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QUECHUA-SPANISH BILINGUALISM IN PERUVIAN COMMUNITIES: USING
GIS TO INVESTIGATE LINGUISTIC DOMAINS

By

Misty Dawn Clover Prigent

A thesis

submitted in partial fulfillment

of the requirements for the degree of

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The members of the committee appointed to examine the thesis of Misty Dawn Clover
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RE: Your application dated 9/27/2013 regarding study number 3977: Quechua Dialect and Maintenance Project

Dear Ms. Prigent:

Thank you for your response to requests from a prior review of your application for the new study listed above.

This is to confirm that your application is now fully approved. The protocol is approved through 1/29/2015.

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Sincerely,

Ralph Baergen, PhD, MPH, CIP
Human Subjects Chair

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To my mother who gave me confidence,

To my father who gave me curiosity,

And to my very patient husband, who gave me anything I asked for.

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ABSTRACT

This thesis examines Spanish-Quechua bilingualism in the region of Cuzco, focusing on how spatial factors and other variables affect the establishment of either Spanish or Quechua within various linguistic domains. I use GIS in order to achieve a comprehensive analysis of language use across space. Interviews and observational data are combined to create linguistic maps that show language attitudes, language use among domains, and inconsistencies of language use in multiple locations. This thesis offers suggestions for increasing Quechua language use within and across domains by using GIS as an investigation tool.

INTRODUCTION

“If, during an epoch of language crises, the language of poetry does change, poetry immediately canonizes the new language as one that is unitary and singular, as if no other language existed” (Bakhtin 1981:399).

When a multilingual community establishes one language for a certain linguistic domain, any other language that has been used for such topics, locations, people, or activities among that community will decrease in use. When these habits of language use build upon one another, one language can become more established than the other, creating displacement of one language with another.

In Peru, both Quechua and Spanish are spoken, with a large portion of the population being bilingual, but quickly becoming Spanish monolingual. This thesis aims to examine Spanish-Quechua bilingualism in the region of Cuzco, focusing on how spatial factors and other variables affect the establishment of either Spanish or Quechua within various linguistic domains, and using GIS in order to achieve a comprehensive analysis of language use across space. Specifically, I aimed to learn about language attitudes, to discover language use among domains, and to search for inconsistencies of language use by location. During my research, I made an effort to link linguistic data to geographic points on earth in order to inspect language use and choices, and domains with a GIS (Geographic Information System). I also wanted to answer the call among GIS and linguistic literature alike to use GIS within linguistic research.

In an early discussion concerning language choice among bilinguals (or multilinguals), Joshua Fishman notes,

...habitual language choice is far from being a random matter of momentary inclination, even under those circumstances when it could very well function as such from a purely probabilistic point of view. “Proper” usage, or common usage, or both, dictate that only *one* of the theoretically co-available languages *will* be chosen by particular classes of *interlocutors* on particular *occasions*. How can these choice-patterns be described? (1965: 68)

I will describe some of these patterns, using GIS as an investigation tool.

Language is necessarily linked to geographic space. It is never spoken in one location; it is spoken in many locations because it is spoken by many individuals. As such, it should be studied spatially. What better device to study language with than GIS, which stores, analyzes, manipulates, and displays spatial data? A surprisingly low number of linguistic studies have employed GIS. This thesis is an attempt to explore this avenue, using Quechua-Spanish bilingualism in Peru as a topic with which to investigate. It is common to see linguistic maps presenting huge areas and stating overarching claims about one language in an area. Language changes unevenly across geographic space, while it affects and is affected by many variables that are spatially related. Using GIS can help elucidate these spatial relationships within and among languages.

Mention of previous work on the subject

The Quechua language family is composed of various dialects across Argentina, Bolivia, Chile, Colombia, Ecuador, and Peru (Coronel-Molina 2011), with over 10 million speakers (Hornberger and King 1998B:390). Peru has the highest total number of Quechua speakers and dialects (Hornberger and King 1998), where it is estimated that Quechua speakers make up 22 percent of Peru’s total population, with 35 percent of those

speakers being monolingual (Garcia 2005). Since the Spanish colonization of the Andes from the 16th to the 19th century, Spanish was the official and dominating language in Peru and its surrounding countries (Delforge, 2012). This has created a diglossic and socially stratified situation, where Quechua speakers are marginalized by the Spanish language and culture (Hornberger 2000; Delforge 2012). Any associations with indigenous culture, notably being a speaker of Quechua, was and still partially is associated with inferiority (Delforge 2012). Perceptions of Quechua language and culture have been impacting choices about using, learning, or teaching the Quechua language, and despite efforts to revitalize the language and improve perceptions of the indigenous identity, Quechua language speakers have been declining since the 16th century Spanish colonization (Hornberger 1988B:23; Coronel-Molina 2011:4).

Most Quechua speakers live in rural areas in the high plains of the Andes, subsisting on agriculture and livestock production. Over time, an increasing number of Quechua speakers have moved to the cities where Spanish is the dominant language. This increasing presence of Quechua speakers in the cities, combined with increased indigenous movements in Latin America, helped spur social reforms in Peru in the mid-1970s. These social reforms took place under a revolutionary government that forged new concepts of citizenship and constitutional multiculturalism (Garcia 2005). For the first time since the 1500s, Quechua held the status of an official language (along with Spanish). This official status was ephemeral, however, and Quechua is currently only being recognized as official in certain zones of Peru (Hornberger and King 1998). Nonetheless, this status was significant and elicited new ideas about multiculturalism and positive attitudes about indigenous people, especially in light of the U.N.-declared decade

of indigenous people from 1995-2004 (Garcia 2005). These new ideas and attitudes emphasized Quechua teaching and literacy. Today, efforts to employ bilingual education and to encourage more Quechua language use are at the forefront of promoting the image of indigenous identity in Peru.

Leading theories for reversing language shift include targeting which language in a diglossic situation dominates which domains. Joshua Fishman was one of the first to develop the idea of linguistic domains, and his work has generated a large following. One of the prominent researchers of Quechua, Nancy Hornberger, is among Fishman's cohort, actively developing Fishman's ideas concerning domains. Other lead researchers of the Quechua language include Rodolpho Cerrón-Palomino, Serafin Coronel-Molina, and Bruce Mannheim, among others.

Limitations and scope of the work

The scope of this work is limited to Quechua-Spanish bilingualism in the department of Cuzco in Peru, and will not encompass features of other varieties of Quechua in Peru or elsewhere. As a requirement under this study's Human Subjects approval, children under the age of 13 were not interviewed, leaving this age range excluded from my analyses. The study took place over a period of two months, and a longer-term study may elicit variations of language use, opinions, and demography across multiple seasons. The maps that display my data are one of the many ways to display data in a GIS, and my techniques are meant to be built upon.

The contents of this thesis include a table of contents, this introduction, a literature review, a section on methods and theory, a results section, a conclusion with discussion, an appendix with maps and tables, and references for all works cited.

LITERATURE REVIEW

The number of Quechua language speakers has been steadily declining since the Spanish colonization of the Andes from the 16th to the 19th century (Delforge, 2012). In Peru, as of 1999, only 16.5% of the population over the age of five speaks Quechua as a first language (Coronel-Molina 1999:166-167). Quechua language researchers are quick to note that this percentage is currently decreasing (for information about why, see Hornberger and King 2004), and that it is urgent that efforts to reverse Quechua language shift (the loss of language) become more effective. Efforts to revitalize Quechua in Peru occurred in the mid-1970s as a result of the growing presence of Quechua speakers in the cities combined with increased indigenous movements in Latin America. Under new revolutionary governments, and later joined by international movements, such as the U.N.-declared decade of indigenous peoples (1995-2004), the improvement of the status of Quechua began (Garcia 2005). These new ideas and attitudes emphasized Quechua teaching and literacy. Today, efforts to employ bilingual education and to encourage more Quechua language use are at the forefront of Peruvian educational policy. Despite these efforts, Quechua language use is still declining (Hornberger 1988B).

Nancy Hornberger, one of the most influential researchers in bilingual education and Quechua revitalization and maintenance, aimed to target main factors that could make language policy more effective. Following in the footsteps of Joshua Fishman, Hornberger proposed that targeting domains in which to expand the use of Quechua could make language policy more effective (Hornberger and King 1998:407). My own studies incorporate these foundations, further asking which variables within each domain determine the choice to use Quechua over Spanish. This review of literature will

summarize leading works and researchers concerned with Quechua language revitalization over time, along with current policy, theories, and suggestions concerning using domains for Quechua language revitalization. Additionally, a final section will outline the use of GIS (Geographic Information Systems) in linguistic studies, which displays a lack of using GIS in revitalization efforts.

1400s to Spanish Colonization

There is ample information concerning the effect of the Spanish colonization of the Andes on Quechua, from the change in population of Quechua speakers to early language policies. Rodolfo Cerrón-Palomino outlines the Incan language policy of Quechua even before Spanish colonization. He starts in the mid 1400s and continues to the mid-1500s, explaining how Quechua eventually displaced the other major language groups of Peru, namely, Sec (also known as Tallan), Mochica, Culli, Aru (Aymara), and Puquina. He notes that Quechua was starting to displace these other languages even before Incan rule, however. Incan rulers recognized Quechua as the official language and made it compulsory in many governmental and civil realms, but the use of local languages and dialects was still permitted (Cerrón-Palomino 1989). He hypothesizes locations, fragmentation, and spreading of Quechua in comparison with Aymara and Puquina. He uses historical, linguistic, and archaeological evidence to support his claims (Cerrón-Palomino 2010).

Cerrón-Palomino discusses policies toward Quechua once Spanish colonization took place. Bruce Mannheim's work outlines the same. Both researchers discuss efforts in the late 16th and early 17th centuries to manipulate the oppressed Quechua speakers by restricting Quechua language use in legal and political domains. He also focused on the

role of Quechua in the religious domain during that period, which seemed to encourage standardization of the language (Mannheim 2013:295). Mannheim points out how colonizing forces increased Quechua language use among colonial leaders in order to better control and rule the colonized population. He describes how 18th century elites (who were descendants of colonial powers) claimed to be descendants of the Incas and used Quechua and indigeneity as nationalist devices to legitimate political power (Mannheim 2013). Cerrón-Palomino follows up by discussing the halt of the dream for a unilingual Peruvian nation. In 1821, Peru officially gained independence from Spain, but Cerrón-Palomino explains that power was transferred to those with highest social status, who were far removed from the indigenous people.

Nearing the 20th century, a wave of indigenous movements came about. Cerrón-Palomino attributes these movements to Peru's defeat in the War of the Pacific (a territorial war between Chile, Bolivia, and Peru, as well as peasants beginning to carry out revolts against their colonizers) (Cerrón-Palomino 1989). He discusses the fluctuations of indigenous movements over the first half of the 20th century. In response to an ever-weakening economy, the government decided to both expand the domestic market as well as educate the indigenous masses to incorporate them into the national workforce. This new education policy led to the introduction of bilingual Spanish-Quechua education in Peru. It is important to note, however, that efforts to teach Quechua in schools at this time were aimed to serve as a way to assimilate monolingual Quechua speakers into the Hispanic society, not to revitalize Quechua (Cerrón-Palomino 1989). Cerrón-Palomino notes how the 1968 *coup d'état* rejuvenated the indigenous movement, promoting Quechua as an official language in 1975, this time aiming to preserve the

Quechua language (Cerrón-Palomino 1989). For intricate descriptions of indigenous movements in Peru in particular, and South America in general, see *Making Indigenous Citizens*, by Maria Elena Garcia (2005). She discusses what it means to be indigenous and outlines the many political factors that led to indigenous rights and lack of support for indigenous rights (including bilingual education issues).

Leading up to the Reform

Delforge (2012) discusses a different aspect of the second half of the 20th century, as she outlines what led to shifts in demography and cultural perspectives in Peru in the 1950s and beyond. One example was the earthquake in 1950 in Cuzco that led to a large demographic shift due to migration, causing a lack of vowel devoicing in Quechua, which is a distinctive Andean language characteristic. The demographic shift, along with growing tourism exposed Cuzco residents to many varieties of Spanish accents, elevating the trend toward attempts to be affiliated with the “upper class” Spanish-speaking European social identities. (For more on language shift concerning rural migrants moving to urban areas, refer to Lilian Sanchez 2003 Chapter 3). This exacerbated the hostilities of identifying with the *provinciano* (migrant or rural) Andean culture and language. These events severely intensified the marginalization of the Quechua language and culture, and eventually produced a “more elegant” type of Quechua that lacks traditional devoicing of vowels. Delforge helps explain major factors about why some of the marginalization of the Quechua language and culture has come about (Delforge, 2012). Hornberger and Coronel-Molina discuss in multiple articles how the hierarchical relationship between Spanish and Quechua has influenced Quechua speakers to choose Spanish over Quechua

(Hornberger 1988A, 1998B, 2012; Hornberger and Coronel-Molina 2004; Coronel-Molina 1996, 1997, 1999).

