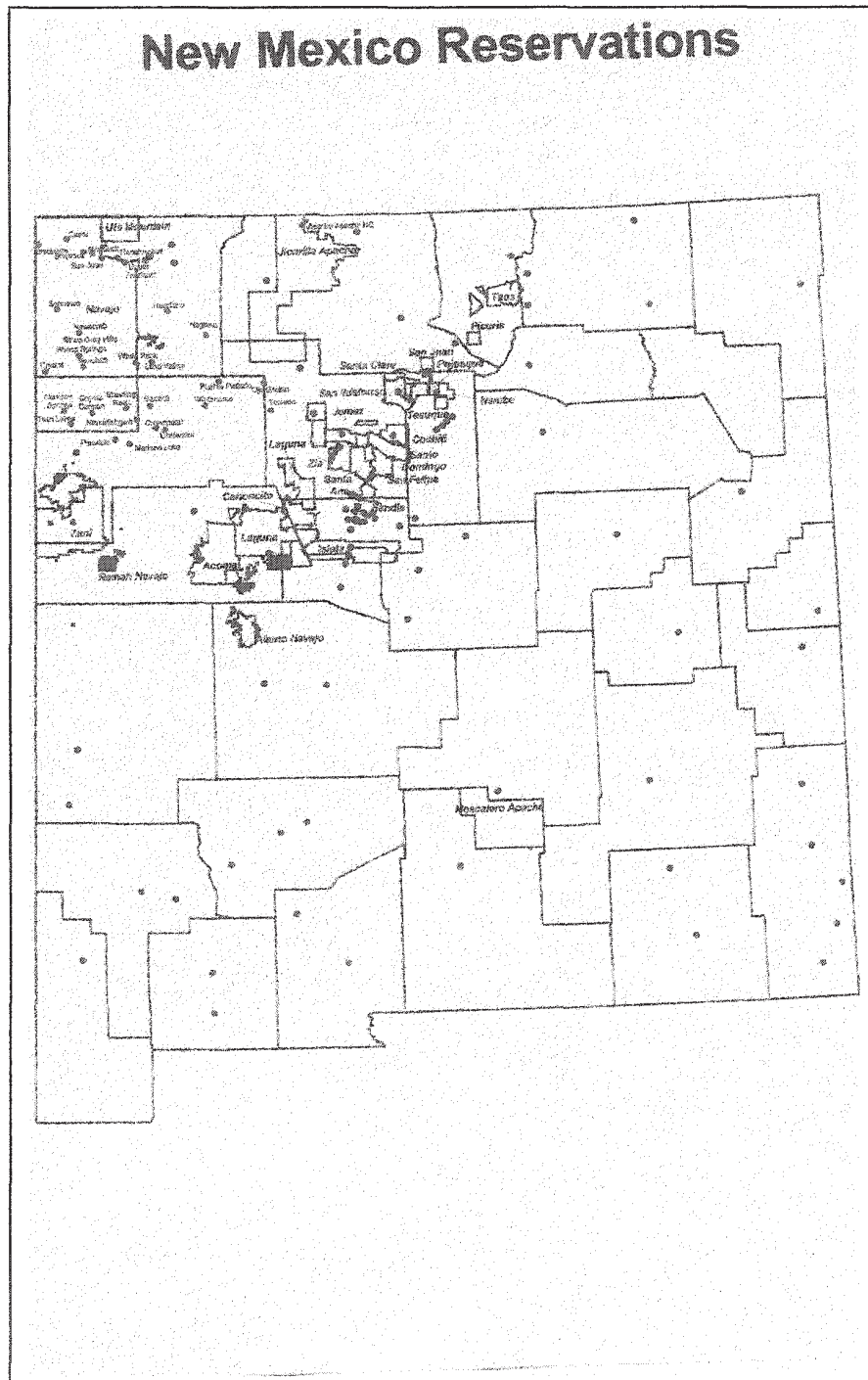
Information technologies offer four services:

(a) voice communication or telephony, being the most common;

(b) digitized communication requiring a modem connected to a computer that allows for the sending and receiving of mail through the network as a mail system;

(c) transfer of images and hypertext as hypermedia referred to the World Wide Web, or simply the web;

(d) research institutions and the Department of Defense engaged in accelerating information processing capabilities of the services above (Braman, 1995).

Web culture.

Web culture refers to the Net, the Internet, and the WWW, as twentieth century technologies that provides a rich panoply of nonlinear communications offers audio, video, print, animation, graphics, real-time, and virtual reality (McLellan, 1996). The web culture, as a technological system, represents a diverse, interconnected, integrative, dynamic, and evolving medium.

APPENDIX C1: Rural Context of Research Area

New Mexico Reservations

APPENDIX C2: Rural Context of Research Area

New Mexico Percentage
Below Poverty by County

% Below Poverty
0 - 6%
6 - 11%
11 - 17%
17 - 25%
25 - 100%
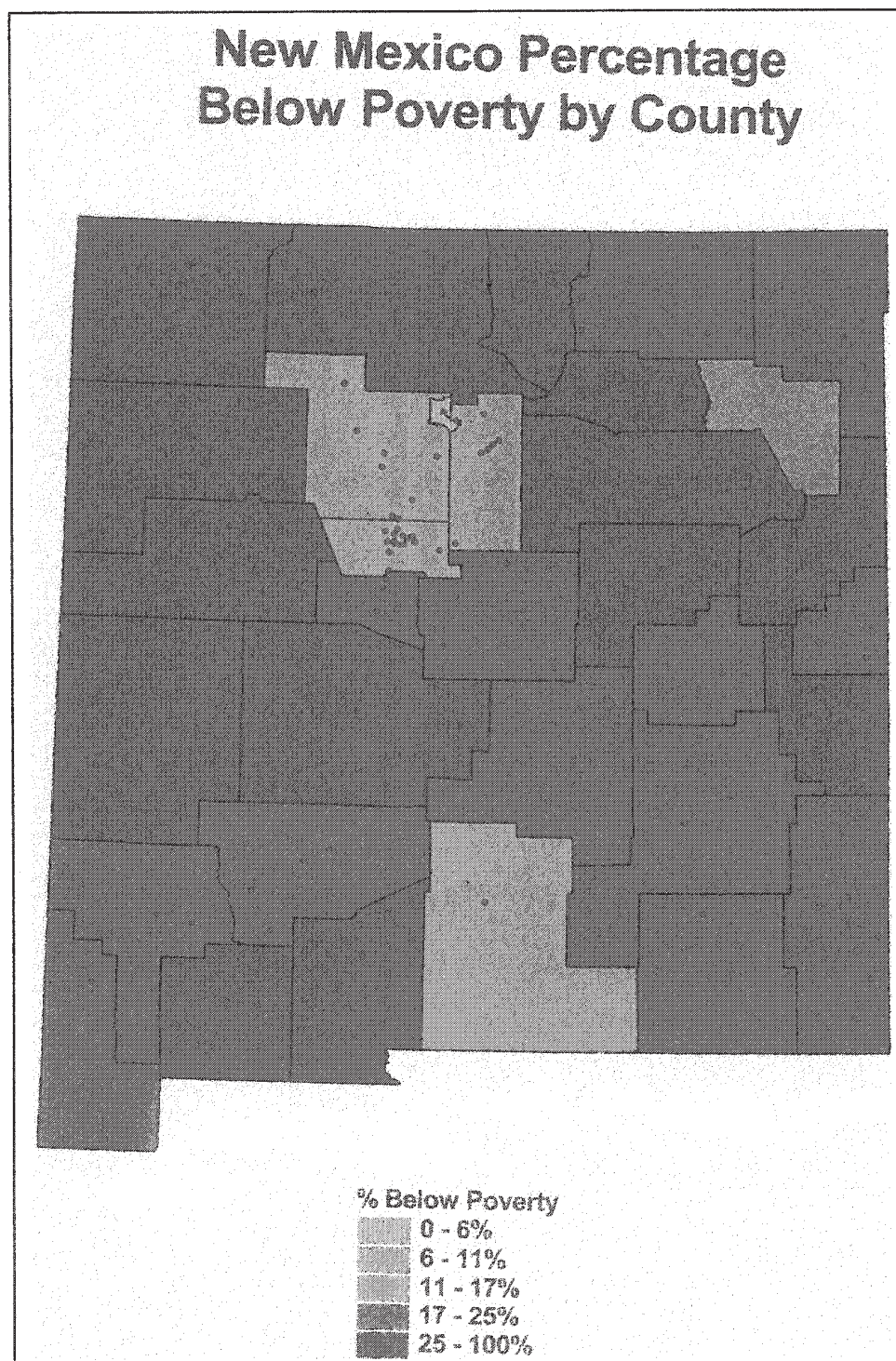
APPENDIX D1: Research Forms – Navajo Request

