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Multilingualism, Identity, and the Internet

I ka 'olelo no ka 'ola, i ka 'olelo ke make
In language there is life, in language there is death
Ancient Hawaiian proverb

Un populu
diventa poviru e servu,
quannu ci arrobbanu a lingua,
addutata di padri,
a perdi pi sempri.
A nation is reduced to poverty and slavery, when it is robbed of its language inherited from his ancestors, when people lose it forever.
Ignazio Buttita, Sicilian poet

0. Introduction

Language has always played an important role in the formation and expression of identity. The role of language and dialect in identity construction is becoming even more central in the post-modern era, as other traditional markers of identity are being destabilized. What is true all over the world, however, has characteristic features in different countries or speech communities. Whereas in the United States of America the English language is still considered as the unifying bond between individuals coming from different ethnic backgrounds, the option for multilingualism of States and for plurilingualism of individuals is one of the cornerstones of Europe. What is called the "monolingual habitus" of Europeans (see Gogolin in this volume) is obsolete in times of internationalisiation and globalization and often regarded as a danger for peace in Europe. Therefore the European communities, in particular the Council of Europe (2001), is promoting trilingualism. Every European citizen should know at least three languages: her/his mother tongue, English as an international language, and another language of the neighborhood or her/his own choice. In this paper, we will first explore the relationship of language to race and ethnicity as essential to the multiple identities individuals are engaged in constructing in the age of information. We will then examine the particular role that language plays in cyberspace. Finally, we will illustrate these issues by examining the experiences of Native

Hawaiians' use of the Internet as a tool for promoting language revitalization[1]. From this experience of the first author we will try to deduce proposals of what could be done to preserve the languages of immigrant workers in Europe with particular reference to the Italian language which before the ascent of French and English was a European lingua franca *par excellence* and is now reduced to regional status.

1. Language and Identity in the Age of Information

The informational revolution which has begun in the last several decades, accompanied by the process of international economic and media integration known as globalization, has acted like a battering ram against traditional cornerstones of social authority and meaning. Throughout the world, shifts of economic and political power have weakened the role of the state, new forms of industrial organization have decreased the possibilities for long-term stable employment, and women's entry into the workforce has shaken up the traditional patriarchal family. The political, economic, cultural, and social shifts which are occurring in the wake of the informational revolution are almost as profound, and far more compressed, than those which occurred as a result of the first industrial revolution some two hundred years ago.

But every action brings a reaction. The last quarter-century has also witnessed a worldwide surge of movements of collective identity that challenge globalization and cosmopolitanism on behalf of people's control over their culture and their lives. These differ from earlier social movements, which in many parts of the world were based on struggles of organized workers. As Touraine explains: "In a post-industrial society, in which cultural services have replaced material goods at the core of production, *it is the defense of the subject, in its personality and its culture, against the logic of apparatuses and markets, that replaces the idea of class struggle*" (Touraine 1994, emphasis in original; translated from French by Castells 1996: 23). Castells (1997: 3) further explains the central role of identity:

> In a world of global flows of wealth, power, and images, the search for identity, collective or individual, ascribed or constructed, becomes the fundamental source of social meaning. This is not a new trend, since identity, and particularly religious and ethnic identity, have been at the roots of meaning since the dawn of human society. Yet identity is becoming the main, and sometimes the only, source of meaning in a historical period characterized by widespread destructuring of organizations, delegitimation of institutions, fading away of major social movements, and ephemeral cultural expressions. People increasingly organize their meaning not around what they do but on the basis of what they are.

Within this situation, the dynamics of race and ethnicity are also altered. On the one hand, race and ethnicity matter as much as ever as a source of oppression. On the other hand though, as globalization and economic change blur traditional racial and ethnic boundaries, race and ethnicity increasingly intersect with other identity markers, related to religion, nationality, gender, and language in stimulating social struggle (Appiah/Gates 1995). This is illustrated by an analysis of ethnic politics in the United States.

Ever since the institutionalization of slavery brought about the racialization of society in the 16th century, the principal divide within American society has been between Black and White. African-American identity was forged through a collective history of racism,

[1] This paper draws on the first author's previous discussion of these issues in "Language, Identity, and the Internet" (Warschauer 2000) and Electronic Literacies (Warschauer 1999).

and expressed in music, literature, and social struggle. European immigrants, whether indentured servants or wealthy industrialists, were socialized within a generation or two into the "white race". Native Americans, Mexicans, and immigrants from Latin America, the Caribbean and Asia were socialized as non-white, with their inclusion in that category enforced through anti-miscegenation laws.

The last thirty years however have witnessed a major reshaping of this dynamic. The success of the civil rights movement and affirmative action programs has allowed an African-American middle class to emerge and make significant inroads into economic and political power structures. At the same time, though, changes wrought by the informational economy, such as the transference of low-skill manufacturing jobs from the U.S. to developing countries - has severely worsened the social and economic conditions of the majority of African-Americans by every conceivable measure (West 1993). The failure of the Civil Rights movement to improve the lot of most African-Americans, as well as the increasing gap between the Black "talented tenth" and a large "underclass", have weakened Black racial unity and caused many Blacks to seek out other identities. Whereas the Black struggles of yesterday were symbolized by the 1965 March on Washington - with its powerful call for racial equality - the Black struggles of today are symbolized by the 1996 Million Man March, with its strong religious, nationalist, and gender-based character (which brought it opposition from many established Civil Rights groups).

Within this new mix of Black politics, the role of language and dialect has emerged as a critical issue. The dialect spoken by many African-Americans, Black English Vernacular (also called Black English, African-American English, African-American English Vernacular, or Ebonics) has existed for centuries, but has apparently diverged in recent decades from Standard American English due to increased racial and economic segregation and cultural resistance in the ghetto (Labov/Harris 1986). Yet the African-American community is bitterly divided over the significance of the Black dialect. This is witnessed by the controversy over the Oakland School Board's 1996 resolution on Ebonics. The resolution asserted that the educational problems of African-Americans stemmed from discrimination not only due to their race but also due to their language. The resolution was immediately attacked by prominent African-American leaders such as Jesse Jackson, Maya Angelou, and Kweisi Mfume. Whereas the Oakland School Board chose to emphasize the linguistic differences between Blacks and Whites, these spokesmen from the Black "talented tenth" chose to reject the language of the ghetto and emphasize the unity of (middle-class) Blacks and Whites in speaking Standard American English.

The U.S. racial dynamic has been transformed not only by changing identity politics among Blacks, but also by shifting immigration patterns. The large number of immigrants from Latin America and Asia, as well as the relatively high intermarriage rates between those immigrants and whites, has further blurred the U.S. color line. The number of Latin Americans surpassed that of Blacks in recent years. Contrary to earlier expectations, quasi racial ethnic identities such as "Chicano" or "Latino" have not taken strong hold, with Latin American immigrants divided by class, nationality, and race. To the extent that a U.S. Hispanic identity has emerged (or that national identities such as Mexican/Mexican-American have been preserved), it is once again largely due to language, with Latin American immigrants united by their use of either Spanish or "Spanglish". Paralleling and even overshadowing the controversy over Ebonics, the main political struggle which emerged in 1998 in California was over bilingual education. This struggle emerged not only between Hispanics and Whites, but also within the Hispanic community. While the majority of Hispanic groups and voters supported the initiative, a substantial minority did not. Apparently, a Spanish language-based identity remains important for a certain section

of Latin American immigrants, while a faith in English immersion as a vehicle to American middle-class life overrides that identity for others.