Nancy Hornberger extensively covers Peru's Education Reform of 1972 along with many of the surrounding events which led to this reform. She explains that the reform was "...an integral and necessary part of Peru's Revolution of 1968, and was accompanied by other reforms such as the Agrarian Reform of 1969 and the Social Property Reform of 1974" (Hornberger 1988B:24). She notes that this reform aimed to form an educational system that would unify the nation while recognizing the nation's diversity (Hornberger 1988B:24).

Coronel-Molina, a native Quechua speaker himself, focused on the many issues of corpus planning and implementation in Peru. Following Cooper's 1989 model of corpus planning, Coronel-Molina emphasized that the fundamental components of corpus planning entailed developing and standardizing a written Quechua along with status planning at the national or governmental level (Coronel-Molina 1996). He stated, "...I would like to emphasize that in corpus planning and language planning the spoken word is not the most important tool, but rather, the written word" (Coronel-Molina 1996:3-4). He discusses that writing, standardizing, modernizing, and renovating the language were all necessary components of corpus planning (for an opposing view, see Luykx 2004). The Quechua language historically had and still has rather sparse written materials (Durstun 2008). Because of this, Quechua orthography was varied and nonstandard at the time it was to be employed for bilingual education (Hornberger and King 1998). Highlighting that there were three separate groups working on corpus planning in Peru, and that these groups were not working in cooperation with one another, Coronel-Molina

outlines the history of planning over the last thirty years of the 20th century. He, as well as Hornberger and King (1998), discuss the necessity of establishing a standard Quechua orthography. A large debate over orthography concerns whether Quechua should be written with a five-vowel system (a, e, i, o, u), the most common traditional orthographic convention, or with a three-vowel system (a, i, u), which better corresponded with the vowel phonemes of Quechua (Coronel-Molina 1996; Hornberger and King 1998).

Coronel-Molina points out that there are three groups that have had the largest effect on standardization, modernization and revitalization of the Quechua language: the Peruvian linguists, Peruvian Academy of the Quechua Language, and the Summer Institute of Linguistics (SIL). However, these three groups are not working in cooperation with one another, usually with orthography as their point of disagreement. His summary of corpus planning includes a case study and various legislations passed concerning revitalization and standardization (Coronel-Molina 1996). Hornberger and King (1998) describe how various interest groups took either or both sides of the argument depending on regional affiliation, socioeconomic status, educational background, etc. Justification for which vowel system should be used varied for reasons pertaining to historical conventions, phonemic necessity, and aligning orthographic practices with Spanish, the dominant language in Peru. A three-vowel orthography was eventually decided on officially, but currently the issue is still hotly debated, and the vowel system used depends on numerous social, political, cultural and economic factors (Coronel-Molina 1999, Hornberger and King 1998; Hayes 2010).

Not only is orthographic standardization an issue, deciding on a standard variety of Quechua is also at the forefront of Quechua revitalization and maintenance. In order

for Quechua to be disseminated through the media, government, and school system, some argue that a unified variety should be agreed on. Certain varieties of Quechua are said to be more pure or authentic, depending on arbitrary traits such as containing less Spanish loan words or morphological and grammatical structures (for more information on this topic, see Hornberger 1988A and 1988B). The problem with claiming that one variety is more authentic or pure than another is that this will then degrade the other varieties (Hornberger and King 1998; Luykx 2004) (for more about linguistic purism, see Niño Murcia 1997). Various issues arise from this, including the degradation of social groups that don't speak the standard, disjoints between older and younger speakers of Quechua (as the younger speakers may have learned a variety different than their parents or grandparents, or a "less pure" version), and the loss of other varieties of Quechua. Luykx points out, however, that, "Given its history as a language family spoken over a broad region, from which one geographical dialect (that of Cuzco) became the language of imperial administration, we can assume that regional variations of Quechua were associated with variations of prestige and power even before the Spanish invasion" (Luykx 2004:150). She notes, however, that linguistic stratification is naturally occurring without language planning. Hornberger and King (1998) detail this unresolved issue of deciding on a standard variety of Quechua. Besides the loss of authenticity among nonstandard dialects and orthographic issues, who makes the decisions and who is the authority of the language is also brought up. Hornberger and King argue that the most compelling arguments are coming from those who speak and write Quechua as their native language.

Later, Hornberger also covers the assimilationist versus pluralist debate, in which national endeavors of bilingual education can take on one of the two forms (Hornberger 2000). Assimilationist goals aim to integrate minority cultures and languages into the majority cultures and languages of that nation. Pluralistic goals aim to bolster indigenous and minority languages and rights (Roberts, 1995). Hornberger explains that often nations construct unification through nationalist efforts. She explains that, "...Andean states have long modeled themselves after the myth of the linguistically and culturally homogenous nation-state" (Hornberger 2000:177), and she illuminates the struggles of a nation that tries to construct a multicultural and multilingual identity. Coronel-Molina points out, however, that "...this does not mean that the aim of standardization is to eliminate variations from a language" (Coronel-Molina 1996:12), emphasizing that standardization of Quechua is aimed at the written form, not the spoken. This way, education can be uniform while still affording literate Quechua speakers the devices to write in their native variety. He quotes Cooper (1989) saying that one can more easily manipulate their writing than their speech (Coronel-Molina 1996:13).

Contrary to Coronel-Molina's point, Aurolyn Luykx purports that there is a lack of evidence proving that standardization is indeed helping revitalize the language, noting how Quechua is historically an oral language in the first place, and revitalization efforts are targeting non-oral efforts. She references Mannheim (1991) where he points out that the height of Quechua language peaked in the Inca Empire as a non-written, non-standardized language. Her refutation against standardizing a written Quechua is that although beneficial in allowing speakers of different dialects to communicate through writing, planning efforts should instead focus on oral, face-to-face interactions, where she

says most speaking of Quechua is actually happening (Luykx, 2004). She further argues that although standardizing Quechua may be aimed at the written form, pressure to standardize pronunciation based off standardized writing is currently occurring, notably in the speech of government officials. She writes, "The assumption seems to be that, since the world's dominant languages are all written and standardized, writing and standardizing subordinated languages will somehow automatically confer power and prestige on them and their speakers--as if a language's political capital were the *result* of standardization and widespread diffusion of its written form, instead of the other way around" (Luykx 2004:151). Her point is to strengthen current domains that are dominated by Quechua, rather than creating new domains, such as education, to help revitalize Quechua. She notes the importance of widening Quechua domains, but prioritizes focusing on Quechua-dominant domains.

Hornberger argues that within bilingual education, heritage language should be the language of instruction for revitalization efforts. Through teaching children with these indigenous languages, this acts as a revitalization effort that empowers children to then promote revitalization and maintenance of their heritage language. She relies heavily on Fishman's Reversing Language Shift Framework, where a heritage language can only survive if children speak that language (Hornberger 2006).

Failed Revitalization

Hornberger (1988B) and Garcia (2005) detail how the efforts of revitalization of Quechua dialects in Peru have fluctuated since the social reforms of the 1970's. One of the highlighted efforts toward language revitalization was the formation and the efforts of the *Política Nacional de Educación Bilingüe* (PNEB), Peru's national bilingual education

policy. Experimental school programs throughout the nation took various approaches to language revitalization, where some schools would teach the reading and writing of Quechua or some would give partial instruction in Quechua. The variety of Quechua to be used depended on the school district—some districts opted to teach dialects that were popular in the capital city (Lima) or in Cuzco, while others decided to teach the dialect of their region. Because this was an experimental program, many school districts or communities were given the opportunity to opt out of including Quechua language in their education. Some communities found these revitalization efforts rewarding and long-lasting, but the majority of programs have not continued to be in effect due to various reasons including inconsistent funding or lack of community support (Hornberger 1988B). Luykx (2004) opposes teaching dialects that were popular in the capital city or in Cuzco, referencing a quote in Siles (2001:103) from a rural schoolteacher saying, ““What’s the difference between students having to learn the normalized Quechua in order to read and write, or having to learn Spanish?” (quoted in Luykx 2004: 151-152).

It is interesting to talk about why there would be a lack of indigenous community support to include Quechua in children’s education. Firstly, Quechua is seen as a direct impediment to Spanish fluency. Hornberger (1988) discusses community ideas of bilingual education and writes how community members were against teaching Quechua in the schools because it was “...confusing the children and slowing down their learning..., that it amounted to a backward step in the school, that there was no use in learning to write Quechua anyway, and that it was not being done at a national level, but only in some schools” (Hornberger 1988B:214). According to Hornberger (1988B) and Garcia (2005), many Quechua speakers do not see how Quechua language could enhance

Spanish language skills, and Spanish fluency is seen more and more as a necessary skill. Older children and young adults bring in a lot of Spanish to their communities because when they seek secondary school education, they usually have to travel away from home to attend school, and these schools are always conducted solely in Spanish. Peru requires the use of Spanish to get most governmental or agency aid, donations, money for community buildings, irrigation or plumbing repairs, assistance programs for farming or animal care, and other outside help. Hornberger also stated that another reason community members don't support Quechua being taught in schools is because people generally don't think that Quechua language use is decreasing. She offers, "There is no thought whatsoever that Quechua will cease to be; it is assumed that the Quechua language will always be, just as it is now" (Hornberger 1988B:93). Added to the initial hesitance to allow Quechua to be taught in schools, this misinformed and unrealistic idea about the future of Quechua vitality is a very large detriment to any revitalization efforts.

Another viewpoint, one of Peruvian-American ethnographer Maria Elena Garcia, surrounds indigenous perceptions of this state-led bilingual education program imposed by those who claim Hispanic heritage and speak Spanish. She looks at reasons why those who identify as indigenous or Quechua are rejecting educational and cultural reforms. She explains it as a "...marked contrast between the ideology behind such programs and their practical implementation" (Garcia 2005:14). She asks who these programs are serving, who is funding them, and whose agendas their obligations serve.

As noted by Garcia (2003), the strongest opposition to indigenous movements are often from indigenous highlanders (Garcia 2003:71). Peru, in comparison to other Quechua-speaking countries such as Bolivia and Ecuador, has no national indigenous

organization, despite the fact that 40% of the population is indigenous (Garcia 2003; Coronel-Molina (1999) also mentions a lack of indigenous movements). Garcia proposes explanations for a lack of indigenous organizations, explaining that many policies to bolster indigenous rights surround "class-based labels and social programs" (Garcia 2003:73 and 2005:7). Von Gleich (1994) notes this lack of a unified and popular ethnic movement, saying Quechua speakers have "An attitude of almost fatalistic subordination to the majority system, expressed frequently through voluntary segregation from the majority or in assimilation for better social mobility by giving up their language and culture..." (von Gleich 1994:107). On the other hand, Garcia says that this argument is lacking, as it "simplifies the relationship between class and ethnicity; they are hardly mutually exclusive" (Garcia 2005:7). She also references (and later refutes the idea of) a lack of political opportunity due to the effects of the Peruvian civil war in the 1980s and early 1990s on indigenous movements, NGOs, missionaries and other organization-building activities (for more about this, Garcia suggests Poole and Renique 1992, Stern 1998, and Manrique 2002) (Garcia 2005). Some said that the fears of an oppressive Peruvian government and the anti-government efforts of the *Sendero Luminoso* (Shining Path) and the *Movimiento Revolucionario Tupac Amaru* (MRTA)) created fear of gathering in indigenous groups because it could have been seen as anti-government efforts (Garcia 2003). Instead, Garcia explains culture as the reason for a lack of Peruvian indigenous movements, saying that the social movements that are happening are not being recognized as indigenous movements, as they may not conform to the traditional ideas of activism. She argues that rural indigenous people that are Quechua-only speakers should be considered activists too, and they can do this while rejecting the mestizo label

(Garcia 2005:9). She aims to redefine what counts, or rather, what *doesn't* count, as a social movement.