Frances Vitali
P.O. Box 3528
Farmington, NM 87499-3528

Navajo Nation Historic Preservation Department
Institutional Review Board
P.O. Box 3896   Window Rock, AZ 86515

January 28, 1999

Dear Institutional Review Board Committee Members:

I am submitting a Permit Form C to conduct my dissertation ethnographic research within the Lake Valley community of the Navajo Nation. It is my intention that the dissertation research project become a public document for use within and outside the Navajo Nation. Therefore, I am requesting a fee waiver.

Enclosed is my Permit Request Form; personal resume; letter of support signed by Lake Valley Chapter House officials and representative members; dissertation proposal summary; and full dissertation proposal. The proposal is also available on the Internet at <http://members.tripod.com/vitali1868/propos2.html>.

The mentors of my dissertation research committee are:
• co-chair, Dr. Brian O'Connor
School of Library & Information Sciences
University of North Texas
Denton, TX 76203
940.565.2347
BOCONNOR@lis.admin.unt.edu

• co-chair, Dr. Roger Wyatt
School of Library & Information Management
Emporia State University
172 Church Street
Saratoga Springs, NY 12866
518.584.8907
rbwslim@yahoo.com

• Dr. Jack Glazier
School of Library & Information Management
Emporia State University
1200 Commercial Street
Emporia, KS 66801-5087
316.341.5303
GLAZIERJ@esumail.emporia.edu

APPENDIX D1: Research Forms – Navajo Request

Frances Vitali   Navajo Nation Historic Preservation Department
P.O. Box 3528   Institutional Review Board
Farmington, NM 87499-3528   P.O. Box 3898   Window Rock, AZ 86515

January 28, 1999

Dear Institutional Review Board Committee Members:

I am submitting a Permit Form C to conduct my dissertation ethnographic research within the Lake Valley community of the Navajo Nation. It is my intention that the dissertation research project become a public document for use within and outside the Navajo Nation. Therefore, I am requesting a fee waiver.

Enclosed is my Permit Request Form; personal resume; letter of support signed by Lake Valley Chapter House officials and representative members; dissertation proposal summary; and full dissertation proposal. The proposal is also available on the Internet at <http://members.tripod.com/vitali1868/propos2.html>.

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* co-chair, Dr. Roger Wyatt
School of Library & Information Management
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518.584.8907
rbwslim@yahoo.com

* Dr. Jack Glazier
School of Library & Information Management
Emporia State University
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Emporia, KS 66801-5087
316.341.5303
GLAZIERJ@esumail.emporia.edu

APPENDIX D1 (Continued)

• Dr. Paul Zolbrod
Dine' College-Crownpoint
P.O. Box 57
Crownpoint, NM 87313
505.786.7391
peezee@nmol.com

• extended member, Dr. Evangeline Parsons-Yazzie
Northern Arizona University
520.532.6234
Evangeline.Parsons-Yazzie@nau.edu

I will be happy to meet with the committee to discuss the research proposal, answer any questions, and/or amend the proposal, if necessary.

Baa aheeh nisin,

Frances Vitali
Doctoral candidate,
Emporia State University
Emporia Kansas

APPENDIX D2: Request for Local Support

Lake Valley Chapter House
P.O. Box 190
Crownpoint, NM 87313

Frances Vitali
P.O. Box 3528
Farmington, Nm 87499

December 1, 1998

LETTER OF SUPPORT

Dear Lake Valley Chapter Members:

I would like to congratulate the Lake Valley Chapter staff and community members in securing the new computer technology available at the chapter house. The chapter members are also making plans to bring additional computers to the chapter house for community members' use. I have been very interested in computer technology at Lake Valley while I was working as a teacher and librarian at Lake Valley Navajo School. The reason why I left was to go on for my doctorate degree so I would be able to better serve the community. I return to Lake Valley with my continued interest in the new computer technology and seeing ways which can benefit the community and community members.

The only thing left to do before receiving my degree is a research project. For my research project, I have chosen to learn more about how community members at Lake Valley Chapter House (children, adults and elders) are using this new computer technology for their needs. Because of this, I am asking permission to do my dissertation research at the chapter house to document and show how adults, elders, and children are using the technology.

I would be able to be at the chapter house throughout the day and in the evenings, if needed, to assist community members with learning about what is available on the computers and how to access information of interest to them. Participation in the research will involve a voluntary learning exchange. While community members learn more about how they can use computers for their needs, they will be contributing to the research project.

I would be very pleased to help our community and at the same time finish this last part of my doctoral program. My plan after the research is completed is to return to the area and to continue to assist the community in any way that I can.

Shíká oohjeeh baa ahééh nisin. Alkéé anáhjah.

Frances Vitali
Doctoral Candidate
Emporia State University

APPENDIX D3: Research Forms – Informed Consent

Informed Consent
Voluntary Learning Exchange Agreement
at
Lake Valley Chapter House

Note: Attempts will be made to provide the Voluntary Learning Exchange
Agreement on the Internet with text and audio capabilities in English and Navajo.

Emporia State University's Commitment:

The School of Library and Information Management at Emporia State University
in Kansas supports the protection of people participating in research activities. To honor
and respect your decision to participate or not to participate in the present research
project, you are asked to complete the following information. Please know that even if
you at first agree to participate, you are free to withdraw at any time without any
consequences or penalty to you.

Title of Research: Digital Dine': At the Intersection of Navajo Orality & Web Culture

Principal Researcher: Frances Vitali

Project Goals:

The research project seeks to better understand how members of Lake Valley
community interact with and use computer and Internet technology for their needs.
The benefits of using the computers and the Internet hopefully will help you to access
information that is important for you. In this way, each person who uses the Internet may
benefit in different ways according to her/his own needs. However, the overall hope of the
project is that it:

- empowers you to learn more about computers and the Internet;
- makes you feel more comfortable using these technologies;
- helps you discover new ways to communicate, locate, use, and appreciate
  available information for your work, recreation, and personal use.

