eRadio: Empowerment through Community Web Radio

Carla Gomez-Monroy

B.A., Computer and Administrative Systems
Universidad de las Américas, Mexico City (2001)

Submitted to the Program in Media Arts and Sciences,
School of Architecture and Planning,
in partial fulfillment of the requirements for the degree of
Master of Science

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

September 2004

Author

Carla Gomez-Monroy
Program in Media Arts and Sciences
August 6, 2003

Certified by

Walter Bender
Senior Research Scientist
Executive Director, MIT Media Laboratory
Director, Electronic Publishing Group

Accepted by

Dr. Andrew B. Lippman
Chair, Departmental Committee on Graduate Students
Program in Media Arts and Sciences

eRadio: Empowerment through Community Web Radio

by
Carla Gomez-Monroy

Submitted to the Program in Media Arts and Sciences,
School of Architecture and Planning on August 6, 2004,
in partial fulfillment of the requirements for the degree of
Master of Science at the
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Abstract

The eRadio project proposes to be an effective aid to increase interaction and reduce alienation among the members of dispersed communities by using a holistic approach to participatory and interactive web radio-production, with *ad hoc* methodology and *ad hoc* electronic tools.

Through eRadio individuals can contribute to a participatory process of community self-discovery, identification, and assimilation by voicing their concerns and views as well as by expressing aesthetic and cultural ways of rejoicing.

eRadio participators can trigger processes that may lead to the sustainability and empowerment of different segments of the dispersed community, and of the whole, by airing issues of collective importance and thus moving individuals, groups, and institutions to reflection and cooperation.

Volunteers become communicators that get others to tell anecdotes or discuss issues as they audio-record them. Then they creatively edit and transmit the finished audio pieces via the web and, if local conditions permit it, they radio broadcast it.

Interactive transmission from different sites is done by two or more segments of the dispersed community.

The project includes development of a hardware and software package that supports simple task-based production of digital audio files. The hardware is a simple computer called "VoxPopBox" which can be connected to a portable digital recorder in order to download audio clips that have been recorded in the field. The software is divided into four task areas which guide the user through gathering audio, producing a piece, publishing their work, and listening to other audio publications. Each box is connected to other boxes via the Internet.

This thesis describes the pilot implementation of the eRadio project with the Tulcingo community, which is a dispersed transnational community with a hometown in Mexico and about half of its population in New York City.

After two nine-day workshops, we produced and transmitted two radio programs, one from the town of Tulcingo and the other from the city of New York. As a result the Tulcingo community is interested in a long-term eRadio implementation. If done, Tulcingo would be an eRadio seed community from which other communities can bloom.

Thesis Supervisor: **Walter Bender**
Senior Research Scientist
Executive Director, MIT Media Lab
Director, Electronic Publishing Group

Thesis Committee

Thesis Supervisor
_____

Walter Bender
Senior Research Scientist
Executive Director, MIT Media Laboratory
Director, Electronic Publishing Group

Thesis Reader
_____

V. Michael Bove Jr.
Principal Research Scientist, MIT Media Laboratory
Director, Object-Based Media Group

Thesis Reader
_____

David Dockterman
Lecturer on Education, Harvard Graduate School of Education
Vice-President and Editor-in-Chief, Tom Snyder Productions

Thesis Reader
_____

Francis Pisani
Research Coordinator, Instituto Tecnológico Autónomo de México
Journalist

Acknowledgements

...little details make great stories...

... great people made me ...

I **dedicate** this **thesis**
to **all** my **family** and **friends**
for **who** they **are** and
for how **much** they **mean** to **me**.

Table of Contents

List of Figures

List of Tables

1. Introduction

—**I'm moving up North**.

—Up there, well I'll be.
Ain't you got your business?
Ain't you into sellin' pigs?

—**Was. Not no more. Don't pay**.
Last week,
didn't make enough for food.
And week before last,
all we ate was herbs.
People're starving, reverend.

Juan Rulfo

—Me voy pal Norte.

—¿Y allá pos pa que?
¿No tienes aquí tu negocio?
¿No estás metido en la merca de puercos?

—Estaba. Ora ya no. No deja.
La semana pasada
no conseguimos pa comer
y en la antepasada
comimos puros quelites.
 Hay hambre, padre.

[Juan Rulfo. *El llano en llamas*]

Carla Gómez Monroy

The eRadio project proposes to be an effective aid to increase interaction and reduce alienation among the members of dispersed communities by using a holistic approach to participatory and interactive web radio-production, with *ad hoc* methodology and *ad hoc* electronic tools.

Through eRadio individuals can contribute to a participatory process of community self-discovery, identification, and assimilation by voicing their concerns and views as well as by expressing aesthetic and cultural ways of rejoicing.

eRadio participators can trigger processes that may lead to the sustainability and empowerment of different segments of the dispersed community, and of the whole, by airing issues of collective importance and thus moving individuals, groups, and institutions to reflection and cooperation.

Volunteers become communicators that get others to tell anecdotes or discuss issues as they audio-record them. Then they creatively edit and transmit the finished audio pieces via the web and, if local conditions permit it, they radio broadcast it.

Interactive transmission from different sites is done by two or more segments of the dispersed community.

The project includes development of a hardware and software package that supports simple task-based production of digital audio files. The hardware is a simple computer called "VoxPopBox" which can be connected to a portable digital recorder in order to download audio clips that have been recorded in the field. The software is divided into four task areas which guide the user through gathering audio, producing a piece, publishing their work, and listening to other audio publications. Each box is connected to other boxes via the Internet.

This thesis describes the pilot implementation of the eRadio project with the Tulcingo community, which is a dispersed transnational community with a hometown in Mexico and about half of its population in New York City.

After two nine-day workshops, we produced and transmitted two radio programs, one from the town of Tulcingo and the other from the city of New York. As a result the Tulcingo community is interested in a long-term eRadio implementation. If done, Tulcingo would be an eRadio seed community from which other communities can bloom.

1.1 Problem

There is little interaction and a growing alienation between members of the dispersed community whose population is mostly concentrated in two distant locations, which are Tulcingo, Mexico and New York City.

1.2 Hypothesis

Given an appropriate 'technomethodology,' the use of electronic tools that facilitate participative radio production can be a significant aid to increase interaction and reduce alienation among a diaspora community.

1.3 Definition of terms

This section introduces the terminology used in the thesis.

Broadcast is radio transmitting.

Clip, **Gather**, **Produce**, (**Audio**) **Piece**, and **Publish** are terms that refer to audio.

> → **Clip** is an audio recording.
>
> → **Gather** is obtaining clips.
>
> → **Produce** is editing clips to achieve an audio piece.
>
> → **Piece** or Audio Piece is the creative modification, ornamentation, or montage of audio recordings.
>
> → **Publish** is exporting an AUP file to MP3 and placing it on the file system to make it accessible to certain users within the system, and once the MP3 is approved, it is posted on the web page for access to all Internet users.

Communicator is a person who is involved in journalistic, radio production, and web-casting and broadcasting tasks.

Dispersed community, also called diaspora or transnational community, is a community whose population is mostly concentrated in two or more distant locations due to considerable migration of its members.

Empower and **empowerment** refer to an increase in self-sufficiency capacity and in satisfaction.

Project may mean: (1) eRadio project, that is, the project as a whole; (2) a software label for a file that is being or has been work on, that is, an audio piece; and, (3) an individual user's project or audio piece.

User is: (1) a person who operates the electronic tools; (2) a person who, through somebody else, indirectly operates the tool; or (3) in the system, user is the owner of files.

Web-cast means to transmit and play at a certain time via de web.

     Carla Gómez Monroy

1.4 Framework

eRadio: empowerment through community web radio.

Ethnographical
:: scenario and present situation ::

to increase interaction and reduce alienation between a dispersed community--in Tulcingo, Puebla, Mexico and in New York City.

**[Chapter: 2
eRadio: an extended example]**

Theoretical
:: approach ::

Methodological
:: design ::

to foster transnational community planning and

**[Chapter: 3 Design ::
3.1 Logistics]**

to promote participative production of audio pieces.

**[Chapter: 3 Design ::
3.2 Methodology]**

Technological
:: design ::

to facilitate participative production and transmission of radio programs.

**[Chapter: 3 Design ::
3.3 Thechnology]**

Practical
:: pilot study ::

to test the proposed techno-methodology; and to learn from unexpected events for future implementations.

[Chapter: 4 Pilot implementation]

General
:: model ::

to participate in an inter-community process of self-discovery and empowerment. to adapt the methodology to different communities for them to appropriate it, and to empower, directly or indirectly, other communities.

[Chapter: 5 Evaluation and Discussion]

1.5 Background

> But quite apart from the dubiousness of its functions, radio is one-sided when it should be two-. It is purely an apparatus for distribution, for mere sharing out. So here is a positive suggestion: change this apparatus over from distribution to communication. The radio would be the finest possible communication apparatus in public life, a vast network of pipes. That is to say, it would be if it knew how to receive as well as to transmit, how to let the listener speak as well as hear, how to bring him into a relationship instead of isolating him. On this principle the radio should step out of the supply business and organize its listeners as suppliers. [Brecht, 1932. p. 52]

1.5.1 Radio as media

Communication is a basic instinct in human nature. The forms in which we communicate have not changed through time. Those forms—storytelling, dialogues, interviews, plays—are just adapted to the incoming media. However, radio still is, as shown in Figure 1-1, the medium with the highest penetration; it is a low-cost and easy-to-use information and communication technology and does not require literacy skills nor visual and tangible attention [Eltzroth, 2003], which means listeners can be doing other things with their eyes and hands, such as working, driving, and cooking.
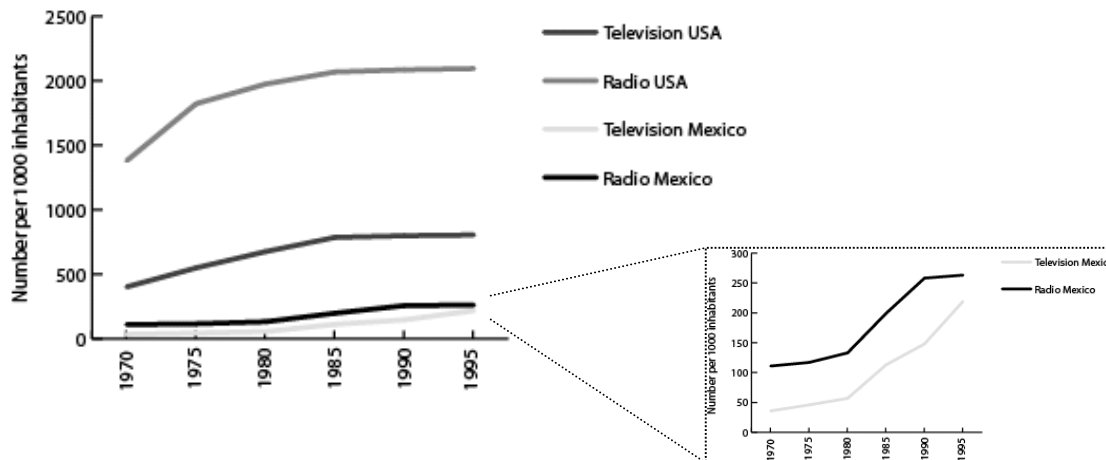
Figure 1-1. Radio and television receivers in Mexico and the United States 1970 – 1995
[data source: UNESCO Institute for Statistics, 1999; graphs: Welti-Santos, 2004]

Carla Gómez Monroy

1.5.2 Related applications

There are many interesting initiatives related to radio broadcasting and web-casting that can be grouped into six areas: community radio, radio broadcasting, Internet radio, active information production, sharing audio on the Web, and the broadcasting process.

Community Radio

Community Radio encourages rural communities to have a **social voice** and strength by being informed [Strömberg, 2002] and by being **active participators** of its production [Price-Davies and Tacchi, 2001]. "Radio is not only a mighty awakener of archaic memories, forces, and animosities, but a decentralizing, pluralistic force" [McLuhan, 1994. p. 306]. An ongoing ambitious initiative is "The Mali Community Radio" project that is about giving access to community radio stations within a country to exchange radio programming [Geekcorps site]. **Storytelling** projects are concerned with recording people's stories [Story Corps site; Radio Diaries site]. Radio is even used **to compensate for physical distance**, as the people from the Pacific Islands who utilize high frequency radio to send and receive e-mail [Hermida, 2004].

Relationship between radio broadcasting and Internet radio

The relationship between radio broadcasting and Internet radio is an open opportunity to exploit the advantages of each medium joined into a single force. This relationship provides advantages that include: (1) the generation of audio pieces in a different geographical location from where they will be transmitted; (2) the access to pieces by different radio stations, at any time; (3) the creation of bridges between distant communities to "voice their concerns and share information" [The World Bank, 2002].

Internet radio

Many radio stations, individuals, communities and organizations, such as National Public Radio, "From the Top," "Radio Chi: Un tributo a la radio Mexicana," "New California Media," and "Radio Arte" are involved in web-casting. The last three highlight **cultural values** [NPR site; From the Top site; Radio Chi; New California Media site; Radio Arte site].

Electronic processes for active information production

"Silver Stringers" and "Junior Journalists" are electronic publishing communities [Silver Stringers on-line publication; Junior Journalists publication; Smith, *et al.,* 2000].

Sharing audio programming on the web

"OneWorld Radio" is a website meant to **share** audio worldwide for and on radio development [OneWorld Radio site]. There is also a project where two radio stations exchange radio programs for **training**, though it seems that it is only a one-way production scheme, USA to Mongolia transmission, and the programs are translated [Knight International Press Fellowships site].

Technology to experience the broadcasting process

Hart was interested in having people from developing communities experience the whole broadcasting process, though he mentioned the necessity of a studio.

> Ideally, there may also be a studio to allow different parts to be mixed, music or sound effects to be added, short excerpts placed together in a rapid montage to make a broadcast flow more quickly, and fades to enable a smoother link between sections. [Hart, 1997]

The electronic tool, VoxPopBox, we designed for eRadio performs as an inexpensive studio that can handle what Hart considered 'ideal' and much more. The "WorldVibrations Radio Station" was announced to begin in January 2004. According to its developers, it "performs all of the functions of a professional radio station, offering a live or fully automated 'on-air' studio, a production studio, and streaming media encoding." However, it is very sophisticated and expensive [WorldVibrations site]. Twenty-two years ago, the Federal Communications Commission established the Low Power Television Service (LPTV) as a system for "local self-expression" in small communities. LPTV only reaches a local community and it is a one-way communication medium [FCC site].

1.5.3 Mexican indigenous community radio stations

Mexico is the only country that has a governmental indigenous national institute that has implemented indigenous community radio stations. Twenty are community-operated AM stations, with a broadcast range of 50 to 120 Km, and four are low-power FM stations operated by schoolchildren, targeting 5-million people belonging to 30 (culturally and linguistically) distinct ethnic groups. [Ramos and Diez, 2003; INI site] In some cases, messages from abroad are transmitted through these radio stations. However, two-way communication does not take place.

> Radio speaks in the language and with the accent of its community […] reflects local interests […] heritage and the development of the cultures, economies and communities that surround it. [Girard, 2003. p. 7]

2. eRadio: An extended example

Here I have settled
in the United States
10 years have passed since
I crossed as a wetback
papers not in order
I still am an illegal

I have my wife and my children
who I brought very little
and they have forgotten now
my Mexico so dear
that I never forget
and I can't go back

*what good is my money
if I'm like a prisoner
inside this great nation
when I remember, I even cry
'cause though the cage is golden
it still is prison

Oh!
my children don't speak to me
another language they have learned
and forgotten Spanish
they think as Americans
deny they're Mexicans
though my color they have

from my job to my home
I don't know what's wrong with me
'cause though I like to stay home
out to the street I almost never go
'cause **I'm afraid they'll find me**
and can deport me
* *
what good is my money
what good is my money

[Los Tigres del Norte
Song: *The Golden Cage*]

23

Aquí estoy establecido
en los Estados Unidos
10 años pasaron ya
en que cruce de mojado
papeles no arreglados
sigo siendo un ilegal

tengo mi esposa y mis hijos
que me los traje muy chicos
y se han olvidado ya
de mi México querido
del que yo nunca me olvido
y no puedo regresar

*de que me sirve el dinero
si estoy como prisionero
dentro de esta gran nación
cuando me acuerdo hasta lloro
de que aunque la jaula sea de oro
no deja de ser prisión"

Ay!
mis hijos no hablan conmigo
otro idioma han aprendido
y olvidado el español
piensan como americanos
niegan que son mexicanos
aunque tengan mi color

de mi trabajo a mi casa
yo no sé lo que me pasa
que aunque soy hombre de hogar
casi no salgo a la calle
pues tengo miedo que me hallen
y me puedan deportar
**
de que me sirve el dinero
de que me sirve el dinero

[Los Tigres del Norte
Canción: *La jaula de oro]*

> Kids are raised with the idea that one-day—soon—they will depart to New York. It's not a matter of going to the United States, but to 'New York.' Before finishing secondary school, some of them decide to risk their lives and borrow thousands of dollars to be taken over to the United States. [Tulcingo Talks, 2004]

2.1 A sketch of Tulcingo and of New York Tulcingans

Tulcingo de Valle, "Town of Emigrants" as the villagers regard their town, is located in central Mexico in the Sierra Mixteca mountain range at the foot of the state of Puebla, almost bordering the states of Guerrero and Oaxaca. The Mexican National Institute of Geographic Statistics and Informatics (INEGI) reported in its 2000 Census a population of 11,025 inhabitants, of which 5,875 were women [INEGI, 2000]. At present, it is difficult to estimate the current population because of the high emigration rate as well as the high rate of immigrants from nearby towns who come to Tulcingo attracted by the jobs abandoned by those that left and by the higher standard of living that now exists in Tulcingo.

In spite of the fact that Tulcingo is considerably influenced by the United States through mails, calls, and visits of those that emigrated, life in Tulcingo is easygoing, the pace calm. Like in other small Mexican towns, people know each other, at least enough to greet each other when crossing paths. Information is promptly disseminated through word of mouth, thanks to their efficient oral network. Agriculture and farming have their place in Tulcingo, but most people make a living by tending their own shops, stores, and other kinds of businesses or by working for others or for public institutions.

Tulcingo is a community whose inhabitants have migrated by the thousands to the United States, mostly to New York City [Guzman, 2001]. A reliable estimate is unavailable; according to one source approximately 10 000 inhabitants, half of its total native population, have left [Levine, 2001], while another reports that approximately 7 000 inhabitants, one third, have left [Borden, 2001].

Tulcingans leave their town looking for better opportunities; a voyage that for most has resulted in a better lifestyle for them as well as for their families. Nevertheless, back home emigration is causing a significant impact since many children are raised without one or both parents, lands are left without hands to work them, and local assets such as their natural resources, values, and traditions are losing their importance, while social, cultural, economic, political and technological changes are taking place. Surprisingly, fashion trends regarding some music, food, and speaking styles first reach a small and remote place like Tulcingo rather than Mexico's capital city. Bachata, a type of music from the Dominican Republic, was taken to

Tulcingo via the New York population, and it has largely replaced profoundly rooted salsa, cumbia and merengue.

From another standpoint, among the Tulcingan immigrant population in New York three very strong mother town customs remain; for example, they still love their unique food, give great importance to their mother, and remain close to their extended family. Such is the importance given to these three cultural elements that two types of new businesses emerged from them in New York. One is the *paqueterias* business which is a package delivery service through which thousands of kilos of all kinds of traditional food goods are sent to emigrants every year, ranging from raw seeds and beans to fresh handmade products, such as *tortillas*, *mole* and chocolate, and even commercial candy or canned goods. These *paqueterias* manage to import and export products that usually cannot be sent through other delivery services. Their other peculiarity is that commonly the people living in the United States are the ones who pay, whether they send or receive. The other kind of business is a non-official money exchange market with better services and rates than the official ones. Mother's Day (May 10) and Christmas season are their biggest days.

New York City is approximately 2 200 miles away from Tulcingo [Elliott, 2003] and about 3 500 US dollars away for those Tulcingans who can raise the money to pay for getting there illegally and who are willing to go through terrible hardships and to run the risk of losing all their money, their liberty during detention, and even their lives.

The US 2000 Census reports a population of 8, 008, 278 for the City of New York, of which 15.1% is of Hispanic origin of which 9.09 % is Mexican (260,889) [U.S. Census Bureau]. According to Mario Riestra, Coordinator of the *Oficina de Atención a Poblanos Radicados en el Extranjero*, the number of people from the state of Puebla living in the United States is between 1,000 000 and 1,200 000 of which 75% are from the *Mixteca* region and live in the North East, above all in New York and New Jersey or in Houston [Molina Ramírez, 2002]

New York, to the eyes of a newly arrived Tulcingan, is a 'rush, time is money' place where people are too busy and do not have time for relating with others from their hometown, and where people can become more distant if they do not participate in activities, such as going to certain mass services on Sundays or playing in an all-Mexican soccer or baseball league, and where people get lost in the subway, and where immigrants prefer to speak their mother tongue and struggle when English is needed. Mexicans have their local economy, like Don Felix's *tortillerias* whose target market is the immigrant population. "Through ethnic solidarity, immigrants create an internal economic logic that allows them to pull themselves up by their collective bootstraps"

[Smith, 1992, p. 40]. The famous "Tortilla King" started out by selling *tortillas* door to door and now has a *tortilla* factory in New York.

2.1.1 Language

Most Tulcingans in New York are fond of speaking Spanish, when among other Spanish speakers, and, under certain circumstances, are quite capable of fluently inserting words or phrases of one language into the other while speaking. Many children may speak fluent English when among English speaking natives or even when among their siblings or friends, yet switch to Spanish when addressing their parents or certain elders. Most Tulcingans still preserve behaviors and customs of their home town to different degrees, but there are those who have almost completely been absorbed by a more American lifestyle. In fact, some of the new generation Tulcingans do not know how to speak Spanish well or prefer not to do so anyway.

These linguistic phenomena are complex, not completely understood or satisfactorily accounted for. There are many variables at play, such as, the conflicting necessities of preserving one's ethnic identity while striving for a functional integrative identity at school and at work. One useful explanatory dichotomy that may be applied here is that of strong social network ties *versus* weak social network ties, where strong ties resist changes or act towards maintaining native ethnic, cultural, linguistic features while the weak ties allow for adopting new ways or even bringing them forth [Milroy, 1987a].

2.1.2 The status of Tulcingo

The economy in Tulcingo—where the currency is either the *peso* or the dollar—is principally trade. The people that do go back usually set up a business based on what they learned to do in their American jobs. Some emigrants' reason for not going back is that there is nothing for them to do in their town. It used to be the case that mostly men emigrated, but since a few years back, many young women are doing so too. Moreover, where families are concerned, it used to be just the man of the family who emigrated and sent money back, whereas now complete families are emigrating.