While the above examples are drawn from the United States, the infusion of language into ethnic struggles is by no means a local phenomenon. South African students' battle to learn English rather than Afrikaans helped carry forward the anti-apartheid movement, while a few years later speakers of Zulu launched a counter-revolution in Natal province. Canadians deal with separatist movements from both French speakers in Quebec and Native American groups who seek to revitalize their languages. Lithuanians, Latvians, and Estonians broke away from the Soviet Union and made language a central component of citizenship only to face revolt from the Russian speakers in their midst. Yugoslavs who previously spoke a single language, Serbo-Croatian, divided into Croats and Serbs who formed new identities based in part on their efforts to forge two distinct languages, Croatian (with a Latin alphabet) and Serbs (with a Cyrillic alphabet). Catalans work to build a language-based nation within a nation, while small numbers of Basque-speakers wage armed struggle for independence. Speakers of Maori, Hawaiian, Navajo, Mohave, Quechua, and Gailec, work to revive their languages as a way of preserving their culture. And throughout the world, from France to Hong Kong to Malaysia to Kenya, movements have arisen to defend national languages against the encroachment of global English.

But there are not only “sites of struggle” within ethnic communities. Single individuals try to overcome identity shifts caused by transmigration. The plurilocal practices of many immigrant workers in the European Union have supplanted the traditional scheme of the immigrant who leaves his or her country to work abroad for a lifetime. Therefore it is not surprising that language and dialect have assumed such a critical role in identity formation. The process of becoming a member of a community has always been realized in large measure by acquiring knowledge of the functions, social distribution, and interpretation of language (Ochs/Shieffelin 1984). In most of the world, the ability to speak two or more languages or dialects is a given, and language choice by minority groups becomes "a symbol of ethnic relations as well as a means of communication " (Heller 1982: 308). In the current era, language signifies historical and social boundaries that are less arbitrary than territory and more discriminating (but less exclusive) than race or ethnicity. As Castells (1997: 52) notes:

> If nationalism is, most often, a reaction against a threatened autonomous identity, then, in a world submitted to culture homogenization by the ideology of modernization and the power of global media, language, the direct expression of culture, becomes the trench of cultural resistance, the last bastion of self-control, the refuge of identifiable meaning.

Language-as-identity also intersects well with the nature of subjectivity in today's world. Identity in the post-modern era has been found to be multiple, dynamic, and conflictual, based not on a permanent sense of self but rather the choices that individuals make in different circumstances over time. Language, though deeply rooted in personal and social history, allows a greater flexibility than race and ethnicity, with a person able to consciously or unconsciously express dual identities by the linguistic choices they make even in a single sentence (e.g., through code-switching, see Dirim, Gogolin, Lüdi in this volume). Through choices of language and dialect, people constantly make and remake who they are. A Yugoslav becomes a Croatian, a Soviet becomes a Lithuanian, and an American emphasizes his African linguistic and cultural heritage.

2. Language in Cyberspace

If language is becoming an increasingly important identity marker in the age of information, what then is the role of language in cyberspace? On the one hand, the Internet highlights the role of language while simultaneously masking the role of other identity markers such as race, gender, or class. As the saying goes, nobody on the Internet knows that you're a dog, nor can they easily determine if you're Black or White, male or female, gay or straight, or rich or poor. But they can immediately notice what language and dialect you are using. And, to many people's consternation, that language is usually English. As of 1996, some 82% of the Web pages in the world were in English (Cyberspeech), and most of the early nationally-oriented Internet newsgroups (e.g., soc.culture.punjabi) conducted their discussion in English as well (Graddol 1997).

This state of affairs caused great consternation for many people around the world, whose concerns were well expressed by Anatoly Voronov, the director of the Russian Internet service provider, Glasnet (cited in Crystal 1997: 108):

> It is just incredible when I hear people talking about how open the Web is. It is the ultimate act of intellectual colonialism. The product comes from America so we either must adapt to English or stop using it. That is the right of any business. But if you are talking about a technology that is supposed to open the world to hundreds of millions of people you are joking. This just makes the world into new sorts of haves and have nots.

The early dominance of English on the Internet was due to several factors. First, a high percentage of early users were North Americans. Second, the American computer scientists who designed personal computers and the Internet did so on the basis of the "American Standard Code for Information Interchange" (ASCII) Code, which made computing in other alphabets or character sets inconvenient or impossible. Finally, at a more basic level, by bringing together users in many countries, the Internet has furthered the need for people to communicate in an international lingua franca and strengthened the position of English in that role (Economist 1996: *The Coming Global Tongue*).

As it turns out, though, the fears of an English-dominated Internet were premature. Recent analysis indicates that the number of non-English Web sites is growing rapidly and that many of the more newly active Internet newsgroups (e.g., soc.culture.vietnamese) extensively use the national language (Graddol 1997: 61). Indeed, by one account the proportion of English in computer-based communication is expected to fall from its high of 80% to approximately 40% within the next decade (ibid). Other examples, too, show that multilingualism is on the advance. In a recent paper of the FIPLV (Fédération Internationale des Professeurs de Langues Vivantes) Cunningham/Leupold (2002) point out that there are more and more websites which refer to the same content in different languages (e. g., www.globegate.org./french/globe.html, www.openroad.vic.gov.au, and www.isoc.org.), and that an increasing number of search engines offer multilingual options (e. g., www.dogpile.com, www.wal.hello.com. and www.babelfish.altavista.com). According to the authors, “the Internet is helping to revive minority languages and cultures by bringing together widely scattered linguistic communities” (James 2001: 17).

Underlying this change of direction is a more general shift from globalization to re-localization. The first wave of globalization - whether in economics or in media - witnessed vertical control from international centers, as witnessed for example by the rise of media giants such as Cable News Network and MTV. But in more recent waves, a process of re-localization is occurring, as corporations seek to maximize their market share by shaping their products for local conditions. Thus while CNN and MTV first broadcast around the world in English, they are now producing editions in Hindi, Spanish, and most European languages in order to compete with other international and regional media outlets.

A similar process is occurring with the Internet, although via a more spontaneous and bottom-up process. Whereas more than 90% of the early users of the Internet were located in North America, the net is now growing fastest in developing countries; in China and India alone, Internet access is expected to multiply 15-fold over a two-year period. In response to this situation, Web browsers are being adapted for an increasing number of languages and character sets. Thus today, while Internet users around the world still must use English for global communication, they increasingly turn to their own language to reach web sites or join discussions in their own country or region.

This process is furthered by an important feature of the Internet, which is its multi-channel capacity. While producing a bilingual television show or newspaper raises costs dramatically, producing a Web site in two or more languages is relatively simple and inexpensive. This allows the Web to both support English as an international lingua franca while simultaneously facilitating the use of other languages, including languages spoken by only numbers of people. Indeed, speakers of a number of indigenous languages - from the Maori in New Zealand to the Navajo in North America - have already started to make use of the Internet's capacity to connect isolated groups of small numbers of speakers and to allow low-cost archiving and publishing as a way to promote language maintenance and revitalization (Benton 1996, Office of Technology Assessment 1995).

In summary, the Internet is on the one hand a highly restrictive medium, based on the cost of access to computers and connections as well as its historical domination by a white, well-to-do, English-speaking North American community. On the other hand, the Internet is potentially the most democratic media yet developed, in that it places powers for broadcasting, research, and interaction into the hands of greater numbers of people than ever before. Because of this basic contradiction, the Internet can both magnify existing inequalities in society while also facilitating efforts to challenge these inequalities. This is certainly seen in relation to race, whereby unequal access to information technology is an important factor in heightening the economic divide between Whites and Blacks (Castells 1998, Novak/ Hoffman/Project 2000 Vanderbuilt University 1998), yet at the same time, well crafted educational programs that take advantage of telecommunications have become an important element of anti-racist curricula (Cummins/Sayers 1995).

A similar situation exists as regards to language. The Internet until now has been thoroughly dominated by English. Demographic factors are starting to weaken this domination, though, while language rights activists throughout the globe are finding ways to use the net to defend and promote minority languages. As a result, telecommunications can become a useful tool to promote the plurilingualism of individuals and communities.