Role of the Participant:

As a voluntary participant in the project, you will

1) be encouraged to use computer programs and Internet searching for your own personal,
   professional, and recreational needs at Lake Valley Chapter House;
2) be assisted in using, operating, and learning about computer programs and Internet by
   the researcher, other chapter members, or other invited knowledgeable people;
3) allow the researcher to ask you questions and to observe your computer and Internet
   use;
4) allow the researcher to interview you to obtain more information about your use of
computers and the Internet.

APPENDIX D4: Research Forms - Review Program Acknowledgment

Frances Vitali
P.O. Box 3528
Farmington, NM 87499

Jo DeGroat
Navajo Nation Review Program
P.O. Box 1390
Window Rock, AZ 86515

November 22, 1999

Dear Jo DeGroat:

Thank you for relaying the necessary information concerning the review of my doctoral dissertation proposal by the Navajo Nation Review Program.

Enclosed please find the proposal and additional supporting documents. My proposal is also on file at and has been reviewed by the Navajo Nation Historic Preservation Department according to Peter Noyes November 22, 1999.

As mentioned per our telephone conversation (November 15, 1999), my dissertation research is almost completed. The proposal is also available online at http://members.tripod.com/vitali1868/propos2.html.

Thank you for your attention to this matter.

Baa aheeh nisin,

Frances Vitali

Frances Vitali

APPENDIX D5: Research Forms – Consent

Voluntary Learning Exchange Form

Attempts will be made to provide the Voluntary Learning Exchange Agreement on the Internet with text and audio capabilities.

I understand that my participation in learning about and working on the computer at Lake Valley Chapter House is for me to pursue my own educational and recreational needs.

_____I give Frances Vitali permission to include me in her dissertation research.

_____I give Frances permission to use my name in her dissertation research.

_____I do not give Frances permission to use my name in her dissertation research.

Name_____Signature_____date

Thank you,

Frances

APPENDIX E: Explanation of NMSL Tribal Libraries Program

New Mexico State Library
1209 Camino Carlos Rey
Santa Fe, NM 87505

TRIBAL LIBRARIES PROGRAM AT THE NEW MEXICO STATE LIBRARY

The New Mexico State Library's Tribal Libraries Program is the first of its kind in the nation to provide library development services to tribal communities on a statewide basis. In response to a call by Senator Leonard Tsosie for the state to improve library services and Internet access in New Mexico tribal communities, the State Library initiated a three-year project in 1994 which was funded by the State Legislature through a bill sponsored by Senator Tsosie and other Indian legislators. By 1997 the State Library had established a resource and training center in Crownpoint, New Mexico, and placed computer equipment in a total of 33 communities. Twenty-seven of these communities access the Internet through the State Library's toll-free service, many for the first time. These sites include 14 Pueblos, 11 of which are established or developing libraries, and 17 Navajo sites (primarily chapter houses), as well as the Jicarilla and Mescalero Apache libraries.

In 1998, Senator Tsosie succeeded in garnering an increased permanent funding level for the State Library's Tribal Libraries Program. Plans for the first year of this funding are directed at increased library development and improved technology at tribal sites. Library development will be enhanced through increased funding to tribal libraries for library acquisitions; training workshops on library skills for tribal library directors and staff; a Summer Training Institute in 1999; and one-on-one consulting for tribal communities that plan to establish libraries. On the technology side, the program will provide computer upgrades for the 33 existing computer sites, increased technical support from contractors for on-site troubleshooting; continued toll-free Internet access; extensive computer training for all sites; Internet research training on specialized topics relating to tribal issues; and other general technical support as needed. Computer equipment, training, and toll-free Internet access will be offered to 20 to 30 new tribal sites in the coming months. If you have questions about the program, please contact Alison Freese, Tribal Libraries Consultant, toll-free 1-800-340-3890 or (505) 476-9726.

Contacts:

Alison Freese, Tribal Libraries Consultant
New Mexico State Library
1209 Camino Carlos Rey
Santa Fe, NM 87505
Phone: 505-476-9726; 1-800-340-3890
Fax: 505-476-9721
alison@stlib.state.nm.us

Jean Whitehorse, Library Associate
Crownpoint Training & Outreach Center
New Mexico State Library
P.O. Box 2099
Crownpoint, NM 87131
Phone: 1-800-670-7223
Fax: 505-786-7189

APPENDIX F1: Computer Boot Camp Article

Computer camp graduates take home hardware

By Malcolm Brenner
Staff Writer

CROWNPOINT — Ah, the joys of summer camp! Riding... archery... swimming... and surfing the World Wide Web.

Even if they didn't get to ride, shoot or swim, some students of Diné College-Crownpoint's Kids Kollege are taking home a lot more than memories. The 19 graduates of Computer Boot Camp didn't just learn how to set up, use and maintain their computers — they got to keep them, too.

The innovative means of moving technology into the underdeveloped Navajo Nation comes from Kids Kollege co-founder Rick Lutz.

Lutz, husband of Crownpoint campus director Irene Charles Lutz, said he got the idea when the campus was given several used Apple MacIntosh II-CI computers last year.

The Macs were state-of-the-art in the early '90s but would have required expensive hardware upgrades to keep up with current technology. Dean Thomas Bennett eagerly accepted Lutz's suggestion that students keep the computers they learn on, and the Boot Camp was born ("boot" being slang for turning a computer on). Irene Lutz even gave up her office so the kids could have a classroom.

"I may be an optimist, but I really believe if we can get computers into the home it's going to have some effect on these students' academics," Lutz said. "But, there's nothing to say they won't take it home and wipe off everything but the video games."

Lutz also cited the "hand-me-down" effect: As the students move on to college, their computers will be passed on to their younger siblings. The students' parents benefit, too, by gaining access to technology and expertise they might not otherwise have been able to afford.

In addition to the 10 Macs, Lutz scrounged enough extra computers — PC 486s and Pentiums — to hold two five-week sessions, one for 13-year-olds and one for high school students. The used computers were refurbished by Brandon Benallie, an MIT graduate in computer science and physics.

"It's both a blessing and a curse," Benallie said of his decision to return to the Navajo Nation as he struggled to replace a malfunctioning hard drive.

Diné College graduate Gail Burnside taught most of the classes, guiding the students through exercises from plugging in the cables to printing banners, posters and newsletters. The students got so involved in their lessons they frequently missed lunch.

"They're fast learners," Burnside said. "I've enjoyed teaching them."

Lutz used some innovative strategies to hold the students' interest, such as buying lunch for the creator of the best-designed newsletter.

The camp cost of $179 included the computer, monitor, keyboard, modem and operating system. The lack of printers is offset, Lutz said, because students can save their work to a diskette and print it at school.

To keep costs down, Lutz installed the GEOS operating system with the New Deal graphic interface on the PCs. The inexpensive system comes with a suite of student-oriented software and runs even on older computers that won't support Windows 95.

As it worked out, only a few of the students had to pay for the camp. The Navajo Nation Division of Youth Community Services paid for the 13-year-olds, and five of the nine high school students were funded by the Office of Workforce Development.