Another reason for not going back to their hometown is that getting a satisfactory migratory status in the U. S. A. can be a difficult matter for these illegal migrants. It takes at least a couple of years for some, while others apparently never manage it. Therefore, many of the people who leave do not go back in the short-term, not even to visit. Most of those that leave do not go back to stay; however, most of them do intend to go back to live in their hometown someday; at least they were determined to do so when they first left. Few go back to stay, but there are those that save money to go back home to visit their families in December, to take part in festivities, to

carry out wedding or baptism ceremonies, or to celebrate their own birthdays. Afterwards, they return to the United States. Some do it the way they left for the first time, illegally. However, in a town with such high levels of emigration, taking the risk of illegally crossing the border is commonplace.

The Internet is available in this community, but it is a novel phenomenon, used mainly by the youth. The telephone is the main medium that keeps emigrants in touch with their families and relatives living in their hometown. Emigrants are the ones who place the calls since it is cheaper from the United States than from Mexico. Tulcingans in Mexico usually call only when money is needed or to give important family news. Emigrants call their families relatively often to tell them about their life in New York, but they always try not to worry the family. When the emigrant is going through a rough moment, he or she will say so but in a way that will not sound too bad.

In Mexico, people are somewhat aware that life as emigrants in New York, at least during the first years while they get adapted and learn the language, is hard, but they do not have a clear picture of what that 'hard' means. In contrast, the new generations born in the United States do not know the culture, the traditions, and, sometimes, not even their parents' town.

> A young person, especially a man, feels more uncomfortable saying that he has never been in the United States than admitting that he did not finish junior high school. [Tulcingo Talks, 2004]

2.2 Two places, one community

A considerable number of inhabitants of the town of Tulcingo emigrated voluntarily, little by little, over several decades, to the United States, especially to New York City where most of them are now living, mainly in The Bronx, Queens, and Brooklyn. The exodus continues.

In spite of the size of New York City and of its intangible complex forces that pull relatives, friends, and acquaintances away from each other, there persists substantial contact among a number of Tulcingans; that is, they get to see, visit, and help each other from time to time if not frequently. Also, there are periodic larger-scale social, religious, cultural, and athletic activities. These as well as other activities are not exclusively made by or meant for Tulcingans because they naturally tend to intermingle with other Mexicans and Latinos. Tulcingans mix mainly with people from the state of Puebla, their own home state. A Mexican patriotic festivity reaches massive proportions: *5 de Mayo*, yearly celebration commemorating the Battle of Puebla fills the streets of New York with thousands of Mexicans, Latinos, and people with all kinds of backgrounds. This year's celebration reached 800 000, as estimated by Carmelo Maceda, the organizer. [Maceda, 2004]

Most New York Tulcingans belong to a low socio-economic stratum. However, some are doing well, with good jobs or businesses of their own, and a few are doing extremely well, because of great jobs or great businesses of their own.

In general, Tulcingans in New York feel extremely fond of their hometown. Typically they have close blood relatives still living in Tulcingo. Some do not, but still feel for Tulcingo. There was, however, one who said "What do we want to do radio with Tulcingo for if we do not have family there anymore?" [Tulcingo Talks, 2004]. In spite of the differences and difficulties pointed out, Tulcingan residents of New York City constitute a social entity.

2.2.1 The Tulcingo community profile

The Tulcingo Community can be considered a diaspora community because:

The community is now divided into two main populations.

→ Both groups of people were born in Tulcingo but are now geographically separated, see Figure 2-1.

→ Both groups of people are native speakers of Spanish and use it.

→ The Mexico group lives in its small hometown, Tulcingo, and is a closely-knit society.

→ Those residing in New York City emigrated from Tulcingo and maintain considerable intra-group relationships, but constitute a loosely-knit network.

→ At a small scale, individuals and families have kept in contact and helped each other across the international border.

→ At a large scale, the town of Tulcingo population, as a whole, and the Tulcingan New York residents, as a whole, have kept in contact, cooperated, and helped each other across international borders.

Nevertheless, there is little socio-cultural interaction between these two groups that live in different countries, yet, in many ways, they constitute a single community.
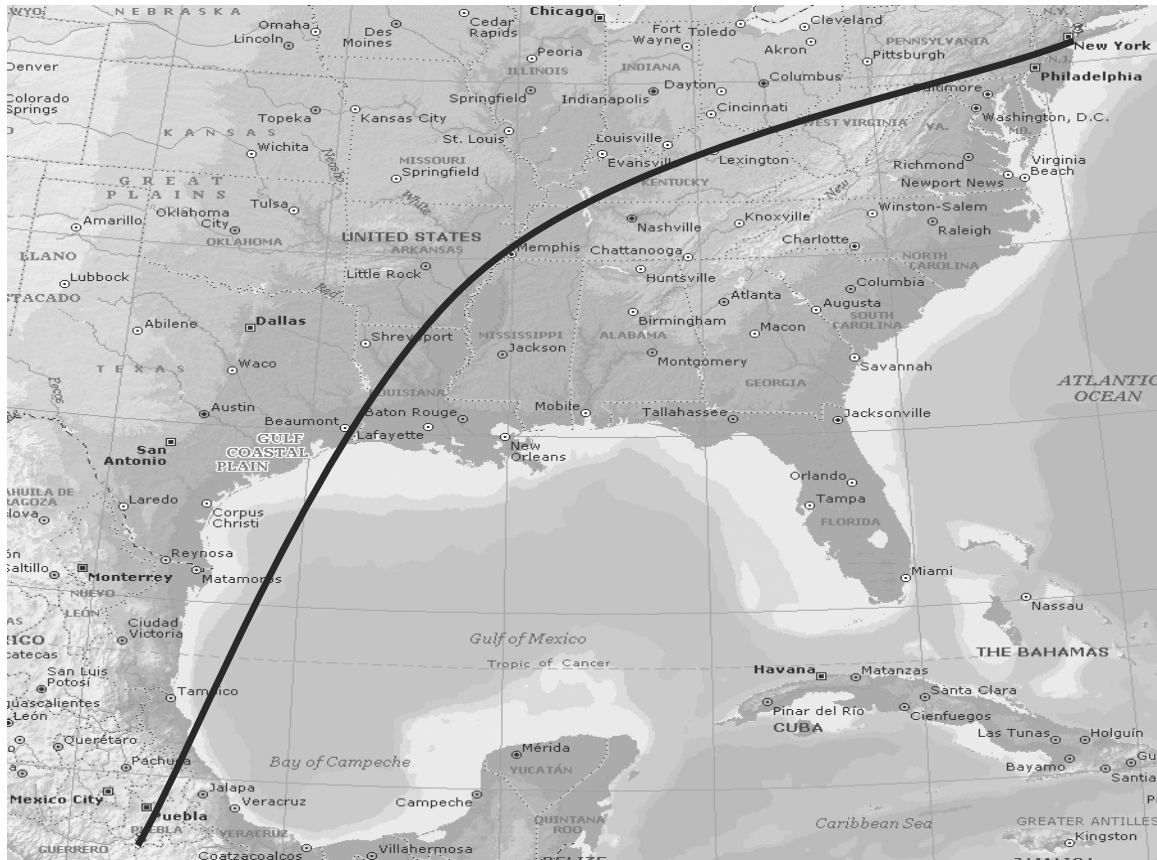
Figure 2-1. Distance between Tulcingo, Puebla, Mexico and New York City, USA
[source: Encarta]

2.2.2 The need and the means for interaction

The eRadio project is a two-way, web-radio production model, where both groups record relevant content, edit it, and transmit it to each other in an attempt to bridge the socio-cultural interaction gap. When they were told of the possibility, both groups were interested in the project, even if only as a pilot implementation.

Each group would need a set of electronic tools meant for web-radio production. Two components make up the set: one is a special computer, the VoxPopBox that facilitates the production and transmission of radio programs. Users who have had no experience in computing or audio production are able to do so by using an interface with a small set of simple visual symbols. The other tool is a portable, digital audio-recorder (the iRiver H120).

2.2.3 The project: aim and framework

The pilot implementation took place on March 20 – 28 in Tulcingo, Puebla, Mexico and on April 17 – 25 *Casa Puebla* in New York City. My original plan was the following.

Both groups would first learn how to handle the electronic tools and to carry out production, creation, and elocution tasks as well as some journalistic skills to elicit from members of the community relevant content, such as anecdotes, opinions, music, news, and fun talk. Members of the community had to cooperatively participate in the production of radio programs that they recorded, edited, mixed and transmitted. In March, the Tulcingo audio pieces were going to be transmitted through the Internet for the people in New York and on FM radio for those in Tulcingo. In April, the New York audio pieces would be transmitted via Internet to Tulcingo were they would be retransmitted on FM radio for the larger population to listen to them.

Both groups would listen to each other's programs, initiating an interactive process expected to bring forth integration and oneness—in spite of geographic and cultural separation. This experience could lead the community to want to implement the project or a variant of it on a longer term basis with periodic transmissions, seeking greater community involvement and, in the long run, community empowerment that could be seen in decisive community participation in establishing, pursuing, and achieving goals beneficial to each of the two groups and to the community as a whole.

2.3 The radio production workshop

In Tulcingo, a group of people organized where the training was going to take place, where the Internet connection was going to be made, when there would be group meetings, and when the final transmission was going to be made so as to notify people in New York and in town.

2.3.1 Doing radio

As it turned out, the Tulcingo group had little time for group sessions and absolute reluctance to touch the editing tool. Notwithstanding, I introduced them to the basics of radio production. They were given explanations of relevant concepts and shown how to use the recorders to make an audio piece. They did learn how to handle the recorder and gained skill in its use throughout the week. And they also learned and did the editing, with me as the operator of the editing tool.

2.3.2 The first stages of producing an audio piece

They had to plan and design their audio piece, decide on the topic, characters, background sounds, format, questions or scripts, and other elements proper to creating an audio piece. Three of them worked individually and the other two as a duo. Together, they established a schedule for using the tools, depending on the peculiarities of each audio piece. On their own, they started gathering audio-content using the recorder, the microphone and the headphones. The duo decided to do a piece titled "What kermesses [fairs] were like in the 50s," so they interviewed an elderly

man who told them all the details about kermesses in those days. The duo had planned their questions in advance, which made for a structured interview, and the way they posed the questions helped make the responses sound like vivid recollections. All of which contributed to turning it all into a storytelling audio piece, rather than an interview.

2.3.3 Transferring the audio onto the tool

When communicators were done with their content gathering, we logged into the VoxPopBox and, with a USB cable, plugged the recorder into it. We waited a few minutes until the red light of the recorder stopped blinking and the icons of the recordings appeared on the left side of the 'Gather' task-area. The system automatically transferred all the recordings from the recorder to the VoxPopBox's environment, leaving the recorder empty for the next user.

The VoxPopBox computer was custom made and the iRiver H120 recorder was customized to provide the maximum simplicity in audio production for the users and purposes here described. Within the VoxPopBox, on the left side of the 'Gather' task-area (the Clips Manager), users can select 'listening', 'renaming', 'deleting', and 'importing' their recordings (clips) into a project. Once they have listened to their recordings and decided which ones they are going to use for their final piece, they can create, on the right side of the 'Gather' task-area (the Projects Manager), a 'New_Project.' After naming their new project, users select and then drag-and-drop their clips into the project. (In the Projects Manager, they can also delete projects.) Once they finish the drag-and-drop of all the clips they intend to use, they click on the new project and the system imports the project into an AUP sound waveform and places each clip on a different track. In the meantime, it switches from the 'Gather' task-area to the 'Produce' task-area.

2.3.4 Editing

Once in the 'Produce' task-area, users can listen to their project. While listening, they should keep an eye on the seconds counter and take note of (Log) the relevant parts of their recordings. After having mapped their recordings on a piece of paper, the users have to decide on: (1) the structure of the piece; (2) how to grasp and keep the interest of their audience; (3) where to begin and where to end; and, (4) where to add effects, if needed. Then the users go through the unpredictable doing, listening, and redoing process called editing, which involves cutting, pasting, deleting, adding more clips and effects onto the audio piece, and saving. The editing process takes time, because users have to listen carefully—critically—to every single part they edit, paying attention to the waveforms, doing, redoing, touching, and retouching. Little by little they get used to it, and little by little it becomes a more intuitive process. At first, the idea of turning an hour-long interview into a less-than-ten minute piece sounds like an easy undertaking,

but after hours of structuring, extracting, and putting things together, they realize that it can be time consuming. If the users wanted to add more clips, they could always click on the Gather button in the Task menu-bar to go back to the first Task area, where the drag-and-drop clips into Projects was simpler. The menu bar is a switch for the four Task areas: Gather; Produce; Publish; and Listen.

2.3.5 Publishing

The network functionality of the 'Publish' task-area has not been fully implemented; I will however describe it as envisioned.

When users think that their project is finished, first they save it and then click on the Publish button of the menu bar. The system then converts the sound wave form into an MP3 file to make it a shareable audio piece. In the 'Publish' task-area, users choose whether or not they want their piece to be published, that is, to make it available to certain other users and eligible to be made accessible to everybody on the Internet. They can always 'un-publish', edit and re-publish their pieces. When the pieces are published, the system places them in a database belonging to Public Radio Exchange (PRX), making the pieces available for the other VoxPopBoxes connected to the Internet. PRX is a non-profit organization through which member radio stations in the United States have access to these audio pieces that were web-cast in New York. The 'Publish' task-area records which radio station downloads it and when it is going to be played. The system can upload the pieces onto the server overnight and keep a status of the process for the dial-up connections. In the 'Listen' task-area, once they have been published, users can see and listen to the audio pieces made by the other users; that is, by both the local communicators (e.g. Tulcingo) and the remote ones (e.g. New York).

Creators help each other when one is faced with any kind of difficulty, whether it be the content or an artistic aspect of their piece or the handling of the recorders, by providing feedback as to content or style and by explaining or showing how to do something. Once all the pieces of the group are done they decide how the transmission is going to be structured, who is going to open and who close.

In Tulcingo, they test the air transmission by connecting the sound output of the VoxPopBox to the FM transmitter that is connected to the antenna. Later they get in touch with the people in New York to agree on the last details. Meanwhile, people in New York have been going through the same process on their side. Since broadcasting the entire program on the air in New York is expensive, the transmission was going to be over the Internet. The New York group got together at *Casa Puebla* in Manhattan Island for the participative transmission, where they would all listen

together over loud speakers. They had previously promoted the event among people of the Tulcingo-New York community.

2.3.6 On air

The day of the transmission, everybody was excited about together transmitting a program that was going to be heard in their town, in the Manhattan locality, and everywhere in the world over the Internet. Once the transmission started, it was very moving for people at both sites to hear the voices of people they knew transmitted over public media, to learn about traditions that do not exist any more, to listen to a Tulcingan recalling the challenges he faced when he crossed the border as a 14-year old and in charge of his 11-year old sister.

Downtown Tulcingo, stores, shops, and taxis were tuned into our radio frequency, playing it so loud that passersby could listen to the program. The transmission was on the air. Phone calls started ringing in the house across the street from where we were broadcasting (since we were using our phone line for the dial-up Internet connection). Callers wanted to send greetings to people, and they congratulated the communicators and all those who had made the project possible. Some of the storeowners who had their radios playing loud wanted to advertise through our transmission big savings at their stores. From New York, all the messages were arriving by email.

The communicators and the audience were satisfied with the first transmission and started throwing out ideas about making improvements, adding more audio pieces, getting more people to participate, establishing topics for each program, and having a regular schedule.

3. Design: eRadio

Frida **Kahlo**.
Self Portrait on the **Borderline** Between **Mexico** and the **United States**
Henry Ford Hospital, Detroit, USA, 1932.

An expression of Frida's situation:
stuck in a foreign country and disconnected from her homeland.

"One of the most important and most overlooked development assets is
organization—the ability to mobilize and organize for collective action."
[Narayan and Shah, 2000. p.7]

This chapter describes how I first envisioned the eRadio project, and it is written accordingly. The description includes the design, the methodological approach employed, and the electronic tools used in the pilot implementation. My objective was to design a methodology that could trigger the generation of ideas in a target community as well as to specify the features needed in electronic tools that could be custom-made or bought to best fit that methodology. However, fostering participatory community involvement was the key design challenge.

Section 3.1 describes the logistics of the workshop, Section 3.2 the proposed methodology, and Section 3.3 the technology implemented.

3.1 Logistics

Logistics deal with each part of a process, resources needed, timing, and integration of all the parts. In the case of the eRadio workshop, logistics meant making decisions regarding the community, participants, workshop, program, and timely deployment and installation of tools.

3.1.1 Community

Although the eRadio project could be applied in different settings, it was meant to be for communities with high levels of migration. My plan was to work with an underserved community in Mexico that had many of its migrants localized in one city within the United States that needed to increase their transnational interaction. eRadio could help boost their existing network. Since there exists a migrant pattern of moving in blocks, a relationship network is established and "it has a tendency to self-sustain, in such a way that the migrants from the same place or region of origin practically monopolize access to specific work market segments" [Duran, 2000. p. 257 (my translation)].

The notion of community is not restricted by space or time. "The concept of community concerns a particularly constituted set of social relationships based on something which the participants have in common—usually a common sense of identity." [Marshall, 1998] Another definition of community is "a body of persons […] having a common history or common social, economic, and political interests" [Merriam-Webster, 2000]. Individual members or groups of a community may be scattered geographically and may have different times or schedules, all of which can be more of a motivator and a *raison d'être* for eRadio than an insurmountable deterrent. Therefore, reuniting diaspora communities was an attainable ideal. Expected benefits

were initiating or strengthening the sensation of being with the community, belonging to the community, and sharing with the community.

I planned to carry out the workshop in Spanish since it was the mother tongue of the Mexican target community. This way, one benefit of the eRadio project was that oral language could be used for the transfer of knowledge in the training workshops and in the resulting audio pieces. Since dissemination is through verbal communication via web radio or radio waves, it could also be used to reach people who speak indigenous languages and to preserve those languages that were in danger of extinction. This is specially important in Mexico because according to "The most conservative estimates […] ten percent of the country's population is indigenous—twelve million indigenous people belonging to nearly sixty ethnic groups with diverse languages and cultures." [Ramos and Diez, 2003. p. 174] Moreover, since the methodology and the tools would be oriented to people within a wide range of ages, no familiarity with computers, and little or no reading and writing skills, almost anybody would be able to participate.

3.1.2 Participants

A participative and involved community is a community that has participative and involved individuals who have different responsibilities, who perform different tasks, who do their individual share with regard to a given project or in different walks of life in their community.

The notion of community participation and involvement should not be seen quantitatively. Even though quantity matters, quality is what makes the difference, as will be seen by the results obtained in the town of Tulcingo and in New York City.

In this project, volunteers[1] who go through the radio production process will be called communicators. They can be diverse and have different backgrounds and characteristics as long as they have the willingness and time to work on the eRadio project.

"Letting communities of people of different ages, backgrounds and literacy skills create and critique" [Ananny and Strohecker, 2002. p. 2] will avoid the not-inclusion of the poorest of a community when giving to a community access to technology [Gumucio, 2003].

3.1.3 Workshop

I planned workshops of six to ten communicators per location, aiming to get at least the same number of audio pieces. A brief description of the main components of the workshop follows as well as the expected requirements for each component.

---

[1] Volunteers signed an Informed Consent form approved by the MIT Committee On the Use of Humans as Experimental Subjects.

Location

The location of the Operational Center, the name given to the location where the electronic tools were going to be installed, had to be accessible to everybody in town so that communicators could use the electronic tools, get advice on the processes, work cooperatively, and have a place to work on their projects.

Scheduling

The scheduling of the workshops was planned to introduce the communicators to the methodology and tools in a period of nine days. Two weekends would have fixed schedules for whole group activities, and five weekdays would be for individual or team tasks at schedules of their convenience. The last Sunday of the workshop would be for transmitting the final audio pieces produced by the communicators at one site to those at the other.

Sessions

The sessions, as mentioned above, would be of two kinds: the group sessions and the individual sessions. In the group sessions, cooperation, apprenticeship, and guided participation would be fostered. The individual sessions would be more a matter of participatory appropriation.

Group sessions

The group sessions were meant to be eight-hours long with a one-hour break for lunch. The first weekend was allocated to introduce the project and to do team, radio production. The introduction would be given by explaining the concepts, giving a demonstration on how to use the tools, and by playing some audio piece examples. The hands-on team, radio production sessions were for the participants to create a simple audio piece by handling and experimenting with the equipment (discovery method).

In the second weekend, the group would listen to everybody's pieces and make comments on them, in case some improvement could be done before the transmission. Participants had to also make decisions about the structure of their program (sequence of the pieces, introduction and closing), and its transmission (coordinate with the remote communicators for setting the timing and dynamics of the transmission).

Individual sessions

The objective of these sessions was to get the participants to work on their own, producing the content and doing the recordings and the editing. However, guidance would be at hand, face to face, via Internet and, possibly, by telephone.

3.1.4 Radio programming

Radio programming deals with time, length, and frequency of transmission; topic, content, number, and sequence of the audio pieces; as well as the media used. The program can be a once-only or periodic transmission with fixed time and day. The pilot implementation was planned as a two-way, once-only transmission; that is, produced and transmitted in two directions, once each, first from Tulcingo to New York, and then from New York to Tulcingo. The two eRadio pilot-implementation programs would have an opening, a body comprised by the audio pieces and a closing, and they would have no fixed topical area.

Media

Content in the project is of great importance if we take into account Marshall McLuhan's insight: "The message is the media." [McLuhan, 1994, p.7] The Tulcingo community would surely be impacted by listening to a loved one, two-thousand kilometers away or by learning of the success of a former neighbor. As a result, eRadio could pave the way for community-to-community communication, surpassing person-to-person telephone conversations. The combination of telephone, radio, and Internet would connect two distant sites and FM radio would transmit within a site.

Radio/Internet is more than its communication potentials [Girard, 2003]. In this project, it would also be an audio piece repository of the community affairs and history.

3.2 Methodology

The eRadio project makes flexible use of principles, strategies and techniques taken from various fields of knowledge in order to achieve its aims. Educationally, the project adheres mainly to the 'constructionist' approach [Papert, 1993a] and to 'inquiry' and 'discovery' approaches [Dewey, 1916; Postman & Weingartner, 1969]. Strategy-wise, it adheres mainly to 'ethnomethodological' strategies and techniques [Garfinkel, Lynch, and Livingstone, 1983] and to 'technomethodological' precepts [Dourish and Button, 1998].

eRadio methodology

The aim was to develop a community-specific, on going, long-term cyclic process of self-discovery and empowerment, by bringing together electronic tools, applications, procedures, and persons and making use of inquiry, discovery, and ethno-methodological strategies and techniques to get the community to generate content—a voice—and to web-cast it so as to multiply participation, generate more feedback, and further the iterative process.