3. The role of the Internet in language revitalization and language maintenance

3.1 Multilingualism in Hawai'i

One of the most developed cases of the use of the Internet to preserve and strengthen an indigenous language has occurred in Hawai'i. This example is also illustrative of the complex interrelationship between language, ethnicity, and other identity markers discussed earlier in the paper. For this reason, we will discuss this case in depth, beginning with an introduction to language and race issues in Hawai'i, and then discussing data from an ethnographic study about Internet use in a Hawaiian language program.

Hawai'i is an example par excellence of the demographic process of globalization, with high degrees of influx and intermarriage among people of European, Polynesian, and Asian descent. Together with smaller numbers of African-Americans and Latin Americans, Hawai'i is one of the most ethnically diverse places in the world. The first U.S.

state with a majority non-white population, Hawai'i represents the demographic future of the rest of the United States. With expanding Asian and Latin American immigration, combined with inter-racial marriage, first California and then other states will eventually reflect a multiracial ethnic blend as in Hawai'i. Though not to the same extent, similar trends can be perceived in many other regions of the world, especially in several European countries, where the presence of immigrant workers and refugees has contributed to multilingualism and multiculturalism.

When people have ancestors of two or three "races" and several nationalities, it is natural that other factors besides race become important in constructing identity and meaning. In Hawai'i, language and dialect are critical factors. This takes place in two ways. First, there is a strong demarcation between those who have "local" origins and values, no matter what their race or identity, and those identified as coming from outside the Hawaiian islands. The most important identity marker of "locals" is the ability to speak Hawaiian Creole English (HCE), more commonly referred to as Pidgin (Sato 1991). HCE grew out of the language of communication between plantation owners and workers in Hawai'i, and soon became the native language of the children of those workers. Though its vocabulary is largely based on English, its syntax deviates greatly from English, and its vocabulary, syntax and intonation all reflect Hawaiian language influences (and, according to some opinions, origins, see Roberts 1995). Though HCE has converged with standard English over the course of the 20th century, it remains a markedly distinct dialect with strong sociocultural connotations. For example, a white who speaks HCE will be viewed as a local; a white who speaks standard English will be viewed as a *haole* (outsider in Hawaiian). Many locals have the same love-hate relationship that African-Americans have with Black English Vernacular (i.e., Ebonics); they use it enthusiastically as a mark of group identity, but many people feel uneasy about it not really being "correct" English.

A second important marker of identity in Hawai'i is *ka 'olelo Hawai'i*, the native Hawaiian language. Hawaiian is a Polynesian language in the same family as Maori and Tahitian. It was the national language of Hawai'i until the sovereign Hawaiian kingdom was violently toppled by American colonists in 1893. The Hawaiian language was forcibly repressed for some 80 years, resulting in its near complete extinction.

By the 1970s, "pure" Native Hawaiians had been reduced to a tiny fraction of the population. Yet part Hawaiians constituted some 20% of the population, and were generally found in dire social and economic circumstances. Globalized economic development led first to the monopolization and then to the downfall of the agricultural economy on which Hawaiians had long sustained themselves. The development of long-distance communication and transportation systems, especially the jet aircraft, led to the transformation of the Hawaiian economy from agriculture to tourism, relegating most Hawaiians as little more than "exotic" tourist attractions in an economy dominated by major U.S. corporations (Kern 1995). Then, in the 1970s and 1980s, major amounts of Japanese flowed into Hawai'i, drastically effecting real estate values and taxes and making small-scale farming or home ownership increasingly impractical for all but the wealthy.

In these circumstances, Hawaiians organized to defend their culture, land, and values. A Hawaiian identity movement emerged in the 1970s, parallel to similar movements for minority and indigenous rights which developed elsewhere in North America and throughout the world (Wilson 1998). The Hawaiian movement was waged on several fronts, from a political struggle for land and sovereignty to a cultural revival of Hawaiian traditions such as hula, oral chanting, and canoing. But within this array of efforts, language revitalization has played a key role. Hawaiian activists were able to overturn legal bans on teaching Hawaiian, make Hawaiian an official language of the state together with English, and achieve the creation of a group of Hawaiian immersion elementary and secondary schools within the department of education. These schools were launched in

1987 and have already graduated the first high school class educated via the medium of Hawaiian language in nearly a century.

The impact of the Hawaiian language revitalization movement extends far beyond the few thousand people who speak or are learning Hawaiian. As of twenty years ago, only a few hundred people, mostly elderly and dying, spoke the Hawaiian language. By successfully reviving the language and preventing its extinction, the revitalization movement has sent a powerful signal that the Hawaiian language, culture, and people are alive and are an important force to be reckoned with on the archipelago. This has served as a stimulus not only for the 20% of the population which is of part Hawaiian ancestry, but for politically progressive people of all races and nationalities in Hawai'i who seek to control the islands' development for local needs rather than for the needs of transnational corporations.

For the past two centuries, Hawaiian leaders have proven pioneers at making use of Western technology to serve Hawaiian ends. Printing presses were brought to Hawai'i by missionaries in the 19th century to propagate the Bible. Hawaiians made use of the presses to establish more than 100 different Hawaiian language newspapers and by the end of the century Hawaiian-language literacy rates were among the highest in the world (Schütz 1994).

Today, Hawaiians are similarly trying to take advantage of the Internet for language propagation. In 1994, Hawaiian educators established *Leoki* (Powerful Voice), a graphical bulletin board system with 100% Hawaiian language content, menus, and interface. The system has been installed on computers throughout the immersion school system and includes components for electronic mail, live chat, public and private conferences, announcements, dictionary, and online newspaper.

In colleges and universities, where the Leoki system is not yet universally installed, Hawaiian educators are making use of other software and Internet tools such as Daedalus Interchange (Daedalus Inc. 1989), electronic mail, and the World Wide Web to connect students of Hawaiian language with each other and with the broader community.

3.2 Multilingualism in Europe

Mulitlingualism in Europe has of course taken a very different shape then multilingualism in Hawai'i or the US. An example of this is seen through the experience of Italian immigrants in Europe. The great majority of Italians who chose or were constrained to work abroad during the 19th and 20th centuries were illiterate and didn't speak Standard Italian but instead spoke one of the various dialects which are a characteristic of the linguistic landscape of Italy. In the early 1950s century only 18% of Italians were able to use the language of Dante, that is Standard Italian. The Doxa, the National Istitute of Statistics, reported that in the beginning of the 1980s, a little more than half of the Italian population used Standard Italian in contacts outside of their family (L'Espresso 1984), whereas dialects continued to dominate informal interaction such as the communication with family members and friends. The diffusion of Standard Italian was due to efforts in schooling, the military service and, last but not least, the introduction of television even in the smallest and remotest Sicilian villages. But even nowadays in many parts of Italy the first year of primary education is reserved to the acquisition of Standard Italian to facilitate the comprehension and interaction between Italians of different dialects. How to use Italian in various contexts of daily life and language issues in general are a frequent topic in the media. Books like *Impariamo l'italiano* (Let's learn Italian) by C. Marchi (1984) or *Italiano* by Gian Luigi Beccaria (1988) are bestsellers in Italy and among Italians abroad.

When Italian immigrants arrived in America, Australia or European countries the first linguistic border to cross was that of Standard Italian. Even if they remained within the group of their home language, communication with other Italians was only possibile by

the means of standardized language. Only after the acquisiton of basic skills in Italian did some of them try to learn the language of their new country. Even nowadays a similar situation is not uncommon. Therefore the children of Italian immigrants have to cope with particular problems: At home they use the language of their family, mostly a mixture of an Italian dialect and standardized language. Outside they try to find their way in a school system which often does not help them in the acquisition of other languages. They have to learn the second language, that is the language of the country of immgration, and the foreign languages of the respective school system. Language courses and immersion programs in general fail because they don't take into account that these children, even if they have acquired basic skills for every day communication in the second language, lack those language skills necessary to follow the suject matter (Cummins 1986). And the children don't receive any support to overcome their identity problems. Especially in European countries, where monolingualism is considered as the cornerstone of nation-state, the plurilingualism of immigrants is ignored and even rejected, whereas – from a cosmopolitan perspective – plurilingualism (see the claim of the European communities for trilingualism) is considered as a prerequisite for Europeanness and for participation in internationalisation and globalisation. But there are beginning signs of a growing political and personal will to solve this paradox.