"I think it's a really good deal," said Charley Begay, father of Derek, 13. Although Begay uses computers in his job for the Bureau of Indian Affairs Division of Roads, he didn't have one at home. "It will help him and his sister too," he said. "That's the thing of today." Down the line, Begay said he might get a printer and Internet access, when he's had a chance to think things over.

On graduation day last Thursday, the middle school students were preoccupied doing the things kids do on computers — mostly playing games — to the point where they almost ignored questions. The most popular game seemed to be "Netris," where players stack tumbling blocks, followed by "Gypha," an Egyptian-styled platformer.

Roderick Tolth said he would mostly use the computer for typing book reports and stories. He had the Independent's web site bookmarked on his browser, but said his favorite site was "Deep Blue Sea," the new shark horror movie.

APPENDIX F2: Computer Boot Camp Article
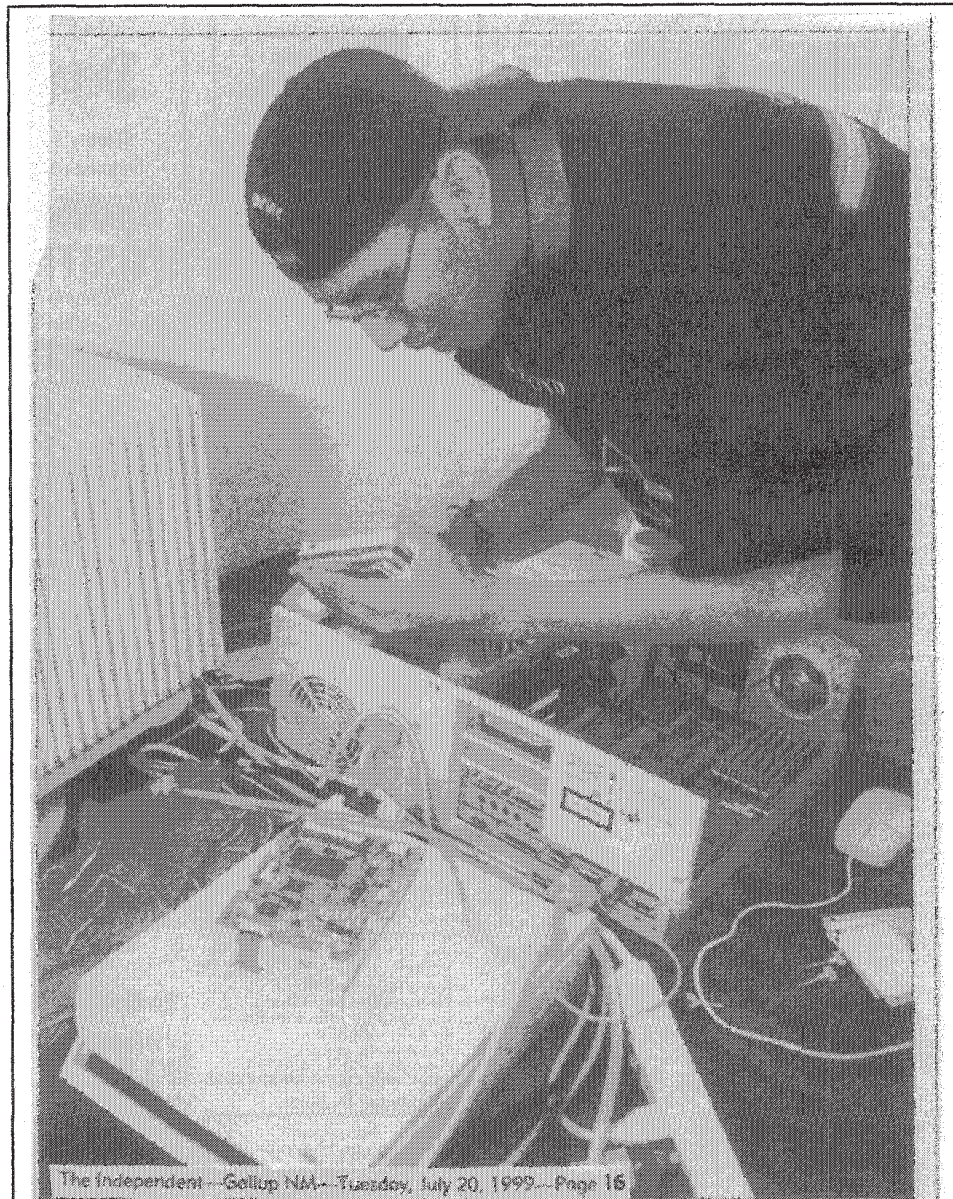
The Independent—Gallup NM—Tuesday, July 20, 1999—Page 16

Brandon Benallie, "resident hacker" at the Dine' College Crownpoint Campus, replaces the hard drive on a computer for a student in the school's "Boot Camp." Students who attended the month-long camp not only learned to run computers but got to take them home as well.