The methodology to be followed was that of a collaborative project that encouraged members of the community to participate in the production of radio programs that would be recorded, edited, and transmitted by them. A selected group of voluntary participants would learn to handle the electronic tools and to carry out production, creation, and elocution tasks and to elicit from members of the community relevant content, for example, anecdotes, interviews, music, news, and fun talk. Both groups would listen to each other's programs, initiating an interactive process that could lead to integration and empowerment in spite of geographic and cultural separation.

Therefore, as mentioned earlier, the project's methodology should lead to an effective correlation of the main elements it would deal with: people, audio pieces, processes, radio program, the workshop, and the tools.

In eRadio, the software, process, and workshop would be structured the same way; that is, going through four stages, gather, edit, publish, and listen. However, even when the process established the standard stages, it would be flexible enough to let communicators learn by themselves and to let them contribute to improving the process, considering that "the critical content of any learning experience is the method or process through which the learning occurs." [Postman and Weingartner, 1969. p. 19]

Progress was also expected in terms of handling of the tools and of communication skills, and consequently of passing on this know-how to others in the future. One community can directly or indirectly motivate other communities to initiate their own process of self-discovery and empowerment as well as to participate in an inter-community process of learning from and of supporting each other. Communicators were expected to learn from observing and listening "with the intent concentration and initiative, and their collaborative participation is expected when they are ready" [Rogoff, *et al.,* 2003. p. 176] to propagate the knowledge and skills they learned to others through apprenticeship or following the same method as was used with them.

Generating self-discovery

The purpose of this project was to get individuals and the community to discover who they are, what they have, and what they can do; that is, to generate content, (something to say, messages) to develop a voice, and to broadcast or web-cast the content within the community and to other communities, multiplying participation, generating feedback, and furthering the iterative process.

To accomplish this self-discovery, I considered the inquiry approach would be the most efficient means to get their intuitive knowledge to surface.

3.2.1 Radio production process

My goal was for communicators to assimilate the radio production process by observing, listening and experiencing, with minimal verbal explanations. [Papert, 1993a; Rogoff, *et al.*, 2003].

This section is concerned with the procedural aspects that take place during the creation of an audio piece. The main process consists of the four stages that are explained below: gather, produce, publish and listen. However, some intermediate steps are the links between one step and the other, such as idea generation, where communicators imagine their final product, they write down the script or the interview questions, and design audio ambience or effects.

The Gather stage

Gathering is the stage at which communicators obtain content in the form of an audio recording; that is, interviews, voices, events, and live effects. Of all the possible kinds of recordings, I will describe two: one is interviewing and the other is live sound effects.

Interviewing

Interviewing starts with asking the right question. A question has to consider the way of thinking of the potential interviewee [Freire and Faundez, 1989. p.34]. The question has to help the communicators develop and internalize the concepts to take them through a "testing and verifying, reordering and reclassifying, modifying and extending process […to transform the subject into] an active producer of knowledge." [Postman and Weingartner, 1969. p.59]

Before interviewing, and other gathering techniques, permission to record should always be requested. The United States' and Mexico's laws require prior consent of at least one party of the conversation. [RTNDA site; CDDHCU site, 2004]

Live sound

Live sound effects give context and orientation. The communicators have to try to make the audience experience what is being transmitted, for the same reason an audio piece has to have only the right amount of live sound effects, recording sounds of what is being talked about; e.g. when talking about typewriting, we may be hearing a typewriter in the background. [Hilliard, c2004]

Tools technique

It is convenient to know about and develop recording technique before setting out to do an interview or to record an event that may not take place again.

Microphone. Richmond recommends that the communicator should have full control of the microphone at all times and that it has to be close to the mouth of the person that is speaking (approximately 6 to 13 inches away, as shown in Figure 3-1) [Richman, 2000].

Figure 3-1. Microphone position
[adapted from Glass, 1999]

Headphones. Wearing the headphones while recording — and listening attentively and critically— enables the communicator to react early to different situations and avoid or quickly correct undesirable sound levels or irreparable noise. Richman recommends wearing headphones during the whole recording session [Richman, 2000].

Examples and counterexamples. Communicators should listen to examples of good recording practice, but also to several instances of disastrous results due to lack of constant attention, such as fingers rubbing the microphone, or the hum of a refrigerator.

Maintaining awareness. Communicators should acquire the habit of maintaining awareness, while recording, of volume levels, of audio quality, of sources of noise and, most important, of whether the recorder is recording. It is also wise to test by recording and playing back before initiating the interview but also immediately after finishing, just in case another take is necessary—and while everybody is still there to redo the recording.

The Produce stage

The *Produce* stage is when steps are taken to transform a field audio-recording into a worthy audio piece. Communicators usually spend most of their time on this phase. *Produce* mainly involves logging, composing and editing.

Logging

Logging consists of taking notes on a piece of paper of the location of the relevant parts of the recording. While listening to a recording composers 'mark' the 'in' point (beginning) and the 'out' point (end) of each selected part.

Composing

Composing refers to making decisions regarding their piece in terms of structure, sequence, tone, style, and background audio. The reordering and reshaping of the elements are mapped on a piece of paper by using the names of the parts and the edit points and written indications.

Editing

Editing is making with the recording the audio piece that was envisioned. It usually involves performing the following operations with audio chunks: move, cut, paste, copy, insert, and delete until we get a final audio piece. This part takes time, patience, and creativity.

The Publish stage

The 'Publish' stage is sharing the produced audio piece with others. Sharing can be done locally or remotely. Locally, it can be heard on the VoxPopBox and via FM/AM radio broadcast. Remotely, it can be via Internet, or by playing it on the remote VoxPopBox.

The Listen stage

'Listen' is here defined as paying attention to what was transmitted and providing the communicators who authored it with useful critique or feedback. [Rogoff, *et al.,* 2003. pp. 177-179] Ideally, listeners will close this proposed radio production cycle by becoming producers. The cycle starts again when the creators of the audio pieces and the listeners switch roles.

3.2.2 Audio piece

> "[Words] existed in a context, through a striking tale that easily accrued associations and depth." [Kohl, 1967. p. 25]

Audio pieces are the final product of the whole audio production process. There are many elements that the communicators of an audio piece have to deal with beforehand, consciously or unconsciously, directly or indirectly, in order to visualize what is to be done. The most important of these elements are briefly explained in Appendix A: Composition Elements.

3.3 Technology

The design and implementation of the technological tools considered the characteristics of the target users and the methodology previously described; this approach is called 'technomethodology' [Dourish and Button, 1998], which is particularly useful in this project due to the nature of the community.

The assumed characteristics of the target users were people coming from developing communities with little or no literacy nor computer skills. [Disessa, 2001]. For that reason, the system had to be reliable, inexpensive, plug-and-play, illiterate user-friendly, and culture adaptable with modifiable icons and translatable to their language, in case the user had to learn to recognize a few words in the menus. Given the characteristics of the eRadio technomethodology,

a set of existing devices and applications were selected, adapted, installed and integrated to each other to obtain the expected functionality and interface.

Following is a detailed description of the design and implementation of the system. The description begins with the hardware components. It then goes on to the system of the main hardware components, described from the perspective of user interaction. Then, it narrows down to the System and user interaction and finishes with the Base software components and the Software integration.

3.3.1 Hardware

Hardware requirements

The eRadio Project requires basically two electronic components. One is an inexpensive dedicated computer capable of receiving, storing, editing, organizing, and transmitting audio data. It should contain special user-friendly software, capable of being handled by users with no literacy and no computer skills. The other component is a portable digital audio recorder that can also be easily handled by the users described above. It should be able to handle large amounts of audio as well as computer connectivity features for downloading and uploading.

In the sections that follow, after specifying which equipment was utilized, we discuss desirable requirements as well as decisions made.

Hardware utilized

The eRadio hardware is a VoxPopBox minicomputer, an iRiver H120 digital encoder, a Sony ECM-MS907 stereo microphone, a pair of Sony MDR-V300 Studio Monitor Series Headphones, and a Veronica 1 watt FM radio transmitter coupled to a 5/8 Wave Colinear Vertical Antenna (CFM-95SL). The transmitter and antenna are optional, for example, for a rural community with no local radio station or no access to it.

VoxPopBox

The 'VoxPop' in VoxPopBox stands for the Latin etymology *vox populi* which literally means voice of the people [Merriam-Webster, 2000], and 'Box' is because it is a box, measuring 147mm (H) by 210mm (W) by 210mm (D), shown in Figure 3-2.

(a)   (b)
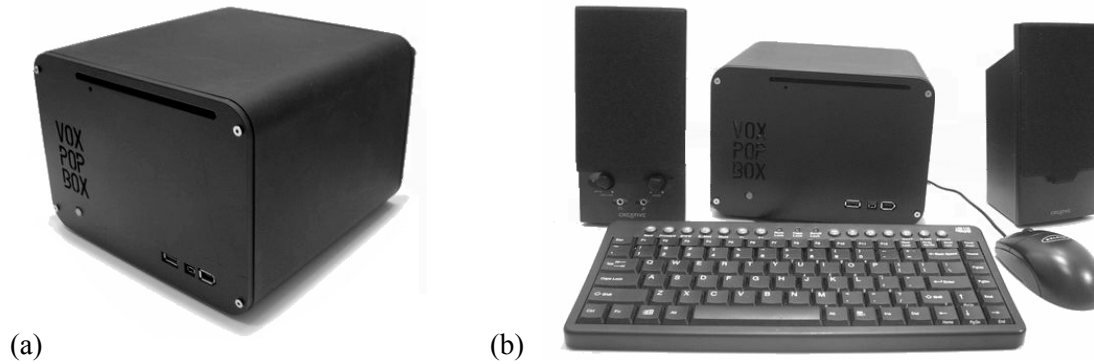
Figure 3-2. (a) VoxPopBox; (b) VoxPopBox and peripherals

The VoxPopBox[2] is the core hardware of the Tulcingo-NewYork eRadio implementation. When outfitted with the eRadio software, it becomes a user-friendly, task oriented, broadcast-ready, data-and-audio electronic processor, and relatively small and economical. It consists of a mini-ITX board, housed in a portable simple case, which has only the essential external ports. [http://mini-itx.com/] These specifications are particularly well suited for deployment and use in rural communities, but most Intel-compatible PCs with similar specifications could be used. The box is fitted with a minimum of off-the-shelf peripherals. Its main purpose is to simplify the making of small audio pieces, easy downloading, uploading, recording, editing, encoding, archiving, and transmitting (via Internet or radio) small audio pieces and audio projects or radio programs. The peripherals of the VoxPopBox include keyboard, mouse, microphone, headphones, and a pair of amplified speakers. It can display via a computer monitor or a TV set (PAL or NTSC) for a minimal deployment.

The portable digital recorder

In order to gather audio from the community, users need to become un-tethered from the VoxPopBox. We chose a digital audio recorder, which could store a large number of high-quality recordings in the field but would allow the user to return to the box and easily connect the recorder for seamless download to the box. The iRiver H120 is one of the few portable digital audio recorders which has large storage capacity, records to professional-grade audio formats, has built-in Automatic Gain Control for simplified recording, and provides a standard USB Mass

---

[2] **The technical specifications of the VoxPopBox are the following:** *Processor*: VIA 1GHz Nehemiah C3 Mini-ITX MII; *Memory*: Crucial 512MB DDR400 Memory; *Hard Drive*: 80GB Ultra ATA/133 7200 RPM Hard Drive; *Video Card*: Integrated VIA Unichrome AGP graphics with MPEG-2 decoder; *Sound Card*: VIA Vinyl Six-TRAC 5.1 Surround Sound; *CD/DVD ROM drive*: DVD/CD-RW combo drive (QuickSlot tray loading system.); *External Connectors*: 3 x USB 2.0, 1 x Firewire (6-pin), 1 x Mini-Firewire (4-pin), 10/100 Ethernet, 2 x PS2, Serial, Parallel, VGA (video), Audio, S-Video out, SPDIF (digital audio)/TV-out; Consumer Infrared for PC control. [http://hoojum.com/html/product_cubit3.htm]

Storage Device interface. It can store up to 20 Gigabytes, which translates into hours of recordings. It encodes directly to MP3, which is commonly supported and allows additional storage capacity and faster transfer speeds through compression. The MP3 of human voice at 44.1 Khz sample rate, 128 Kbps, 16-bit sample size is nearly indistinguishable from uncompressed audio and is approximately one twelfth the size. This format is commonly used in professional radio production. The automatic gain control eliminates the often-confusing step of adjusting levels while recording. The recorder's USB Mass Storage Device interface allowed us to easily implement the downloading logic on the VoxPopBox.

3.3.2 System and user interaction

This section describes some characteristics of the system in relation to the user, that is, system and user interaction. The tool guides the user through a process, which consists of intermediate tasks which can be started, stopped and resumed at almost any time. The goal was to guide the user through what is largely a linear process while recognizing that the creative process, mental models, and outside factors do not necessarily proceed directly from beginning to end in a single limited amount of time. Thus, the interface was divided into four Task areas represented by a bar of visual symbols which flow linearly, but can be selected at will. Within each area, the user is presented with simplified tools for completing the task at hand. Users can become comfortable with one area before moving to another, ideally mastering all areas and eventually switching between them with ease. The interface elements are designed for the user with little or no reading skills and with no experience in using a computer or in audio production.

In this first stage, we had limited iterations in which to refine the tool, but a long-term goal should be to integrate lessons learned from user experience to increase overall usability.

The one step away feel

The tool is designed in such a way that novice users feel that they are one step away from their desired end, and they never get lost or forget what to do next. That makes the system easy to learn [Joshi and Rasai, 2002]. At all times the user can see their current status directly because it is visually connected to the end goal in the Task menu-bar.

User management

As with the radio production process, within the system users have different profiles. These profiles are set when first assigning users into the system, and from then on they can access their personal profile with a user name and a password. There are three different profiles. First, everyone can be a communicator if they carry out gathering, producing, or publishing tasks. The

published audio piece is only accessible to the communicator who authored it and to the editor. Second, the *editor* is the user in charge of administrating the system locally and of publishing the reviewed and accepted audio pieces on the editor's system. In fact, there can be a 'remote' editor or even a bilateral editorial committee composed of 'locals' and 'remotes.' In this case, publishing means that the audio piece is not just on the local VoxPopBox, but also on the 'remote' editor's system. The editor is the publisher and can also be the broadcaster. Third, the *broadcaster* has access to the pieces that were already reviewed and OK'd for broadcasting and is in charge of broadcasting them on the Internet. All user files—clips, projects, etc.—are stored separately on the file system for each user. This way, each user has his or her own unique environment, which can be left off and resumed again and again, allowing multiple users to operate (non-concurrently) without interfering with each others' tasks.

User experience and Task areas

This section describes the interaction of the users with the electronic tool while they go through the radio production process. The system, mirroring the radio production process, has four Task areas that represent the stages of the process, that is, *Gather*, *Produce*, *Publish*, and *Listen*. Each profile is a fixed Task area accessed by a Task menu-bar. The Task menu-bar also has four buttons, as shown in Figure 3-3. When the users switch between Task areas, a label indicates what stage of the process they are in.
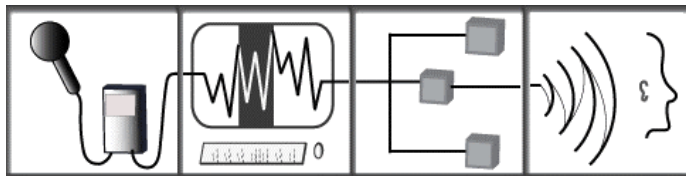
Figure 3-3. Task menu-bar

The modified Digital recorder

The primary drawback of the iRiver H120 was its complicated user interface. We solved this problem by altering the controls to remove any unnecessary functionality. We removed the jog handle (for multi-function control) and a mode button. After the modification, users could only record, pause, stop, and play back the last recorded clip. This effectively locked the audio format settings and prevented users from entering the confusing menu system. In Figure 3-4 we see the recorder before modification.

Figure 3-4. The iRiver H120

The modified recorder has three buttons: Play to turn it on and playback the last recording; Record to start, pause, and resume recording, and to switch from play to record mode by pressing the button for a second; and the Stop button is to stop play and record modes and to turn off the recorder by pressing the button for a second. The more advanced functions of the recorder still can be carried out through the remote control.

To record, the user plugs the microphone into the recorder, turns both of them on and starts recording. Once the recordings are done, the recorder is connected to the VoxPopBox with a USB cable. In the following section we see what happens next.

The VoxPopBox

The 'Gather' task-area. The moment the recorder is connected to the USB slot of the VoxPopBox, the system detects the recorder and automatically reads the audio files and places them in the 'Gather' task-area, and removes them from the recorder, leaving it empty for the next user. The 'Gather' task-area, as shown in Figure 3-5, is divided into two panes: Clips and Projects. In the Clips section the users see the clips (recordings), which can be listened to with a single click. The user can drag any number of clips onto any project in the Projects pane, 'adding' the clips to the project and preparing the user to edit that set of clips in the 'Produce' task-area. More details regarding the 'Gather' task-area are given in section 2.3.4.
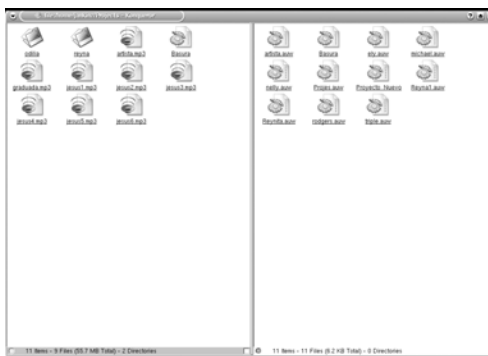
Figure 3-5. *Gather* task-area

Users can click on any project to be switched to the *Produce* task-area with that project open for editing.

The 'Produce' task-area. The 'Produce' task-area is displayed as audio waveforms, where logging and editing have to be performed.

The waveform

With practice, users develop the ability to distinguish broad categories of audio by looking at the visual waveforms. Thus, the editing process can be done more rapidly because visual searching makes finding the wanted parts easier and faster, without having to re-listen to the whole piece.

As shown in Figure 3-6, a flat line is silence, small waves may be noise or someone breathing, irregular waves of greater amplitude probably are people speaking, and long periodical and condensed waves are likely to be certain kinds of music.

| silence | noise/breathing | speech | music |
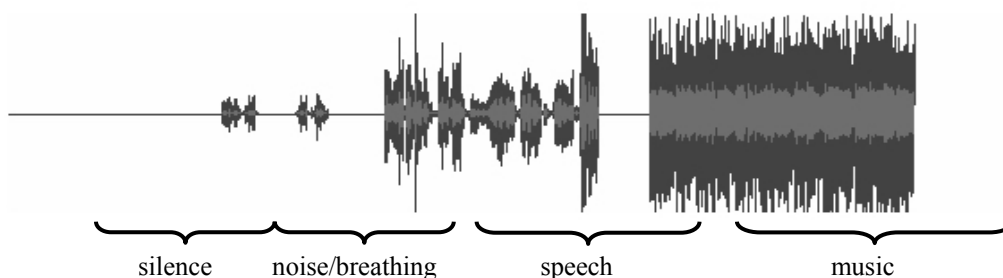
Figure 3-6. Audacity waveforms

Producing

Producing is to edit a recording by modifying it, reordering it, and ornamenting it in order to achieve a desired audio piece. This is done by 'selecting' with the mouse the chosen part of the waveform. Then by using the iconic editing tools, users, as they listen, can do the following one-step basic editing tasks known as play, move, copy, cut, paste, delete, and insert. Complex tasks of more than one step are also possible, such as increasing or reducing volume levels and doing fade-ins and fade-outs by using Audacity's 'Effect Menu.' In future implementations tasks of this kind will be activated via an iconic menu. Some or all of the operations can be done on different tracks and then put together onto one or two tracks for mono or stereo. At any stage copies can be made of parts or the whole track to experiment making variations of the same track. Upon completing an editing step users can listen repeatedly to verify results. There exist convenient "Undo"

and "Redo" features. At regular intervals and when the user exits the Task area, the project is saved invisibly.

Figure 3-7. 'Produce' task-area (Audacity)

The 'Publish' task-area. The 'Publish' task-area lists each of the user's projects and allows the user to choose whether or not to publish each one of them. It allows users to enter with the keyboard an optional description of a project and press "publish." At that time, the system creates a single MP3 file from the multi-track project. The original project file is not deleted so that the user may return at any time to perform more editing and then re-publishing. The MP3 file along with its description is called a 'piece' and is treated like a "final cut." Pieces are accessible, through the 'Listen' task-area, to their authors, their fellow users, and 'Editors' and potentially to the world.

Depending on how the system is configured, publication may trigger distribution to other VoxPopBoxes, which are networked to the local box. This distribution may occur during off-peak hours to minimize network load and cost. As explained later in this section under "Networking-publishing," in the pilot implementation, audio pieces were manually synchronized so that people at both sites could listen to them.

The 'Listen' task-area. The 'Listen' task-area was implemented in limited fashion for the pilot, but is envisioned as structured in logical trees in a file manager. The local and networked sites are represented as VoxPopBoxes at the top level, with users underneath them. When clicking on a site, it allows reading piece descriptions and listening to published pieces. One can envision a network of interlinked VoxPopBoxes, each of which can listen to the published content of the others. In the broadcaster role, the VoxPopBox audio output is connected to the transmitter or broadcasting console.

3.3.3 Base software components

Our goal was to start with 'off the shelf,' free, open-source components and modify or configure them to collectively fulfill the requirements of each Task area. This allowed us to start with established software packages and then remove or abstract away unnecessary or distracting elements, a strategy similar to our recorder hardware modifications. Because most components were under a GNU Public License or similar license, the final eRadio software package mostly consists of patch files, configuration files, and instructions. In most cases these are necessarily open source. These files are put together at: http://eradio.media.mit.edu/download.html.

Some components performed poorly in the Tulcingo workshop, so we replaced, modified or debugged them for the New York workshop, as noted in corresponding sections.

Operating system and Distribution

We required an open operating system that had components we could easily modify, powerful audio support and tools, and compatibility with Mini-ITX motherboards and on-board components. We ultimately selected Linux because of the many compatible open-source software packages that supported our needs, like graphical file browsing, waveform audio editing, and virtual desktops. We then chose the Knoppix GNU/Linux distribution because it auto-detects the Mini-ITX hardware well, provides a simple 1-CD install, is based on the well-maintained Debian GNU/Linux distribution, and inherit's Debian's 'apt-get' tool for easy addition of software packages. Knoppix comes with KDE 3, and using 'apt-get' we were able to easily add Audacity, apache, hotplug and several other packages we required.