Referencing a new radical grassroots educational reform effort in the 1990s (after the civil war and “terrorist” groups subsided) in Peru and surrounding countries, Garcia discusses “development of a unified Quechua ethnic identity among highland Quechua peoples through the implementation of bilingual intercultural education...[demanding]... the incorporation of indigenous languages and cultural practices into national language and education policy” (Garcia 2003:71). She discusses how this period marked the beginning of a passionate indigenous movement in Peru (Garcia 2003:72). Although often problematic, she explains that indigenous people are working counter to activist goals, and instead are focusing on their own objectives (Garcia 2003:72), as they often see activists as outsiders aiming to impose policies that are to the disadvantage of indigenous peoples’ wants and needs (Garcia 2003:72). Hayes (2010) reiterates this, and says that those who actually speak Quechua on a daily basis are interested in socioeconomic advancement, and Quechua revitalization activist efforts, which include not allowing the adoption of new Quechua vocabulary and orthographic conventions, lead to the fossilization of certain aspects of the language, rendering it non-functional as a quotidian language (Hayes 2010). Garcia points out that this mobilization against activists is indeed the mobilization that is being overlooked. She pushes for activists to reexamine their understandings of indigenous identity, focusing on local control of defining what it means to be indigenous, and pulling away from established models of indigenous movements and language revitalization (for criticisms and highlights, see reviews of Garcia’s book by Cameron 2006 and Godoy 2008). Cerrón-Palomino was

quick to give this same warning in 1989, saying, "We have seen how, throughout Peruvian history, the cause of ancestral languages and of the speakers themselves was supported only by the moral scruples of the ruling groups; and decisions about language policy were made without regard to the interests of the peoples concerned. Therefore, the failure of the indigenist movements should be regarded as the consequence of their artificial nature: that is, they were divorced from the real interests of the groups involved" (Cerrón-Palomino 1989:31).

Aurolyn Luykx's opinions align with Garcia's. Specializing in similar but partially separate Bolivian Quechua revitalization, Luykx argues that purposeful planning is indeed important, but she encourages one to ask "...what kind of planning" is taking place. She argues that the same efforts to save minority languages are those that may be oppressing the language in the first place. She criticizes how language planners unquestioningly accept that "...standardization is key to Quechua language revitalization" (Luykx 2004:148), and asks planners dually to question how their criteria for creating a standard is chosen. She urges planners to withhold ethnocentric views of revitalization, writing "Unfortunately, language planners have tended to view popular language ideologies mainly as obstacles to the current policy agenda, rather than as sociohistorical constructions arising from speakers' lived experience, observations, prejudices, and perceptions--comparable in this regard to planners' own beliefs" (Luykx 2004:148). Luykx stresses that revitalization efforts focus on such purist and inconsequential morphological or sentence-level issues that they neglect bigger-picture issues of Quechua language use (Luykx 2004: 152).

Attitudes and identities

Various authors have discussed why one language dominates another in multilingual situations and which factors contribute to the marginalization and endangerment of languages. One of the most popular topics concerning why languages become and/or stay marginalized surrounds the topics of language attitudes and identities. Joshua Fishman, Maria Elena Garcia, Nancy Hornberger, Serafin Coronel-Molina, Liliana Sanchez, Marilyn Manley, Clair Lefebvre, Marleen Haboud, and Rosaleen Howard, among others, have researched this topic, specifically concerning the Quechua and Spanish languages. Hornberger and Coronel-Molina (2004) note that the hierarchical relationship between Spanish and Quechua has influenced how Quechua and Spanish speakers decide which language to speak. Spanish is associated with literacy and education, prestige, employment, and national and international society (Hornberger 1988A and 1988B). This high status leads to the devaluation of Quechua. Overwhelming evidence shows that unfavorable attitudes and identities associated with Quechua encourage speakers to choose Spanish over Quechua. In fact, Hornberger and Coronel-Molina (2004) note that, in general, speakers of any indigenous language often choose to speak the higher-status language in an effort to disassociate themselves with the lower-status indigenous language. Joshua Fishman's concept of language loyalty (1965) lays out the foundation of these issues, noting that multilingual speakers frequently consider one of their languages to be, "...more dialectal, more regional, more substandard, more vernacular-like..." (Fishman 1965:70), and that those speakers often choose to speak the dominant language over their maternal language, even if they don't speak the dominant language as fluently. Even before the Spanish colonization of Peru (and today still),

certain varieties of Quechua dominated others, and Quechua itself dominated other indigenous languages in Peru. As a result, Quechua is both a marginalized and marginalizing language (Hornberger and Coronel-Molina 2004).

Hornberger and Coronel-Molina (2004) discuss how Quechua is thought to adulterate Spanish language learning, and how Quechua was thought to be a useless language without grammar. Coronel-Molina (1997) notes how Quechua is associated with uneducated, lower-class people. In an example of Ecuadorian Quechua, referred to as Quichua, Haboud (2004) explains that even some influential promoters of Quechua don't speak it with their children (Haboud 2004:73). Many authors would agree with Hornberger and Coronel-Molina (2004) that Quechua is tarnished by the attitudes of both those who speak it and those who don't (Feke 2004, Coronel-Molina 1997, Haboud 2004, Manley 2008). Many Quechua speakers in larger cities have been found to lie about their knowledge of Quechua, saying that they forgot how to speak it, or never learned how to speak it at all (Hornberger and Coronel-Molina 2004; Hornberger 1988B; Coronel-Molina 1997). (See Lopez Quiroz 1990 for more on Quechua linguistic shame).

It is common in Lima and other larger cities to face social discrimination based on identification as a Quechua speaker or an indigenous person (Howard 2004). Manley's (2008) data contrasts this, however, referencing a study in Cuzco where "...participants claimed to never have denied speaking Quechua" (Manley 2008:336). Feke's research (2004) is also contrary to these results, where she notes that only 11% of her participants confessed to lying about being able to speak Quechua (Feke 2004:237). Manley purports that her study shows more positive attitudes toward Quechua than in Hornberger and Coronel-Molina's, Haboud's, Howard's, and Gleich and Wolck's studies. However, her

explanation for these contrasts are that the interviewees in her study were part of associations to help protect indigenous migrants. She describes these as "...Quechua 'safe spaces' within the Spanish-dominant city of Cuzco, where the majority of group members can speak Quechua without fear of discrimination" (Manely 2008:337). These safe spaces are known as, "Casa del Cargador (CdC) (in the case of the males) and the Centro de Apoyo Integral a la Trabajadora del Hogar (CAITH) (in the case of the females)" (Feke 2004:239), which are associations in Cuzco that aim to help integrate and care for in-need Quechua speaking migrants.

Although prevalent, these are not the only attitudes toward Quechua. Haboud mentions that in more rural environments (Hornberger and Coronel-Molina 2004 and Feke 2004 all agree), there is a stronger tendency to embrace Quechua, and throughout her interviews in Ecuador, Haboud did find many who had a favorable attitude toward Quechua. Feke's interview results also presented evidence for "...generally positive attitudes toward Quechua" (Feke 2004:228), although Quechua was not seen to be more or less valuable than Spanish, rather equal, and knowing both languages was seen as important. She notes that it is desirable for working professionals to learn and speak Quechua. Feke (2004) mentions that these rural environments tend to be higher elevation without electricity and popular media, which would have less influence on attitudes pertaining to the prestige of Spanish. Hornberger (1988B) also mentions how Quechua is valued. In many communities in rural (and less often in urban) Peru, most older community members only speak Quechua.

There is also a loyalty to Quechua. Hornberger references Fishman concerning language loyalty saying, "Fishman has noted that in many cases around the world,

language loyalty makes up for lack of language prestige. The case of Quechua for Quechua speakers appears to be no exception” (Hornberger 1988B:91). Hornberger mentions how Quechua speakers claim it is easier to learn Quechua, that they have a high confidence about their proficiency in Quechua, and that Quechua is used more often in familiar situations, among friends, in celebrations, or for telling jokes. It is associated with traditional community life, allowing Quechua speakers to claim closer affiliation with their ancestors before the Spanish colonization (Hornberger 1988B: 224). Bilinguals were said to have reported greater enjoyment in speaking Quechua, that it was more rich and full of expressions and knowledge that were not translatable into Spanish. Quechua is valued for its beauty, for sounding prettier, and for the community’s emotional connection to it (Hornberger 1988B). Lefebvre (1979) says it is better for telling jokes, stories and poetry, as well as for word games. Lefebvre writes, “Generally speaking, Quechua is the intimate code and Spanish is the formal code” (Lefebvre 1979:397). Hornberger suggests that there is an even deeper, unconscious loyalty to Quechua, in that its speakers believe that it will exist forever. When asked if Quechua will disappear, speakers say it never will (Hornberger 1988A). Additionally, Haboud (2004) comments on how migration of indigenous people into urban areas influences attitudes about Quechua. She explains that once a group establishes economic and social stability, these groups tend to identify more freely with the indigenous identity.

Hornberger and Coronel-Molina (2004) point out that speakers still choose to use Spanish over Quechua despite their appreciation of the language because they are too preoccupied with learning Spanish. Garcia’s fieldwork in Cuzco (2003) highlights this point, as she discusses how Quechua-speaking people thought the best way to climb the

social ladder was through learning Spanish rather than through education. As mentioned earlier, some varieties of Quechua are considered more prestigious than others, making solidarity between different dialects of Quechua difficult to achieve (Hornberger and Coronel-Molina 2004). However Feke's results (2004) about Quechua attitudes that contrast Hornberger's idea of Quechua speakers choosing to speak Spanish over Quechua because of their preoccupation with learning Spanish. Instead, Feke discusses how her participants continued speaking Quechua long after being newly immersed in a Spanish-dominated environment, and that her participants find Quechua to be useful, even for future jobs. Feke points out that the reason her results may differ are for the same reasons previously discussed about why Manley's results don't coincide with Hornberger's 1988 study; the safe-haven associations that were helping these participants allowed them support from other Quechua-speaking members and from the associations themselves that decreased the rate at which the migrants needed to assimilate into the Cuzquenian culture. Von Gleich (1994) mentions an increase and more overt language loyalty appearing as a result of the indigenous movements. Maria Elena Garcia (2005) discusses quite thoroughly the issue of Quechua identity and what it means to be indigenous in her book, *Making Indigenous Citizens*.

Language is often an important identifier of ethnicity. Many Quechua language researchers note that to speak Quechua is to be Quechua. Hornberger and Coronel-Molina (2004) explain that many Quechua speakers identify themselves as ethnically Quechua. Identifying as Quechua often also means identifying as indigenous. Garcia (2005) discusses the struggle between being a citizen and being indigenous, where these identities have previously been opposed to one another, but are now becoming re-

conceptualized, so that , “ ...one can be Quechua and Peruvian, or more strongly, become Peruvian by becoming Quechua” (Garcia 2005:165). Also, Hornberger’s 2012 article, *Bilingual intercultural education and Andean hip hop: Transnational sites for indigenous language and identity* discusses similar questions pertaining to what it means to be indigenous in the Andes. Age and gender are also said to affect ethnic identity as well as language use. For example, Quechua monolingualism is higher among women, children, and older generations (Hornberger and Swinehart 2012). Hornberger (1988B) offers additional qualities that might determine Quechua ethnicity,

There are, of course, a number of cultural characteristics which might be identified as being “Quechua.” Among these are styles of dress, customary cuisine, religious beliefs and customs, as well as songs, dances and textile weavings typical of the Quechua communities (see Hornberger 1985:243-247 for a description of these). These practices, as well as living on and of the land, are all features of being Quechua... (1988B: 71-72).

Domains and language shift

The processes of language endangerment and death, along with ideas about reversing these processes are manifold. Hornberger and Coronel-Molina (2004) help distinguish between the processes, as they discuss the differences between language maintenance, language revitalization, and language shift. Language shift is described as a community’s loss of a language, and it is said that this can lead to the death of a language. Language maintenance is described as the “...relative stability in domains of use, and number, distribution, and proficiency of speakers in a speech community”

(Hornberger and Coronel-Molina 2004:13). Revitalization is also known as renewal or reversing language shift. This involves reinitiating language features and/or use.

Modernization involves making the language an appropriate mode of communication for topics and media of the modern world. This modernization includes tasks such as inventing new terminology, extending meanings, and adapting loan words into Quechua. An example of one of the largest areas in which lexical modernization needs to take place is technology. If the younger Quechua-speaking population is unable to discuss technology in their language, it will lack a main function, and younger people will keep following the trend of choosing Spanish over Quechua (Coronel-Molina 1996).

Many corpus planners and revitalization experts have anchored their work on Joshua Fishman's seminal works from the 1960s until the present day. In his book *Reversing Language Shift: theoretical and empirical foundations of assistance to threatened languages*, published in 1991, Fishman provided theory and methodology for reversing language shift and language maintenance. Additionally, Fishman (1991, 2006) outlined an eight-stage analysis of and prescription for reversing language shift. With these theoretical stages, he aimed to bring linguists and activists together to strengthen and perpetuate "intergenerational linguistic continuity" (Fishman 2006:91). The stage requiring the most urgency, stage 8, is the stage at which a language has already died, and stage one marks the point at which a language could be chosen as the language of education, employment, government, and media. The stages allow the language planner to decide at which stage of the language shift the language in question is, and then priorities are listed at each stage to help the planner organize efforts. Fishman notes that these stages are not exact, as each language case will have its own peculiarities.