3.3 The study of Hawaiian language revitalization

In 1996-1998, the first author conducted an ethnographic study of the uses of online technologies in the Hawaiian language revitalization effort (Warschauer 1998, Warschauer 1999). He observed classrooms and interviewed parents, administrators, teachers, and students throughout the state of Hawai'i, focusing in particular on one computer-intensive Hawaiian language class at the University of Hawai'i, "Hawaiian 201". Thirteen of the 14 students in Hawaiian 201 were Native Hawaiians, as was the teacher, Kapili, and Hawaiian-language computer-mediated communication - including real-time discussions via Daedalus Interchange, an e-mail exchange with a Hawaiian class at a community college, and the development of Hawaiian language Web pages - was a central part of the course.

3.4 Daedalus Interchange to promote language skills

Starting from the second week of the semester, the class went to the computer lab once a week for computer-assisted classroom discussion using Daedalus Interchange. Every week the teacher posted questions or topics for them to discuss. In the beginning of the semester, these were simple topics such as discussing favorite films, musical groups, and free time activities. As the semester developed, Kapili chose more complex topics, such as students' opinions on upcoming elections or on social issues such as prayer in the schools.

The lab was a buzz of activity during Daedalus sessions, with students checking back and forth between different Interchange conferences (on different topics), reading incoming messages, scrolling back to read previous messages, writing messages addressed to individuals, writing messages to the whole group, consulting dictionaries, laughing, and chatting with one another. The teacher sent sporadic messages in the Interchange sessions, but other times spent her time either reading the messages or helping students with problems.

From observing the students in the lab, noting his own behavior as participant, reading over the transcripts, and interviewing students, the first author noted a number of aspects of the use of Daedalus.

One benefit was the high degree of student-student interaction. After the first week, normal classroom sessions were dominated by Kapili, with brief comments or questions,

almost always to the teacher, made occasionally by students. In contrast, the Daedalus sessions were a free-for-all of student interaction.
Secondly, the increased interaction was also very democratic, extending to even the shyest students. One of these students, Onaona, told him:

> I really like Daedalus a lot, 'cause I think you lose some of your inhibitions that you have when talking to somebody face-to-face, you know, 'cause you're not necessarily strong in verbal speaking, so you kind of hold back a little bit, but when you're at a computer talking to everybody else you can just go for it and not really worry that much.

Third, the experience was very motivating for the students. The excitement seemed to stem from both the fun of using the computer and the joy of communicating with people in a low-stress environment.

Finally, students achieved the language learning benefit of written interaction. This real-time written interaction gave students a chance to see not only one or two sentences written by the teacher, but dozens of comments made by other students and by the teacher. The ability to take from these comments, as well as from other sources, provided an excellent environment for language learning. As Bakhtin (1986: 89) said, discussing the learning and development of language:

> The unique speech experience of each individual is shaped and developed in continuous and constant interaction with other's individual utterances. This experience can be characterized to some degree as the process of *assimilation* - more or less creative - of others' words (and not the words of a language). Our speech, that is, all our utterances (including creative works) is filled with others' words, varying degrees of otherness or varying degrees of "our-own-ness," varying degrees of awareness and detachment. These words of others carry with them their own expression, their own evaluative tone, which we assimilate, rework, and re-accentuate.

In the last 20 years, there has been a good deal of research demonstrating that second languages are learned through interaction (see summaries of research in Long 1996, Pica 1994). But, it has also been shown that for teenage and adult learners interaction is not sufficient for language learning. People who learn language only through interaction tend to "fossilize" at a level far below that of native speakers, with some form of pidginized syntax (see for example Schmidt 1983). Rather, some kind of attention to the form of language is necessary to allow students to continually stretch their language abilities.

Finding the best ways to combine a focus on form and on meaning is one of the main challenges of the language educator. One approach has been to first teach a variety of forms, and then allow students time to practice these forms. This method has been criticized as in violation of natural learning sequences (Long 1991). An approach that is gaining increasing interest is maintaining an overall emphasis on communication and meaning, but attending to form issues that arise within this process. This is quite challenging, since interaction is by nature fast-paced, and attempts to halt interaction for form-focused attention can short-circuit the communicative process.

Computer-mediated interaction provides, in theory, a vehicle for helping overcome this contradiction. First, students have more opportunity than in oral discussion to notice structures in incoming messages, a condition which is believed critical for learning (Schmidt 1993). Then, working privately at their own seats, students can attend to formal aspects without interrupting communication - by rereading previous messages and, if appropriate, consulting texts, dictionaries, or even their neighbor. They can then take advantage of increased planning time to write their messages, a feature also shown beneficial in stretching language (for a review, see Crookes 1989). And in rewriting their

messages, they can borrow liberally and easily from earlier messages, thus achieving the assimilation suggested by Bakhtin. Finally, the teacher can make use of the students' written messages for further analysis together with students.

Through observations, interviews, and analysis of texts, as well as attention to his own behavior, the first author attempted to assess the extent to which this process occurred. As a learner himself (albeit probably more conscious of second anguage learning theory than the other participants), he actively consulted others' words in writing his own messages. Indeed, the ability to do so was one thing which made the process so exciting for him. He often felt frustrated in class when oral conversation went by him; either he didn't understand something, or, even if he did understand, he didn't feel he could incorporate it in his own production. In Daedalus, he could always take time to understand everything and incorporate new words or phrases into his own production.

In interviews, most of the students commented about the benefits of written interaction, and several spoke in particular about how they picked up phrases and phrases from each other. One female student, 'Iolani, told him:

> You learn vocabulary, cause there's people who know some vocabulary that you don't know, so when you see it on the screen, you can look it up or something, or you can see how they're using the patterns and stuff when you read it, it's like you're reading the patterns over and over and over. It helps too, even if you don't write, I guess reading it. But the writing helps too, 'cause you're thinking and you're writing. When you talk, it's like you have to get what you know in your head, it's more pronunciation. But when you're writing you're solely concentrating on the patterns and everything else.

3.5 E-Mail Interaction

After several weeks of using Daedalus Interchange, the Hawaiian 201 students were looking forward to their next adventure in electronic communication - e-mail correspondence with a Hawaiian class at Pearl Community College. This would be their chance to use their Hawaiian not only with their classmates, but with other students on another part of the island.

Not only technichal problems occured. E-mail messages, when they were written, became more of a series of asocial monologues rather than an authentic forum of communication. Students tended to view their weekly topics as assignments that they would fulfill simply by writing a message to the rest of the group. For example, one student, Donald, explained to the first author a formula that he used for all his messages:

> Every time I wrote my e-mail pals over there, I write two paragraphs, the first paragraph I ask how they're doing and general information, like I talk about what I'm gonna do on the weekend, cause I always write it on Friday, and I ask what are they doing on the weekend and I tell them what I'm doing on the weekend, and the second paragraph is usually about the topic that *kumu* [teacher] gives us.

Here's an example of one of Donald's messages. Note that while it's a very friendly and sociable message, it makes no reference at all to anything that anybody's ever said to him.