The Window system and Window manager

Our goals with the Graphical User Interface (GUI) were to make it simple and intuitive, presenting the user with only the functions required to complete the task at hand. In order to represent the four Task areas, we required four different full screens, each with their own stateful interfaces that could be switched between at any time (Task areas with their Task menu-bar are shown in Figure 3-8).
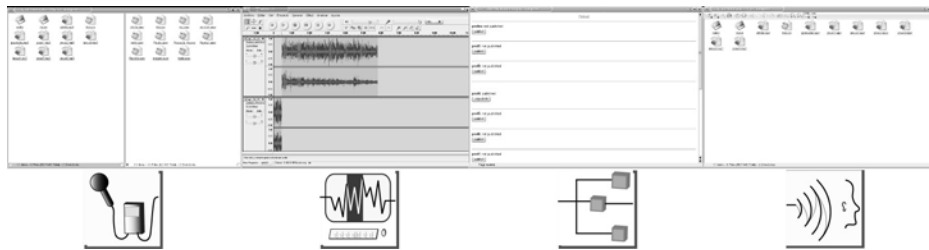
Figure 3-8. Windowing System

We chose the X Window System ("X11") [http://www.x.org/], and used the XFree86 implementation [http://www.xfree86.org/]. When combined with a window manager, X11 provides "virtual desktop" functionality. This allowed the system, upon user login, to pre-create four independent screens which could then be populated with various software components for each Task area.

We initially chose Windowmaker [http://www.windowmaker.org/] for the window manager. Windowmaker is configurable through files, is relatively free of visual "clutter," out of the box, and can be made to perform virtual desktop switching from other applications. Windowmaker does not have a rich Application Programmer's Interface (API) or event system for starting application windows on particular virtual desktops. This required some non-standard techniques for pre-populating and switching between desktops, which proved unreliable in the Tulcingo workshop.

For the New York workshop, we re-evaluated window managers and chose the KDE desktop environment [http://www.kde.org/] which provides a window manager and several other integrated applications. KDE provides an easy and reliable interface for opening application windows on different desktops and for triggering other events.

Graphical file browser

For the 'Gather' task-area, we needed basic file browsing functionality, including click-to-open, drag-and-drop, and rename. KDE includes a versatile application called 'Konqueror', which can function in file browser mode and can be configured to show multiple "panes" and to hide advanced functionality [http://konqueror.kde.org/]. We configured Konqueror to hide all toolbars and show two panes: one containing "Clips" (MP3 files) and one for "Projects" (Audacity "aup" files). The Konqueror window was also "maximized" to fill the whole Task area (except for the Task menu-bar), as shown in Figure 3-5. When users single-clicked on Clips they would play using the program 'x11amp', but any MP3 player could be used. We created unix shell scripts for performing simple tasks like "create new project" or "delete clip" and added these to the panes. The scripts were triggered through click or drag-and-drop and are discussed in section 3.2.4.

Waveform audio editor

'Produce,' the most complex and time-consuming Task area for users, required a visual representation of all clips in the project along with simple tools for combining them into a completed piece. Multi-track waveform-based editing remains the dominant paradigm for software audio editing but most software packages are complex and professionally oriented. We

chose 'Audacity', a mature open-source digital audio editor. [http://audacity.sourceforge.net/]. Audacity is relatively simple compared to most digital audio editors. However, tasks such as "saving," "opening," and "importing" require menu-selection, hierarchical browsing and file system comprehension which users could not be assumed to have or learn. Thus we made several modifications to the Audacity source code (described in section 3.2.4) to allow for "signaling" from other components to trigger these actions in Audacity when appropriate.

Audacity's limited workload capacity

During the Tulcingo workshop, Audacity slowed to an almost unusable state while editing some pieces. We realized that this only occurred when working with very large files, in this case files of multiple Gigabytes. In the two weeks between the Tulcingo and New York workshops, we obtained some explanations. The three main causes for system slowdown are fragmented file storage, audio data memory and temporary file overloading, and re-sampling. Schmandt points out that editing produces "many small snippets of sound that result in fragmented files" [Schmandt, 1994. p. 319] and that fragmentation by itself slows down the system. Richard Ash, a developer of Audacity, says that every time a track is played back, Audacity loads the audio data from the disk and that it re-samples it [Ash, 2004]. Sipitakiat adds that higher resolutions and stereo mode also increase the size of the temporary files generated by Audacity [Sipitakiat, 2004].

Avoiding Overload

The first lesson learned is to work with as few tracks or clips as possible and to remove unused portions during editing. This reduces audio data load on memory and on disk. Second, when recording, we must remember to press "Stop" at natural stopping points in order to create multiple files which are smaller and less processor and memory intensive than the single large file created if we only press "Pause" at those points. Third, recording in mono will halve file size and is often indiscernible from stereo when recording the human voice. Finally, the recorder should be set to record at the same sample rate as the Audacity project, avoiding a re-sampling step. One could also reduce sampling rate or sampling size, but this would risk significant audio quality degradation.

Task menu-bar

The Task menu-bar is a tool for navigating between Task areas, which also provides a reference point for the user's current location in the piece creation process. It is positioned in a fixed location and persists across all Task areas.

When using Windowmaker, we chose the open-source application 'AcidLaunch', which allowed us to define iconic buttons via an XML configuration interface. These buttons switched

between Task areas. The AcidLaunch-based Task menu-bar is shown in Figure 3-3. However, the AcidLaunch and Windowmaker combination did not enable us to ensure that the bar would be placed in the same location on all monitor configurations, causing significant malfunctions and usability problems, as was the case in Tulcingo.

Since our target users were perfectly literate, for the New York workshop, we used the built-in KDE text-based Task menu-bar, which did not incorporate the iconic buttons but was significantly more reliable. A reliable icon-based Task menu-bar would have fully met the initial project goals, and should be considered for future work. The KDE-based Task menu-bar is shown in Figure 3-9.

Figure 3-9. Text-based Task menu-bar

Publishing interface

The publishing interface was minimal for the workshops. It provided a list of current projects with "publish" or "unpublish" options. We used a script written in 'PHP: Hypertext Preprocessor' language running on a local Apache web server to provide this interface and to operate on the user's files (http://eradio.media.mit.edu/download.html). If several boxes are networked, when one user checks the "publish" option for a given project, PHP tells Audacity to export a final MP3 of that project and place it on the file system, making the file accessible to other users of the same box via their 'Listen' task-area and to the users of the other boxes (details in Audacity Modifications in section 3.3.4). In the workshops, files were manually made available via the Internet on PRX, but we envision these operations taking place automatically in the future. And future work should also include a more rich set of metadata for completed pieces.

Listening interface

We again used Konqueror for the Listening interface, which consisted of a simplified file browsing window. When several boxes are networked, users can single-click on any other box within their network, then single-click on any user associated with one of those boxes, and then single-click on any of that user's published pieces. This causes the audio file to play with 'x11amp,' a popular open-source MP3 player. Several improvements can be made to the Listening interface to ensure that network-box-user-piece browsing is more intuitive, but the fundamentally hierarchical nature of graphical file browsing served well for the purposes of this study.

User management and Login window

Users need to be able to log into the system in order to work on their content uniquely. When no users are logged in, the system presents a Login Window. KDE and Window Maker each provide a simple login interface with fields for username and password along with a visual identifier. All user administration was done using the built-in Linux user management system.

Networking–publishing

Each individual box requires a network connection to the other boxes for publishing beyond the local site. Although this functionality was not entirely functional for the workshops, it was implemented in limited form. The Tulcingo box was networked via a sporadic dialup connection and the New York box was networked via DSL.

In order to allow people at each site to listen to pieces from the other, directories containing published pieces on the two boxes were occasionally 'pushed' from one box to a central Internet host. These files were then 'pulled' by a user at the other site, at which point the files are said to be 'synchronized.' We chose the software package 'rsync' [http://samba.anu.edu.au/rsync/] to provide this functionality. Rsync performs integrity checksums to guarantee that files are transferred successfully and can operate recursively on directory trees. This allowed us to synchronize the files manually overnight to make them available to the other site during the day.

The Public Radio Exchange (PRX) is a non-profit web service, which allows members to post pieces for listening, review, license, and download. PRX servers provided the central Internet host for file synchronization and allowed us to manually make the pieces available to the broader public and broaden exposure of the published pieces [http://prx.org/].

Networking – for administration

When the boxes are at least sporadically accessible via the public Internet, administrators are able to access the boxes to perform tasks such as user adding, system administration, and file synchronization. This is performed via the encrypted Secure Shell protocol (SSH). We chose the OpenSSH suite [http://www.openssh.com/] because it was freely available and easy to install via apt-get.

3.3.4 Software integration

Several areas of functionality required more in-depth software integration. These efforts are described below and specific implementation files are provided via the web site (http://eradio.media.mit.edu/download.html).

Audio file downloading from recorder

The project required a mechanism to trigger a seamless download of audio files from the digital recorder without any user intervention other than plugging the recorder into the box. In order to achieve this, we used the linux-hotplug package [http://linux-hotplug.sourceforge.net/] which allowed us to write custom scripts to perform actions every time the recorder was plugged in. Upon being plugged in, the recorder is recognized as a USB Mass Storage Device. This triggers a custom script to mount the recorder on the file system, move all audio files to the 'clips' subdirectory in that user's home directory, and unmount the device. At this point, the Konqueror-based 'Clips' pane of the user's 'Gather' task-area shows the new files along with any files that were already there. The user is then free to begin editing, using all available clips or return to the field to gather more.

File structure

Each user's files are stored in a separate 'home' directory on the Linux file system. Their files are further subdivided according to type. Within each home directory is a 'Clips' directory, which contains any raw MP3 audio files gathered by that user. When the user creates a new project, a complete small metadata file is placed in a similar 'Files' directory and Audacity creates '.aup' files (AUPs) to hold project status and corresponding '_data' directories with all audio data. An '.auw' file (AUW) is also placed in a 'Projects' directory and is the user's single method for interacting with these various project files, as described in "Scripting" below. When a project is published, a single MP3 file is created and placed in the user's 'Files' directory.

Scripting

The following scripts written in Perl and Bash were used for the following tasks and are available from the web site (http://eradio.media.mit.edu/download.html):

→ In each 'projects' directory:

- *New_Project* prompts the user for a project name and then creates a new AUP, data directory, AUW, and metadata file.

- *Trash* allows users to drag an AUW onto this icon to delete the AUW.

- *AUW files* can be clicked on in order to open the corresponding AUP file in the Produce task-area. Also, by dragging a clip (MP3) onto the AUW, the user can import the clip into the corresponding AUP, making the clip available for editing within the project. AUW files accomplish this by sending to any open Audacity process signals to save and quit

before opening others. AUW files also call Audacity with our custom options in order to allow clip importing when opening a project.

→ In each 'clips' directory:

- **Trash** allows users to drag a clip onto this icon to delete the clip.

→ In /etc/hotplug/usb/

- **usb-storage** contains all the logic for mounting the recorder as a USB Mass Storage device, moving the audio files to the 'clips' directory, and un-mounting the device.

Audacity Modifications

→ "no check" option: We modified Audacity to accept the command-line option "-nc" that would prevent it from checking whether another Audacity process was running. This allowed us to call our customized Audacity binary in order to perform operations such as "import" without generating errors if another project was simultaneously open.

→ "import" option: We modified Audacity to accept the command-line option "-i" followed by an MP3 filename and an AUP filename. This would cause Audacity to open the AUP and import the MP3, making the MP3 available for editing within that project.

→ "export" option: We modified Audacity to accept the command-line option "-e" with filename after it. This would cause Audacity to open the project named, export it to an MP3, and quit.

→ "save" signal: We modified Audacity to listen for the signal SIGUSR1 and, upon receiving the signal, to save any open projects.

→ "quit" signal: We modified Audacity to listen for the signal SIGUSR2 and, upon receiving the signal, to quit any open projects. In combination with the above options and signals, this allowed us to open, import, export, save, and quit Audacity projects without requiring the user to perform these actions explicitly.

User Environment Configuration

Many user environment settings for KDE and Audacity were placed in files in the /etc/skel directory so that all users created on the box would share these settings.

Interface Customization

We used the following built-in KDE functions for controlling the interface:

→ **kstart.** This is a program that allows you to call any other program with KDE-specific settings. For example, we used '--maximize' to force the windows to fill the screen and '—desktop <num>' to specify on which desktop window it should appear.

→ **Konqueror** profiles. Konqueror can be called with a '—profile' parameter which loads a user-customizable profile to enable or disable toolbars, enter web or file browser modes, split into panes, and open specific directories in panes. For example, we used the command 'kstart --desktop 1 --skiptaskbar --maximize konqueror --profile gather' to initialize the 'Gather' task-area.

→ **Autostart**: This file inside the .kde directory is executed every time the user logs in. We placed environment initialization commands here, including calls to konqueror and audacity via kstart.

4. Pilot implementation

….we each leaped and **fell now on the United States's** side.

…all of us running, **crouching all the time**

…**that run**, we started it like at about 11 and we finished it, I think, at about 4 a.m. because **it was still a little dark**

…finally when we reached San Isidro **they stuck us in a garbage container**

…and later two cars arrived and **they stuck us in the trunks**…

—now that I remember—it was an address, **really ugly, the place**. There were only, like 2 or 3 buildings—in a 15-block area—that were inhabited and **to one of those** buildings **was where we were headed**. We got there, and all quiet, **we knocked** and **it turned out that my sister didn't live there anymore**…

[Carmelo Maceda. *Voyage from Tulcingo to NY.*
(Audio piece translation)]

This chapter contains the pilot implementation process of the eRadio project. The implementation followed the structured design of a process meant to be iterative and adaptive. Despite various factors that stretched the notion of adaptability far beyond the original design, the pilot implementation was successful in terms of process, product and of the eRadio model.

Implementation

The implementation is designed to be recursive because simplicity is necessary for inexperienced communicators of journalistic and artistic audio pieces. It is designed to be adaptive because the implementation must adjust to the characteristics of each of the groups, taking into account their lifestyles, their people, and other overall constants. However, adaptability is also necessary to handle unexpected or changing events. The researcher and the participants are constantly evaluating situations, making decisions, and acting upon them. The information here presented is taken from audio recordings, observations, interviews, and other spoken and written sources.

First Steps Towards Implementation

Searching on the Internet, I came across with what I was looking for to implement the eRadio project: the Tulcingo community, a transnational community that has its hometown in Tulcingo in the state of Puebla, Mexico but approximately 7 000 of its members live in New York City [Borden, 2001]. At www.tulcingo.net I got in touch with Jesús Perez, native of Tulcingo now living in New York, current administrator of the page, and who was to become my New York contact in what concerned the pilot implementation of the eRadio project with the Tulcingo community. Jesús connected me with Don Carmelo Maceda, current Vice-president of *Casa Puebla New York*, and also a native of Tulcingo who ventured to New York at the age of 14, and with Salomón Virafuentes, in charge of the Cultural Center in Tulcingo, who was to become my contact in the town of Tulcingo. During my conversations with the three of them, I learned that the Tulcingo community, with its hometown in Mexico and its enormous emigrant population in New York City, seemed to be in need of and ready for the benefits that could stem from the eRadio project. Moreover, the feasibility of the implementation quickly became apparent. The reasons that stood out were their diaspora situation, the contact they had strived to maintain, the infrastructure we could count on in New York and in Tulcingo, their enthusiasm with the idea of constructing a bridge for participative and interactive communication between both populations, and, above all, their willingness to try out this particular project which relied as much on community participation and involvement as on technology.

During further talks with members of the Tulcingo community in New York and in Tulcingo, we discussed and decided on the implementation plan. They pointed out the great strategic advantage of web-casting first from Tulcingo to New York on March 28 which was in the week of Saint Gabriel's festivities, their patron saint, thus the most relevant religious festivity in Tulcingo; that is, popular enthusiasm would be at its highest in Tulcingo.

They also pointed out that the New York to Tulcingo web-cast would be best positioned on May 5, the most important historical date for the New York community, a day of a big celebration in New York, organized by Mexicans mostly from Puebla and Tulcingo; that is, popular enthusiasm would be at its highest in New York and, of course, in Puebla too.

After everything was agreed on and ready, the first concrete step that we took towards implementation was to promote the project by word of mouth and by way of posters to attract volunteers (Appendix B).

4.1 The Tulcingo implementation

4.1.1 Workshop locations

Once in Tulcingo, the project was carried out basically in three kinds of locations: the Operational Center, for group and individual sessions, was at David's place which was almost downtown; the Connection Center, where we linked up to the Internet, was at 'Armando's Internet Café,' a five minute walk from the Operations Center; and the Field, that is, many distinct locations, such as the street, somebody's house, a school, the church, and the fair, where the field work of the 'Gather' stage (recording the community) was done.

4.1.2 Participants' commitment

At an informal meeting, Friday night before the Tulcingo workshop started, Salomón, our Tulcingo contact, asked those who wanted to participate to confirm their participation. Nine people expressed that they were interested in participating in the project. Not all were going to be audio piece creators, but they offered to help with the Internet connection, taking pictures, and providing support.

Five people participated in the entire workshop. Three communicators were male, Salomón, David, and Israel, who decided to work on individual projects, and two were women, Elsa and Mary, who teamed up. All of them were hardworking and very participative, though Israel did not finish his piece.

4.1.3 Sessions

As foreseen in the implementation plan, members of the Tulcingo community and I adapted the sessions and the timetable of the workshop to the town's festivities and activities. From the first Sunday to Wednesday there were many religious, educational, and commercial activities going on. Field recordings were done on those days. On Tuesday, April 23, we set up an eRadio Project stand at the Tulcingo's 2004 Educational Fair because the communicators wanted to disseminate the workshop, as an educational instance, and the project itself, as a relevant social pursuit. From Thursday to Saturday, we devoted long hours to the editing process.

Uploading to the MIT Media Lab and to PRX via dial-up Internet connection took up all of Saturday night and part of Sunday morning. Web-casting to New York and broadcasting in Tulcingo were carried out Sunday afternoon. That Sunday evening, as we celebrated the closing of the whole process, the post-workshop group evaluation was carried out and the participants were unanimous on implementing an eRadio project to transmit on a regular basis.

Group sessions

There were five group sessions distributed throughout the nine-day workshop:

→ (Saturday 20, 9 p.m.) The first group session was for introducing the project, setting up group sessions and individual work, presenting and introductory handling of the recorder, and explaining what the next step would be—coming up with ideas for their audio pieces—for the communicators to start working on it. We agreed on things such as logistics and timetabling for using the equipment. Salomón interviewed each participant very much like a professional journalist would have done. He began with something on the order of, **"**Good evening, ladies and gentlemen. Here we are with a group of volunteers who want to do radio. We are going to ask Ms. Flores to give us her opinion."

→ (Wednesday 24, 9 p.m.) The second group session was to see the communicators' progress with the field recordings and to discuss their ideal final product. We then proceeded to fine tune the individual sessions as to who, how, when and what was going to be done. We talked about the importance of listening critically to an edited piece before considering it 'done.'

→ (Saturday 27, 9 p.m.) The third group session was to decide the transmission logistics and timetable.

→ (Sunday 28, 11 a.m.) The fourth group session was for the simultaneous transmission of the audio pieces in town and at '*Casa Puebla* New York'. We established telephone contact and kept both groups in touch during the whole transmission.

→ (Sunday 28, 9 p.m.) The fifth and last session was designated to evaluate the work done, to listen to comments and discuss possible improvements, to talk about future approaches and plans, and to celebrate the closing of the workshop.

Individual sessions

The implementation design requires that communicators 'play' with the tools to 'discover' how to use them and that the researcher stand by in a supportive fashion. Nevertheless, they were reluctant to handle the equipment, and since we were pressed for time, I operated the VoxPopBoxes most of the time, as an editing technician, but they took the editing decisions. Perhaps with more time communicators would have overcome their reluctance to interact with the tools.

The extension and frequency of the individual sessions depended on the amount of editing that was needed. Listening to the field recordings and choosing the parts that were going to be used was the most time-consuming part. The details of each of the communicators' work and the process they went through are described in the Sections 4.1.4 and 4.1.5.

The group and individual sessions took place in close concordance with the initial design in terms of approach and methodology; that is, we managed an environment where everybody was learning something new, getting feedback on their ideas and work, and feeling challenged to do their best, according to each one's personal traits and projects. There was a great degree of diversity in the group, which made for variety of subject matter, approaches, styles, and results. The relationships in the group were friendly. All the communicators carried out various activities together.

On Monday 29, when the workshop week was over, I visited the participants at their homes or workplaces and they individually answered some questions about the workshop and tools.

The consensus among the communicators was that, although they were given the most relevant information in order for them to produce the radio program, not enough details were given. They would have also liked to be given more content in the workshops and more than one example for the hands-on learning stage.

Nevertheless, the time allotted for the workshops did not allow for any more. The original plan was to have four 8-hour long sessions, but instead we had to settle for five 2-hour long sessions due to the festivities and to people's occupations. The total amount in hours of the group sessions was 10 instead of 32, much shorter than planned, so I had to be very concrete.
In fact, what they wanted was what had originally been planned, which required more time, but duration had to be shortened to meet local needs.

Because editing is so time consuming, it is important to keep to the original plan regarding time of allotting more days to editing than to recording. Nevertheless, the Tulcingo situation forced things in the other direction because the town's festivities were valuable input for the project.

4.1.4 Process

This section is concerned with the procedural aspects that took place during the creation of an audio piece. Since the first group session, communicators already had an idea of the kind of work they wanted to develop in the week. Their idea was well accepted among the group members and suggestions were made. As to the methodology of how things should work, I insisted that everybody should try to go through all the process, not to just adopt one role, as David had suggested. He said that roles should be assigned depending on personal characteristics. However, it could be that those characteristics were based on the observer's impressions about others, rather than on a person's real characteristics. For example, David said that Elsa would never be able to make an interview because she was a shy person. Fortunately, I convinced them that everybody should give every step of the process a try, to get a better feel of the whole process and to later decide for themselves which activities suited them better, which were not for them, or which were hard for them to do though not impossible, and I also pointed out that they could even discover in themselves natural abilities they did not know they had. As it happened, Elsa turned out to possess great interviewing skills. And David, who was very reluctant to edit his material, ended up demonstrating to others and to himself that he could be a successful editor.

The Gather stage

Salomón, after three days of recording, came up with about ten hours of audio recordings of an event and of people's opinions about it. He had planned to do two pieces, but after doing the first one, he did not have any time left to do the other one. At the beginning, he was overly ambitious in making recordings for his piece. He self-improved his recording techniques, judging by the excellent quality of his later recordings as compared with the poor quality of many of his first ones. He went through the whole process patiently.

David organized a discussion panel with many people to talk about a problem that he wanted to raise among the community. It was an extremely long a discussion panel but a rewarding one.

Figure 4-1. David gathering

Elsa and Mary: Elsa came to the first session just to keep Mary company. She ended up being a great asset to the workshop, and a wonderful interviewer. She worked with Mary on a piece. Mary was the one with the ideas, logistics and structure, and Elsa conducted the interviews and asked the questions.