One of Fishman's earlier papers discusses the theory of domains of language use. The concept of domains was first discussed in a 1932 article by Schmidt-Rohr (Fishman 1965, Valentino et al. n.d.), and was later developed and popularized by Fishman (Valentino et al. n.d.). Fishman defines a domain as "... a sociocultural construct abstracted from topics of communication, relationship between communicators, and locales of communication, in accord with the institution, of a society and the area of activity of speech community in such a way that individual behavior and social patterns can be distinguished from each other and yet related to each other" (Fishman 1972:82). If a speaker is multilingual, they will use one language for certain circumstances and the other language for other circumstances, and these choices have patterns that are influenced by various factors. Factors which Fishman said influence language choice include group membership (such as age, religion, race, sex as well as "*reference group membership*" (Fishman 1965:68) such as club membership), situational style (such as intimacy, formality, solidarity, status), and topic (Fishman, 1965). Group, situation, and topic can also influence one another, creating a unique interdependence. Schmidt-Rohr (1963) suggested various domains, and these domains were added to or refined by subsequent researchers (Mak 1935, Frey 1945). Examples of domains are school, family, work, church, and the media. Fishman explains that "By recognizing the existence of domains it becomes possible to contrast the language of topics for individuals or particular sub-populations with the language of domains for larger parts, if not the whole, of the population" (Fishman 1965:74). The less domains in a language, the bigger the chance of language shift. In a multilingual community, a language can dominate a domain and spread this dominance to other domains, which is why Coronel-Molina

(1997) explains that most language planners are quite concerned with which language is used in different domains. He also references authors who are in agreement with this concern (Wiley 1996, Cooper 1989, Wardhaugh 1992, Altehenger-Smith 1990, Cobarrubias 1983 and Fishman 1979) (Coronel-Molina 1997).

Fishman gives a description of the differences and similarities between domain and function, as they may seem to blend together in a few but not all areas. “"Functions" stand closer to socio-psychological analysis, for they abstract their constituents in terms of individual motivation rather than in terms of group purpose” (Fishman 1965:75). He also references his 1964 paper *Language maintenance and language shift as a field of inquiry* for a more thorough distinction. (See Lefebvre (1979) for a discussion on functions of communication.)

Which domains are dominated by Quechua now? And which are in danger?

Linguistic domains that are dominated by Quechua have been and are still currently diminishing since Spanish colonization (Hornberger 1988A; Coronel-Molina 1997; Coronel-Molina 1999; Luykx 2004). Within bilingual (and multilingual) Quechua-Spanish communities in Peru, language planners have targeted domains that Quechua dominates and domains that Spanish dominates. In efforts to minimize Quechua language shift, planners have proposed ways to stop Spanish from taking over vulnerable Quechua domains, as well as providing suggestions for new domains that Quechua might be able to take over. Influential domains that are predicted to determine the direction of language shift are often emphasized.

Leading Quechua language researchers and planners are regularly concerned with which domains are losing their stronghold in Quechua. They also help prioritize language maintenance initiatives by exploring which Quechua domains are expanding.

Additionally, efforts to propose new potential domains for the Quechua language are also prevalent.

According to various sources, domains that are dominated by Quechua in Peru are commonly intimate, informal situations, among women, children, and the elderly (Lefebvre 1979; Hornberger 1988A and 2012). Additionally, it dominates the provincial and group domains (the official language of a province or region and main language of communication of a cultural or ethnic group, respectively), the domestic domain, and the community domain or for traditional indigenous community life (Hornberger 1988A; Luykx 2004; Coronel-Molina 1999). It is a dominantly oral language, most common in the rural highlands and is chosen over Spanish for jokes, story telling, riddles, nicknames, botanical nomenclature (Howard 2004; Hornberger 1988A; Coronel-Molina 1999).

Hornberger and Coronel-Molina (2004) note that among the oldest generations, Quechua is used more often regardless of domain, and regardless of migration to urban centers (Hornberger and Coronel-Molina 2004:18).

Many sources agree that Spanish dominates the following domains: formal situations, education (especially writing and literacy), public places, young people (which I interpret as adolescents), religion, employment, industry, bureaucracy, commerce, law, the capital domain (used in/around the national capital) and internationally (Lefebvre 1979; Hornberger 1988A; Coronel-Molina 1999; Howard 2004, Stross 1976; Hornberger and Swinehart 2012; Luykx 2004).

Coronel-Molina discusses domains that Quechua used to dominate but which are now dominated by Spanish. Although Quechua is still dominant in the rural highlands of the Andes, there is a shift toward Spanish (Coronel-Molina 1999:170). In the 17th and 18th centuries, Quechua was the *lingua franca* between Spanish colonizers and the indigenous population of Peru, but today Spanish is now the *lingua franca* in Peru between Quechua-Spanish bilinguals (Coronel-Molina 1999:170).

As mentioned earlier, the religious domain was dominated by Quechua during Spanish colonization. Coronel-Molina explains, “Using Quechua was the only way the missionaries could hope to convert the Indians to Christianity” (Coronel-Molina 1999:175). However, in a short amount of time, as Spanish contact increased, Spanish eventually took over this domain. Coronel-Molina proposes this as one domain that would be fruitful to expand for Quechua since Quechua is still used in some highland communities to give the sermon, and also because some Quechua communities still intertwine ancient beliefs or rituals into their Catholic beliefs, and these ancient rituals are always performed in Quechua (Coronel-Molina 1999).

It is proposed that Quechua could expand in its international domain because so many different countries speak Quechua, but despite this, Spanish is being used for communication between countries (Coronel-Molina 1999:170). Another expanding domain, although only outside of Peru (in places such as North America), is Quechua as a school subject. It has become popular among linguists and in universities or language institutes, as well as international seminars and conferences (Coronel-Molina 1999:171).

There is a growing presence of Quechua in the digital world, with new websites and software, both for learning Quechua as well as entertainment, desktop publishing, or

word scanning software (Coronel-Molina 1999:171). Google even launched a version of its search engine in Quechua (Economist 2006). Coronel-Molina and Hornberger (2004) note, however, that most Quechua speakers don't have the technology to access this digital realm, and they question the utility of expanding this domain. Coronel-Molina mentions a domain, the radio, that is also becoming an opportunity for Quechua.

Hornberger also mentions this as a developing domain, and includes television as a new domain that may enhance the status of Quechua (Hornberger and Coronel-Molina 2004). New initiatives to provide stations in Quechua have been in place since the late 1990s. It is mentioned that these initiatives are not just in Peru, but in Ecuador and Bolivia, as well (von Gleich 1994; Coronel-Molina 1999). Quechua may be gaining influence in the education domain too, thanks to many bilingual education researchers and projects. (See Lopez Quiroz (1996) for more on current bilingual education in Peru.) Floyd (2008) mentions an influx in Ecuador of illegal reproduction of media in Quechua, such as music, films, street comedian routines, religious ceremonies and dances, and more, providing positive images of indigenous life and language (Floyd 2008: 37).

The use of Quechua is said to be expanding in official contexts (from presidential speeches to the translation of official documents into Quechua), and is recognized as an asset to young professionals, bilingual educators, and indigenous leaders. Hornberger and Coronel-Molina (2004) note its wide use in local medical posts of rural communities as well.

Coronel-Molina remarks that there are opposed views about Quechua and the literary domain. Coronel-Molina and Hornberger (2004), write that there has been a considerable amount of literature in Quechua over time, citing old manuscripts, present-

day poetry and stories that were transcribed, as well as publishing houses that encourage Quechua publications. However, the low literacy rate of Quechua speakers combined with the lack of standardized written Quechua complicate this issue (Coronel-Molina 1999). He suggests that perhaps more print media would be beneficial for expanding the literary domain for Quechua. (For an alternate view of low literacy in Peru, see De La Peidra 2009 and Zavala 2008; for information about the colonial Quechua corpus, see Durston 2008).

One of Coronel-Molina's most important suggestions for increasing these domains is to better the status of Quechua through speaker attitudes and bottom-up grassroots movements. He also urges language planners to change their efforts. He writes,

Much of the effort aimed at educating people to (re)valorise the Quechua language is geared towards the wrong population. It is true that many Quechua people have learned to devalue their own language and culture and so need to learn to revalorise it, but who was it that forced them into that shame? It was the hegemonic majority, the Spanish-speaking population, who convinced them of the lack of value of their heritage. So it is this dominant sector of Peruvian society that needs to learn to appreciate the value of, if not actually to speak, this ancestral language. Much more effort should be directed at that sector of the population, rather than all of the focus going towards the Quechua people themselves (Coronel-Molina 1999:177)

Hornberger suggests both top-down and bottom-up revitalization efforts, and she puts a big emphasis on bilingual education and standardization. Hornberger has

consistently mentioned that language planning goals should be generated primarily from within communities themselves, but she also encourages outside governmental and organizational support for these efforts. Despite her longstanding work with bilingual education, she points out that the low literacy rate among Quechua speakers may make building a literary tradition in Quechua a futile attempt. In an article by Hornberger and Coronel-Molina (2004), they argue for a standardized written Quechua, "...making explicit the linguistic "unity" of the varieties—the many linguistic elements that join them, that are shared—could offer the psychological impetus needed to help construct a social unity for a divided population, thus giving Quechua speakers a stronger, more unified power base from which to work" (Hornberger and Coronel-Molina 2004:53). She references Cerrón-Palomino's warning that standardization should not hinder use, and that primary efforts should be towards extending written Quechua to every domain of use (Hornberger and Coronel-Molina 2004).

As previously mentioned, Garcia (2003 and 2005) encourages planners to initiate endeavors that aim to allow indigenous people to redefine what it means to be indigenous, and to take control of their own linguistic revitalization movement on their own terms. Luykx's reproaches echo Garcia's, as she criticizes current bilingual education efforts. She notes that these efforts are not fruitless, but that they fail to stabilize the stronghold Quechua has in its current domains. She explains that bilingual education shows little evidence of how it will help Quechua language maintenance outside of school. Despite a lack of research that supports bilingual education as an efficient revitalization tactic, she notes that it is still popular. She urges planners to separate domains and functions for Quechua and Spanish. She references Fishman's

work, saying that “...threatened languages tend to become compartmentalized (i.e. functionally fixed), whereas dominant languages tend to break compartmental boundaries and spread into functions previously fulfilled by the threatened language. Endangered languages must therefore guard their functional boundaries vigilantly, if they are to remain viable” (Luykx 2004:153). This is why Luykx suggests safeguarding the home and community domains, where Quechua still has its strongest grip. She warns that expanding Quechua into new domains is unproductive. Luykx wants planners to recognize that their priorities, and the priorities of academia, are not necessarily the same priorities of Quechua communities. She wants efforts to evoke revitalization efforts within these communities, rather than forced upon them from outside.

Linguistic Mapping using GIS

This section briefly covers linguistic uses of GIS. This field is still young and growing, and I will eventually narrow down the topic to studying Quechua and linguistic domains with GIS, at which point there is no study focusing on these topics together.

Linguistic mapping is certainly not new (Luebbering et al. 2013A), and there are many forms of it, including language contact maps, linguistic atlases, lexical variation maps, mutual intelligibility maps, language family maps, and more. Using GIS to map languages often returns the broad term *geolinguistics*. Geolinguistics is defined by Williams as being concerned with “...the relationship between languages and their physical and human contexts...” (1988:2). One of the many functions geolinguistics can cover includes looking at language use and choice in a socio-spatial context.

Although linguists have used GIS in the past, especially for creating language atlases, sophisticated processing and analyzing linguistic data with a GIS is seldom found in literature. There are few studies employing or discussing GIS methodology, and also few studies discussing the history and development of these new opportunities of using GIS with linguistics (Hayes 2010). Lee and Kretzschmar note that, "It is somewhat surprising that up to this point linguistic researchers have not maintained closer relations with other geographers except for cartographic assistance" (1993:1). They continue to describe how geographic sciences have had two great developments since the 1980s, which were creating GIS software and creating statistical models to analyze patterns of data spatially. In an aim to bring light to this issue of a lack of GIS and linguistic methodology in the literature, Hoch and Hayes (2010) discuss products, articles, books, and useful tools and techniques that use GIS for linguistic purposes, hoping to encourage others to recognize the utility of GIS in linguistic research.

Hoch and Hayes comment on the extensive cartography that linguists are performing, but they see no records of the development of this cartographic work although they have no doubt that GIS has played a role in this development. They urge a focus on the role of GIS in linguistic research. This echoes Lee and Kretzschmar's (1993) call for collaboration between linguists and cartographers.