APPENDIX G1: Infrastructure Diagrams
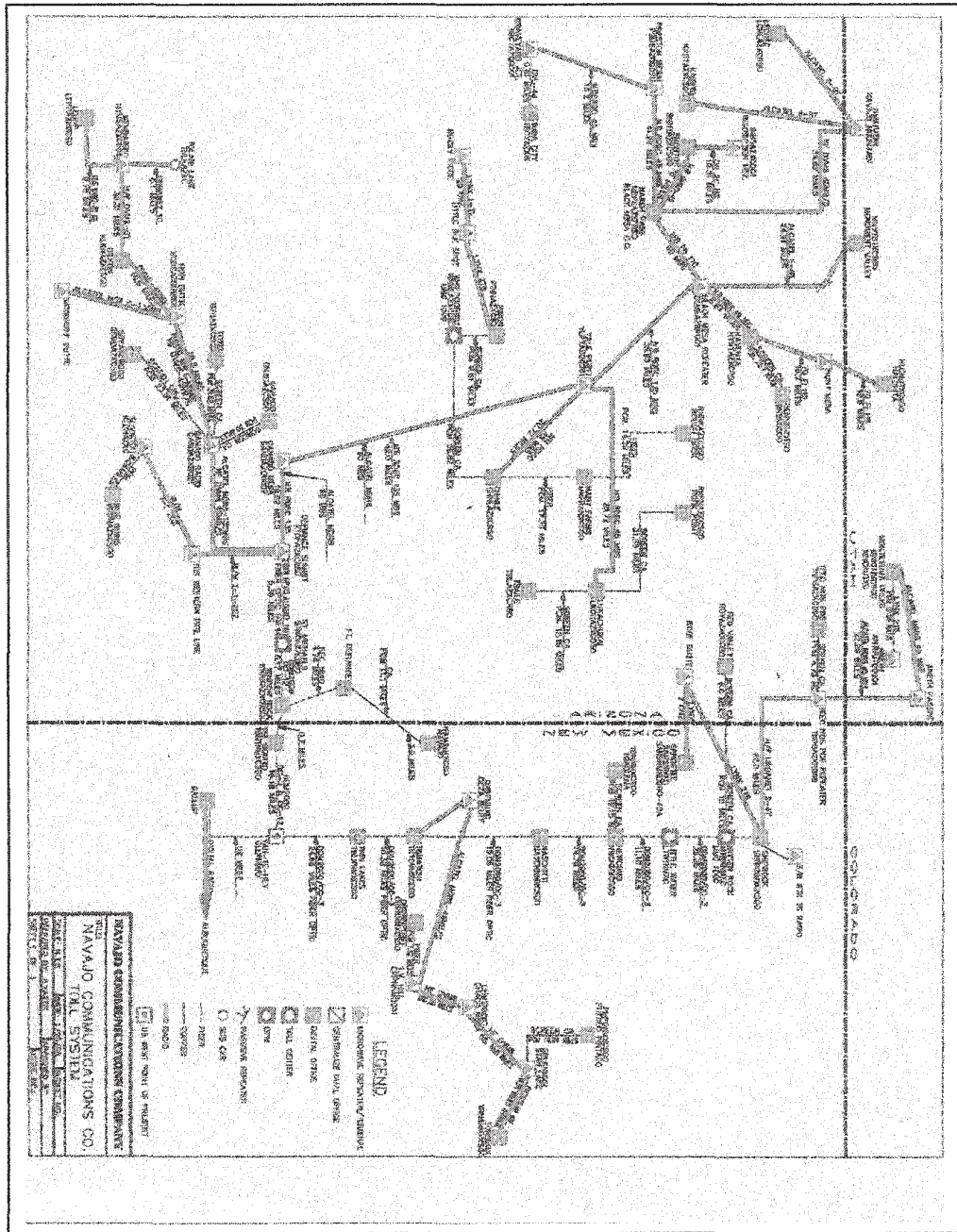
APPENDIX G2: Infrastructure Diagrams
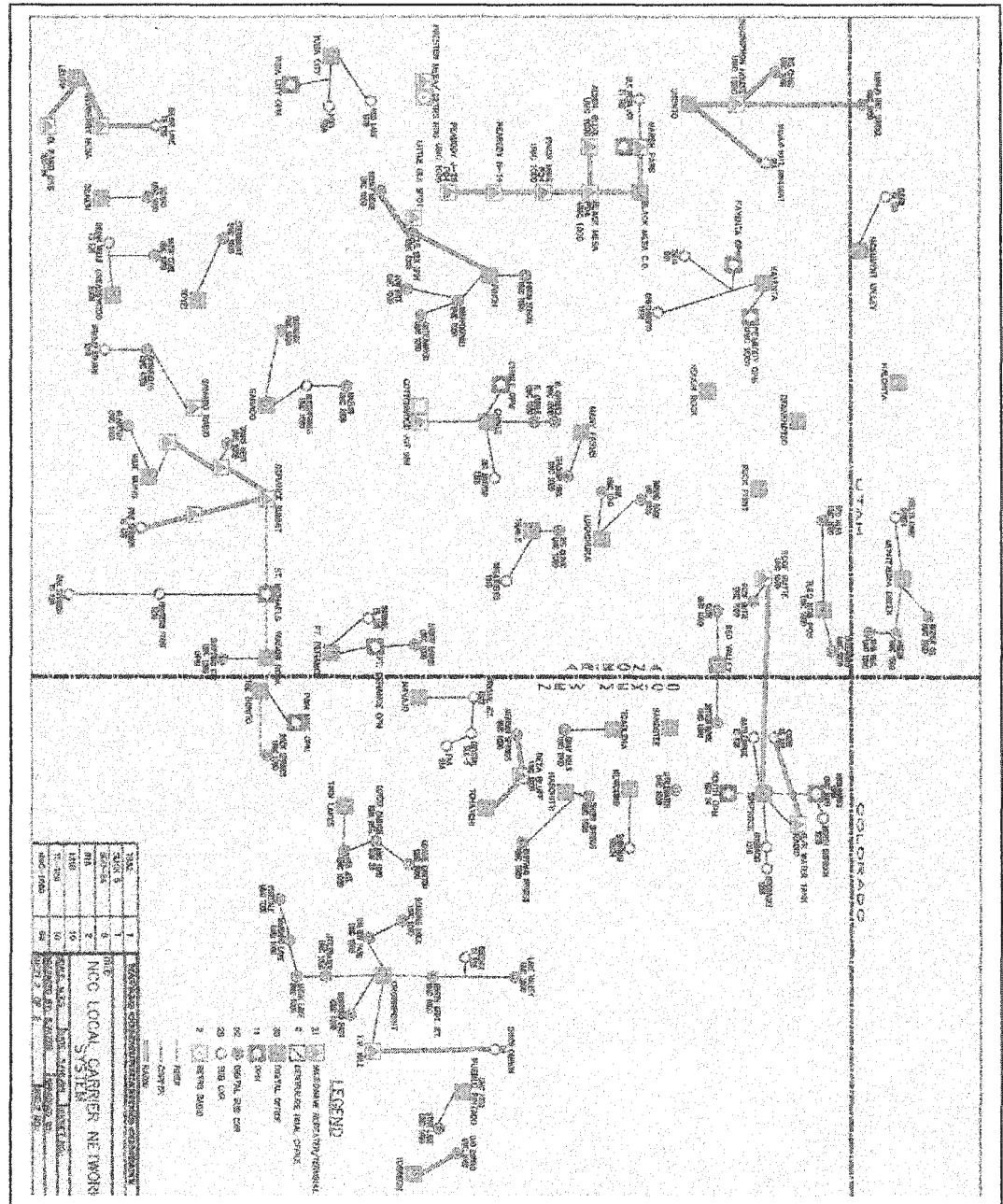
APPENDIX G3: Infrastructure Diagrams

NAVAJO COMMUNICATIONS COMPANY
Report Foor April 1999

Access Lines		RES	BUS.	CENTREX	MULTI-PARTY
AZ	17,292	7,745	8,511	6,206	17
NM	6,009	3,587	2,165	1,260	9
UT	424	180	207	32	1
	23,725	11,512	10,883	7,498 @ 32%	27

39 Exchanges and 1 Toll Center

	COMMUNITY	EXCHANGE	ACCESS LINE	RESIDENTIAL
1	Window Rock	871/810	3,794	937
2	Tuba City	283	3,107	1,486
3	Shiprock	368	2,272	1,293
4	Chinle	674	2,253	1,016
5	Fort Defiance	729	2,016	912
6	Kayenta	697	1,650	791
7	Crownpoint	786	1,549	860
8	Ganado	755	832	555
9	Pinon/Cttnwd	725	537	287
10	Tohatchi	733	434	285
11	Tse Bonito	371	427	163
12	Navajo	777	364	284
13	Twin Lakes	735	335	289
14	Many Farms	781	332	241
15	Leupp	686	298	116
16	Dilcon	657	276	121
17	Teec Nos Pos	656	266	145
18	Shonto	672	257	151
19	Montezuma Creek	651	247	106
20	Tsaile	724	225	127
21	Greasewood	654	191	116
22	LeChee	698	186	163
23	Lukachukai	787	180	135
24	Rough Rock	728	161	52
25	Naschitti	732	156	127
26	Torreon	731	147	110
27	Monument Valley	727	142	60
28	Kaibeto	673	138	85
29	Black Mesa	677	123	46
30	Newcomb	696	117	74
31	Toyei	736	130	70
32	Rock Point	659	108	57
33	Pueblo Pintado	655	98	41
34	Wide Ruins	652	85	52
35	Red Valley	653	77	50
36	Toadlena	789	67	41
37	Dennethotso	658	62	34
38	Sanostee	723	43	20
39	Halchita	739	35	14
	TOTAL:		23,725	11,512
	PERCENTAGE:	100%		