It was pleasant to discover that interviewing is something natural and even simple. Elsa, as mentioned earlier, was considered by her workshop-mates, a shy person with no abilities to perform an interview, but when we listened to her interview, we could not believe it. The interview was conducted smoothly, her voice was clear, it sounded confident, her questions were concrete, and she asked them naturally. She was direct but always polite and respectful, and she managed it as if grandpa were telling a story, which gave the piece so much life.

Israel, played with the idea of a piece on high-end, car stereos, which were in fashion in Tulcingo, but ended up working on a very original idea. He planned an audio piece about a day in the life of a boy whose father took off to New York since he was born. The boy had a kind of imaginary friend who was his father. Israel spent the day with the boy, he was with him since the boy woke up, had breakfast, went to school, and until after lunch. Along the day he interviewed the boy, and the significant people around him, such as his mom and his primary school teacher. He also recorded a considerable quantity of ambient sounds for his piece. Unfortunately, he did not finish editing his piece even though he went through the whole process.

The Produce stage

Things were being created, knowledge and skillfulness were growing, the communicators obviously were learning while editing their pieces, but the learning process was not that obvious.

The learning curve can be understood better by analyzing every stage each participant's unique piece went through. But since that is too exacting a task, I will at least provide a bit of detail of some of the stages.

Logging

Communicators understood the idea that logging is selecting whole clips or parts of clips to be later edited. However, they did not know which clips to log or what they were looking for in the clips, because everything sounded important to them. Therefore, most decisions that had to do with selecting parts to be used and deleting unwanted elements from those parts, were made during the editing stage instead.

Editing

Salomón, after spending many hours of editing, said that for his future work he would record the voice separately from the environmental audio to make editing easier. He was the only one who made multiple versions of his piece. He divided it into two parts that he put together at the end. The process was time consuming: listening to all the clips, logging them, figuring out what specifically to say, and determining how to say it from what had been recorded. We imported all the clips into one file for editing; after a while it was almost impossible to do anything because the system had become too slow. Most probably the Audacity software could not handle such an enormous load. While I found out what was going on, I imported what was already finished and worked with only a few clips at a time. The system did not slow down again.

David's piece was a series of tracks with inserted introductory comments of his own and with his voice (except for one, which has his wife's voice) to introduce what the speaker was going to talk about. This technique may be called an 'audio montage,' where we worked with fragments of audio that may or may not be closely related to each other, using the communicators voice as a transitional device.

At the conceptual and the practical level the communicators found editing hard to understand and harder to do. David asked how I expected them to edit a one-hour interview into a 10-minute one, since everything was so important. He was the only one who expressed it, but I could feel that the others were thinking alike. I offered to sit with him and do it together. He refused to work that way: he needed to see an example with his clips of how to shorten his piece while it still made sense.

He did not want to listen to the clips and do the logging himself. That is, he wanted me to take the logging decisions. Again, to save time, I made a small selection for the purpose of an example. He then sequenced the selections, made introductory comments for each one, recorded

them on separate clips, and then we put it all together. He managed to give cohesiveness to his piece. In the end, his piece was less than five minutes long, the shortest of the program. It had an interview format. The final audio piece had all the necessary information to get his message across.

Elsa and Mary did not know what to edit from their piece. They started by getting rid of the mistakes, the blank clips, repeated things and "Uh's," and "well's." Then they grouped the logs into topics and, finally, they decided to leave in the fewest questions possible and to put together a new sequence. After listening for a while, they became more critical of their work. Both were picky and we continued editing until they were happy with the piece. They worked on the story narrative and adding background music. The finished audio piece consisted mainly of parts taken from the interview, and only one question was re-recorded, as was the closing.

The learning pace at the beginning was slow, but by the time the communicators finished their first piece, they had picked up speed and 'mastered,' conceptually, the editing basics as well as the handling of the recorder and microphone. Practical interaction with the VoxPopBox required more time. Unfortunately, they did not have enough time to do a second piece.

The Publish stage

Broadcasting in Tulcingo was done locally on March, 28, 2004. I had uploaded the files using FTP onto the Media Lab and PRX servers overnight, and for the audience in '*Casa Puebla* New York' it was played simultaneously from a local laptop.

The Listen stage

Later in Tulcingo, in a group session, the communicators made comments about their own pieces. In spite of their joy, they were self-critical in that they mentioned almost imperceptible flaws or parts or effects they could have added or improved. Most of the feedback they gave each other downplayed self-criticism and encouraged the author. All in an ambience full of laughter and *camaraderie*.

4.1.5 Audio piece

Since the first group session, David, Salomón, Mary and Israel, already had an idea of the topics they wanted for their pieces.

David's piece was meant to raise awareness about the importance of creating a Multiple Assistance Center to assist handicapped kids. His audio-piece is a formal and informative synthesis of a discussion panel. It is well sequenced with effective fade-ins and fade-outs. The

volumes of his piece are kept within an acceptable range though a little bit of noise is heard when he speaks too close to the microphone.

> To wrap up, I invite all parents to, together, support us all, for the benefit of our handicapped children, with work and with financial resources, to achieve, as soon as possible, this CAM. [David. "Creating CAM (Multiple Assistance Center) to assist handicapped kids" (my translation)]

Salomón narrated the Educational Fair activities that took place from March 21 (Spring starts) to March 24 (the town's festival.) The intention of his socio-cultural piece was to share the customs and events of the town with his fellow townspeople in an informal but informative way. There is a part, where people are giving their opinions that is inadequately structured because the listeners get lost as to who is speaking. However, the message of why this kind of fair is important was well understood. Salomón used background music, ambient-sounds, and silences to make his piece more vivid.

> We commence this narration on the 22nd of March with the festivity, here in Tulcingo, of the 198th anniversary of the birth of Don Benito Juarez, of whom we recall the dictum: "Among towns and individuals, respect for the rights of others means peace." [Salomón. "Narration about the Educational Fair 2004" (my translation)]

Mary wanted to do something related to the traditional dances of the region. And **Elsa** was not sure what she wanted her audio piece to be about. Both, Mary and Elsa, ended up together doing an inspiring piece that sounds like 'grandpa' narrating what kermesses were like in the 50s. Their audio piece is aimed at promoting socio-cultural traditions of the town among the young. The sequence of the piece and the interaction between the interviewer and the interviewee is that of a natural conversation. Don Francisco, the senior citizen interviewed, does the narrating, bringing up interesting points and highlighting details. The details together with the background music evoke in the listeners minds what the teller is reminiscing. The elderly audience was deeply moved with the recollections of those days and they would nod to what was being said in the audio piece and even add side comments of their own. To the youth, listening to how men used to court women, sounded either ridiculously funny or interesting and romantic.

> [Don Francisco] Ah, well you'd go up to her, and you'd extend your hand, and you'd say to the girl: "Miss, will you allow me to dance a piece with you?" And, well some said yes and others said no. [Mary and Elsa. "What kermesses were like in the 50s" (my translation)]

The audio pieces can be heard at http://eradio.media.mit.edu and an audio piece log can be seen in Appendix D, and excerpts of some pieces in Appendix E.

4.1.6 Program

The program lasted approximately 26 minutes. It included an opening, three pieces, and a closing. Armando was the radio announcer; he had a prerecorded written introduction (scripted by Salomón). The closing comments were given by Nancy, *impromptu*. They did a great job. The radio transmission ran smoothly and towards the end of the transmission, the Tulcingo participants were so enthused with having listened to their radio program that they cheered for the audience in New York.

Communicators, collaborators, friends, and relatives gathered in the house from where we transmitted to listen to the program. The communicators promoted the FM radio transmission by calling their friends and asking taxi drivers and shop owners to tune in to our radio frequency. During the transmission, a TV channel from the State of Puebla covered the event and highlighted its significance for the community. (The channel broadcasts in the State of Puebla and New York but the signal does not reach Tulcingo.) Before the transmission, the reporters interviewed the communicators of the audio pieces. After listening to Elsa talking with so much confidence on her audio piece, it was moving to see how nervous she was while being interviewed, stuttering on her answers. The reporter kept on posing the same question in different ways until Elsa said: "I thought that doing something like this was too hard for me, but I'm very proud that I could do it."

In New York, Tulcingo migrants came to '*Casa Puebla* New York' to listen to the program. They had learned about the program through relatives or friends involved in the project or because they had gone to *Casa Puebla* to be helped with some governmental paperwork and had seen our publicity. Because I was in Tulcingo, Steve Schultze, technical manager at Public Radio Exchange, represented the eRadio project. He set up and operated the equipment. Jesús, my New York contact, Don Carmelo, *Casa Puebla* Vice-President, and Verónica, coordinator of *Casa Puebla* made sure the place was ready for the audience—they offered snacks. Reporters from *Hoy*, *El Diario*, and *Diario de Mexico*, newspapers published in New York, were there. A 'Smithsonian Magazine' journalist was also present. For conversing, we were connected with New York via telephone. Steve explained the project to the audience, downloaded the pieces from the eRadio project website (http://eradio.media.mit.edu/) and played them. Since the telephone was connected to the audio system the audience in '*Casa Puebla* New York' could listen to cheers coming from the communicators in Tulcingo. Most of the audience in New York was from Tulcingo but some others were from towns nearby Tulcingo who were curious to hear news from somewhere near their hometowns. There was a girl in the audience, Odilia, a Tulcingan who had been in New York for around three years. She is reported to have said she would like to be one of

the first communicators to transmit from New York to Tulcingo. "There are so many things to tell." She had said in Spanish to the reporter of the *Hoy* newspaper [Relaño, 2004].

The communicators believe in the potential of the eRadio project. The communicators in Tulcingo, even those who have worked and lived in New York, find it relevant to listen to programs from their hometown and nearby towns because the media coverage about their town is limited and is never about what is going on in their little towns.

4.2 The New York implementation

4.2.1 Workshop location

In New York, the operations center was '*Casa Puebla* New York' in Manhattan but field recordings were done in four boroughs: Queens, Brooklyn, Bronx, and Manhattan.

4.2.2 Sessions

Not everything was well organized in New York except for the place where the transmission took place. Promotional material (Appendix C) was distributed in advance (since before the Tulcingo workshop started) to the Tulcingan owners of some businesses, to the hosting organization, and by Internet in the '*Casa Puebla* New York' and Tulcingo web pages (http://www.tulcingo.net/ and http://www.casapueblanewyork.org).

Group Sessions

In New York there were no group sessions. We adhered to the structure of the workshop in matters of timing. Odilia was the only participant who committed herself to go through the whole project as a communicator, hence all the sessions were individual. Odilia would have liked to have a group with whom to cooperate, give and receive feedback, and share experiences and ideas.

Individual Sessions

On the first Saturday, I introduced Odilia to the project. We also made decisions regarding the timetable for the week, and talked about topics for pieces. She had lots of creative and feasible ideas. She invited me to go along with her and I did. From Tuesday through Friday she did interviews at her school and its surroundings, after school hours, from 2:00 to 4:00 p.m. From Wednesday to Saturday she did logging and editing from 4:30 to 9:00 p.m. I explained most of the notions to her throughout the sessions, but she learned most of the processes by herself. I met just once with the other content providers, from 2 to 4 hours with each.

4.2.3 Participants

As is fully explained in Chapter 5 there are several kinds of participants in the project. In New York, there were six content providers and one communicator. These six content providers participated with their voice and with content by telling anecdotes, reciting a poem, or providing fun talk. The communicator is the participant who goes through the whole process of producing an audio piece; that is, coming up with an idea, recording the content providers, and editing the recording even if they do not operate the equipment.

In New York there were four women, Odilia, Hilda, Reyna, and her mom, and three men, Carmelo, Ernesto and Isidro. Hilda, Ernesto and Isidro teamed up and made the content of a piece together. Odilia, who was fully committed to the project, and the other three, Carmelo, Reyna, and Reyna's mom, also made a story.

Commitment

Odilia would telephone me to check on the day's plan and to talk to me about her ideas, achievements and discoveries, but also to check if I had arrived safely after leaving her close to her home late at night.

The other participants were enthusiastic about sharing their stories, but they were not interested in going through the whole creative process. They claimed to be busy.

I expected more communicators and more or longer audio pieces. The eRadio methodology foresees a reduced proportion of communicators in relation to storytellers and content providers.

The mornings of Monday, Tuesday, and Wednesday I felt like Don Quixote. I visited restaurants, grocery stores, bakeries, *paqueterias*, churches, and baseball leagues looking for Tulcingans. I talked to at least 50 Tulcingans about the project, and they thought that it was not for them. They would say that the project was a great idea, but that the right person to work with was anybody else but them, or at best they would refer me to 'so and so' who lived in the Bronx or to 'such and such a place' where a group of Tulcingans gathered. And at least half of the people I talked to said that they had seen the reportage on TV or had been told about the project.

4.2.4 Process

Odilia was the only one who went through the process several times from the beginning to the end. She produced several audio pieces by herself on the VoxPopBox.

The first Saturday Odilia came back ready to work. She had been part of the audience of the first transmission. She quietly took the workshop that first Saturday, and even though she expected many people to be there taking it, her enthusiasm did not waver and she started working

on what person she was going to interview, and what the topic of her piece would be. She came up with many issues that she considered relevant for the immigrants. On Monday, she talked to her professors and friends about her project. All the school authorities were notified about the project and about the interviews. She arranged the interviews and permission for me to accompany her to the school the whole week. All the professors and school personnel happily cooperated with Odilia's projects. The interviews started on Tuesday at her school and kept on going until Friday.

By the end of the week she had made six pieces. The school principal authorized her to make the two audio pieces with topics related to the school on condition that they be broadcast only in Tulcingo to avoid possible conflicts with Board of Education authorities.

The Gather stage

At the beginning Odilia's interviews where long and poorly structured. By the end, her interviews were totally structured, and with the right length to get the message across.

Figure 4-2. Odilia gathering

When in the first interviews she asked me if she was doing it incorrectly, I would always reply to her with a question such as: "What do you think?" By the end of the week she was doing the interviews confident of herself. She would even approach people at random in Mexican restaurants asking for someone to give her a story of immigrant experiences. She would record herself while riding the subway in front of people without being embarrassed. The sound recorded on the subway was not of good quality, but time was precious on the last day.

In Odilia's case, the progress made in learning between her first and last interviews and pieces was significant. She changed her interviewing strategies: making mistakes while interviewing did not matter any more; if something was not clear, either the question or the answer, asking again was okay for the purpose of clarity. It became like an endless process,

because more ideas kept on coming to her mind about new topics to work on. Odilia was also shy, and on her first interviews she was nervous about asking the wrong questions. She also worried about whether she had enough information. In her last interviews her attitude was totally different: she sounded natural; she did not keep on turning the recorder on and off while thinking what to ask next; she laughed with the interviewee about being interviewed; and she helped the interviewee feel relaxed.

Ernesto, Isidro, and Hilda wanted to tell a story about the work they do in their organization. Since all the members of the organization did not arrive to the appointment, the three present talked about a set of recommendations for the people in Tulcingo who were thinking of crossing the border. While waiting for the other members, they shared all kinds of good stories. As soon as they decided they were ready for recording, all the beauty was lost, delivering a flat message to the listeners. Instead of narrating what they had experienced, they seemed to be lecturing the listeners, recommending that they do not do this and do not do that.

I went to visit **Reyna** at her Restaurant, one morning. **Her mom** and youngest daughter were with her having breakfast. I sat with them, and we talked for a long time about all the stories that could be told in the project. Finally, Reyna was willing to record a piece of her life. When we started recording she was serious and watchful of what she was saying, obviously the stories did not sound as beautiful as when we were not recording, but since she is a very lively person, the change was not as obvious as with the others. Her mom started to talk about what it was like to cross the border when her husband passed illegally for the last time. Then I recorded approximately half an hour of Reyna's anecdotes about her life. Reyna was aware that the ambience noise of the restaurant was too loud. We set an appointment for later on, to record everything all over again. Unfortunately, we could not meet again.

With Don **Carmelo** it was a special case. After coexisting with this immigrant community, new to me, I was curious to know 'the how' people cross the border. For them it is shared knowledge, for me there was in between Tulcingo and New York a big black hole. Don Carmelo squeezed my interview into his busy agenda to explain to me with all possible details what such a journey had been like for him. Don Carmelo is very used to speaking in public so he narrated his story very naturally and interestingly.

The Produce stage

After we finished her first piece together, Odilia felt confident to edit her other pieces by herself. On Wednesday, the editing process started after school and kept on going until late on Saturday. Odilia had allocated most of her time for the project. She liked to play with the audio segments,

cutting and pasting. And if it did not sound well, there was always a way to undo and try a new combination.

Over time she became more critical during the editing process. While at the beginning she took longer, at the end she did not even have to listen to the recordings. She could structure in her mind the order of the cuts-and-pastes from different files just by recalling her notes; she checked them a little. The last Saturday, Odilia worked until very late at night.

Odilia used both techniques: narrative-based and montage. In one of her pieces, she combined the techniques, making a dialog from two different clips. She was patient during the whole process: she would re-record her voice several times; she would edit for hours; she logged all the clips at home after spending the afternoons either interviewing or editing. She had many ideas for making more stories. She used both interviewing techniques: expecting specific answers, and asking people to tell her stories. Doing her first piece was for her an ice-breaking activity. Odilia did not think it was correct to chop off and erase content from the story: she followed the same strategy as Elsa and Mary's—getting rid of what she thought was not necessary and then putting in sequence those clips that sounded out of place. Her first piece is the only one in which the duration of the raw material (6.09 minutes) is almost the same length as the finished piece (5.56 minutes). Her second piece was a dialog, and from then on she started playing more confidently with the sequences: she would add a creative touch here and there. Her last piece was a montage; in this one it was amazing to see that she did not need her logging notes to see what part of which clip was to be first, what next, and how she was going to connect them. She recorded the introduction of each segment in the subway, without even listening to how the piece was coming out. She was confident and she was probably listening in her imagination to the finished piece. In Odilia's work, the sound quality of her recordings also greatly improved.

Odilia easily learned how to handle the recorder when I explained how to use it. During the day she would skillfully use the recorder and the microphone to get her content. In the evenings, she did the logging of the clips at home using the remote control of the recorder to stop and rewind the clips. Logging everyday after recording was useful to Odilia because she was able to hear the noise recorded by mishandling the microphone or placing it too far away from the speaker, giving her the opportunity to avoid committing the same behaviors the following day.

By observing me operate the VoxPopBox, Odilia learned to use it when we were editing her first piece. Odilia got the idea of editing immediately and she started looking for patterns on the visual audio waves to find what she needed. She used the sound effects and tracks to make her pieces more interesting.

The Publish stage

Broadcasting was done from Tulcingo on May 8, 2004. I had uploaded the files onto the Media Lab server for the audience in '*Casa Puebla* New York' it was again played simultaneously.

The Listen stage

Odilia did not have the opportunity of getting feedback from other participants, only from me.

4.2.5 Audio piece

Odilia made six pieces. Most of them were addressed to the youth and adults, attempting to raise awareness about social problems such as AIDS, drugs, premature pregnancy, immigrant students' rights, and cancer; or about experiences of immigrants in New York. Her pieces are in Spanish but some have some terms or parts in English translated or explained by her in Spanish. The quality of her pieces varies, depending on the quality of her recording, which improved during the process. She made a closing for her pieces that identify them as hers, as her signature.

> So now we've heard, girls. May this teach us a lesson so we plan our family. **Learning from life in New York. For you, Odilia**. [Odilia. A pregnant girl in high school (my translation)]

Odilia's pieces moved her audience to make comments. For example, in the "It's a matter of adapting" audio piece, the Tulcingans in Tulcingo who had worked in New York related to the interviewee; they even recognized that he worked in the restaurant kitchen, and some specifically said that Juan was a dishwasher; which in fact, he was.

There were four other audio pieces that I edited.

Carmelo's story is a vivid and detailed story of his experience crossing the border when he was a 14-year-old child and came with his sister of eleven looking for a job in New York. He narrates when they started playing with the idea of crossing the border, contacting the *coyotes*, the fears and things they went through until arriving to New York and finding that his sister (the one living in New York) no longer lived where they were supposed to arrive.

> …and until then it dawned on us, this time we were really by ourselves…the policeman stared at us really strangely that we were so many children and all by ourselves, and uh, and, then he actually started to call us and …Well, we started to run already here at the Kennedy Airport. [Carmelo. "Voyage from Tulcingo to New York" (my translation)]

Reyna talks about her passion for singing and she signs a little bit in her piece. It is a very lively narration.

> And honest, when I sing, I feel I bring it out from inside me. And that makes me happy, it does. I feel very good, singing [she sings]. [Reyna. "Singing passion" (my translation)]

Reyna's mom narrates very briefly how she was about to loose her brother when he crossed the border. She was telling the story to her daughter, so it was naturally told, short and impacting. Unfortunately, the TV is too loud in the background.

> And the place where they crossed them, they say it was a gully. But real deep, and then they crossed climbing some tree branches to cross to the other side, there, and all of a sudden, my brother lost his grip. [Reyna's mom. "Crossing over the gully" (my translation)]

Hilda, Ernesto, and Isidro attempted in their piece to give a series of recommendations and facts to the youth in Tulcingo to keep in mind before deciding to cross the border. It is about what it really means to exchange Tulcingo for New York.

> Rent here, at least, it's $650 – 700. It's a little room, tiny, not like those back home. 'Cause what we got back there is a little house. Small, at least it's yours, and it's big. Not like here. I mean, it's like a closet where we live, really. [Ernesto, Hilda and Isidro. "Think twice" (my translation)]

The audio pieces can be heard at http://eradio.media.mit.edu and an audio piece log can be seen in Appendix D, and excerpts of some pieces in Appendix E.

4.2.6 Program

The New York pieces were transmitted six weeks after the Tulcingo transmission. The transmission was much longer: it had an introduction, 10 pieces, and a closing, for a total of approximately 50 minutes of transmission, and at the end, greetings and congratulations sent by request. The whole transmission lasted about two hours because people would not stop calling in.

For the transmission the pieces were also placed on the same server, so people in New York would also play them from the Internet. Because of the cooperation with an online radio station, the transmission could accommodate people from New York talking (with a one-second delay) in real time into the Tulcingo FM radio station. The introduction of the program was given by Jesús, on behalf of the Tulcingans living in New York. After the pieces were transmitted, the commentators sent greetings and thank-you notes to relatives and people involved in the project. The contacts in New York would read the messages and send them through Internet to be aired in near real time.

In Tulcingo the transmission was well received. People in Tulcingo wanted to know how everything had worked out in New York; they were curious about the people and their

interactions. They were surprised that I had come back as I said for the second transmission. Everybody cooperated to have the transmission done nicely. Communicators, this time as audience promoted the event with taxi drivers, businesses, and among friends to have them tune in and play the program loud. The transmission could be heard many blocks away from where the transmission was taking place. It was on the air.