Early questions that stimulated using GIS for linguistics surrounded language border measurement, which included discussions of isoglosses, linguistic feature boundaries, and sociological variables that should be considered while mapping (Hoch & Hayes 2010). Early applications included storing large amounts of survey data and creating linguistic atlases much more quickly and at lower costs. Over time, advantages

included having digital maps, using multiple variables, geocoding data, and quantitative and statistical testing of the linguistic data that was calculated by and held within the GIS software (Hoch and Hayes 2010).

Hoch and Hayes discuss how data handling and display capabilities are among the most used features in linguistics using GIS. They discuss disadvantages to older types of mapping displays, namely choropleth maps. One disadvantage for this type of mapping is that it uses discrete polygons as boundaries (for items such as linguistic features or political boundaries), instead of representing them as continuous variables that change gradually. Luebbering et al. (2013B) also point out that there are currently no established standards for creating language maps. They suggest that without these guidelines, the difficulty in producing language maps rest solely on the mapper, who can then misrepresent the linguistic data, or have their data misinterpreted by viewers. They also focus on the fact that language is continuous, and that in traditional vector mapping, it is impossible to represent this.

Another disadvantage pointed out by Hoch and Hayes (and reiterated by Luebbering et al. 2013B) is that points or spaces on a choropleth map will only be allowed one attribute, when in reality, many attributes may be associated with that point or space. A GIS can correct these issues by allowing spatial gradation of boundaries and other attributes as well as multiple attributes for single entities. Furthermore, the authors described the benefits of semivariance (the degree of relationship between points) analysis models of variability, which “...provides information on the relationship between distance and the intensity of spatial dependence between sampling locations, and the distance at which samples are independent (Rossi et al. 1992)” (quoted in Hoch and

Hayes 2010:30). Other ways to analyze point data are also referenced, as well as map overlay, which would allow one to look at spatial coincidences between linguistic data and other variables.

Luebbering et al. (2013B) discuss their aims to renew attention to linguistic mapping. They discuss issues with contemporary boundary representations, depictions of linguistic diversity, and the advantages and disadvantages of traditional linguistic maps. They note that language maps do not represent the multivariate nature of a study area. They bring up a great point concerning using vector maps for mapping bilingualism,

Frequently in language mapping, only one language is assigned per mapping unit. Such monolingual mapping however is a mismatch for the multilingual residents of many places in the world. In order to map a multilingual society with monolingual polygons, decisions are made as to whose language will be assigned to a mapping unit—whose language will be visible and whose will not. This element of language map compilation reveals the problem of power and perception that can accompany language maps. The limitations of map symbology problematically confront the power struggles among languages, and the cartographer, in a way, must take sides (Breton 1991). (Luebbering et al. 2013B:386)

Luebbering et al. follow up by discussing how a language map will never be both visually appealing and able to display all its information of importance. However, with the growth of GIS, these issues are easily diminishable, and GIS is stated to be the best tool to date for dealing with these problems.

Luebbering et al. give examples of a few works concerning digital mapping, but note that these articles were all written over 10 years ago (as of 2013), and this 10 year expanse has had great changes in GIS technology. They use this information to urge new attempts at digital mapping, suggesting that early attempts can be reproduced or that new possibilities could be pursued. (See Luebbering et al. (2013B) for examples of GIS-made linguistic maps and brief methodology/techniques).

A few linguistic maps made with a GIS created between 2000 and 2010 exist that Hoch and Hayes (2010) and Luebbering et al. (2013B) didn't mention in their articles, which confirms Luebbering's statement that many linguistic mappers are not aware of the digital linguistic mapping that is presently occurring. One article by Luo et al. (2000), provides maps of terms associated with minority farming groups in China, helping to elucidate candidates for the origin of Proto-Tai (Luo et al. 2000:1). Another article aims to encourage participant-mapping, where users of endangered languages can document their own language use (Ekpenyong et al. 2006).

Some nontraditional linguistic mapping and methods that stem from using GIS are worth mentioning here. Luo et al. (2007) have created multiple graded raster maps of interpolation of kinship terms. Evans and Waters (2008) discuss mapping vernacular geography, (such as uptown, high-crime, to the shops) and tackle the task of mapping "fuzzy" or "vague" entities. Xie et al. (2008) create an unprecedented project, the Language and Location Map Annotation Project (LL-MAP), which is a "...comprehensive source of georeferenced language information...which can organize a wide range of heterogeneous data, integrating language data with geographical, political, demographic, zoological, botanical and archaeological data in ways which are

immediately visually interpretable” (Xie et al. 2008:1-2). This project lets users customize their maps, combining linguistic information with non-linguistic data, including physical or cultural landscapes. Gregory and Hardie (2011) map linguistic corpora by interpreting spatial phenomena within texts. Here they detect place names within a corpus and represent them visually using GIS. In a related article, Gregory and Cooper (2010) are focused more on history and literature than linguistics, but show us the possibility of mapping things such as emotional response or altitudes of places visited from place-names mentioned in text corpora. They even go as far as embedding hyperlinks of quotes or crowdsourcing pictures from Flickr within their maps, among other unparalleled novelties. Gregory and Cooper (2010) and Gregory and Hardy (2011) show the possibility of a sort of 3-D text analysis that could demonstrate new opportunities for linguistic mapping with GIS. A study by Mennis et al. (2013) mapped activity space (geographic and social contexts) data from oral narratives responses in questionnaires, while proposing how to better incorporate qualitative information into GIS-generated maps. Bibiko (2012) provides suggestions for using open-source software to present linguistic data, manage complex data sets, create custom maps, and to structure linguistic data into user-friendly formats.

Multiple recent articles show how GIS can aid in mapping dialects and dialect change, including: Ayad 2006; de Vriend et al. 2010; Radzi et al 2014; Sibling et al. 2012; Teerarojanara and Tingsabadh 2011 and 2013. These articles show how mapping techniques can take advantage of the capabilities of GIS, many of which include detailed methodology. Ayad (2006) even provides a detailed model diagram of functions performed in a GIS, allowing for facilitated replication.

Most of the maps in these articles show data as continuous, are able to show multiple variables in the same regions, incorporate an interdisciplinary approach, and provide methodology used or proposed for replicating their projects, all while being aesthetically pleasing and easily decipherable. (See Bye 2011 and Carlo 2012 to see how to use GIS to map language change and sound change.)

GIS studies concerning multilingualism and/or the Quechua language are of the highest concern for this review, but are also the least numerous. Eriksen (2011) uses GIS to address linguistic and sociocultural history in the Amazon, focusing on the pre-colonization period of 500 BC to AD 1500. He uses GIS to create this history, using interdisciplinary data and approaches to discuss sociocultural history and demonstrate the distribution of language families during this time. I am unaware of any other studies that use GIS to study the Quechua language.

However, two studies were located which concern mapping bilingualism (or multilingualism) with GIS. The study by Veselinova and Booza (2009) focuses on the spatial distribution of languages in the Detroit area and provides a model for mapping multilingual cities. Their maps and methodology are particularly helpful, especially as they note that simply showing number of speakers of a multilingual region on a map is not a true representation of the linguistic diversity in that area. They suggest that these maps show the number of languages spoken in the area, as well as the proportion of speakers in relation to the total population, and they lead by example in providing maps where this is done. They also propose applying Joseph Greenburg's 1956 methods for measuring linguistic diversity. The authors also compare linguistic distribution against other factors, such as economics, and foreign language instruction in the area.

Similarly, McGuirk's dissertation (2004) looked at demographic data in association with language use in Florida. He looks at vitality of Spanish in Florida, in terms of prestige, support, and use of the language. He found that bilingualism was supported through residential patterns, but unsupported through the educational system, with attitudes about Spanish by Spanish speakers as generally positive.

METHODS AND THEORY

Endeavors to revitalize language or reverse language shift utilize many theories, one notable theory being Joshua Fishman's development of language domains and steps to reversing language shift. In his milestone 1965 article, *Who speaks what language to whom and when*, Fishman discusses language choice in relation to linguistic domains. He notes that language choice occurs unevenly across different linguistic domains. For example, one language within a bilingual or multilingual situation can be associated and used more strongly within a certain domain. Fishman also suggests that some domains are more or less susceptible to being displaced in a diglossic situation. The family domain was explained to be more resistant to being displaced than the work domain, for example. Over time in these diglossic situations, domains will be dominated by one or the other language, and eventually the recessive language will eventually only dominate a few domains that are rather limited. By following the patterns of domain dominance, Fishman suggests that we can better understand language choice through socio-cultural implications of language loss. He then proposes stages of bilingualism in which a language displaces another through increasingly dominating domains (Fishman, 1965).

Fishman continued to build on this concept in his 1991 book *Can Threatened Languages be Saved?*, providing eight diagnostic stages of reversing language shift, called the Graded Intergenerational Disruption Scale (GIDS). Depending on the state of language shift, Fishman provides suggestions of how to reverse language loss, and additionally predicts the likeliness that a language will die depending on its location in the scale. At stage eight, the language in question has already died. Working to stage one, each stage is progressively expanding in use within more domains. Stage one is defined

as a situation in which the language is being used in education, work, mass media, government, and national levels. It is noted that stage 6 is a pivotal stage, in which all those below stage 6 (7 and 8, namely) leave the language in a critical stage. Stage 6 is described as that in which the home-family-neighborhood-community domain is the basis of language use and transmission. Stage 7 represents the absence of transmission of a language to children, where child-bearing age or younger speakers no longer exist and stage 8 concerns the absence of native speakers. In a complementary chapter (titled *Reversing Quechua Language Shift in South America*) in Fishman's 1991 book, Quechua is matched to these stages by Hornberger and King (Fishman 1991). It is noted that Quechua language shift is not uniform, and the article avoids generalizing the many Quechua language communities and networks by discussing Quechua in terms of each stage. This concept of linguistic domains, developed by Fishman and later extensively employed by Hornberger, forms the basis of my study of Quechua Spanish bilingualism.

Study design

The goal of this study was to explore which variables within each domain help determine language choice. A supplementary goal was to discover how mapping bilingualism with GIS can help us better understand spatial properties of domain use. The research explores the use of each language within different domains, attitudes of Quechua versus Spanish, and the spatial incongruences between multiple Quechua-speaking communities.

The study involved interviewing, recording, and observing speakers residing in five bilingual communities in the Cuzco Region of Peru. These cities were Maras, Kacllaraccay, Urubamba, Cuzco, and Mahuaypampa. The primary area of study and

location of my residence during research was Maras, where I resided during my field work. I also frequented and volunteered in Kacllaraccay. Each of these cities varies in size and features. Cuzco is located in Southern Peru and is the capital of the Cuzco Region, and the largest of the aforementioned communities, with a population of approximately 348,935 (<https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=population%20of%20cuzco>). Urubamba is the second largest of these communities with a population near 8,000, located in the Sacred Valley of the Incas (<http://www.planetware.com/peru/sacred-valley-urubamba-valley-per-cs-sv.htm>). Maras is the third largest, with an estimated population of 2,500 (Personal Communication, Elizabeth Cartwright 2014). Mahuaypampa has an estimated population of 200 (personal estimation), and Kacllaraccay has an estimated population of 200 as well (Personal Communication, Elizabeth Cartwright 2014). The latter two locations are seldom marked on maps and little to no literature can be found concerning them.

Maras, Kacllaraccay, Urubamba, and Mahuaypampa are all relatively close to one another, compared to their distance to Cuzco. Maras is about 1 ½ hours Northwest of Cuzco by car, and Urubamba can be reached via the same route to Maras, continuing another 30 minutes northeast from Maras (Urubamba is more north from Cuzco than Maras). From Maras, Kacllaraccay is about 20 minutes west by car, and Mahuaypampa is

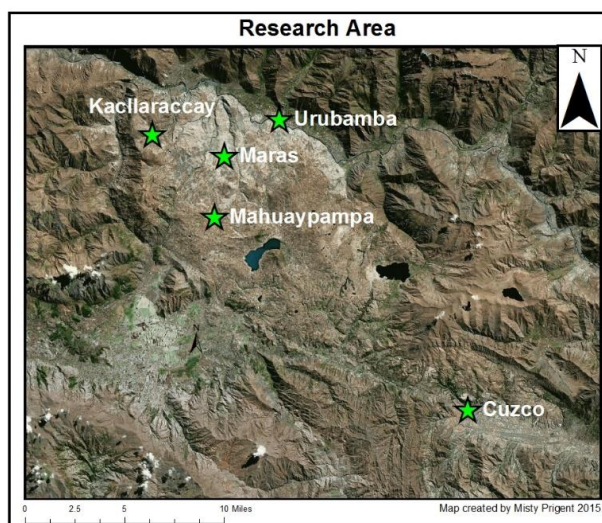


Figure 1 Research Area

south of Maras about 30 minutes by car. (See figure 1).