03/15/99-lna

APPENDIX G4: Infrastructure Diagrams

New Mexico Local
Exchange Carriers (LECs)
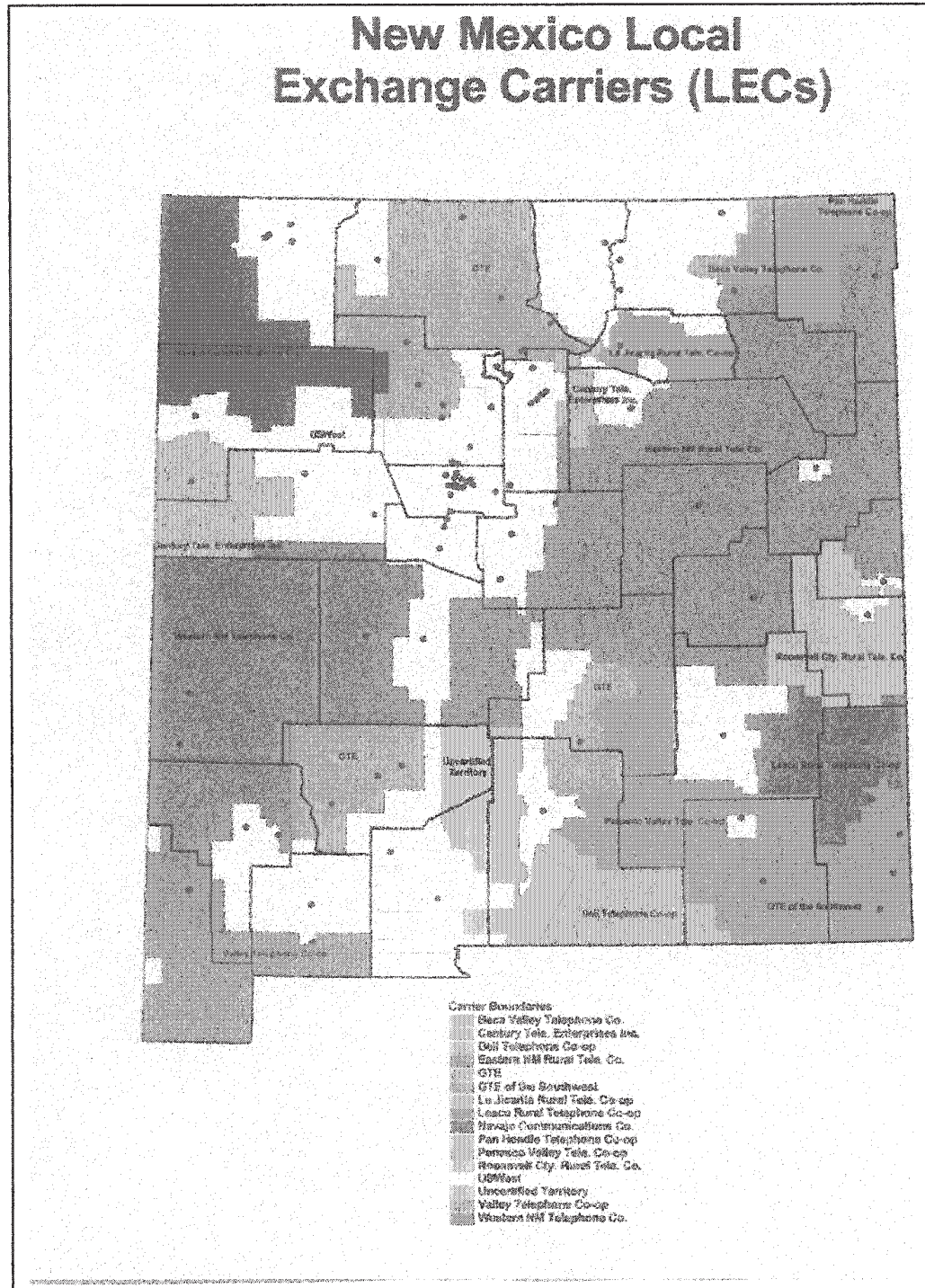
APPENDIX H: Local Infrastructure Issue

TO: Jean Whitehorse
FROM: Frances Vitali
RE: Internet Trial Period
DATE: April 7, 1999

Jean, as per our telephone conversation yesterday (4/7), here's my written plan.

Lake Valley Chapter House has had a computer installed by the New Mexico State Library for four years now without any Internet activity, serving as a "stand alone" computer. Because of the cost of activating a computer line and monthly recurring charges, the initiative to connect to the Internet has been delayed.

Lake Valley Chapter House is considering paying for the access and activation costs for the Internet through a private funding source as a trial period for a five months.

In this way, Lake Valley Chapter members can decide for themselves whether or not they would want to continue the Internet activity after this period of time. Such a plan would allow members of the community to experience firsthand what the Internet is and how it can be used to meet information needs. For members of the community who are already familiar with the Internet, they will have a closer location since they must travel to libraries or colleges in Crownpoint (37 miles away), Farmington (60 miles away), or Gallup (90 miles away) in which to access it.

Lake Valley Chapter House is a recipient of Gates Foundation's new American Indian Access for Technology computer workstation. The temporary stand alone computer is equipped with software programs for children, students, and adults. The intention of this project is to encourage community members to use the computer programs for their educational, recreational, personal use, mutually helping the Gates Foundation to better understand the information needs of this community.

The Internet and the Gates computer workstation would be complementary technologies for use by community members.

APPENDIX I1: Local Infrastructure Figures

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DRAFT INTERNET CONNECTIVITY WORKSHEET
FOR
LAKE VALLEY CHAPTER HOUSE
P.O. BOX 190
Crownpoint, NM 87313
505 786 2190

1. Total estimated population living in Lake Valley
   400-500 (numbers fluctuate)

2. Percentage of Navajo population
   90%

3. Number of voice (analog lines) for:

   Lake Valley Navajo School (Bureau of Indian Affairs) = 4
   (including Fax line; possibility of 3 more lines in the near
   future for the new school addition)

   Lake Valley Chapter House = 5 (including one Internet
   line)

   LaVida Mission (Seven Day Adventist School) = 3 (has
   Internet connection with NPWT as service provider using
   800# costing $54 monthly for 30 hours)

   Savage Trading Post = none (uses one cellular phone with
   long distance provider in Farmington. George Savage said
   that phone lines don't come across the bridge to his
   location.)