The town treasurer was driving towards Tulcingo when he heard on the radio a person he knew was in New York. He was so excited that he came to where we were to congratulate us. The greetings were sent and received by phone in the house across the street from the house where the broadcast was being done. Then they were entered through Instant Messenger to the people in New York. Some of the audience did not understand that the transmission in Tulcingo was in FM and Internet but that in New York it was only in *Casa Puebla* and on the Internet. Probably they were aware that the likelihood of their greetings reaching the addressee was almost null, but at least everybody in town had heard them sending their greetings.

People in Tulcingo were excited to hear on the radio their relatives and other people they knew were living in New York.

Audience opinion

Only a few people living in Tulcingo were interviewed regarding both transmissions. The audience agreed that the idea was interesting, that it would be a great communication alternative with the *paisanos* and that the programs were of their liking, considering that it was the communicators first time, and in a certain way they felt, closer to their relatives.

Once they began listening to the program, most of the audience would call other people to come and listen. The people in Tulcingo listened to the program over FM radio, including all of those present at the broadcasting site. Half of those questioned were interested in making their own pieces.

5. Evaluation and Discussion

I am grateful for the fact **that**,
I being young,
my mother was poor.
Compared to all the millionaires' children,
I considered myself a thousand times richer
in all of what gives existence worth.

…

When I hear **parents** saying they labor
to hand down an inheritance to their children,
I wonder whether they realize that,
that way
they **contribute to asphyxiating**
the adventurous spirit in **their offspring**.
Each dollar they hand down to them
increases their weakness.
The greatest inheritance consists in
giving children the greatest **liberty**
for them to develop on their own.

[Isadora Duncan. *My Life*]

This chapter elaborates on what took place, how it was carried out, and the end results, concerning the pilot implementation of the eRadio project.

Rogoff's three planes of socio-cultural activity will be the framework to test my hypothesis, which is as follows: given an appropriate 'technomethodology,' the use of electronic tools that facilitate participative radio production can be a significant aid to increase interaction and reduce alienation among members of a dispersed community.

Rogoff suggests that the analysis of socio-cultural activity be carried out on three planes: apprenticeship, guided participation, and participatory appropriation. That is, when studying learning in the context of everyday activity, it is necessary to consider: (1) how learners are apprenticed into practice by more experienced partners; (2) how individual interactions contribute to the evolution of a community; and (3) how both of these lead to individual growth and development [Rogoff, 1995]. Although it is not realistic to expect that from the short pilot implementation we will see significant movement across Rogoff's planes, I will use this framework to illustrate the efficacy of eRadio as shown by (1) and (2), which lead to (3).

5.1 Apprenticeship

For apprenticeship, four learning modes (that are innate abilities) were identified in the eRadio project: keen observation, listening-in [Rogoff, 1995], practice [Papert, 1993a], and inquiry/discovery [Postman and Weingartner, 1969]. Instances of keen observation took place when the communicators learned by watching (imitating/mimicking) someone else operating the electronic tools or exhibiting behaviors and attitudes. Instances of listening-in occurred when communicators were given an explanation of a concept, provided direct or indirect feedback, or shown oral extra-linguistic behaviors, such as, changing voice tones while narrating an event. Practice happened when the communicators operated the recorders, before or during real events—and in Odilia's case, also the VoxPopBox—thus becoming better at applying the knowledge acquired by the previous modes. Inquiry is when questions, curiosity, or uncertainty trigger exploratory behaviors. Instances of inquiry/discovery occurred when communicators were critical about their own work and explored different ways of obtaining better results.

In the eRadio, project different degrees of the four learning modes were identified as dependent on each communicator, assimilation of methodology, and manipulation of electronic tools.

Assimilation of methodology

The assimilation of the methodology depends on each communicator. At the individual level, communicators make a more proactive use of their learning abilities when transmission of knowledge is one to one and guidance is more focused on the communicator's personal interests. In terms of quality and relevance, they not only fulfilled the expectations set forth in the project, but they by far exceeded them, taking into account the limited resources and the inexperience of all of those involved.

The audio pieces are samples of participative generation of content within a community. Communicators made use of discovery and inquiry approaches as they learned how to use the equipment and as they planned and carried out content gathering. The communicators also adopted an ethnomethodological approach by creating the right ambience to get their interlocutors to open up and to provide the relevant content in appropriate ways (e.g. details, tone of voice).

The production of the audio pieces, seen as process and as end product, employed the constructionist approach. Freire's perceptions and prescriptions are also seen in the initial motivation for the project, in carrying it out, and in its ultimate objectives [Freire, 1970].

It was presupposed that the group interaction would propitiate a more dynamic inquiry process among participants, leading to 'practice' of the methodology and of the handling of the tools. In short, the methodology was assimilated and furthered.

Adequate durations for the workshop depend on many factors and on desired results, because amount of exposure and practice in turn affect quality and quantity of results.

Operating the electronic tools

Previous experience using computers seems to be a factor for both fast understanding of the electronic tool methodology and less fear of interacting with the tool. Israel and Odilia, the only communicators who used the VoxPopBox during the workshop, had previous and regular contact with computers. As to the other communicators in Tulcingo, who only used the recorder, they said that the recorder was "not that easy" to use; e.g. having to press the same button twice to start recording.

Most of the communicators had finished high school. One of the participants, Elsa, had only completed the third grade of primary school, but her piece on kermesses was superb.

In New York, for Odilia, observing once and then practicing became her strategy to learn fast during the workshop. She uses computers at school every day and she had taken a media class at her high school. For Odilia, after finishing her first audio piece, the whole methodology and use

of the electronic tools (the Recorder and the VoxPopBox), were well on their way to becoming what Minsky terms a 'learned reaction' [Minsky, 2004].

It was not planned for me to do any of the editing, other than to show them how to use the tools or to explain a concept. However, in Tulcingo, due to their reluctance to use the tool and to lack of time, I decided to operate the VoxPopBox while the communicators told me what to do.

The technology would be better appropriated by the communicators if: (1) the development of the VoxPopBox were finished as planned; (2) more time and hands-on practice were allocated to introduce it to communicators, especially to those without any previous contact with computers; and, (3) they frequently used the electronic tools.

5.2 Guided participation

Guided participation takes place in a longer-term implementation. However, the eRadio project points in that direction.

In Tulcingo, having a group of communicators working at the same time on the eRadio project and fostering cooperation among them help communicators to feel part of the community, to obtain feedback, to share experiences. All of them had a history of involvement in their community's affairs. They were active in educational, cultural, political, social, and religious endeavors of the town. David, Elsa, Mary, and Salomón were taking a journalism seminar, once a week, given by one of the most important newspapers in the country, *La Jornada*, because they were going to start making a newspaper for the community. Armando, David, Hector (the cameraman), and Salomón had been running a cultural and educational closed circuit program for the community every Wednesday, in which they made reportages.

No doubt the communicators' background of activism in community affairs, of participating in a journalism seminar, and of being acquainted with closed circuit TV production facilitated various aspects and stages of the workshop. It also sets them apart from the rest of the community.

It is true that communicators play a key role in the radio production process, but there are many ways to participate and levels of involvement, which together constitute community participation. In Table 5-1 a matrix of **individual involvement** summarizes **community participation**. The fully committed communicators were the ones who are most evaluated throughout the thesis; they appear in the gray area (A). Communicators went through the whole production process, regardless of how acquainted they were with the technological side and with the journalistic side.

Figure 5-1. Tulcingo communicators

The individual interaction among participants was not always direct. However, there were other participants who contributed in different ways to the project. In Tulcingo, the matrix is denser because individual participants played different roles, columns in the table. However, in both groups there are a few people who played multiple roles (Columns 1 – 4), who were key people locally and arranging cooperation between Tulcingo and New York. The Tulcingo, gray area shows that among the active communicators there existed a unified team, who even if they worked individually or in small teams, they always gave and received feedback and cooperated with each other. Interaction was also strong among these active communicators and the others. In contrast, Odilia, on the New York side, worked by herself on the project and never interacted with the other communicators. Finally the roles played by each group differed. While in Tulcingo 'Listeners' was the activity with more participants (Row 5), in New York City it was storytellers and content providers (Row 6).

The columns that have a 'grouped' mark at the bottom represent groups of people, and the column with an 'I' stands for 'institution' or 'location.'

The participants' involvement can be classified in five main areas.

Communicators of audio pieces (C) are those who made the audio pieces and went through the radio production process in a workshop.

Storytellers (S) are the content providers who spoke live during transmission or were recorded.

Assistants (A) are those who assisted communicators or were cooperative listeners who assisted by providing feedback or promoting the program.

Listeners (L) are those who listened to the program.

Organizers (O) are those who aided organizationally, who were in charge of recruiting and organizing people, promoting the project, and arranging times, days and locations.

Technical collaborators (T) are those who set up the equipment, took pictures and video of the workshop, and those who did live Internet radio cooperation.

Providers of locales and human resources (P) are those who facilitated the physical and social infrastructure to have localities, Internet/dial-up connection, and human resources necessary to carry out the project.

Extra roles (E) are various extra ways of supporting the eRadio project. For example, running errands, preparing snacks and meals, and an impressive instance of community participation was Misaela who besides doing her daily job, additionally did her husband's, just to let him participate in the project.

Every communicator played an important role in the project, but Odilia's case is worth singling out. Odilia was always motivated, driven by her desire to better the circumstances of her people. She proved my assumptions and approach for the eRadio project correct. The approach called for user-friendly tools and a simple methodology. The assumptions were that communicators were people who would take advantage of the opportunity to help their community, that they would become empowered to do so through becoming engaged, apprenticeship, and learning by doing. She was also motivated because her pieces were going to be heard in Tulcingo and because the people she had interviewed were going to be listened to over the Internet. She had immigrated with her family almost four years earlier; she thought that the strong and unpleasant impact she had received could be reduced by letting people know about the life of immigrants.

PARTICIPANTS

TULCINGO

ROLES	Elsa	Mary	Salomon	David	Israel	Armando	Hector	Misaela	Areli	Miriam	Nancy	Prof Jose Luis	Fam Flores Perez	Interviewees	Audience
Publisher	C	C	C	C	C										
Editor	C	C	C	C	C										
Interviewer	C		C	C	C	A						A			
Conceptualizer / Ideator	C	C	C	C	C										
Voice off	C	C	C	C	C			S	S						
Storyteller / talking	C	C	C	C	C									S	
Listener	C	C	C	C	C	A	A	A	A	A	A		A	A	A *(5)*
Advertisement / Closing / Introduction			S			S			S	S	S			S	
Logistics		O	O	O	O	O			O	O					
Organizer		O	O			O									
Promotor	O	O	O	O	O	O		O	O				O		O
Set up equipment	T	T	T	T	T	T	T								
Radio Internet															
Camera man															
Provided facilities				P	P	P		P					P		
Internet / Dial Up			P	P		P									
Get contacts			P												
Hosted								E					E		
Did someone else's job			*1*	*2*											*5*

grouped

NEW YORK

ROLES	Odilia	Jesus	Don Carmelo	Reyna	Reyna's mom	Ernesto	Hilda	Isidro	Enrique	Veronica	Jaime Lucero	Interviewees	Audience	Radio Internet Collaborators	Casa Puebla
Publisher	C														
Editor	C	P													
Interviewer	C	P													
Conceptualizer / Ideator	C														
Voice off	C														
Storyteller / talking	C		S	S	S	S	S	S				S			*6*
Listener	C	A	A				S	S		A			L		
Advertisement / Closing / Introduction		S													
Logistics		O	O							O					
Organizer		O	O												
Promotor		O	O						O	O					
Set up equipment		T							T						
Radio Internet														T	
Camera man															
Provided facilities		P	P							P	P				P
Internet / Dial Up															P
Get contacts		P	P												
Hosted															
Did someone else's job		*3*	*4*												I

grouped

Table 5-1. Active Participation

5.3 Participatory appropriation

Participatory appropriation like guided participation requires a longer-term implementation to become noticeable. However, for eRadio purposes, short-term individual growth patterns were identified, as well as, potential community development.

Individual growth

Individual growth means becoming a better person. Communicators experienced personal growth. Through the eRadio project, communicators experienced changes and situations such as learning something new, sharing know-how, improving skills, participating in the development of the community. Next, I provide specific examples to illustrate this section.

Self-challenge

An example is Elsa's and Odilia's shyness. Elsa challenged herself to do interviews and to start a project assuming that it was hard for her. She did it, though and she did outstanding interviews. In Odilia's case, she was shy with asking people for an interview, and she was not confident at all about going through the eRadio process by herself. However, she never thought that she was not capable; on the contrary, she worked hard to evolve by herself regarding each of her weaknesses. I accompanied Odilia on her gathering tour and showed her step by step how to edit her first piece.

Self-knowledge achievement while producing radio

After we finished her first piece, Odilia was able to go on—on her own—through the radio production process and to use the electronic tools to make her other five audio pieces. The Tulcingo communicators did not have the opportunity of doing a second audio piece. However, they claim that doing a second one would be easier for them and the more they did, the easier it would be.

Of the radio production process, the 'Gather' stage was the easiest one for them. They preferred the interviewing format as a gathering procedure. They shunned the 'Produce' stage. However, for the Tulcingo communicators, having gone through every step of this process—even if they did not operate the tool themselves—was a considerable achievement, since they made the decisions of what to cut, move, delete or re-record. In contrast, in New York, Odilia eagerly went through this stage with the VoxPopBox. Moreover, once she got the feel of the basic editing dynamics—play, cut, paste, move, re-play, zoom-in, zoom-out, select and re-play—she could skip from one operation to another with increasing automaticity. Since the networking mode of

the system was not fully implemented, we did not get to the 'Publish' stage. The 'Listen' stage is discussed in the next section, and in Chapter 4 details about the communicators going through the radio production process are given.

Learning curve

Practice and editing time became key factors to achieve high quality in the audio pieces. With practice, communicators improved the quality of their recordings, reducing noise and leveling volume. Communicators also became more goal-oriented in their 'gathering'—interviewing and collecting of live sound effects—making the editing process easier and faster and thus reducing editing time. The quality of the content depended more on the way communicators posed the questions, on the way interviewees' expressed themselves, and on the relevance of their responses. Although communicators learned to detect when sound effects were needed for ornamentation purposes (for example, to make the piece sound more vivid), sound effects were mainly used to hide cut-and-paste transitions, to make the sequence sound smooth, and to give emphasis or to clarify something. No relationship was found between the total amount of gathered recordings and the final quality of the pieces. Nevertheless, to make the piece catchy and more artistic, allocating more time to editing time made a difference. There are limits, though, beyond which no amount of editing time, or editing skill, can improve pieces much more. Salomón's piece took up around 14-hours of editing time while the others are in the four to six-hour range. All of them have their unique style, plot and message. However, some are more vivid and have a better sequence, and not because of more editing time.

Odilia's work shows a very clear learning curve in the quality of her recordings and in interviewing strategies. She started by thinking ahead of time on all the stages of the process and how she wanted her audio pieces. From there she asked her interviewees either specific closed questions or she would ask an open question such as "Can you share with us, your most impacting story since you came to the States?"

Community development

Due to the brevity of the workshop, community development is difficult to notice. However communicators' outputs have similarities that could be indicative of potential benefits to the community.

What was observable in the short are the intensity of the audio pieces in terms of socio-cultural relevance and the social reaction to the broadcast and web-cast program. An observable

longer-term indicator is the interest expressed by the community in implementing the project on a permanent basis. Audio pieces can play different 'roles' in community development.

Audio historical archive

The audio pieces are broadcast at least once but they remain on digital files and on the Internet as an oral historical archive. The complete unedited recordings or big chunks of the recordings could be kept as links in the archives.

Photographic, video, and digitalized documents could also complement the audio archives, or *vice versa*.

Social awareness

The audio pieces—targeted to the youth and adults—raised awareness of existing problems and of past experiences and traditions. Communicators used a formal and informative format to raise social, educational and political issues that have to be taken into consideration by the community. For rescuing from oblivion past experiences and traditions, communicators used informal narrative formats in longer and more artistic audio pieces. (More details on the audio pieces are found in Section 4.1.5 for Tulcingo and Section 4.2.5 for New York.)

Generating active producers of content

The eRadio production process awoke the communicators to become active participants in their community, as Freire would call it, educating for social change [Freire, 1970]. They become proactive at identifying common problems and seeking solutions. The eRadio project gave them a medium to voice their concerns and to become transnationally organized and empowered to turn things round to grow and benefit from their diaspora situation.

Impact on the remote audience

For the Tulcingans, listening to a relative that is thousands of miles away, either on FM radio or through the Internet, was moving and impacting. Likewise, the Tulcingan stories made people in New York homesick of their land and culture. According to Castells, oriented content strengthens community identities, and its implications for social movements [Castells, 2004.]

Social impact

Social impact is noticed when an event or project changes regular patterns of lifestyles. The phenomenon of connecting both communities to each other during the transmissions generated a feeling of closeness among relatives, friends, and acquaintances. For the communicators and

content providers having their audio pieces on the air made them feel proud of themselves personally and civically and different from the others.

In Tulcingo, the programs were heard over FM radio. During both transmissions, businesses shops and taxi drivers near the transmission site were tuned in to our frequency and had their volumes turned up. The programs were on the air. During the second transmission, people in town were calling to the house across the street from the transmission site to give feedback about the project or to send greetings to their relatives in New York.

Most of the audience invited more people to listen to the program when they heard it. The audience considered the programs were interesting given that it was the communicators' first attempt at communicating with the *paisanos* (hometowners). Half of the audience surveyed was interested in making their own pieces. [eRadio surveys, 2004]

In New York, for the first transmission, the audience was very excited since "the program was made with them in mind." "Telephones never stopped ringing on Sunday in Casa Puebla, with people asking on what day they could listen to the program." [Relaño, 2004. (My translation)]

Community interest

Community interest is seen because after three months of having piloted the project, people continue asking about the requirements to get the eRadio project fully implemented. They see the relevance of being connected with the remote group and they are willing to commit themselves to working on the project.

Tangible cooperation

Tangible cooperation is in the works. The project for the Multiple Assistance Center for handicapped children, featured in David's audio piece, greatly advanced by the local Tulcingans, is now receiving the much needed decisive support by the New York Tulcingans who: (1) did not know about the project until after they heard about it through the eRadio program; (2) are now using their political leverage at the State of Puebla level; and (3) are going to be making arrangements to send a specialized psychologist from Columbia University to give parents of handicapped children a workshop [Perez, 2004].

6. Conclusion
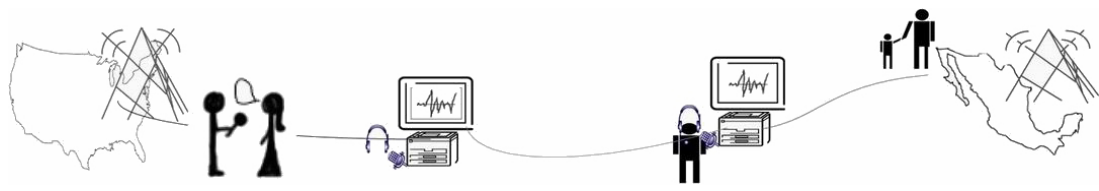
Tulcingo community **eRadio logo**
Based on Walter Bender's graphic depiction of eRadio when I first told him my idea, Fall 2003.

The eRadio is a 'technomethodological' project that proposes to be an effective aid to increase interaction and reduce alienation among members of a dispersed community. It went through a pilot implementation to test its feasibility and to detect its shortcomings. The implementation of the overall eRadio design was applied to the Tulcingo community living in its two sites: Tulcingo and New York. The two nine-day workshops, one in the town of Tulcingo, Mexico and the other in New York City took place as planned.

The project proved feasible in spite of the detected shortcomings.

The differences between the workshop in Tulcingo and the workshop in New York validate the flexibility and applicability of the project to radically different settings, such as those of a big metropolis in a developed country *versus* those of a small town in a developing country, in spite of similar backgrounds, such as cultural and family ties.

People

Even when the eRadio project targeted dispersed communities, it was coincidental to have encountered the Tulcingo diaspora community, which fulfilled the requirements. The people I contacted were active members within their community, who offered full support and foresaw committed volunteers to cooperate in the project. Willingness, participation, and commitment from communicators, content providers, organizers and the audience were crucial to the success of the implementation. Communicators in Tulcingo and Odilia in New York were fully committed to the project. In Tulcingo, volunteers were many, participation was vast, and cooperation was strong. In New York, eRadio seemed more of a door-to-door awareness raising pitch to get Tulcingan immigrants to volunteer. More communicators were expected in New York, nevertheless, the only one that volunteered proved to be far more than enough, not only because she worked long hours on the project but because of her versatility and multiple projects. In Tulcingo, however, given the limited availability of the communicators, the group workshop time was reduced from 32 to 10 hours. Taking into account that all the people involved had a job, school activities, or other duties, it is commendable that they allocated as much time as they did to the project. Moreover, several of the Tulcingo participants had extra duties due to the annual community festivity and educational fair that were taking place during our workshop.

Produce

All of the communicators learned the radio production process and how to handle the recorders—and in Odilia's case, also the VoxPopBox—by listening, observing, and inquiring as well as by doing and practicing. For all the communicators, the Gather stage was the easiest and most

natural undertaking as compared to the Produce stage that was the hardest to understand. They all excelled in journalistic and elocution tasks. Once they had made their first piece, communicators understood the radio production concepts, which corroborates the notion of learning by doing.

The audio pieces and the transmitted programs are tangible end products that speak for the overall feasibility of the project, as do comments of all those involved directly and indirectly. Three audio pieces were made in Tulcingo by five communicators. In New York, six pieces were made by one communicator, and six other participants provided the voice and content of four more pieces. All the audio pieces had relevant content, audio broadcast quality, and were enthusiastically welcomed by the audience in both locations. As a result, Tulcingans are greatly interested in having the eRadio fully implemented.

A two-way transmission was achieved, first from Tulcingo to New York and six weeks later the other way round. For both transmissions, the audio pieces first had been posted on the eRadio website, then aired over FM radio in Tulcingo and simultaneously downloaded and played through loudspeakers to an audience at '*Casa Puebla* New York.' In addition, the second transmission was also streamed on Internet.

Tool

All communicators learned and used the digital recorder for gathering, even when it seemed not to be the most intuitive device for field recordings. The digital recorder worked well in both locations, and its most important feature, automatic downloading of all its files once plugged-in to the VoxPopBox, proved most convenient. As for the VoxPopBox, the custom-made computer for audio piece creation and transmission, everyone in Tulcingo was reluctant to operate it, except for one who used it for logging his piece. Perhaps more time and individual sessions would have helped do away with their reluctance. The New York communicator did use it fully to edit five of her six audio pieces.