> Date: Mon, 7 Oct 1996 13:23:45 -1000
> To: keona@hawaii.edu, iolani@hawaii.edu, kamealoha@hawaii.edu, sandy@hawaii.edu, kumu-l@hawaii.edu
> From: dflores@hawaii.edu (Donald Gomez)
> Subject: Re: Aloha
>
> Aloha nui loa käkou! Pehea käkou? Maika'i nö au a hau'oli loa, no

> ka mea 'o ka "Pö'alima Aloha" këia lä. "'A'ole hana ä hiki i ka Pö'akahi". No laila, he aha 'oukou e hana ai i këia hopena pule? E holoholo ana au me ko'u mau hoa aloha. Nänä mäkou i ka pä'ani pö peku. 'A'ole au i makemake i ka pä'ani pö peku akä, he pä'ani Homecoming ko mäkou. Ua puka au i ke kula ki'eki'e 'o Darlington. E hö'a'ano ana mäkou i ke kula ki'eki'e 'o Waimano. Mana'o au, 'oi aku ka maika'i i ka pä'ani pö pa'i ma mua o ka pä'ani pö peku.
>
> Pehea 'oukou 'imi noi'i? He aha 'oukou i ke kumuhana? E 'ölelo ana au e pili ana i ka nënë. Käkau anei 'oukou i ka 'ekolu 'ao'ao? Käkau mäkou i ka 'ekolu 'ao'ao. I këia manawa, 'a'ole maopopo ia'u he aha e käkau e pili ana i ka nënë. Ma hope iho paha, maopopo au. E käkau ana au iä 'oukou ma hope iho.
>
> A hui hou,
> Donald Gomez
>
> [Translation:
> Greetings everybody. How are you? I'm well and very happy, because today is "Aloha Friday". "There's no more work until Monday." So, what are your plans this weekend? I'm going out with my friends. We're watching a football game. I don't like football, but it's our Homecoming. I graduated from Darlington. We're playing Waimano. I think that volleyball is better than football.
>
> How's your research? What are your topics? I'm going to speak about geese. Are you writing three pages? We're writing three pages. Right now, I don't know what to write about geese. Perhaps later I'll know. I'll write to you later.
>
> Bye,
> Donald Gomez]

Some students, including Donald, stopped writing at all when they didn't get any responses from Pearl Community College for several weeks. As one student, Kalei, told him: "I haven't been sending any e-mail, because they don't send it back to us. Nobody, not since September. I only got one message, two sentences from one girl at Pearl College. Only one."

It's interesting to note that e-mail class exchanges, which are often viewed as one of the best uses of the Internet for teaching language and writing, proved disappointing Kapili's class at the University of Hawai'i. It appears that successful e-mail projects involve a tremendous amount of coordination, with teachers from two or more different schools co-managing both curricular goals and practical matters. Cross-cultural psychologist Bruce Roberts has pointed out that:

> There is a significant difference in educational outcome depending on whether a teacher chooses to incorporate email classroom connections as (1) an ADD-ON process, like one would include a guest speaker, or (2) an INTEGRATED process, in the way one would include a new textbook. The e-mail classroom connection seems sufficiently complex and time consuming that if there are goals beyond merely having each student send a letter to a person at a distant school, the ADD-ON approach can lead to frustration and less-than-expected academic results - the necessary time and resources come from other things that also need to be done. On the other hand, when the e-mail classroom connections processes are truly integrated into the ongoing structure of homework and student classroom interaction, then the results can be educationally transforming (Bruce Roberts, posting on IECC-discussion@stolaf.edu, March 22, 1994, cited in Warschauer 1995: 95).

In spite of the many problems with e-mail, there were times when the first author could catch a glimpse of its potential. Kamahele was a student with very strong speaking skills but less developed writing skills. He also had a very strong sense of pride in the Hawaiian language and culture. A couple of times when the computer lab was busy, Kamahele came to the first author's office to write his e-mail. The first author noticed that Kamahele stayed a very long time, putting a great deal of effort into polishing his messages. The student told him once that:

> The e-mail is really good. Because I'm sending it to somebody, I tend to take a little bit more time, just because I want to try out complex sentence patterns. I don't want to just like - I don't know, we're sharing between two schools and like, that's just my *'ano* [way], it's not competitive or anything, but I wanna just send out interesting things and put it in an interesting way, so I wouldn't just say things like "How are you doing?" I would make this into just a little more interesting, like "How are you doing on this great day today?" I mean like, just like flower up the sentence so it looks a little bit more, not impressive, but just a little bit more interesting to read. That's why I take a little bit longer. I also try to correct my things before I send it out. That's how I do it. But I'm not too familiar with e-mail, so that's why too I have a hard time, I'm still learning how to use e-mail.

3.6 The World Wide Web

The other main computer-based project in the class involved the World Wide Web. Kapili assigned her students to do one in-depth research paper due at the end of the semester. Students were taught how to use the Web in order to find material for their research, and they were then taught how to publish their papers on the Web. By the end of the semester, all the pages were up on the Web and were linked together to a class page.

Work on the project began early in the semester, when students were told to start thinking of their topic, which could be anything related to Hawai'i, such as the Hawaiian people, historic events in Hawai'i, Hawaiian geography or nature, or activities in Hawai'i. Students were to choose their topics and present a basic outline of the paper by the sixth week of class. Topics were discussed orally in class and also in Daedalus and e-mail discussions.

A first draft of the paper was due in the 9th week of class, and a final draft due in the 12th week. This allowed two weeks for students to put their paper on the Web.

Kapili worked very closely with the students throughout this whole process. Though technically only two drafts were required, many students submitted several drafts in their efforts to develop top-notch papers. Kapili provided both general feedback in terms of the content and organization of the papers and detailed feedback on language errors.

After the initial outline was turned in, students spent a couple of class sessions learning how to use the Web to search for information for their papers. This was quite an adventure as about half the class had virtually no prior experience on the World Wide Web. Kapili provided basic instruction, and the first author assisted in helping the students.

Students had a number of interesting experiences when they first ventured out onto the Web. 'Iolani had found a page of Hawaiian photography and went to sign the guest book. She found a comment in the guest book from someone on the U.S. mainland who asked "Hey, where are the girls in grass skirts?" She decided to try to inform the person about Hawai'i by sending him the following e-mail (which in the first author's eyes was surprisingly polite):

> Date: Wed, 23 Oct 1996 14:11:47 -1000
> From: 'Iolani Smith <iolan@hawaii.edu>

> To: jonathon@waycon.net
>
> Aloha!
> Noho au ma Kaneʻohe Hawaiʻi ma ka mokupuni ʻo Oʻahu. (I live in Kane'ohe Hawai'i on the island of Oahu). There aren't any ladys walking around here in grass skirts. It really isn't the total paradise that people make it out to be. Of course there are beautiful mountains, beaches, and waterfalls, however due to western contact, much of the original native beauty is gone. Take care. A hui hou! (Until we meet again)
> Write back if you want to! =) I just wanted to share a little bit about Hawai'i with you.

The real excitement began when students started to put their own papers up on the Web. Kapili had earlier asked him how long the first author thought this would take, and he answered that it could be done in a single class session, since new software programs allow students to basically cut and paste word processed text into an HTML file. To his surprise though, for most students this process ended up taking not one day but two weeks of daily work in the computer lab.

He had been right in estimating that the creation of the basic text-only Web page was relatively straight-forward. What happened though was that students insisted on making attractive multimedia Web pages with background colors and graphics; different colors of text; carefully-chosen and well-placed photos, graphics, and icons; and hypertext links to additional information. Several of the students made sites with two or more pages in order to provide additional background information on their topic or to provide personal information about themselves, their family, or friends.

In spite of the fact that the students learned a great deal during these two weeks, the first author was still at first somewhat confused by the experience. Most of what the students were working on did not fall within the realm of writing as it is usually conceived (i.e., the creation and editing of texts). And a great deal of their interaction during the last two weeks took place in English, rather than Hawaiian. This did not necessarily have to be the case - these types of interaction around learning new computer and design skills could of course take place in Hawaiian as well - but occurred in English in this class for several reasons: (1) all the software programs are in English, necessitating special effort to translate terms into Hawaiian; (2) students were rushing to finish their projects, and thus often used the language of greatest ease and convenience; (3) the first author was the one who was principally instructing and helping students in Web page design, and his Hawaiian is too weak to easily give that kind of instruction in Hawaiian. As a result, students were using English to talk about issues such as how to create background patterns on Web pages. He began to wonder what this had to do with learning how to write in Hawaiian.