   Tsaya Trading Post = 1

   Public Pay Phone = 1 (opposite Tsaya Trading Post on Hwy
   371)

</div>

APPENDIX I2: Local Infrastructure Figures

4. Number of private lines in Lake Valley
   40-45 (per Citizens Communications)

5. Estimated percentage of Lake Valley residents without access to a private telephone in their homes.
   90%

6. Phone lines in Lake Valley Chapter House
   5 including one Internet connection

7. Cost of one phone line per month for Lake Valley Chapter House
   About $30 monthly; Internet connection $72 monthly

8. Funding sources for budget
   Navajo Nation

9. Estimated percentage of administration budget that is spent for phone/telecommunications costs
   About 60%

10. Estimated budget for Lake Valley Chapter House 1998-99 fiscal year
    $32,000.00

11. Any T-1, frame-relay or point-to-point lines in Lake Valley
    No

12. Wireless network in Lake Valley
    No

Report completed with the assistance of: Evelyn Slim (Lake Valley Chapter House Secretary), George Savage (Savage Trading Post), Francis Mike (Citizens Communications), Betsy Dennison (Lake Valley Navajo School)

APPENDIX J: CTI Internet Flyer

APPENDIX K1: Gates Foundation Local Coverage

What's next: *At the Daily Times* Computer labs in chapter houses? *9/3/99*

DIANA HEIL
STAFF WRITER

SHIPROCK — Why is IBM computer whiz Bill Gates the buzz word among chapter coordinators these days?

It all started last week at a picnic table along Narbona Pass. A representative from the Gates Library Initiative met with 17 Northern Agency chapter coordinators and Rep. Ray Begaye, D-Shiprock, to explore technology needs on the Navajo Nation.

The Navajo Nation opened its first large-scale public library in 1997 inside the new museum in Window Rock, Ariz. With the nearest public library 40 minutes away in Farmington, the Shiprock Chapter hopes to provide a computer lab for children. The New Mexico State Library supplied the first computer for public use, with Internet access, a little over a month ago.

Shiprock Chapter Coordinator Marilyn Garcia would like to get more computers if the Gates Foundation can help.

The remote San Juan Chapter House has a library section with one bookshelf. Computers would come in handy there, too.

"We clearly are concerned about giving technology access to these communities, but we don't have a program in place at this time," Bill and Melinda Gates Foundation communications manager Trevor Neilson said in a telephone interview from Seattle. "It was an exploratory discussion with members of the tribe."

The Gates Library Initiative is in the process of wiring every U.S. public library for the Internet. A software program for kindergartners through 12th-graders also is being designed.

Since public libraries are almost nonexistent on the Navajo Nation, the Gates Foundation may consider a way to provide the same services but in a different format here, Neilson said. Local chapter-houses could be the best venue for linking often isolated reservation communities, with the information highway, and thus the world.

Information: Gates Center for Technology Access, (206) 709-3300.

> **"We clearly are concerned about giving technology access to these communities, but we don't have a program in place at this time."**
>
> — *Trevor Neilson*

APPENDIX K2: Gates Foundation Local Coverage

Albuquerque Journal   FEB. 19, 2000

Tribes Tap Into Gates Technology Fund

BY DIANE VELASCO
Journal Staff Writer

The Bill & Melinda Gates Foundation, the nation's fourth-largest charitable fund, has turned its attention to bridging the digital divide for many American Indian tribes in the Southwest.

"We are starting in New Mexico and going clockwise," said Jessica Dorr, grant program manager for the foundation's new Native American Access to Technology Program.

The goal is to provide equipment and educational assistance to help tribes advance technologically. And that means different things to different tribes.

Santa Ana Pueblo, which already has a computer lab, will receive four new computers and other equipment. In contrast, the Navajo Nation's greatest need is basic phone lines.

"Each tribe is going to be funded in different ways," said Donna Pino, Santa Ana's director of education. "Some will be worked with in different ways because some have zero computers."

The Gates Foundation, with an endowment of $10 billion, focuses on health and learning around the world.

The access to technology program plans to aid all tribes in Arizona, Colorado and Utah, as well as New Mexico.

"We have been working with most pueblos and Apache tribes and will be offering

APPENDIX K3: Gates Foundation Local Coverage

Tribes Tap Into Gates Technology Fund

grants to some of them in the next couple of weeks," Dorr said.

Santa Ana has already qualified for a three-year grant for a total of $175,476 — which will pay for four computers loaded with software, a Web server, laser printer, internal building wiring and network hub. Pino said she expects the new equipment by April.

The gap between people who have access to technology and those who do not is most evident on reservation lands, Dorr said.

The program has its roots in the statewide partnership with public libraries the Gates Foundation started.

In 1998, the foundation gave a $1.25 million library grant to New Mexico.

Santa Ana Pueblo last year applied for grants through that program.

But the foundation quickly learned American Indian communities had different levels of needs and developed the new program, Pino said.

As part of the library program, communities originally had to qualify by population figures.

For example, Santa Ana's total enrollment is about 800. Pino said the pueblo couldn't qualify unless it offered to share computer equipment and services with others in Sandoval County.

With the Native American Access to Technology Program, the only criteria are tribes must want the equipment, be willing to maintain it and have people willing to learn to use it, she said.

The new program also provides greater flexibility in working with tribes, Pino said.

Dorr said computers provided by the grants would include software chosen for a variety of public users

including children, students, office workers and artists.

"We want to make sure (computers) are placed in an area where they can be used by the public," Dorr said. "We also have the goal of connecting them to the Internet."

Last week Dorr visited the Navajo Nation to assess its technology needs. The visit was a follow-up to Navajo President Kelsey Begaye's meeting in Seattle with foundation officials.

"When you look at those (Four Corners) states, the one (tribe) that comes to mind first is the Navajo Nation because it's so large and populous," Dorr said.

Although no grants have been made to the Navajos yet, Dorr said she is hoping the 110 communities will start applying for grants by spring. She is working with Teresa Hopkins, director of Navajo Division of General Services, to coordinate efforts with different depart-

ments and agencies.

Hopkins said the top technology need facing the Navajo Nation is infrastructure.

"Having clear telephone communications at all community levels is our top priority," Hopkins said. "The ability to connect communities with communities and communities with central agencies and government — that is lacking."

How much funding will be made available to the Navajos will depend on what each community applies for.

Dorr left the Navajo Nation headed for the Hopi reservation Friday.

"The Gates Foundation has been very encouraged with the visits we have started to do with the Navajo Nation and other tribes in the West," Dorr said. "We are learning about the user needs — what they would like to be able to do with technology and communication and the kind of training they need."
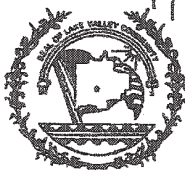
APPENDIX L1: "Encarta Encyclopedia" Re: Hogan

Lake Valley Chapter
Eastern Navajo Agency
P.O. Box 190 • Crownpoint, New Mexico 87313
Phone (505) 786-5846
Fax (505) 786-5647

Herbert J. Pioche
COUNCIL DELEGATE

Edison P. Tso
PRESIDENT

Tony C. Padilla, Sr.
VICE-PRESIDENT

Alta M. Dodge
SECRETARY / TREASURER

Etta P. Tso
COORDINATOR

Evelyn Silva
CLERK

Lake Valley Chapter House
P.O. Box 190
Crownpoint, NM 87313
505 786 2190

Microsoft Encarta Encyclopedia 99
Program Manager
One Microsoft Way   Redmond, WA
98052-6399

May 3, 1999

Dear Encarta Encyclopedia Program Manager:

Several residents of Lake Valley Chapter House, on the Navajo reservation in New Mexico, need to bring to your attention an inaccuracy found while using the Encarta Encyclopedia Deluxe 99 CD-ROM product.