Data Collection

A total of 45 interviews were collected (along with two incomplete interviews that I will not use in my results: one due to language barriers and the other due to intoxication of the participant. In addition to interviews, I kept field notes about my experiences in each location, recorded audio and video samples in public areas in all locations besides Mahuaypampa, and took geographic coordinates of each of these locations and many of their attributes with a handheld Geographic Positioning System (GPS) unit, the Trimble Juno SB.

Interviews

I used Nancy Hornberger's 1988 book, *Bilingual Education and Language Maintenance*, and Joshua Fishman's 1965 article *Who Speaks What Language to Whom and When* as foundations and references for developing my interview questions. Hornberger's book provides an appendix of questions for her Language Use/Language History Interview Guide (Hornberger 1998B:239), which helped me develop my questions pertaining to personal information and attitudes about language. Fishman's article (1965) aided me in developing questions pertaining to established linguistic domains. He gives suggestions for and additions to previously suggested domains by Schmidt-Rohr (1963), Mak (1935), and Frey (1945), and explains that domains should be modeled according to topics of communication, relationships, and locales of communication associated with the spheres of activity of the culture in question. Examples of such domains are family, friends, mass media, or occupations, and Fishman

crosses these domains with other variables, such as formality, intimacy, speaking, reading, and writing. Many Quechua-language researchers have used domains in their research, often adding to domains or assessing whether Quechua or Spanish dominate each domain (Hornberger and Coronel-Molina 2004; Hornberger 1988B; Coronel-Molina 1997; Coronel-Molina 1999; Luykx 2004; Von Gleich 1994; Feke 2004). My interviews aimed to look at factors that influenced language choice, focusing on physical location.

As such, a portion of my interview asked participants which language they spoke in traditional domains along with questions about language use in certain locations within those domains. Based on commonly used domains, I considered traditional domains as home, school, work, media, religion, government and friends. I added additional sub domains to help elucidate factors within domains (namely location) that might influence language choice. These domains are church, party or celebration, teachers, literacy, market, hospital, with strangers, dreaming, thinking, doing math, while mad, while traveling, and with neighbors. In addition to sub domains, I asked questions about literacy in both languages, language of education, and demographics to use as variables within domains. The full questionnaire is available in the appendix.

While conducting interviews and observations, I had the following goals in mind:

1) To discover the participants' language acquisition and literacy levels; 2) To learn about language attitudes; 3) To discover language use among domains; and 4) To search for inconsistencies of language use by location.

Language of Interviews and Establishing Repertoire

My interviews took place over a two-month period, while I lived in a house in Maras. This house was a two-level structure owned by a local community member with

local inhabitants in the bottom half, and myself and husband in the top half. We shared the bathroom and courtyard, where we often did laundry and dishes alongside the downstairs neighbors. The house was located near the center of the main residential area in Maras and was being rented by the NGO *Crescendos Alliance* for its medical anthropology volunteers (of which I am affiliated through my professor Dr. Elizabeth Cartwright, co-founder of the NGO).

I conducted interviews in both Spanish and Quechua, based on the preference or ability of the interviewee. I speak neither Quechua nor Spanish maternally or fluently (although I reached a basic fluency of Spanish near the middle of my stay), and so was given much help with translation and interpreting.

Once my interviews were created in English, I had two native Spanish speakers from my university in the United States help me translate the questions into Spanish. When I arrived in Peru, I enrolled in two and a half weeks of Quechua language school at *Centro Tinku* in Cuzco. My main instructor, a native Quechua speaker whose family hails from Maras (ensuring that the dialect of Quechua I was learning and translating my interviews into was the dialect my interviewees would most likely be using), taught me Quechua grammar, vocabulary, culture, and more. On top of learning Quechua language, we also used approximately five of our class sessions to translate my interview questions into written Quechua. I learned to pronounce words and read the questions in Quechua, in the case that I might need to perform the interview in Quechua. In my case, I did perform four interviews in Quechua, but they were not out of necessity, rather out of curiosity on behalf of the interviewees, so they could see a foreigner speak and read in Quechua.

After two weeks of language school in Cusco, I traveled to Maras where I settled for my stay. There, I was also aided by the *Crescendos Alliance* coordinator, Katie Tyson, with translation and making acquaintances in the town. Katie lived in the volunteer house with me for most of my stay. Katie was not a native speaker of Spanish or Quechua, but spoke Spanish fluently and Quechua intermediately as



Figure 2 Library Opening

a result of living in Maras and frequenting Kacllaraccay for the year previous to when I arrived (her Peruvian boyfriend was also present from time to time, as some of his family lived in Maras). Katie was often present during my interviews, and was ready to help in case my Spanish or Quechua was insufficient or obstructed the interview. Many of my interviewees were acquaintances or friends of Katie's, and everyone I had met in the community was aware of and had good impressions of Katie's presence (as a representation of



Figure 3 Books to donate to Kacllaraccay

Crescendos Alliance) in their community. As such, I was afforded a rather quick integration into the community.

In order to establish repertoire in the community, and through much of Katie's help, we notified community members of my presence and intentions by frequenting local stores, community events, parties, markets, and stopping by houses to perform water tests (a goal of *Crescendos Alliance*). I spent the first few weeks getting acquainted with community members before I conducted any interviews. Additionally, *Crescendos Alliance* had recently built a medical post in the nearby village of Kacllaraccay, and volunteers had been working in the elementary school in Kacllaraccay for the last few years. I raised money for and collected donations of books in Spanish. Despite my research endeavors concerning Quechua, I didn't bring books in Quechua because they are rare, the school already had books in Quechua, and it was known that the school in Kacllaraccay needed books in Spanish (suggested by Dr. Elizabeth Cartwright). I brought over 400 books to the school, and with the help of Katie and my husband (and funding for book shelves, paint, transporting the books, and library supplies from *Crescendos Alliance*), we turned an empty room in the building adjacent to the schoolhouse into a community library



Figure 4 Library Opening

managed by the school (see figures 2-5). This is the only library in the community. A library opening event was held, where teachers, students, and community members (mostly parents of the children) were presented with the new library. For the duration of my stay, my husband, Katie, and I held weekly reading groups and library days with the support of the teachers, where students were either required or encouraged to spend time reading in the library in between classes or after school. Community members were also allowed to borrow books from the school library. Lastly, my husband held a few soccer practices with the children in the community, and we often came to the school to play with children during recess or to watch presentations the students had made for community members. As a result, my rapport with Kacllaraccay was almost as strong as it was in Maras where I lived.



Figure 5 Schoolchildren using the library

Interviewees

Approximately 80% of my interviewees were of good acquaintance with Katie, and the rest were people I had met while traveling, or while frequenting nearby cities. I explained my project to each participant and asked if they were willing to participate. All of my participants were readily willing to participate and signed a consent form in association with the interview. Anyone who did not want to participate was not encouraged otherwise. I orally explained the consent form to them, and additionally had

them read the consent form in Spanish or Quechua (most requested Spanish because, according to my experiences, monolingual Quechua speakers were usually illiterate). I recorded each interview with a digital voice recorder (Olympus VN-8100PC). I always asked the participant if I could record them before I started recording. Then I proceeded with the interview, always allowing the participant the choice of performing the interview in Quechua or Spanish. Often I had a sheet of interview questions in front of me to help cue my questions.

Demographics of interviewees

A total of 48 interviews were completed, however two were discarded because I realized that one interviewee was extremely intoxicated a few questions into the interview, and the other interviewee was Quechua monolingual, and even with Katie's help, we couldn't explain the consent form to her (and she couldn't read it). As a result, only 46 interviews are taken into consideration for this study. Four of these interviews were performed in Quechua, and the rest took place in Spanish.

Twenty interviewees lived in Maras, 9 lived in Kacllaraccay, 8 lived in Cuzco, 6 lived in Urubamba, and 2 lived in Mahuaypampa. Twenty of the interviewees were males, and 26 were females. Ages ranged from 13 years old to 71 years old. Table 1 indicates age and gender of interviewees by city.

City	Interviewees	Females	Males	20 years old or under	21-40 years old	Over 40 years old
Maras	20	11	9	8	5	7
Kacllaraccay	9	6	3	5	1	3
Cuzco	8	5	3	0	4	4
Urubamba	6	3	3	1	1	4
Mahuaypampa	2	1	1	0	1	1

Table 1 Interviewee ages and gender by city

Because I was living in Maras, I had more opportunities to interview individuals from Maras. I found it much easier to make contact with women from Maras between the ages of 20-60, while males were harder to access. Older women were often running local stores, in markets, and traveling from place to place, so I had little difficulty finding interviewees in that demographic. I am guessing that my gender also made it easier for me to approach women and children. Additionally, through Katie, I had made quite a few young female contacts that worked at the Maras hospital. Although children from Kacallaraccay were always around, it was still hard to interview children from other locations, such as Urubamba and Cuzco, because strangers approaching children isn't usually acceptable, and I had to get their parents' permission to interview them, so even if I did find a child or teen to interview, I usually couldn't do it because their parents weren't quickly locatable. Half way through my interviews, I realized that I had many interviews with women and children, but only a few with men. In an effort to get an equal number of interviews from both genders and different age ranges, I interviewed some individuals with whom I was not previously acquainted, and those interviewees were often males. Initially, I didn't intend to interview individuals from Mahuaypampa, but they frequented Maras and I didn't realize my two interviewees from Mahuaypampa were not Maras residents until I had already started my interview. Cuzco and Urubamba residents were the most difficult to come by because I had no affiliations with either of the cities, which explains the uneven distribution of interviewee residences.

Note-taking

I carried a small notebook around with me wherever I went, and discreetly wrote down notes about language use in various situations. I started methodically taking notes

(or audio recording) during my travels from one city to another. Each time I entered a vehicle, I would take note of the language or languages spoken, who was speaking what, and what the topic was (if I could understand well enough). About once a week in the morning, I would sit out on my veranda which faces the street, and listen to passersby. I started taking note of which individuals were speaking which language, or when they decided to switch language or borrow words. However, I realized that this sampling technique was going to be biased because I would probably be taking notes of the same people walking by doing routine duties throughout the city. As a result, I decided to walk through the city and take notes of speakers, this way making sure that I was sampling a wide variety of community members, not just those that traveled by my house routinely. The population in Maras is small enough that I had time to note the apparent age and gender of individuals and whomever they were talking to, along with the language that they were speaking. Through my affiliation with *Crescendos Alliance*, I found myself at the Maras hospital often, and decided to take notes of language usage in the waiting room. I noted interlocutors' age, gender, and language spoken, along with noting who was the initiator in the conversation. I never noted the topic of conversation because I thought it might be too personal. One of my interview questions asks interviewees what language they speak in hospitals, and this seemed like an efficient method to compare with the interview responses. When I entered new environments such as restaurants, internet cafes, parties, or when I participated in events, such as parades, ceremonies, or church, I also took notes about the conversations around me. In total, I accumulated about 80 separate entries in my journal, each separated by date, location, and other variables. I also wrote personal notes to myself about my experiences half-way through my trip,

outlining struggles and unmet goals and planning on how to overcome or achieve them, but there are only two entries like this.

Audio recordings (non-interview)

Along with my notebook, I always carried around a small digital voice recorder with me. I was always rather discrete with my recorder, because I found it intimidated those around me and disrupted the natural flow of conversation. I took samples of speech at any point in my day, always making sure that I was in a public place, and usually only when I was sure that I could capture a clear conversation. If there were too many people talking at once, I might still record, but accompanied the recording with note-taking about the interlocutors. Common locations that I recorded speech samples included public transportation, restaurants, the hospital waiting room, my veranda, and in the street while walking through the city. I have many more speech samples of Maras than other cities. I obtained about 120 audio recordings (not including my interviews) of random speech occurrences. Because these samples were randomly taken, I realize that this methodology is not a uniform sample of the community, and would aim to change this if I were to repeat this sort of study. However, I did attempt an even sampling method while traveling from one city to another. I traveled from Maras to Kacllaraccay and back about four times a week, from Maras to Urubamba and back about three times a week, from Maras to Cuzco and back about five times total. I only traveled to Mahuaypampa twice. Each time I was traveling, as mentioned earlier, I either kept track in my notebook, audio recorded (or both) of the language spoken while traveling.

Videos taken

Less often than audio recording or note taking, I took videos. I took videos only when people were aware I was filming, or if they were too far away to be recognized. Most videos were not intentional data gathering techniques, they were just to capture images. However, some subsidiary data came from a few of these videos. About 20 videos contributed to the data of this study, often concerning who was speaking which language to whom.