His concerns were offset by what he saw and heard taking place in class. First, as indicated above, students were learning important new skills. Secondly, they were actively engaged in the learning process. They were spending long hours - anytime the computer lab was open, they would be there - to work on their projects. This excitement built to a crescendo on the final day, as the students took turns presenting their projects to the rest of the class. There was a feeling of pride and achievement which permeated the whole class.

It was only when talking to the students though that the first author fully realized how much impact the course and project had had on their education and life. A number of the students expressed a profound sense of personal awakening to the power of technology and to its relevance to the present and future of the Hawaiian language.

In the remainder of this article, the first author will discuss some key themes that emerged in their interviews and in the class. These themes include the changing nature of writing (3.7), culturally appropriate education (3.8), social identity and investment (3.9), language revitalization (3.10).

But already at this point, we can say that similar initiatives could contribute to stretching the language abilities for immigrants in their first language. Returning to the Italian experience, the children of immigrants could better learn Standard Italian if there were computer-assisted activities and e-mail contacts with other Italian immigrant groups all over the world as well as with young people of the same age in Italy. An activity like that of Daedalus Interchange described above could be of special interest because of the different language levels in the same class or course. The main problems to overcome are:

(1) unequal access to the media; the fact that most first language courses take place outside of regular schooling makes it difficult for teachers to have access to computers and to media in general;

(2) the diverging opinions about the necessity of learning Standard Italian instead of giving the priority to the second language; whereas educators underscore the necessity of good skills in the native language as a prerequisite of learning in general, teachers and parents often consider it as a burden for the children to attend first language courses;

(3) the lack of knowledge and skills how to use new media and especially telecommunications to promote language learning. Those who teach in first language classes are often isolated and don't get into contact with other (foreign) language teachers.

3.7 The Changing Nature of Writing

Students spent a great deal of time working on elements other than text, such as editing and of images and overall page design. To assess whether this was justified necessitates a broader look at issues regarding the changing nature of writing.

Technology critics such as Neil Postman (1993, 1995), Sven Birkerts (1994), Clifford Stoll (1995), Stephen Talbott (1995), and Todd Oppenheimer (1997) decry the image-oriented emphasis of educational computing which they feel is debasing attention to the word. Oppenheimer (1997: 52), for example, claims that lazy students "frequently get seduced by electronic opportunities to make a school paper look snazzy" rather than trying to improve the text.

Writing theorists such as Jay David Bolter (1991, 1996) and Nancy Kaplan (1995) view the matter differently. Bolter (1996), looking at the history of writing and art, explains that human beings have a "desire for the natural sign" (264): "Pictures or moving pictures seem to have a natural correspondence to what they depict. They can satisfy more effectively than prose the desire to cut through to a 'natural' representation that is not a representation at all" (ibidem: 265-266). In Bolter's view, this desire for the natural was partially suppressed due to the limitations of print, but has broken out widely throughout the twentieth century, not only in the popularity of film and television, but also in recent developments in newspapers and magazines. Use of graphical material in writing thus not only corresponds to a natural human desire for multimodal communication, it also represents an effective way to reach audiences in the current era.

Kaplan (1995: 15) claims that an emphasis on graphics represents a restoration of something which has been lost:

> In the past, literacy has chiefly meant alphabetic literacy. That meaning has dominated because the chief technologies of literacy, especially the early printing press, have privileged the written language over all other forms of semiosis... The printing press divorced verbal from iconographic information and representation. This divorce no doubt

> helped intellectual elites to consolidate their power and authority over public and authorized discourses.

The first author's observations and interviews yielded evidence that students were keenly aware of the new medium they were writing in, and that they felt that the media was very appropriate to their Hawaiian cultural traditions. Almost all of the students showed keen interest in learning the design features of the Web medium. They were not content to just put their text on the Web, but wanted to find a presentation that was rhetorically appropriate. This included aspects such as finding appropriate graphics, editing the pictures carefully, choosing effective background colors or graphics, and linking to other background information.

Several of the students spoke to the relationship of multimedia computing to Hawaiian culture in their interviews. Among the most eloquent was Kamahele, a 20-year-old biology major. Kamahele has been immersed in native Hawaiian life and culture since childhood. Both his mother and father are Hawaiian, and some of his aunts and uncles spoke the language. Kamahele is a talented hula dancer and a gifted Hawaiian chanter. He works part time teaching hula and chanting to high school students, and he has traveled to Europe and Asia to participate in Hawaiian cultural presentations. Kamahele created a very compelling Web page that incorporated not only texts and images, but also included recordings of his own Hawaiian chanting. Kamahele told me that:

> If you look at hula, the importance of hula isn't the dance performance, the most important thing was the word. But Hawaiians are more than one-dimensional, they like to do things so you hear it and then, and then they'll embellish on it, something like that. So like the pictures really help, because if you've never seen a *kalo* [taro] plant before, you can read about it all you want but if you don't have the picture and stuff like that, then they would help you to understand what *kalo* is or what or maybe what an old Hawaiian chanter looked like and how he dressed, and stuff. So you have maybe a deeper understanding.

Kamahele felt that it was a matter not only of Hawaiian means of expression, but also Hawaiian styles of learning. As he explained:

> If you look at Hawaiian culture, they weren't one to sit down in a classroom and read something. Ours was more of a, was a spoken language, and so what that means is that you interchange, you speak to each other, you work with ideas, you look at pictures, you look at, and feel different things. And so that the more dimensions that we can get it to, the easier it was for Hawaiians to learn. That's why I think, I don't know, it's just a guess, this is my own opinion, there's no documentation, no fact or anything, but I think maybe that's why Hawaiians are having a little bit of a hard time in the classroom, it's because that's not the *'ano* [way] for thought for maybe 2000 years, they've been learning through teaching and learning from somebody else, and through visually doing things and working with things instead of just reading out of a book. And so when we add in pictures and colors and voice and everything like that, it's not just a page, words on a page, but actually like jumps at you, and it comes, it, you can feel it more, more in your brain, everywhere, just in your body, I don't know.

A focus on oral and visual learning is one that the first author has found pervasive in Hawaiian education. Historically, Hawaiian multimodal forms of communication - such as the hula, which combines dance and chant - were opposed as "obscene" by North American missionaries. Today, Hawaiians place great emphasis on maintaining and reviving their oral and visual traditions, both in society and in the classroom.

We would certainly not claim that Hawaiian children have an exclusive propensity for learning through singing, drawing, and performing. Learning through a combination of

media is indeed considered a general principle of good education since it allows educators to reach out to learners no matter what their preferred learning medium or style is. And, as has been noted by many other educators, students of all different backgrounds are fascinated by the multimedia capacities of modern computers.

Nevertheless, the importance of learning through various media is given special attention by Hawaiian educators as one possible way to help overcome to the text-based modes which have thus far failed the Hawaiian community. In this sense, using multimedia computer applications certainly seems congruent with the goals of Native Hawaiian education.

In summary then, it did not seem to the first author that students' effort to incorporate additional media into their pages was a matter of frivolous play. Rather, it seemed to indicate that they were aware of the nature of the Web medium, and wanted to communicate in as effective a fashion as possible in order to have a positive impact on their readers. They were also communicating in ways they felt to be congruent with their own cultural background. Their pages were not only well-designed, but also included well-written and edited texts. If we are in fact "coming toward a semiotic view of writing, a view that incorporates writing among other forms of communication" (Faigley/Miller 1982: 569), then this seemed like a job exceptionally well done.