Under "Navajo Reservation", a photo is shown with credit to Paolo Koch/Photo Researcher, Inc. The photo is not a picture of a traditional hogan as described, but in fact, a summer shade house. The pronunciation of hogan is not 'ho-gun' but 'ho-ghon' (with a more guttural 'g' sound).

For a more authentic hogan representation and pronunciation, we invite the Paolo Koch researchers and Encarta Encyclopedia consultants to Lake Valley, New Mexico, where knowledgeable community members and elders can assist with first hand, and therefore, accurate information for dissemination within Encarta Encyclopedia.

Under "Navajo Customs and Religion", a song described as a Corn Grinding Song is sung. Several community members are not certain whether this is indeed a corn grinding song. Again, we invite you to Lake Valley community where there are many members who could assist you in singing a corn grinding song, thereby documenting more accurate information.

APPENDIX L2: "Encarta Encyclopedia" Re: Hogan

Lake Valley Chapter House has been the recipient of the generous new Gates Native American Library Initiative Grant Program (Gates Center for Technology Access). With available computer software programs for children, teenagers, and adults to use, we were asked to observe how residents enjoy, use and recommend suggestions for these products Many people use and enjoy searching for information in the Encarta Encyclopedia with all its varied interactive, sound, voice, and Internet capabilities. In this way, we would be remiss if we did not bring this information to your attention.

We understand the responsibility and the integrity that Encarta Encyclopedia must maintain in presenting accurate information, and in this particular case, Navajo (Dine') people. We thank you in advance for eventually updating the above inaccuracies.
As a community, we would be happy in assisting Encarta Encyclopedia with needed information. Please feel free to contact Etta Tso, Community Service Coordinator, at Lake Valley Chapter House.

Sincerely,

Etta Tso
Lake Valley Chapter House Community Service Coordinator

Frances Vitali
Lake Valley Chapter House Gates Center Computer Monitor

APPENDIX M1: Navajo WWW Sites

The following Digital Diné Web Pages highlight a sampling of those who are telling their own stories and singing their own songs (Williams, 1995, p. 23).

Navajo Artists

    Randall Beyale -- Lake Valley Sculptor.

    Wayne Nez Beyale -- Painter

    Leonard Haskie – Master Jeweler

    Little River Simpson--Sandpainter

    The Gathering Place Navajo-Coop is a non-profit artist cooperative that showcases the work of local artists. Featured Navajo Artsists are:

        Ambrose Begay -- Painter

        Milton and Theresa Martinez -- Jewelers

        Fiona and Andy Tsosie -- Potters

        Grey Cohoe -- Painter, author of the Navajo Personality Test

        Crownpoint Navajo Rug Auction

        R. C. Gorman -- Painter

Navajo Authors

    Alonzo, Katz, Fishgrab, and Starks: <u>Green Eggs and Ham rez style</u>

    Esther G. Belin -- poet

    Shonto Begay -- Author, Illustrator, Storyteller

    Monty Roessel Author

    Luci Tapahonso -- Shiprock native, poet, professor, author, and speaker

APPENDIX M2: Navajo WWW Sites

Navajo Culture

       Stories of the artisans from 'Ndahoo'aah project

       The Navajo Creation Story

       Navajo Clan Names

       The Sacred Mountains

       Navajo Timeline

       Medicine Man Albert Laughter

Education

       The Navajo Sentence Machine by Craig Spooner

       ENAN BIA School Web Pages

       Saint Michael Indian School

       Chinle Unified School District #24

       Kayenta Unified School District #27

       Central Consolidated School District #22 -- Shiprock

       Rough Rock Community School

       Dine College

       Navajo Education Technology Consortium

       Navajo Uranium Miners Fight for Compensation

Diné C.A.R.E. – Citizens Against Ruining our Environment

APPENDIX M3: Navajo WWW Sites

Navajo Government

 Navajo Nation Official Home Page

 1868 Treaty between U.S. and Navajo Tribe of Indians

 Navajo Nation Flag and Great Seal

 The Navajo Nation Natural Heritage Program

 Navajo Nation Archeology Department

 Navajo Tribal Utility Authority

 Shiprock Agency, Navajo Nation

 Navajo Nation Government Book, 4th edition

 The Navajo Nation Film Office

Navajo Businesses

 www.navajoland.com: Navajoland Tourist Guide -- Alvino Sam,

 webmaster

 www.navajos.com: My World on the Web

 www.navajo2000.com

 The Navajo Times Newspaper

 Tseyi' Association of Canyon de Chelly National Monument Residents

 Coyote Pass Hospitality

Navajo Personal Websites

 Navajo People on the Net

APPENDIX N: Nageezi Report

Gates Center for Technology Access Report for August 26, 1999 at Narbona Pass & Nageezi

Jessica Dorr from the Gates Center for Technology Access returned to meet with chapter coordinators at Narbona Pass and Nageezi. I had the opportunity to accompany Jessica on her travels that day. Unfortunately Jean was sick and could not attend. Jean had specifically asked Jessica to return to meet with chapter coordinators during their meetings since so few attended the June 3 meeting in Crownpoint. Jean was instrumental in arranging for Shiprock chapters to have a chance to meet with Jessica.

The Shiprock community service coordinators scheduled their meeting at Narbona Pass picnic area. Narbona Pass is a beautiful area with lush pine trees and green growth covering the high hills. It was a Kodak moment (which we didn't capture on film) when a Gates computer was hooked up to the generator provided. Coordinators gathered round the back of Jessica's Ford Blazer to view the computer screen. A powerpoint demonstration and a short demonstration of the programs available were given as Jessica explained the Gates program and application process. New Mexico Representative Ray Begaye came and spoke to Jessica Dorr and the coordinators at their meeting.

We thanked Luther Livingston for hauling the generator up there for the demonstration. Clarence Hogan asked some very thoughtful questions about the software programs. He wanted to know if there were any programs for map-making since that is an important aspect of chapter house business-mapping out where people live. Hogan also asked about the availability of Navajo programs. Jessica said she would look into it further. Jessica mentioned there are not a lot -- The Navajo Sentence Machine--for one. The Encarta Encyclopedia has limited Navajo phrases and some information about Navajo culture.

In general, most coordinators seemed favorable about applying for the Gates computers in the future.

Jessica and I left before lunch and headed for Nageezi. Jessica again delivered her talk to the chapter coordinators at the Nageezi meeting. We did a powerpoint presentation as a visual aid and talked about the various programs available on the Gates computers. There were not many questions, however some people spoke individually to Jessica before she left.

The basic tenet of the program is to provide all 110 chapter houses on the Navajo Nation with at least 1-2 computers, a printer, and Internet connectivity. They will begin in New Mexico and then branch out to Arizona. They will treat each chapter on an individual basis. Applications should be available this Fall '99. Once applications are completed and sent to the Gates Center, someone from their office will come out to do a site visit to assess what is needed, especially for Internet connectivity. Some chapters may need help in paying for their Internet monthly fee and maybe Gates can help out in this area. Although it will be a flexible program with not many rules, one feature that remains firm is that Gates computers must be made available for public access, that is, to community residents.

All in all, it was a great day to spread the news about the promise of the upcoming technology and technical assistance in using it. The computers and software will be state of the art.

Respectfully Submitted,

Frances Vitali

Gates Pilot Project Site Monitor

Lake Valley Chapter House

APPENDIX O: Parents Learning Technology WWW Site