Interpretation of Data

Interpreting Interviews

Once I had finished collecting my data, I started translating it into excel sheets. First, I listened to each interview, translating the answer to each question into English and displaying these answers in a large table. After I had finished translating answers and transferring them into an excel sheet, I had a native Spanish speaker, Leidy (a native of Colombia), verify my translations and help me with any points that I was unable to do myself. Each interview question has its own column in the excel sheet, as well as additional columns for me to write notes about the interview and to note the length of the interview. I also added a column to accompany the last question in my interview, which was to tell me what they did last weekend, or yesterday, in Quechua. In this column, I wrote each occurrence of Spanish word borrowing while the interviewee was speaking Quechua.

I sorted the interviews by location. Many of my interviewees were born in one place, grew up somewhere else, and currently lived in a different place. Because language learning takes place primarily from childhood to adolescence, I categorized interviewees

by the place they grew up and went to school, instead of their current residence, because this is where they would have learned language. Current place of residence may affect the interviewees' language preferences, but overall, I assumed that habits concerning language use were based on the place the interviewees grew up. I wanted to sort interviewees by location rather than other factors, so that I would be able to display my data with a GIS, which is, by necessity, location-dependent.

Interpreting notes, videos and audio samples

As with my interviews, I organized my notes, videos and audio samples into categorical columns in an excel sheet. Columns for my written notes included information such as city, location (such as in a restaurant, or in the street), language(s) spoken, interlocutors and their assumed ages, date, topic of conversation, and if there was ever word borrowing from one language to another. I was particularly keen on writing down instances of word borrowing—which happened always in Quechua with Spanish words—and whenever I hear instances of borrowing or code switching on my recordings, I was sure to write them down in the excel sheet.

I recorded information from my audio and video recordings in the same format as my notes, but since they provided more information, I noted language of music or other activities in the background, and was also able to



Figure 6 Flower van/taxi

capture the context around code switching or borrowing occurrences.

Traveling

As mentioned in my methods for note taking, I consistently noted or audio recorded my travels from one city to another, taking note of who spoke which language to whom while moving from one city to another. I wanted to focus on movement from city to city, since people in the cities I studied were traveling quite often. Reasons for traveling to different cities included commuting to work or school, buying groceries (local stores in Maras and Kacillaraccay had sparse amounts of food—including a few fresh vegetables and fruits—drinks, and snacks), buying household products and supplies.

In order to look at travel data, I created an excel sheet from notes, recordings, and videos, to specifically look at language during travel from one place to another. This excel sheet takes into account the starting and ending location (direction of travel), the vehicle traveled in, languages spoken, interlocutors and their descriptions, date, topics of discussion, and any instances of borrowing or code switching. The vehicle traveled in could be a taxi, a moto-taxi, a combi, a cargo truck, or a bus. Taxis in Peru are particularly interesting because they can be either full-time taxis, meant to take people from one place to another all day, or they can be a regular car that is picking up passengers for a one-time trip since they happen to be going



Figure 7 Combi Van

in the same direction as the to-be passengers. In this case, any car is a potential taxi, and all a would-be passenger needs to do is raise their hand at the passing cars and see who will stop. In one instance (see figure 6), I was even picked up by a flower business vehicle, allowed to ride as a passenger along with the flowers.

I wanted to note the mode of transportation, because the dynamics of each mode are all quite different, and the driver can influence the language of conversation. I am assuming that a full-time taxi driver would be most efficient if they initially spoke

Spanish to all their passengers (as Spanish is the *lingua franca* (Coronel-Molina 1999) in Peru), so that they can have good communication with the widest amount of passengers possible. However, any random car serving as a temporary taxi will have drivers of varying language preference and abilities. Combis are vans (see figure 7) that

usually have more of a set route than a

taxi, are scheduled, and are usually

lower-cost transportation that target

locals. There are a lot of tourists in Peru,

and combis are much less likely to pick

up tourists, as the tourists' destinations

often don't meet up with the combi

routes. Combis are usually only seen

picking up tourists if there are no other passengers (except tourists) in their vehicle. This

is because tourists are generally charged about three times more than locals, and

combining locals with tourists in the same van can bring this to tourists' attention,



Figure 8 Moto-taxi



Figure 9 Cargo Truck

making it harder for drivers to raise tourist traveling prices. Moto-taxis (see figure 8) are two-to-three person carriages built onto the back part of a motorcycle. These taxis are used strictly for transportation in cities, and almost never from city to city (it is both illegal and impractical to travel on a highway with one of these). They are a major form of transportation in Urubamba. Also, these taxis are banned in certain cities, such as Cuzco and other big cities, and they are not present in Maras, Mahuaypampa, or Kacllaraccay



Figure 10 People riding inside a cargo truck with their cargo

since these cities are too small to give them enough business. Cargo trucks are used primarily to take goods from place to place (see figures 9-10), but are often found with passengers riding with their cargo in the back of the truck. Many people in the cities I studied don't own their own car and rely on cargo trucks in order to purchase groceries and other goods from larger cities (such as Cuzco and Urubamba). After these trucks deliver the goods, they are known to take passengers with them on their way back. I usually only had the opportunity to take a cargo truck from Urubamba to Maras or Kacllaraccay while moving goods for the library shelving from city to city. Most Kacllaraccay residents travel out of the city through cargo trucks on Wednesday to (and later in the day from) Urubamba, since Wednesday was a market day. Busses usually hold over 20 people and are often meant primarily for tourists, but are known to act as combis, driving locals back after they've emptied themselves of all the tourists. Busses

also usually have set routes and travel from large cities to large cities. Fees for transportation are known by all and set, unless you're a tourist or are asking for an uncommon destination. From Maras to Ramal, it is one sole, from Ramal to Urubamba, it is two-and-a-half soles. From Ramal to Cuzco, it is six soles. From Maras to Kacllaraccay in a combi it is two-and-a-half soles, but from Maras to Kacllaraccay in a taxi it is six to nine soles because this was not a set route. Moto-taxis in Urubamba were two soles.

Displaying, calculating, and exploring data in Excel sheets

Interviews

Once I had transferred all of my interviews, notes, videos, and audio recordings into excel sheets, I prepared the data so that it would be displayable on a GIS-created map. Every line of data, whether it was an interview, a video, notes, etc., was linked to the location in which it occurred, which was one of the following five locations: Cuzco, Maras, Kacllaraccay, Mahuaypampa, or Urubamba. Because there are so many possible answers that someone could have given in an interview, I wanted to narrow answers down into a few standard options in order to display them on a map or discuss them in comparison with one another. As such, I reevaluated the data in each column, categorizing answers into a smaller amount of options. In some cases, I chose not to re-categorize data if it seemed impossible to keep the intent of the original answer, if I did not intend to display those data in my maps, or if the majority of the answers to that question were missing or did not apply. Those columns that are not re-categorized were usually evaluated without a GIS. Columns such as gender, age, and place of residence usually didn't need to be re-categorized since the answers given were rather uniform.

However, when I asked questions that were open-ended or did not result in a yes, no, a location, or a number, I re-categorized the answer into more uniform answers. The

following are original categories based off interview questions, and further below I will describe the re-categorization in detail.

Table two is a list of the columns used to tabulate interview data (which correlate with the interview questions, except for *category*, *date*, *gender*, and *description*):

Category
Date
Gender
Description of Interviewee
Name
Age
Residence
Where they were born
Where they grew up
How many years of education they received
The dialect they spoke
Other languages spoken
If they had learned or used Quechua in school when they were young
Whether they could read or write in Quechua and/or Spanish
What type of situation requires/allows them to write in Quechua
The type of Quechua their school taught
If they thought there was too little Quechua being spoken in their community
What people are doing to stop the loss of Quechua
If the interviewee was willing to speak only Quechua in their home
If children should learn Quechua before Spanish
What would happen if children didn't know how to speak Spanish
When it's not okay to speak Quechua
When they write in Quechua
If children had the desire to speak Quechua
If Quechua was going to disappear
Which language was preferred out of Spanish and Quechua
Which language was more important
Which language was more beautiful
Which language was spoken at home, at church, at a party or celebration, at school or with teachers, at the market, at the hospital, at the municipal, with strangers, while dreaming, while thinking, while doing math, while mad, while traveling, with neighbors, and at work
Where they worked
A recitation in Quechua about what they did last weekend or yesterday

Table 2 Interview data categories

As previously mentioned, each interviewee was categorized based on where they grew up and learned their maternal language(s). This is how I determined the column for category, and it was not re-categorized. Date, gender, description and name of the interviewees were not re-categorized either, since I did not intend to display the date, description, or name of interviewees in my final data, and since gender was already categorized. Place of residence, place of birth, and where they grew up were not re-categorized either. Years of education was re-categorized. For example, when asking interviewees how many years of education they had, I received answers such as: “incomplete secondary school” “second level of secondary school”, “until I was 13 years old” or “eight years of education”. In all of these responses, the answer is the same, the second level of secondary school, which is at age 13, equivalent to eight years of schooling, and is almost half way through secondary school. I needed to categorize these answers into new categories that were uniform, so I created the following categories: primary school or less, secondary school or less, university, and currently in school. Dialect spoken was not re-categorized, nor was the question about other languages spoken by the interviewee. The question about if the interviewee had learned Quechua in school was re-categorized. Examples of responses to this question are: “no, I learned with my parents”, “yes but there was more Spanish”, “no”, “yes”, “a little”, “they taught in Spanish”, or “just at the university”, among others. I narrowed all of these answers down to yes, no, or a little. The questions about being able to read or write in Quechua or Spanish were also re-categorized into “yes”, “no”, and “a little” for each language. The questions asking types of situations that they wrote in Quechua and which type of Quechua was taught in school were not re-categorized, since many of these responses did

not apply to the interviewees (many interviewees never wrote in Quechua, and many did not receive schooling in Quechua). The question concerning whether they thought there was too little Quechua being spoken in their community was re-categorized into yes and no responses. What people were doing to stop the loss of Quechua was also not categorized, because I stopped asking this question after the first few interviews. This question was poorly understood by interviewees, and I did not see a use for it in my study (it was a question suggested by my Quechua teacher in Cuzco). The question about the interviewee being willing to speak only Quechua in their home was not re-categorized because the nature of the responses was too varied to re-categorize without losing the intent of the respondent. The question about whether children should learn Spanish or Quechua first was re-categorized into “Spanish first”, “Quechua first”, or “both at the same time”. The questions about what would happen if children didn’t know how to speak Spanish, and when it’s not okay to speak Quechua were also not re-categorized. I re-categorized the question about whether or not Quechua was going to disappear. The categories were “yes” and “no”. For the questions concerning which language was most preferred, more important, and more beautiful (of Spanish or Quechua), the answers were “Quechua”, “Spanish”, and “both”. The questions asking which language, Quechua or Spanish, were spoken in the home, at church, at a party or celebration, at school or with teachers, at the market, at the hospital, at city hall (henceforth referred to as “the municipal”), with strangers, while dreaming, while thinking, while doing math, while mad, while traveling, with neighbors, and at work, were all re-categorized into “Quechua”, “Spanish”, or “both”. Places of work were also re-categorized into the following: tourism, taxi driver, at home/domestic, in a restaurant, at the market, at the

hospital, in the fields, in retail, in the municipal, at a school, as a student, or unemployed.

Instances of re-categorization resulted from similar answers such as *chicheria*, *cevicheria*, or restaurant, in which all would be put into the ‘restaurant’ category.

Working in a hotel or as a tour guide would place one in the ‘tourism’ category. Retail would include anyone that worked in a store (local stores often made out of the front room of a home in smaller cities) or souvenir shop. The rest of the responses for other categories of workplace were rather uniform. (See figure 11 for better idea).