Moreover, it is easy to draw parallels to the Italian experience as an example of Mediterranean cultures in general. Italy has always been proud of its image-oriented culture, such as painting and movies. The extensive use of graphical material is one of the characteristics of Italian print media. In the domain of research, Italy puts great emphasis on semiotic systems other than language (e. g., the work of Umberto Eco). Multimodal communication is frequently found in daily life. For example, there exist letters in which the illiterate wives of Sicilian immigrants left at home tried to communicate with their husbands in America or Australia by means of pictograms and drawings to ask advice how to administrate their tiny farms during their husband's absence. What Bolter (1996: 294) calls "the desire for the natural sign" can be easily detected in public and private interaction in Italy.

3.8 Culturally Appropriate Education

As Kamahele mentions above, Hawaiians have had troubles with the American educational system imposed on them in the 20th century. Among K-12 students, Native Hawaiians achieve the lowest test scores of all major ethnic groups in Hawaii in both reading and mathematics (Takenaka 1995). Those that make it to college take longer than other groups to graduate and have higher drop-out rates (Takeuchi et al. 1990). As a result, only 8.7% of Native Hawaiians in the state have bachelor's degrees, compared to 21.4% of whites, 24.2% of ethnic Japanese and 12% of ethnic Filipinos (Barringer 1995).

Yet Hawaiian education in the 19th century, before the overthrow of the Hawaiian monarchy, achieved one of the highest literacy rates in the world (Judd 1880). What then accounts for the dismal performance of Hawaiians now?

Research confirms Kamahele's comment that at least part of the reason is culturally inappropriate education, with decontextualized modes of school learning at odds with traditional Hawaiian approaches (Au 1980a, 1980b, Boggs 1985, D'Amato 1988, Jordan 1985, Levin 1992, Martin 1996). One of the most consistent research findings has been in regard to the importance of social relations in Hawaiian learning. On the one hand, this involves close communication with the people around them, a tradition often referred to in Hawai‘i as "talking story" (Au 1980a). On the other hand, this involves striving toward helping the broader family and community. David Sing (1986: 26-27), director of *Nä Puä Noe‘au* (Center for Gifted and Talented Native Hawaiian Children), summarized the results of research that he and others have conducted on these points:

> Hawaiians will work on a task with more vigor and longer if the task involves social interaction. Studies have shown that Hawaiians are motivated to achieve in order to have access to and sustain contact with people. The achievement of personal goals and success provide only secondary motivation... Hawaiians have been found to achieve less when they are expected to strive toward individualistic and competitive oriented goals... Another affiliation-oriented behavior of Hawaiians is that they perform better in class when the activity has direct benefit to their family or to a group of which they are part.

Interestingly, long before the World Wide Web was developed, Hawaiians have been using the metaphor of the net to describe their concept of social relations (Whitney 1987). Here's how one Native Hawaiian program explains the concept of net in Hawaiian culture:

> Hawaiians think of social relationships as binding ties which protectively surround a person. These ties are conduits or connecting paths for emotional exchanges between interrelated individuals. The greater number of positive affective exchange relationships a person has, the more secure and protected the individual (Mental Health Task Force 1985).

Social relations are just one factor related to culturally appropriate Hawaiian education. Darlene Martin (1996), also a coordinator of the Center for Gifted and Talented Native Hawaiian Children, conducted a two-year study of optimal learning conditions among Hawaiians. According to Martin, previous research as well as her own study shows that Hawaiians learn best when education emphasizes (1) encouragement and opportunities to develop the whole person through dynamic and experiential learning experiences, (2) a strong connection to one's roots, (3) nurturing and expression of interests and talents, (4) relationships that foster a true sense of belonging and inclusion, and (5) the striving for perfection.

From the first author's observations of class, it was clear that each of these elements was prominent. The work that students did on their Web projects was by any definition dynamic and experiential. A strong connection to Hawaiian roots was emphasized throughout the course. The Web project nurtured students interests (by allowing them to work on projects of their own choosing) as well as their talents (whether they be in writing or design). The relations both in the class and to the broader community fostered belonging and inclusion. And finally, the striving for perfection was encouraged through opportunities for multiple revision in close cooperation with the teacher.

A comment by Kamahele helps illustrate how several of these features came together in this class. For Kamahele, striving for perfection was closely related to his sense of belonging with the other students and especially his strong roots to the Hawaiian culture:

> Most of us are Hawaiian, and I think we all chose to be in Hawaiian language class because we love Hawaiian language and because that's what we want, we CHOSE to be in Hawaiian language, more than we would choose Japanese or any other culture. We chose the class, so once we did, we have like a desire to learn, and a desire to do things, and I think after that it becomes pride, like whatever we do and whatever we're gonna say, this is Hawaiian, we don't want the world to look at it and go, oh, well, that's interesting, or oh, that's nice - we want them to go WOW, that's Hawaiian! So I think that's why we took a little bit more pride and it took us a little bit more time to do our projects, only because we have pride in our heritage and maybe where we come from, and so we wanted to put our best foot forward. That's what I think and that's how I was feeling.

As in Hawai'i, inappropriate education is an important reason for the failure of the children of immigrant workers in European school systems. Italians outside their country

achieve the lowest rates of school-diploma of all major ethnic groups in Europe. Only a few make it to higher education, and those Italian students who achieve a university degree often come from priviliged families. More than other ethnic groups, Italian children abroad suffer from identity disorders partly caused by the above described language problems and by a school system which is dominated by individualism and competition. They have more success when education is based on holistic action-oriented approaches that take the whole learner personality into account. *I contatti* (social relations) are of great importance to Italian immigrants, and most of the aspects cited above from Darlene Martin's study (1996) also refer to the children of Italian immigrant workers in Europe, and of other immigrant groups as well.

3.9 Social Identity and Investment

Much research on second language learning has focused on the role of individual affect and cognition. Bonnie Peirce (1993, 1995) critiques this perspective and suggests that it be complemented by an approach emphasizing social identity and investment. From this perspective, social identity is (1) multiple, (2) a site of struggle, and (3) constantly changing, and the way that social identity changes over time and in different circumstances affects how people invest in learning and using languages. In addition, as Peirce and others point out (e.g., Penuel/Wertsch 1995), a key aspect of social identity is cultural identity.

This perspective seems especially helpful for understanding what took place in this class. As young adults of mixed ethnic background, the students' sense of cultural and social identity was multiple and changing. As seen by the comments above, many of the students were in the process of becoming more strongly invested in their sense of being Hawaiian and their concomitant commitment to the Hawaiian language. Kapili was able to use technology to tap into this further by giving students an opportunity to express and develop their own Hawaiian identity through their online projects. This seemed to have a positive impact on many of the students, with one particularly dramatic example being the case of Onaona.

Onaona is a 24-year-old student of Portuguese, German, and Hawaiian ancestry. Though very light-skinned and just 1/8 Hawaiian, her Hawaiian roots were a strong part of her identity. As she explained:

> When I was in elementary school my mother made me take Japanese. It was fun at first, but after taking 2 years in an after-school Elementary program, 3 years in high school and 1 semester in college I began to hate it because it wasn't something I could relate to in terms of heritage and nationality. I only did it for my mum. To this day all I can remember are a few key verbs (matte-wait, hayaku-hurry, etc.) as well as a few Hiragana and Katakana characters.
>
> But my great-grandfather was Hawaiian. My mum had told me that he used to translate the bible from English to Hawaiian but I'm still trying to trace that. I definitely know that when he'd retired, he worked at the Bishop Museum, on his own time, helping with texts and artifacts, perpetuating the language and making sure that we learned it. I think that was the driving force for me to learn the language, because he was both fluent in Hawaiian and English, and I think like, why aren't we like that? You tend to lose bits of your culture and your history and yourself, when you kind of close yourself off to that side of you and that's what it felt like I had been doing.

Onaona worked at a television studio doing broadcasting and computer graphics. When the first author interviewed her for the first time, she was planning on taking an internship in a New York television studio and continuing in a career in broadcast media. However,

she wasn't quite sure of her study or career plans, and had changed her major several times.