Specs

In the current status of the VoxPopBox, audio pieces can be produced, broadcast and web-cast, even when the networking feature for automatic publishing has not been fully implemented. However, to make it sustainable or reliable enough to leave it in a remote developing community, further coding/implementations have to be carried out.

eRadio

During the eRadio pilot implementation, the community's diaspora situation showed that even though immigrants still are part of their hometown, now they also have begun to assimilate a new

lifestyle and belong to the new location, giving each of these two segments of the community unique characteristics, though also the shared need to stick together.

David's audio piece has triggered decisive transnational collaboration to set up a center for handicapped children in Tulcingo. On August 7, 2004 a group of New York Tulcingans and Columbia University specialists arrived in Tulcingo to carry out the first workshop for parents with handicapped children, bringing resources to the center, and establishing an active and closer relationship with the community. Mr. Lucero, founder of '*Casa Puebla* New York,' also went to propose a couple of projects for sustainable development in the community. The group will stay on until August 17, 2004 [Jesus, 2004]. It is important to stress, that this group of New York Tulcingans and most of the key participants of the eRadio project in Tulcingo are always looking for opportunities and ways to empower Tulcingo and Mexico. The eRadio project claims no greater role than that of an aid, a means, the result of a technomethodological approach that can be bettered.

The pilot implementation of the eRadio project revealed shortcomings of the implementation logistics and of the electronic tool. However, throughout this thesis the eRadio project, as a whole, has shown that with further development it can realize Brecht's suggestion of having an apparatus with "two-sided" communication functions, where listeners are not just receivers but also speakers who are suppliers.

6.1 Immediate future steps

The **VoxPopBox** requires further development, as was foreseen, in order for it to be a reliable and sustainable system that could be taken to a remote community for it to easily make use of it. As any other computational system continuous improvement should be pursued.

If the **digital recorder** recommended in Chapter 3 is used, every new acquisition needs to be modified.

Technological understanding

Intensive **training** should be considered for a week for one key person in each location and regular **support** should be available by phone, Internet, or other channels. Support could be provided by more experienced communities in these matters, such as the Tulcingo community, remote parties, or eRadio developers.

Legal issues to be aware of,

→ **audio recording** requires previous authorization by the party that is going to be recorded.

→ **FM transmission** requires permission from the government.

→ **commercial music** transmission in both media (Internet and FM radio) also requires permissions and sometimes payment.

6.1.2 Participatory community

Participants have to see a personal or social benefit when joining the eRadio project. Active participation and commitment are based on the communicators' dedication, availability, capability, personal interests, and social involvement. Participants both as individuals and as part of a community have to voluntarily commit to cooperate on the eRadio project. The eRadio project promotes active learning of a methodology and a specific set of electronic tools, and encourages sharing of experiences and transnational cooperation. Cooperation is about the roles that each participant plays in the project and the interaction among participants.

Since people are the key factor, participants have to get organized, make a commitment and strive for active cooperation on the project. The remote and local participants have to confer to get things going and to agree on, at least, timetables for exchange and transmission. It could be convenient to promote the use of eRadio for different purposes in order to involve more members of the community, for example, having a teacher setting radio production tasks among his or her students and connecting them to a remote school to have interactive transmissions.

6.1.3 Methodology

The design of the methodology has to be flexible, **adaptive** to the community's characteristics, time commitments, learning methods, participation, willingness, and cooperation.

The introduction of a methodology and technology has to be seen by communicators as the means to achieve the ultimate end, which in part depends on their **appropriation** of the means. It is a must for people to appropriate a methodology and the use of electronic tools. Therefore the learning duration and learning methods are important variables.

A process is a set of stages that take one along a path to achieve a final goal. However, how to accomplish each stage and how to move from one stage to the other is a creative process built with the unique style and characteristics of each participant and with the cultural influence of the community.

6.1.4 Logistics

Logistics involve arranging actions and organizing available resources to get a project going. People working on the project have to answer questions such as What, Who, Where, When, How often, and How much. The description of functional roles and responsibilities has to be well defined.

Having a staff team to carry out the workshops would be convenient for support, for division of tasks, and for better assistance to individuals and to small teams.

6.2 Towards generalization

In the Tulcingo pilot implementation, the eRadio project was the dependent key factor and the community was the independent one. The eRadio project could be modified and molded, depending on the circumstances and on the characteristics and availability of participants. However, variables inherent to the volunteer community could not be fully controlled, and probably should not. The characteristics of the Tulcingo community and the eRadio participants were determinant of the positive results obtained from the implementation of the project. Adaptations had to be done during the workshops. However those changes occur on dependent key variables rather than on the independent ones, which is the whole purpose of the adaptive nature of the 'technomethodology' employed, enriching the patterns to be considered in order to generalize eRadio.

The pilot implementation encouraged multi-task communicators but the longer-term implementation will most likely derive into more specialized communicators, as well as more complex networks. Figure 6-1 shows the two-way production and transmission features of the pilot implementation and the n-way of the longer-term implementation, in which every VoxPopBox will be a node from where to produce and web-cast, and from where to receive, listen, and broadcast.
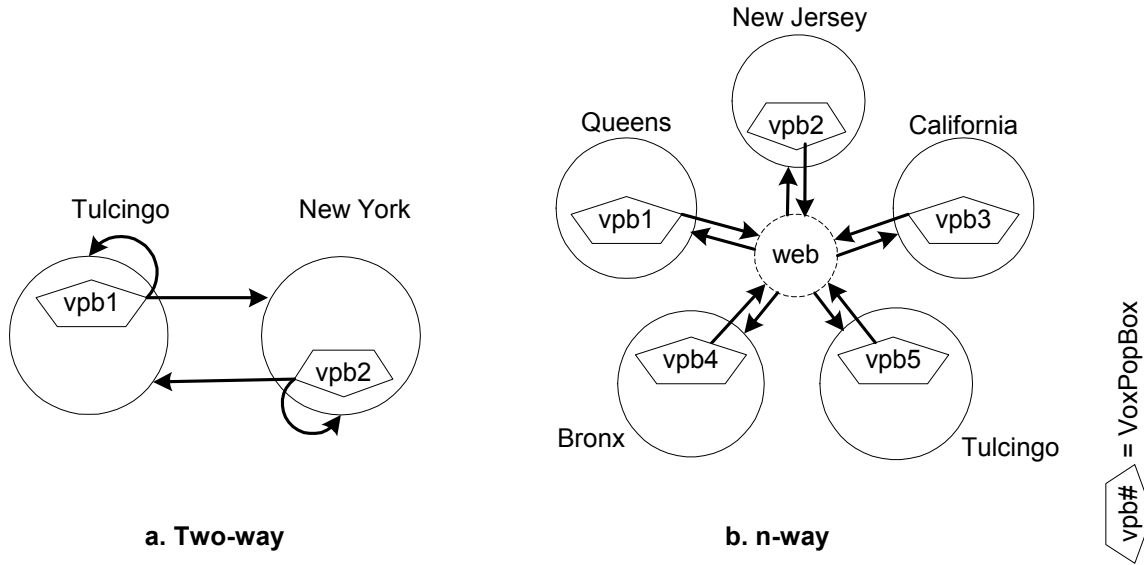
Figure 6-1. Two-way and n-way production and transmission features.

6.3 Model

From the results and given the existence of many dispersed communities, the project has potential in different planes, (1) applicability; (2) replicability; and (3) networking. Those three planes require three features needed to generalize an electronic solution to empower different communities, which are cooperation, generalization, and dissemination.

6.3.1 Cooperation

To adequately integrate the digital environment into a certain community's reality, interdisciplinary work is needed, as well as the cooperation of different entities.

In the described eRadio implementation these stages were well developed. Whenever convenient, eRadio should establish cooperation with radio stations, governmental entities, academic institutions, the business sector, and other communities. In addition, eRadio has to develop the network infrastructure to have all the VoxPopBox nodes connected among them. That means having all the individual and institutional relationships established and the technological infrastructures set to manage full communication and cooperation across the transnational network.

6.3.2 Generalization

From the facts described throughout this document, eRadio can be implemented in communities with different characteristics but shared interests. If implemented for longer-term periods and by communities with different characteristics, patterns may emerge that could be used as models. As a result, eRadio would undergo continuous improvement in its methodology and electronic tools.

6.3.3 Dissemination

> "If things are done right, a beneficial ripple effect should be triggered; that is, a community's successful eDevelopment moves should directly or indirectly be of use to other communities. It is expected that the communities with the applied solution will try to share with others their new acquisition by convincing them of the obtained benefits. On the other hand, other communities, noticing the increased development of a community may want the same opportunities. Good concepts and actions can be contagious, in easy, rapid, and far reaching manners." [Gomez-Monroy, 2002].

Appendix A: Audio composition elements

The following elements are based mostly on Glass, Richman, Rattigan, and the IMER manual. Some of the elements, such as the plot, may have to be modified when editing. Others may be present in certain types of audio pieces but not in others.

Target audience. The communicator has to work on his piece taking into account the characteristics of his target audience, such as age, interests, and gender.

Objective. The communicator has to have a clear idea of what he intends to achieve with his piece: to entertain, to inform, to document, to raise issues, to ask for cooperation.

Topic and area have to be determined. What is the story going to be about? What areas does it focus on: education, politics, culture, sports, community?

Plot. The plot is the story line, how the elements interact, and how the sequence of events unfolds. [Glass, 1999]

Reflection. The piece has to have something that people will keep on thinking about, whether they agree or not with the message, or whether they have yet to figure out what the message was. The piece may give them something to reflect on, such as, an unexpected ending, or why a character said or did something. [Glass, 1999]

Character driven and story based. Who are going to be the characters? Usually the pieces have a main character or topic, it could be about an event, a situation, a person, or a moment but it has to be about something/someone. [Glass, 1999]

Details. Some details make the stories more interesting. Moreover, we must take into account that radio is an audio medium, where just by listening, the audience has to get enough—and just enough—details which recreate a vivid experience in their imaginations. Details can refer to who, what, where, when, why, how. [Richman, 2000]

Tone of voice. This label covers a broad range of features of the voice which can be considered audio features rather than verbal details. These audio features, which include pitch, stress, volume, sarcasm, irony, silence, and speed, may add intensity, change the intention, and even mean the opposite of what is literally said. They may help the audience to live the moment, to feel it is more real. [Hilliard, 2004; Rattigan, 2002]

Sound effects. This label also covers a wide range of background or environmental sounds, voices, or music. They can be taking place in real time or added later during the post-

production stage (editing phase); sound effects other than musical can be real or simulated. [Hilliard, 2004]

Catchy. An effective piece catches the intended audience's attention and keeps it throughout the duration of the piece. Moreover it makes the audience want more, want to tune in again.

Radio formats are different types of 'styles' or kinds of 'programs' used in radio broadcasts. Formats can be achieved during the gathering stage or during the editing stage. Following is a brief list of radio formats.

> → *discussion panel* is a group of experts discussing a topic.
>
> → *storytelling* is a narration of fictional or anecdotical events.
>
> → *interview* is meeting people to ask questions, to chat, or to let them do all the talking.
>
> → *narration* is a description of events.
>
> → *report* is a formal, event driven, talk about a specific issue or problem.
>
> → *diary* is a frequent personal log of narrations or thoughts made to oneself.
>
> → *monologue* is a only one person talking for the whole piece.
>
> → *commentary* is an event or situations description happening at the moment.
>
> → *documentary* is a description of an events or situations that happened. Usually some kind of research or interviewing is done for this purpose.

Voice. The voice can be formal and informative or informal and narrative.

Personal motivation. The communicators have to be personally motivated to do the piece. If they know they have a strong reason for doing it, they will probably find creative ways to make it more interesting to others.

Duration. The length of the piece depends on all of the above. It has to be long enough to communicate the whole message. It has to be short enough to leave in the audience the feeling that it was an intense experience. Also, because the audience's listening time, attention span, and interest level have limits. [Driscoll, 2003]

Language. The language that is used can be a local variety or a different one; it depends on the audience; the same is true regarding the use of colloquialisms, slang, and different degrees of formality. [IMER, 2003]

Speaking style. Some types of pieces require clear, slow diction and others require more emotive or fast paced delivery. Respect the audience and be honest [IMER, 2003]

Audio quality. Communicators should strive for quality recordings, avoiding background noise that interferes with the voices [Glass, 1999].

Noise. is unwanted sound.

Appendix B: Promotion poster

Invitation to listen to the first eRadio transmission from Tulcingo, Puebla, Mexico to New York. And to join the project. Sixty copies were printed. They were posted two weeks before the radio transmission by Tulcingo community volunteers.

Doing Radio for Our Compatriots Tulcingo- New York

If you want to participate, you just have to:

- Be interested
- Give us some of your time (17-25 April)
- Be over 18 years of age
- Be from Tulcingo or have family in/from Tulcingo.

Don't miss the First transmission from Tulcingo

Sunday 28 March 2004 2 pm

For further information,

Appendix C: Promotion poster in New York

Invitation to do the first eRadio transmission from New York to Tulcingo and to join the project.

It's our turn to do radio
New York - Tulcingo

It's our turn to respond
Compatriots in New York
also have a voice

It's our turn to do radio.
Our New York-Tulcingo radio program
Let's stick together

Come to *Casa Puebla*
You can participate in many ways
* singing, laughing, encouraging
* telling your adventures, experiences, feelings, memories, dreams
*giving us ideas, interviewing, recording, editing
If you want to participate, you just have to:
- Be interested
- Give us some of your time (17-25 April)…
- Be over 18 years of age
- Be from Tulcingo or have family in/from Tulcingo.

Carla Gómez Monroy

Appendix D: Audio piece log

Tulcingo

Author	Piece	Number of Clips	Number of versions	Clips total time	Editing file size (max.)	Final piece time
Salomón	Educational Fair	18	4	9:35:23	2.8 GB	8:37
David	Creating CAM	1	2	1:21:12	1.2 GB	4:02
Elsa and Mary	…kermesses	3	1	1:05:14	256 KB	7:42
Totals per location		22	7	12:01:49	*5.70132 GB	20:21

New York

Author	Piece	Number of Clips	Number of versions	Clips total time	Editing file size (max.)	Final piece time
Odilia	…adapting	3	1	6:09	440 MB	5:56
Odilia	Dream act	4	1	4:06	60.3 MB	2:50
Odilia	A school counselor…	4	1	20:08'	475 MB	5:09
Odilia	A pregnant…	2	1	1:26:02	57.2 MB	2:05
Odilia	Poem…	1	2	1:10:42	93.9 MB	4:44
Odilia	Impressions	12	2	3:30:32	1.96 GB	4:44
Carmelo	Voyage …	1	1	36:03	259 MB	12:04
Ernesto	Think twice!	1	1	52:36	302 MB	6:46
Reyna	Singing passion	1	1	40:23	94.8 MB	2:19
Reyna's mom	Crossing the Gully	1	1	4:02	22.8 MB	1:07
Totals per location		30	12	8:50:43	*5.68262 GB	47:44

* This total amount is the total memory space used in the VoxPopBox for editing in each location; which includes memory space taken up by all the different versions of tracks and audio pieces of every user.

Appendix E: Excerpts of some audio pieces

Audio piece transcript	Audio piece translation
David: La creación del CAM (Centro de Atención Múltiple)	**David: Creating CAM (Multiple Assistance Center) to assist handicapped kids.**
[Señora Misaela narrando] El señor David bravo moderó un panel integrado por maestros y padres de familia de Tulcingo para discutir la creación del CAM.	[Mrs. Misaela narrating] Mr. David Bravo moderated a panel composed of teachers and parents from Tulcingo, to discuss the creation of the CAM.
[David] para concluir invito a todos los padres de familia a que juntos nos apoyemos en beneficio de nuestros hijos discapacitados poniendo nuestro esfuerzo y los recursos económicos para lograr lo mas pronto posible este CAM.	[David] To wrap up, I invite all parents to, together, support us all, for the benefit of our handicapped children, with work and with financial resources, to achieve, as soon as possible, this CAM
Salomón: Feria Tulcingo 2004: 22 y 23 de marzo	**Salomón: Narration about the Educational Fair 2004: March 22nd and 23rd.**
[en el fondo sonidos de la feria y música de le banda] Iniciamos esta narración este día 22 de marzo con el festejo aquí en Tulcingo del 198 aniversario del natalicio de don Benito Juárez, de quien recordamos la frase, entre los pueblos y los individuos el respeto al derecho ajeno es la paz.	[background fair sounds, music band] We commence this narration on the 22nd of March with the festivity, here in Tulcingo, of the 198th anniversary of the birth of Don Benito Juarez, of whom we recall the dictum: "Among towns and individuals, respect for the rights of others means peace."
Desde el diamante de la Mixteca poblana para ustedes Salomón Virafuentes. Gracias.	From the Mixteca Poblana [mountain range] diamond, with you, Salomón Virafuentes. Thank you.

Audio piece transcript	Audio piece translation
Mary y Elsa: las kermesses en los años 50	**Mary and Elsa: What kermesses were like in the 50s**
[tango music as background]	[background tango music]
[Don Francisco] *se invitaban a las muchachas,* *se iban a invitar hasta su casa,* *a la hora que ya iba ser la fiesta* *se iban a traer* *y se iban a dejar cuando se acaba.*	[Don Francisco] You'd invite the girls, you'd go to their homes to invite them. When it was almost time for the party, you'd go and get them, and you'd take them back when it was over.
se paseaba a las novias, *vaya... las muchachas mas bien,* *no, casi por lo regular no se acosta....* *no se acostumbraba mucho el baile,* *sino no que mas el paseo que se daba alrededor del zócalo,*	You'd stroll with your girlfriends. I mean the girls, rather. No, almost regularly we didn't use to … we didn't go to dances much, but rather we used to stroll round the square
y ya este se daba unas 2, 3, 4 vueltas y *si el muchacho tenia dinerito para* *seguir invitando allí a la señorita, invitarle* *las golosinas que había, los antojitos que hacían las personas.*	And so, well you'd go 2, 3, 4 times round and if the young man had a little bit of money to keep on treating the young lady there, treat her to the sweets there were there, to the goodies people cooked.
[Elsa] ¿Y bueno era difícil sacar el permiso para sacar a las señoritas y llevarlas al baile?	[Elsa] And well was it difficult to get permission to take the young ladies out and take them to the dance?
[Don Francisco] Pues tenia uno que suplicarle a las madres de familia,	[Don Francisco] Well you'd have to plead to their mothers.
[Señora] pues para mí fue muy difícil *no nos dejaban bailar...*	[Lady] Well for me it was very difficult. They wouldn't let us dance.
...[Elsa] ¿volviendo a lo del baile usted *nos puede decir como se invitaba a bailar a la pareja?*	…[Elsa] Going back to dancing, can you tell us how you asked a girl if she wanted to dance with you?
[Don Francisco] a pues se acercaba uno, *y este se tendía la mano, y le decía uno a la muchacha: "señorita me permite bailar una pieza con usted,'* *y ya pues unas decían que si y otras decían que no, pero ahí eran las* *quemazones, que a veces no* *nos hacían caso , a veces ya tenían compromiso con otro, y ya no iba uno con ellas.*	[Don Francisco] Ah, well you'd go up to her, and you'd extend your hand, and you'd say to the girl: "Miss, will you allow me to dance a piece with you?" And, well some said yes and others said no, (and that's when you'd feel terribly embarrassed, 'cause sometimes they'd pay no attention to us, sometimes they'd be engaged to somebody else, and you wouldn't go and ask them again.)
Pues la llevaba uno del brazo y la tenia que llevar uno al asiento que ella tenia, no como ahora que no mas la sueltan y ya.	Well you'd lead her by the arm, and you'd lead her back to her seat, not like today that they just let go off her, and that's it.

Audio piece transcript	Audio piece translation
Odilia: Una joven embarazada en la prepa	**Odilia: A pregnant girl in high school**
Y ya escuchamos chavas que esto nos sirva de lección para planificar nuestra familia. *Aprendiendo de la vida en Nueva York,* *para ustedes Odilia*	So now we've heard, girls. May this teach us a lesson so we plan our family. Learning from life in New York. For you, Odilia.
Odilia: Es cuestión de adaptación	**Odilia: It's a matter of adapting**
[Odilia] íbamos por la calle *buscando historias de inmigrantes cuando* *de repente nos encontramos con* *un restaurante mexicano…* *las personas del mostrador nos recomendaron a un señor que estaba en la cocina…*	[Odilia] We were walking down the street looking for immigrant stories when suddenly we run into a Mexican restaurant… the people at the counter recommended a man who was in the kitchen…
[sonidos de restaurante en el fondo] *[Juan] Siempre me dedique al diseño grafico* *Lo que pasa es que después del 9/11* *Mi carrera esta bloqueada…* *La mayoría de las imprentas … como la mía quedaron en bancarrota* *Y entonces me ha sido muy difícil encontrar un empleo en publicidad o diseño grafico*	[background restaurant sounds] [Juan] I always did graphic design The thing is that after 9/11 my career is blocked… Most printing shops…like mine went bankrupt And so it's been very difficult for me to find a publicity or graphic design job
y como ahora estoy trabajando en este restaurante *Pero hay que buscar la manera de sobrevivir* *No no es fácil* *Uno tiene que adaptarse al sistema al medio* *Y realmente lo que ha implicado para mi desde que llegue es adaptación* *Primero como les dije al principio el problema de la comunicación* *Segundo el sistema de la sociedad* *Y tercero por ejemplo, aquí este pequeño restaurante es un mundo también* *El grupo de personas con el que trabajo* *es una atmósfera donde me tengo que adaptar* *Y aunque son compatriotas* *este es difícil lidiar entre entre nosotros muchas veces no no hay mucho apoyo,* *no hay cooperación entre uno y el otro,* *es muy difícil*	And like now, I'm working in this restaurant But you have to look for a way to survive No, it isn't easy One has to adapt to the system, to the environment And what this has really meant for me since I got here is adapting First, like I told you at the beginning, the problem of communication Second, the society system And third, for example here this little restaurant is a world too The group of people I work with is an ambience where I have to adapt And though we are compatriots, it is difficult to struggle with each other. Many times there is not, no there is not much support. There is no cooperation with each other. It is very difficult.
Pero insisto es cuestión de adaptación.	But I insist it's a matter of adapting.

Audio piece transcript	Audio piece translation

Reyna: *Pasión por cantar* | **Reyna: Singing passion** |

Yo nací con eso
Porque desde Chiquita a mí siempre me gusto cantar

I was born with it.
Because since I was little, I always liked singing.

Yo pienso que si yo me hubiera puesto a estudiar para cantar
Yo si la hacia, no me moría de hambre

I think that if I had
studied singing,
I'd do alright. I wouldn't starve to death.