Even though Onaona had a computer at home and was more computer-savvy than most of the other students, she had little previous experience with the Internet. She had never used e-mail, had rarely used the World Wide Web, and was somewhat skeptical about the sudden popularity of the Internet. But Onaona really enjoyed the computer work in class, in part because it gave her a chance to express herself. She also felt the written interaction helped her speaking abilities: "I'm more of like a visual learner, so if I can get it visually down, like in writing, then the correct structure, it will be a lot easier to speak."

It was while working on her research paper, though, that she really started to shine. Onaona wrote a lengthy and sophisticated paper on the life of one of Hawai'i's last princesses. She then spent countless hours in the computer lab developing the presentation. There was literally not an hour that the lab was open that you could not find her there. She had a fine eye for aesthetic detail, thinking carefully about issues such as how and where to place picture captions or whether to put in borders, and learned much more about some of the software than the first author knew.

She explained to the first author the great attention that she paid to both the text and design of her page:

> I was kind of nervous about the text, I tried to make it extra good, revision after revision, going, *kumu* [teacher], is this O.K., does it look all right? I guess because, for me, my name is on it, and so I really want it to look good, and I'm like, a real balance freak, especially if I've got photos, I've got to either have it centered, with things underneath, or on the side with stuff next to it, with text wrapped around it, so I think, plus too, because of my job and the things that I work with, the computer graphics that I work with at the station, I really like to make sure everything's balanced, with my name on it, it's even more so, cause I keep thinking, oh gosh, all these people are gonna see it, and they're gonna go, oh you did that.

Onaona overcame her skepticism about the Internet and started to spend a good deal of time online in various projects. She also started to think more actively how to combine her interests in media and in Hawaiian.

> I think the possibilities are limitless right now, because if you get the people together you could probably have radio, you know even if you wanted radio dramas or even a television station that broadcast only in Hawaiian, or, you know and (and?) different learning tools with children, you know like getting some of the legends on tape or on film for them to watch and you can also learn and possibly getting something up with HITS [Hawaiian Interactive Television System] and more of an interaction between kids, you know, on other islands, and they can talk to each other.

She was trying to figure out what her own role would be in this:

> Since taking Hawaiian I've changed my major like 8 million times. I used to be an English major, well, first I was a television production major, then I was an English major, then a journalist major, then I went back to English, and now I'm thinking of getting an education major, with a minor in Hawaiian studies, and a minor in journalism. I'm not sure yet [about being a teacher], but when we see the video and we see the kids, they're so cute.

Onaona's social identity evolved in two important ways during the class. First, she changed from seeing herself as someone who was skeptical about the Internet to someone who had strong expertise and interest in it. Secondly, she began to view herself as

someone who was not only interested in learning about her heritage, but rather someone who should actively promote Hawaiian language and culture throughout her life. The combination of these two helped her make an important career choice that she felt would allow her to combine her interests in media, Hawaiian language, and education. Though few other students in the class changed their majors or career choices, many of the students seemed involved in a process of developing their identities as Hawaiians. Kapili tapped into this well by providing students an opportunity to explore and express their sense of Hawaiianness in the online world.

3.10 The Internet and Language Revitalization

Finally, we would like to return to the issue of the Internet and minority language revitalization. There are currently some 6,000 languages spoken around the world. It is estimated that some 90% may die out within the next century (Krauss 1992), representing a loss of stunning magnitude to the cultural heritage of humanity. An individual culture need not die out with its language - witness, for example, the cultural survival of groups like the Jews and the Yaquis who have shifted languages several times (Spicer 1980). Yet the death of a language does entail the eclipse of certain voices, perspectives, and ways of life. Languages are threatened by "destruction of lands and livelihoods; the spread of consumerism, individualism, and other Western values; pressures for assimilation into dominant cultures; and conscious policies of repression" (Crawford 1994: 5). For Hawaiians, as for Italians and many peoples around the world, defense of their language means defense of their community, their autonomy, and their power. It is a way of asserting that "we exist" in a post-modern world where the most important question is no longer "What do you do?" but rather "Who are you?" (see discussion in Castells 1997).

According to sociolinguists, the survival of languages depends not so much on numbers of speakers but rather on will and transmission. Simply put, languages will survive if the speakers of the language have the desire to maintain the language and the means to transmit it to the next generation (Fishman 1991). Transmission has traditionally occurred as tight-knit communities passing the language on to their children. In places where globalization and economic change has dispersed native speakers, such as in Hawai'i, communities are experiencing with new media to assist transmission, such as electronic bulletin boards which can bring together widely dispersed groups of speakers.

It appears thought that the most important role of the Internet is not to impact transmission - which must continue to occur through oral interaction in families and schools - but rather will. As noted by Nancy Hornberger (1997), "language revitalization is not about bringing a language back, it's about bringing it forward." People will struggle to maintain their language when they see it as not only an important part of their grandparents' past, but also of their own future. And herein lies the main significance of Hawaiian language computing. As Kamahele explained,

> We're learning how to use new technology and new tools, at the same time we're doing it in Hawaiian language - it looks as if it's a thing of the future for Hawaiian, because maybe there's [only] a few Hawaiian language papers. But you have something that might be just a little bit better, like the World Wide Web.

Kamahele began the semester with a strong sense of commitment to the Hawaiian language. He ended it with an appreciation of how his commitment could be extended via new media. Onaona began with an emerging but unexpressed sense of her own identity as a Hawaiian; she ended the academic year prepared to dedicate her life to revitalize Hawaiian language as a Hawaiian-language educator. For each of them, Hawaiian

language computing took on an important symbolic value, allowing them to say to themselves and to the world that they are Hawaiian and proud of it.

4. Conclusion

In the postmodern era, traditional cornerstones of authority and meaning, ranging from family to job to nation to race, have been shaken up. While race still matters as a source of oppression, the dynamics of race have been altered by the fast-paced social and economic changes of the informational era. New patterns of immigration, marriage, employment, and interaction mean that the ethnic dynamic in the U.S. is no longer principally Black vs. White, but rather a complex web of multiple and conflicted identities shaped by nationalism, religion, gender, race, and culture. Language plays an important role within this new mix, as it represents a powerful and flexible medium for assertion of identity against cultural homogenization.

The Internet does not introduce totally new ethnic dynamics, but rather magnifies some that already exist. New immigration patterns and increased inter-racial marriage make racial identity more subjective and multiple; the anonymous, multi-channeled communication facilitated by the Internet deepens this trend toward multiple subjective identity (Turkle 1995). Globalization heightens the role of English as an international lingua franca while re-localization creates space for other national and local languages to reassert themselves; the broad mix of international, national, regional, and local discussion channels on the Internet first accelerated the spread of global English and now provides opportunities for those who challenge English-language hegemony.

Hawai'i in some ways represents a special ethnic dynamic, but in other ways is not unique. The multi-racial ethnic mix that exists in Hawai'i, where no single racial group dominates and large numbers of people have inter-racial backgrounds, will likely become the norm soon in California, Washington, New Mexico, Texas, New York, and other states. The increasing prominence given to language issues in North America is seen by the recent battles over bilingual education and Ebonics as well as the ongoing conflict over Quebecois sovereignty. Just as Hawaiians have sought to assert their language rights in the online realm, other groups will increasingly do so. Indeed, Native American groups are already bringing their own language revitalization efforts into cyberspace (Office of Technology Assessment 1995) and there are signs that Internet contact with Latin America is creating opportunities for language-based identity formation among U.S. Hispanics (Lillie 1998).

Sherry Turkle (1996) suggests that the identity question posed by cyberspace is "Who am We?" If Hawai'i is an indication of future trends in America and elsewhere in the world, then "we" is increasingly someone who uses standard English in certain Internet forums but chooses alternate languages or dialects in other online domains, and that the exercise of this choice represents an act of cultural resistance against the homogeneity of a monolingual America and Europe as well.

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