Y la verdad cuando canto
Siento que lo saco de mí
Y eso me hace feliz a mí
Me siento bien cantando

And honest, when I sing,
I feel I bring it out from inside me.
And that makes me happy, it does.
I feel very good, singing.

[canta] Que bonitos ojos tienes de bajo de esas dos cejas…

[sings] *Que bonitos ojos tienes de bajo de esas dos cejas…*

Y llegaba el mariachi ahí a donde estaba yo ahí sentada
Y ya que, ni modos que les iba a decir que
no que ahh no no la voy a cantar
Y a mí que me encantaba también
Y ya me daban el micrófono
Y yo me ponía a cantar
Y Saliera como saliera a mí me daba, yo cantaba [ja, ja, ja]
y a mí me daba risa

And the mariachis came to where I was
 sitting.
And no way out, like I wasn't gonna tell'em no, not
ahh, no, no I won't sing it.
And me, I loved it too.
And they would give me the microphone
And I would sing
And no matter how well I did, me, I'd la…I'd sing
[Ha, ha, ha]
And me, I'd laugh

Reyna's mom: *Cruzando por la barranca* | **Reyna's mom: Crossing over the gully** |

Fue como en 1971...
Duraron un mes para llegar...
Y por la parte por donde los cruzaban,
dicen que era una barranca
pero bien honda, y entonces se cruzaron por unas
ramas de árboles, para cruzar del otro lado para
allá, y en un de esas que
se suelta mi hermano, y pues
se iba ir pa' bajo pa' la profundidad

It was like in 1971…
It took them a month to cross…
And the place where they crossed them,
they say it was a gully
But real deep, and then they crossed climbing some
tree branches to cross to the other side, there, and all
of a sudden,
my brother lost his grip. And, well,
he was gonna fall down, down to the depth.

Por fin que logro agarrarse de la otra
mano y se cruzo, pero entonces sufrieron mucho, la
ultima vez que entro ilegal mi esposo.

He managed, though, to grab on with his other hand
and he crossed. But then they suffered a lot. Last
time my husband entered illegal.

Audio piece transcript	Audio piece translation
Ernesto, Hilda, Isidro: Piénselo bien!	**Ernesto, Hilda, Isidro: Think twice!**
[Isidro] La vida es muy difícil aquí en Nueva York	[Isidro] Life is very different here in New York
[Ernesto] no porque estemos acá quiere decir que nos hemos olvidado de ustedes, nosotros siempre los tenemos en la mente	[Ernesto] Not because we're here does it mean we've forgotten you [all]. We always have you in mind.
[Isidro] la renta que, aquí lo bajito son de 650 – 700. Es un cuartito chiquito, no es como los de allá. que lo que tenemos allá es una casita Chiquita, como sea es de uno, y esta grande, no como aquí que es como un closet donde nosotros vivimos de verdad.	[Isidro] Rent here, at least, it's $650 – 700. It's a little room, tiny, not like those back home. 'Cause what we got back there is a little house. Small, at least it's yours, and it's big. Not like here. I mean, it's like a closet where we live, really.
[Hilda] y sufre mucho porque no encuentran trabajo, no encuentran donde vivir. En una casa a veces viven entre 8, 10 personas –15 personas. Recamaras nada mas a veces hay 2 o 3. En un cuarto se quedan 2,3, 4 hombres. En otro cuarto 4 – 5 personas , 5 mujeres. Y te toca de todas maneras pagar. Y ahí veces que se turnan unos duermen de día y otros de noche, depende del horario de trabajo. Y ahí veces que tu tu tienes un desvelo, que vienes cansado y eso no importa. Porque así vive uno aquí	[Hilda] And you suffer a lot because you can't find a job, you can't find where to live. In a house, sometimes 8, 10 people live –15 people. Bedrooms sometimes there're only 2 or 3. In one room, 2, 3, 4 men sleep. In another room 4, 5 people, 5 women. And you have to pay anyway. And sometimes, some take turns, some sleep in the daytime and others at night. Depends on the work schedule And sometimes you, you've stayed up late, you're tired, and that doesn't matter. Because that's the way one lives here.

Audio piece transcript	Audio piece translation
Carmelo Maceda: Travesía de Tulcingo a Nueva York.	**Carmelo Maceda: Voyage from Tulcingo to New York**
No veíamos la carretera donde íbamos corriendo y ya se paro nos dijeron casi en secreto que todos de uno por uno subiéramos la caseta de la camioneta y que de ahí brincáramos el alambre ...háganlo rápido pero cayados	We couldn't see the road we were traveling on and finally it stopped. They told us, almost in secret, that one by one, we were to climb onto the cabin, and, from there, jump the wire …do it quickly but quietly
...brincábamos y caíamos ya en el lado de Estados Unidos	…we each leaped and fell now on the United States's side.
...ya este, con malas palabras este, un poquito fuerte lamentablemente ese es el estilo de los coyotes, no? nos venia gritando que nos calláramos, que no hiciéramos ruido	…we, uh, with foul language, well, rather harshly, unfortunately that's the *coyote*'s style, isn't it? shouting at us, all the way, to shut up, to make no noise
...todos corriendo todo el tiempo agachados ...esa carrera la empezamos como a las 11 y la terminamos yo creo como a las 4 de la mañana porque todavía era un poquito obscuro ...ya cuando llegamos hasta San Isidro nos metieron a un basurero y ahí estuvimos...y luego llegaron dos coches y nos metieron a las cajuelas	…all of us running, crouching all the time …that run, we started it like at about 11and we finished it, I think, at about 4 a.m. because it was still a little dark …finally when we reached San Isidro they stuck us in a garbage container…and later two cars arrived and they stuck us in the trunks.
...de hecho venia mi hermana conmigo. Imagínense si yo venia chiquito de edad, pues ella venia más chiquita porque nos llevamos tres años de edad, era ella una niña! yo tenia 14 años ... y ya cuando agarramos el vuelo, ora si de verdad veníamos solos	…in fact, my sister came with me. Imagine, if I was little of age, well, she was even littler because we're three years apart. She was a little girl. I was 14. …and until then it dawned on us, this time we were really by ourselves.
... el policía nos vio muy raro, que éramos tantos niños y todos solitos, este ,y entonces si que nos empieza a llamar, y ...pues que empezamos a correr ya aquí en el aeropuerto Kennedy, y que agarramos taxis	…the policeman stared at us really strangely that we were so many children and all by ourselves, and uh, and, then he actually started to call us and …Well, we started to run already here at the Kennedy Airport and we took taxis.
...Yo llegue, eso si nunca se me olvida, yo llegue el 18 de octubre aquí —ahora que yo me recuerdo—Era una dirección. Muy feo el lugar. Nada mas había como 2 o 3 edificios—en un área de 15 cuadras— que estaban en servicio. Y uno de esos edificios era a donde nosotros íbamos. Llegamos y todo callado, tocamos, y resulta que mi hermana ya no vivía allí. Ni la conocía la persona que vivía ahí	…I arrived, that, really, I never forget. I arrived October the 18th here. —now that I remember—it was an address, really ugly, the place. There were only, like 2 or 3 buildings—in a 15-block area—that were inhabited and to one of those buildings was where we were headed. We got there, and all quiet, we knocked and it turned out that my sister didn't live there anymore. Nor did the person that lived there know her.
...eh pues no, estaba lloviendo, ya eran como las	Ah, well nah, it was raining and it was now like 4

4 de la mañana. El cansancio, el miedo y todo eso pues nos dormimos en las escaleras.

…"no, pero no te preocupes paisano, este, les voy abrir, mi apartamento, ahí se meten todos,
y quédense…este pues pa' que no estén aquí en el pasillo, y en la tarde regresa otro muchacho
y pues yo le voy hablar a su trabajo y le voy a decir que pues ustedes son nuevos aquí
y que les ayude a conseguir información de sus familias"

…y así le hicimos nos quedamos todo el día ahí, por suerte el muchacho tenia un poquito de comida, no, pues nos dividimos la poquita comida que había ahí,
no salimos para nada a la calle porque teníamos miedo

a.m. The tiredness, the fear, and everything, we fell asleep in the stairs.

…"Nah, well don't worry, *paisano*, well, I'm going to open my apartment for you. All of you, come in, and stay…well, so you won't be here in the corridor and in the evening, this other guy comes back and I'm going to call him to his work and I'm going to tell him that, well, that you are new here, and to help you find out about your families"

… and that's what we did we stayed there all day, fortunately the young man had a little bit of food. Well, so we split the bit of food there was there.
We didn't go out into the street at all because we were scared.

References

Ananny, Mike **and** Carol **Strohecker**. (**2002**) "Sustained, open dialogue with citizen photojournalism." Proceedings of Development by Design Conference. Bangalore, India [http://thinkcycle.org/tc-filesystem/download/development_by_design_2002/publication:_sustained,_open_dialogue_with_citizen_photojournalism/anannyStrohecker-dyd-FINAL.pdf?version_id=40814]

Ash, Richard. (**2004**) Personal email communication. June 20, 2004.

Bender, W., Chesnais, P., Elo, S., Shaw, A., and Shaw, M. (**1996**) "Enriching communities: Harbingers of news in the future." IBM Systems Journal: Vol. 35, NOS 3&4. [http://www.research.ibm.com/journal/sj/353/sectionb/chesnais.pdf.]

Bender, Walter. (**2000**) "Learning and Expressing." IBM Systems Journal: Vol. 39, NOS 3&4. [http://www.research.ibm.com/journal/sj/393/part3/bender.pdf.]

Brecht, B. (**1932**) "The radio as an apparatus of communication" In Willett, J.(Ed.), *Brecht on theatre*. London: Hill & Wang. 1964.

Borden, Tessie. (**2001**) "Web links migrants in U.S. with Mexico hometown" In Laredo Morning Times. August 22, 2001. p.14A. [www.lmtonline.com/news/archive/082201/pagea14.pdf]

Castells, Manuel. (**2004**) *The power of identity*. 2nd Ed. Oxford, and Malden, MA: Blackwell Publishers.

CDDHCU site. (**2004**) "Ley federal contra la delincuencia organizada—Nueva Ley publicada en el Diario Oficial de la Federación el 7 de noviembre de 1996." In Camara de Diputados—H. Congreso de la Union site [http://www.cddhcu.gob.mx/leyinfo/doc/101.doc] Última reforma aplicada: May 11, 2004.

Dewey, John, (**c1929**) *Experience and nature*. New York: Norton.

Dewey, John. (**1916**) *Democracy and education: an introduction to the philosophy of education*. New York, Macmillan.

Disessa, Andrea A. (**2001**) *Changing minds: computers, learning and literacy*. Cambridge, MA,: The MIT Press.

Driscoll, John (**2003**). Personal email communication. November 21, 2003.

Dourish, P. and G. **Button**. (**1998**). "On "Technomethodology": Foundational Relationships between Ethnomethodology and System Design. Human Computer Interaction." 13(4):395-432. [http://ftp.ics.uci.edu/pub/jpd/papers/1998/hci-technometh.pdf]

Durand, Jorge. (**2000**) "Origen es destino: Redes sociales, desarrollo histórico y escenarios contemporaneos."In Migración México-Estados Unidos opciones de política. CONAPO. October 2000. [http://www.conapo.gob.mx/migracion_int/principal.html]

Elliott, Andrea. (**2003**) "For mom's cooking, 2,200 isn't too far." In New York Times. August 11, 2003.

Eltzroth, Carter **and** Charles **Kenn**. (**2003**) "Broadcasting and development: options for the World Bank." Washington, D.C.: The World Bank.

eRadio surveys. (**2004**) Refers to information taken from audio recordings, observations, interviews, and other spoken and written sources.

FCC site. Federal Communications Commission. [http://www.fcc.gov/mb/video/lptv.html]

Freire, Paulo **and** Antonio **Faundez**. (**1989**) *Learning to question: A pedagogy of liberation*. Tony Coates (Trans.) New York: Continuum.

Freire, Paulo. (**1970**) *Pedagogy of the oppressed*. Myra Bergman Ramos (Trans.) New York: Herder and Herder.

From the Top site. Radio Program (pre-college age classical musicians.) [http://www.fromthetop.org/rs_pages/rs_listen.html]

Garfinkel (Harold), M. **Lynch**, **and** E. **Livingstone**. (**1983**) "Temporal order in laboratory work." In K. Knorr-Cetina and M. Mulkay: Science observed. London: Sage publications.

Geekcorps site. [http://www.geekcorps.org/]

Girard, Bruce. (**2003**). "Radio and the Internet: Mixing media to bridge the divide." In Bruce Girard, FES, and UN (Eds.), *The one to watch: radio, new ICTs and interactivity*. Rome: Food and Agriculture Organization of the United Nations.

Glass, Ira (**1999**). "Radio: an illustrated guide." Jessica Abel (Illustrator). Chicago: This American Life.

Gomez-Monroy, Carla. (**2002**). "The Pool Effect: More Access, Sharing, & Resources." Proceedings of Development by Design Conference. Bangalore, India.

Gumucio Dagron, Alfonso. (**2001**) Making waves: participatory communication for social change. New York: The Rockefeller Foundation.

Gumucio Dagron, Alfonso. (**2003**) "Take five: A handful of essentials for ICTs in development." In Bruce Girard, FES, and UN (Eds.), *The one to watch: radio, new ICTs and interactivity*. Rome: Food and Agriculture Organization of the United Nations.

Guzman, Betsy (**2001**) "The Hispanic Population Census 2000 Brief." In US Census Bureau. May 2001. [http://www.census.gov/prod/2001pubs/c2kbr01-3.pdf]

Harel, Idit **and** Seymour **Papert** (Eds). (**1991**) *Constructionism: research reports and essays, 1985–1990.* By the Epistemology & Learning Research Group: the Media Laboratory, Massachusetts Institute of Technology. Norwood, N.J.: Ablex Pub. Corp.

Hart, Roger. (**1997**) *Children's participation: the theory and practice of involving young citizens in community development and environmental care*. London: Earthscan.

Hayes, Joy Elizabeth. (**c2000**) *Radio nation: communication, popular culture, and nationalism in Mexico*. Tucson: University of Arizona Press.

Hermida, Alfred. (**2004**) "Radio mail links Pacific islands." In BBC news. UK edition. April 6, 2004. [http://news.bbc.co.uk/1/hi/technology/3600657.stm]

Herrera, Hayden. (**c1983**) *Frida, a biography of Frida Kahlo*. New York: Harper & Row.

Hilliard, Robert L. (**c2004**) *Writing for television, radio, and new media*. 8[th]Ed., Belmont, Calif.: Wadsworth.

IMER. (**2003**) "Código de ética y manual práctico de estilo radiofónico." In Sistema Nacional de Noticiarios.Instituto Mexicano de la Radio. Mexico City. [http//www.imer.gov.mx]

INEGI. Instituto Nacional de Estadística Geográfica e Informática. (2000). "Tulcingo Census 2000." In XII Censo General de Población y Vivienda 2000. [http://www.inegi.gob.mx/est/librerias/tabulados.asp?tabulado=tab_po04a&c=708&e=]

INI site. Instituto Nacional Indigenista. "Sistema de Radiodifusoras Culturales Indigenistas." In Programas y proyectos del INI. [http://cdi.gob.mx/ini/ini/progra08_1.html]

Joshi, Anirudh **and** Shama **Rasai**. (**2002**) "Interaction for semi-literates and illiterates." Proceedings of Development by Design Conference. Bangalore, India.

Junior Journalists on-line publication. [http://toy-story.media.mit.edu]

Kelly, Eugene (Ed.). (**c1984**) *New essays on Socrates*. Lanham, MD: University Press of America.

Knight International Press Fellowships site. "Chuck Rice's Journal from Mongolia." [http://www.knight-international.org/chuck]

Kohl, Herber. (**1967**) *36 children*. New York: The New American Library.

Levine, Joanne. (**2001**) "New Frontier: The Deserted Village: Mexican Village Left Barren by Men Searching for Jobs in New York." In abc NEWS.com. June 6, 2001. [http://abcnews.go.com/sections/wnt/WorldNewsTonight/wnt010606_emigrants_feature.html]

Maceda, Carmelo. (**2004**) Personal Communication. New York City. June 12, 2004.

Marshall, Gordon (Ed.). (**1998**) "community" *A Dictionary of Sociology*. Oxford University Press. Oxford Reference Online. Oxford University Press. Massachusetts Institute of Technology - MIT. August 9, 2004 [http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t88.e343]

McLuhan, Marshall. (**1994**) *Understanding media: the extensions of man*. Cambridge, Mass.: MIT Press.

References

Merriam-Webster: Authority & Innovation. (**2000**) Ver. 2.5. Computer Software Dictionary Application.

Milroy, Lesley (**1987a**) *Language and social networks*, 2nd Ed. Oxford: Blackwell.

Minsky, Marvin. (**2004**) Part V. Deliberation and Imagination (March 19, 2004.) of *The Emotion Machine*. Unpublished. MIT Media Lab and MIT AI lab. [http://web.media.mit.edu/~minsky/]

Molina Ramírez, Tania. (**2002**) "Día del Migrante Mixteco en Pueblayork: Negocios, no soluciones de Estado." Mexico: La Jornada newspaper. August 18, 2002. [http://www.jornada.unam.mx/2002/ago02/020818/mas-molina.html]

Narayan, Deepa **and** Talat **Sahah**. (**2000**) "Connecting the local to the global: voices of the poor." Washington, D.C.: World Bank. (Framework paper prepared for December 11 – 13, 2000 Workshop on Local to Global Connectivity for Voices of the Poor.)

NPR site. National Public Radio. [http://www.npr.org/]

New California Media site. [http://news.ncmonline.com/news/]

OneWorld Radio site. [http://radio.oneworld.net]

Papert, Seymour. (**1993a**) *Mindstorms: children, computers, and powerful ideas*. New York: Basic Books.

Papert, Seymour. (**1993b**) *The children's machine: rethinking school in the age of the computer*. New York : BasicBooks.

Perez de Cuellar, Javier. (**1995**) "Our creative diversity. The report of the World Commission on Culture and Development" (chaired by the former UN secretary-general). Submitted to the UNESCO General Conference in Paris. November, 1995. [http://www.unesco.org/culture_and_development/ocd/intro.html]

Perez, Jesús. (**2004**) Personal telephone communication. July 13 and August 6, 2004.

Postman, Neil **and** Charles **Weingartner**. (**1969**) *Teaching as a subversive activity*. New York: Delacorte Press.

Postman, Neil. (**1998**) "Five things we need to know about technological change." Denver, Colorado: March 27, 1998. [http://itrs.scu.edu/tshanks/pages/Comm12/12Postman.htm]

Price-Davies, Eryl **and** Jo **Tacchi**. (**2001**) "Community radio in a global context: a comparative analysis." Community Media Association. September, 2001.

Radio Arte site. [http://www.radioarte.org/home.html]

Radio Chi: Un tributo a la radio Mexicana. By Samuel Morales. Radio Program at the Computer Clubhouses Village, 14 years old child from Mexico City. [http://village.computerclubhouse.org/ch/] (username and password are required.)

Radio Diaries site. [http://www.radiodiaries.org/]

Ramos, Jose Manuel **and** Angel **Diez**. (**2003**) "Blending old and new technologies: Mexico's indigenous radio service messages." In Bruce Girard, FES, and UN (Eds.), *The one to watch: radio, new ICTs and interactivity*. Rome: Food and Agriculture Organization of the United Nations.

Rattigan, Dermot. (**2002**) *Theatre of sound: radio and the dramatic imagination*. Dublin: Carysfort Press.

Relaño, Maruxa. (**2004**) "Un puente a distancia: un programa piloto de radio busca conectar una comunidad dividida entre Puebla y Nueva York." New York: Hoy newspaper. March 30, 2004. p. 14/Comunidad.

Richman, Joe. (**2000**) "Teen Reporter Handbook: how to make your own radio diary." New York: Radio Diaries Inc.

Rogoff, B., Paradise, R., Mejía Arauz, R., Correa-Chávez, M., and Angelillo, C. (**2003**). "Firsthand learning through Intent participation" In Annu. Rev. Psychol. February, 2003. 54:175 – 203.

Rogoff, B. (**1995**) "Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship." In J. V. Wertsch, P. Del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind*. Cambridge: Cambridge University Press.

RTNDA site. "Hidden cameras, Hidden microphones:At the crossroads of journalism, ethics and the laws." In Radio and Television News Directors Foundation. [http://www.rtnda.org/resources/hiddencamera/index.html]

Schmandt, Christopher. (**1994**) *Voice communication with computers: Conversational systems*. New York: Van Nostrand Reinhold.

Silver Stringers on-line publication. [http://toy-story.media.mit.edu:9000/servlet/pluto]

Sipitakiat, Arnan. (**2004**) Personal email communication. April 1 and 6, 2004

Smith, B., Bender, W., Endter, I., Driscoll, J., Turpeinen, M., and Quan, D. (**2000**) "Silver Stringers And Junior Journalists: Active Information Producers." IBM Systems Journal. Vol. 39, Nos. 3&4.

Smith, Robert. (**1992**) "Mixteca in New York; New York in Mixteca." Vol. XXVI No. 1. July, 1992. In Report on the Americas. 24 no. 5 – 26 no. 4 1991 – 1993. New York, N.Y.: NACLA.

Story Corps site. [http://Storycorps.Net/About/]

Strömberg, David. (**2002**) "Radio's impact on public spending." In Forthcoming, Quarterly Journal of Economics. World Bank. October 30, 2002. [http://www.worldbank.org/Wbi/B-Span/Radio_Impact/Sub_Radio_Impact_Index.Htm]

The World Bank Institute. (**2002**) "The right to tell: the role of mass media in economic development." Washington, DC.: The World Bank Institute. November, 2002.

Tulcingo Talks. (**2004**) Is a general label used to indicate non-literal citations of comments or compilations of comments made by different people of whose identities I am not positively sure. I am certain that they were Tulcingans, either living in Tulcingo or in New York City. March-May, 2004.

UNESCO Institute for Statistics. (**1999**) "Table IV.14 Radio and television receivers." In UNESCO Statistical Yearbook 1999 - Culture and Communication Statistics (Updated: February 19, 2004) [http://www.uis.unesco.org/TEMPLATE/html/CultAndCom/Table_IV_14_America.html]

U.S. Census Bureau. "Census 2000 Summary File 1, Matrix PCT11. QT-P9. Hispanic or Latino by Type: 2000. Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data. Geographic Area: New York city, New York. [http://factfinder.census.gov/servlet/QTTable?_bm=y&-geo_id=16000US3651000&-qr_name=DEC_2000_SF1_U_QTP9&-ds_name=DEC_2000_SF1_U&-_lang=en&-redoLog=false&-_sse=on]

Welti-Santos, Larissa. (**2004**) Custom made the graph of Figure 1-1. with Adobe Photoshop.

WorldVibrations site. WorldVibrations Radio Station. [http://www.worldvibrations.com/]

Index