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
31	kacllaracco	kac	F	yasi quisp	34	kacllaracco	in school	cusco	a little	yes	yes	yes	yes	no	spanish	no	both	quechua	quech		
32	kacllaracco	kac	F	ana yukra	35	maras	in school	cusco	a little	yes	yes	yes	yes	no	spanish	no	both	spanish	quechua	quech	
33	kacllaracco	kac	F	Lucia	42	kacllaracco	primaria	cusco	a little	a little	a little	a little	a little	no	spanish	yes	no	both	spanish	quechua	quech
34	kacllaracco	kac	F	Genara Ar	42	maras	primaria	cusco	no	no	no	a little	a little	no	spanish	yes	no	both	spanish	quechua	quech
35	kacllaracco	kac	F	Marisa	36	kacllaracco	primaria	cusco	no	no	a little	yes	yes	no	both	yes	no	both	both	quechua	both
36	kacllaracco	kac	F	Purificac	54	kacllaracco	primaria	cusco	yes	no	no	yes	yes	no	quechua	yes	no	both	quechua	both	quech
37	kacllaracco	kac	M	Paoul	73	kacllaracco	in school	kacllaracco	a little	no	yes	yes	yes	yes	spanish	yes	no	spanish	spanish	spanish	both
38	kacllaracco	kac	M	Roger Qui	13	kacllaracco	in school	kacllaracco	a little	a little	yes	yes	yes	yes	no	quechua	yes	no	spanish	spanish	spanish
39	cusco	kac	F	Saturnina	64	kacllaracco	primaria	cusco	yes	yes	yes	yes	yes	yes	yes	yes	no	quechua	both	quechua	both
40	mahuayp	mahuayp	M	jose	48	mahuayp	secondary	mahuayp	no	a little	a little	yes	yes	yes	no	quechua	yes	no	both	spanish	quechua
41	urubamba	urubamba	M	Luisa	54	ollantayta	secondary	cusco	yes	yes	yes	yes	yes	yes	yes	no	both	both	quechua	both	both
42	urubamba	urubamba	F	Lizbeth	13	orquillos	in school	orquillos	no	yes	yes	yes	yes	yes	no	spanish	yes	no	quechua	quechua	quechua
43	urubamba	urubamba	M	Ricardo M	46	cusco	university	cusco	yes	a little	yes	yes	yes	yes	no	quechua	yes	no	both	both	quechua
44	urubamba	urubamba	M	Ilipio Ram	49	hecharate	university	cusqueno	no	no	yes	yes	yes	yes	no	quechua	yes	no	spanish	spanish	spanish
45	urubamba	urubamba	M	Serafin	42	puno	university	cusco	a little	yes	yes	yes	yes	yes	yes	quechua	yes	yes	quechua	quechua	spanish
46	urubamba	urubamba	F	Maritza	2	urubamba	university	cusco	no	yes	yes	yes	yes	yes	yes	quechua	no	yes	both	both	quechua
47																					
48	residence	acd_cuz		acd_mara	acd_kac		acd_urub	acd_mahu	acd_truj		acd_manc	primary	secondary	university	in_school	qis_yes	qis_no	qis_little			
49	cusco	4	2	1	0	0	0	0	1	4	2	2	0	3	5	11	4				
50	maras	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
51	kac	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
52	urubamba	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
53	mahuayp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Figure 11 Interview data processing

The column concerning the story told in Quechua was not re-categorized, but instead further assessed. I noted all Spanish words that were borrowed during speech in Quechua, and counted the frequency and marked the word class of each instance (which only included nouns, verbs, adjectives, adverbs, numbers, conjunctions, and prepositions).

Re-categorization for Notes, Videos and Audio Recordings

Data from notes, videos and audio recordings (minus the interviews) was broken down into a separate table (besides the table concerning travel from one city to another). This table focused on learning about which language was spoken in domains. In this table, every instance of speech was linked to a city, and then variables such as location (domains, like church, hospital, municipal), participants in the conversation, topic, and borrowed words were recorded. Overall, the total domains I noted were: city center/plaza, restaurant, speakerphone (to make city announcements, either from a truck with a speakerphone, or from a building with a speakerphone), internet cafés, hills, in the street, in a store, at a bus/taxi stop, at the municipal, in or at a school, in the market, at the *chicheria* (restaurant or bar where *chicha*, a traditional alcoholic drink, is served).

Minimal re-categorization beyond what has been described did take place while I was creating maps, because too many variables represented in a map can be visually confusing. I haven't detailed this additional categorization, because it will be visible in the maps themselves. For example, I broke ages into the following groups: children 0-10 years old, teens 11-17, young adults 20-30, mid adults 31-45, elderly, 46 and up. These groups are arbitrary. Ages were either taken from interviews or estimated based on appearance. Sometimes I didn't note the age or gender of someone speaking, in which case I counted the instance of that language, but not the age or gender. As a result, there may be more instances of speech than there are ages or genders (per speaker).

Borrowing Instances

An additional table was created to keep track of all instances of Spanish word borrowing during speech in Quechua. This table included borrowing instances from interviews, notes, audio recordings, and videos. City, location, gender, age, and other variables were included in this table. Sometimes code switching occurred as well, but not nearly as often as borrowing. I distinguished between the two and noted this in these tables as well. There was never any borrowing of Quechua words in Spanish, except for place names, which is probably not considered borrowing to most. I asked a few interviewees, speakers, and also Katie and her boyfriend if they were aware of instances in which Quechua words were borrowed during Spanish speech. The only example I was told about (by Katie) was the expression “Ah lao lao”, which is a Quechua expression to express being cold. The reason I mention place names while speaking of cross-linguistic borrowing is because during one of my interviews, I was told about the place name Kacllaraccay (by a Maras resident). I was told “Kaclla” means spine, as in the spines of the local plants (characteristic of the area and abundant) (see figure 12) and “raccay” is a destroyed house, so together, she explained Kacllaraccay as the town where spines grow from destroyed houses.



Figure 12 "Kaclla" spines of local plants

Calculating numbers and Map-making methods

Once my data was compiled, I started analyzing it. The data that were mappable (data linked with a geographic location and representable in variables that were

reasonable to show in a map) were calculated with a GIS (ArcMap 10.2.2). The data that were not calculated with GIS were calculated manually with excel. Examples of topics calculated with GIS are which city had the majority of interviewees who learned Quechua in school, or finding out which gender speaks Quechua more often based on city. These numbers were normalized (by multiplying by a factor that makes the norm or some associated quantity equal to a desired value, which is usually 1), meaning that if one city had more responses than another, the number of responses themselves would not determine majority among cities.

GIS GPS data

Besides linguistic data, I also took geographic data, namely coordinates of cities and locations within some of the cities. I brought a Trimble Juno SB handheld GPS device with me which helped me precisely collect the points for my maps. I took points of each city center (designated by a city plaza or main market area of the town, if there was one). Because I spent little time in Cuzco, Urubamba, and Mahuaypampa, I didn't take additional points within each city. However, I spent a good amount of time collecting points for locations within Maras and Kacllaraccay. For example, I took point data for all the stores, churches, and schools in Maras, along with some other locations such as internet cafés or *chicherias*. Because Kacllaracacy is a much smaller village, there were not too many locations to collect, but I did collect locations for the church, schoolhouse, stores, soccer field, and a few other areas in the village. These data were then used to link with my linguistic data.

Maps

Moving data into ArcMap involved first creating a map with shapefiles of point locations of the cities involved in this study. The main method of linking this data together was by linking my excel tables (organized by location) to actual geographic point locations in my maps



Figure 13 Digitized road layer in ArcMap

(see figure 13). A shapefile with points in it will have an ‘attributes list’ that lists each of the points, and I would join my attribute table with my excel tables in order to attach the linguistic information to geographic locations. From there, I used tools and queries within ArcMap to elucidate information about locations, domains, interview responses, instances of Spanish or Quechua language use, and other linguistic phenomena related to location.

Additionally, in order to map languages spoken while traveling, I digitized a road layer into my map (see figure 14), showing the approximate routes from one city to

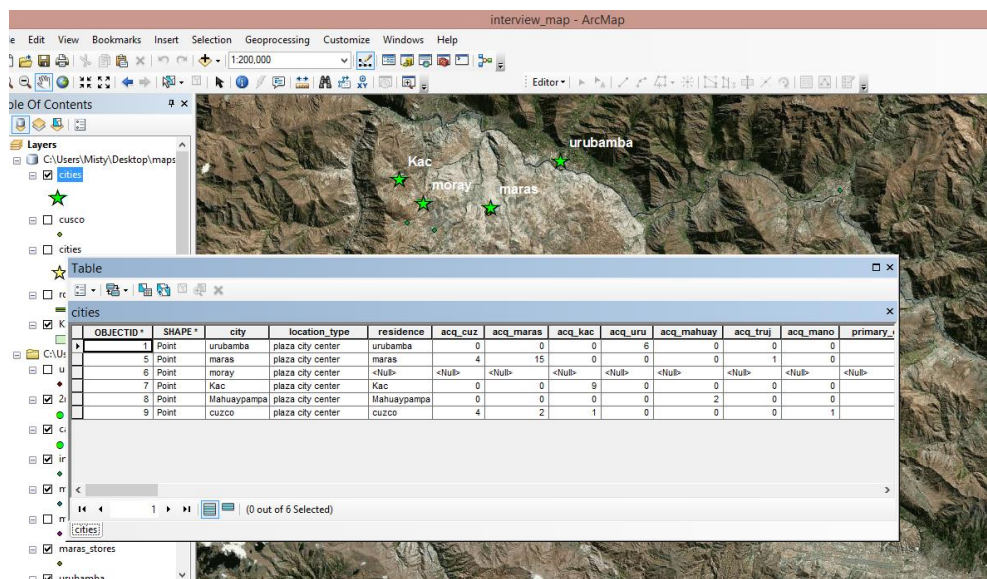


Figure 14 Linking interview data to geographic locations in ArcMap

another. The roads within the digitized layer were duplicated in order to have road representing ‘to’ and ‘from’ traveling instances. I then matched the layer attributes with linguistic data through another “table join”, linking excel and ArcMap tables together.

RESULTS AND DISCUSSION

Findings will be presented concerning the study goals outlined in the methods section, which are the following: 1) To explore how Spanish and Quechua are used within different domains; 2) to observe spatial incongruences between multiple Quechua-speaking communities; 3) To discover how mapping bilingualism with a GIS can help us better understand spatial properties of domain use; and 4) to elucidate attitudes of Quechua versus Spanish.

Interview data

Before I discuss interview questions individually, I provide a map (figure 15) showing majority language use for each city based on observation data, so I can use this information as a guide for discussing other

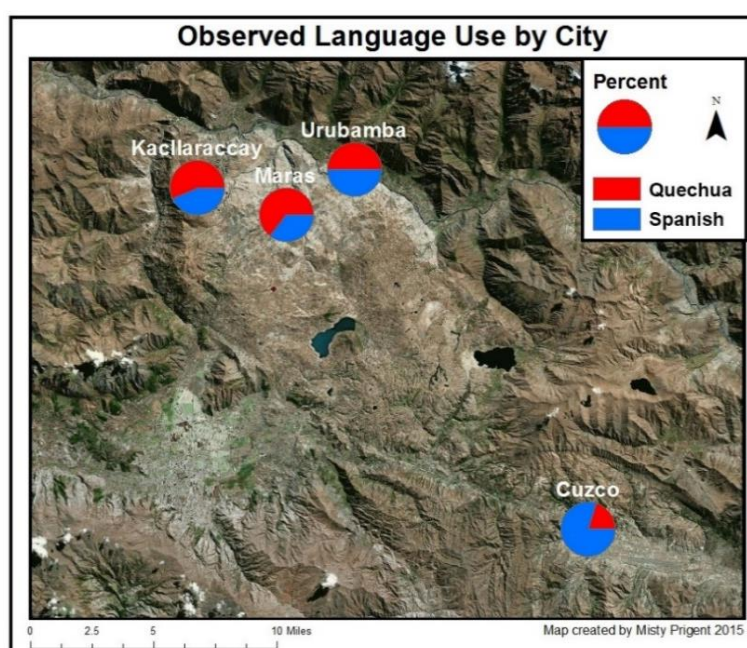


Figure 15 Language Use by City

questions. The methods for the creation of this map are discussed below, but I display it here in order to use it as a quick guide for majority language use per city.

My interviews contained 30 questions which include the following: biographical questions, such as age, places of residence and birth; literacy questions concerning both Quechua and Spanish; and preference and use questions concerning both Quechua and Spanish (questionnaire appended).

Questions 1-5 and 28 will be summarized, and some information will not be discussed as it contains personal information of the interviewees. The majority of these questions asked biographical information, which resulted in the following data: Out of 46 interviewees, 20 interviewees lived in Maras, 9 lived in Kacllaraccay, 8 lived in Cuzco, 6 lived in Urubamba, and 2 lived in Mahuaypampa. Twenty of the interviewees were males, and 26 were females. Ages ranged from 13 years old to 71 years old.

City	Interviewees	Females	Males	20 years old or under	21-40 years old	Over 40 years old
Maras	20	11	9	8	5	7
Kacllaraccay	9	6	3	5	1	3
Cuzco	8	5	3	0	4	4
Urubamba	6	3	3	1	1	4
Mahuaypampa	2	1	1	0	1	1

Table 3 Interviewee age and gender by city

Often, interviewees were born and raised in different locations than their current residence. As mentioned in the methods section, I sorted the interviews by location, categorizing interviewees by the place they grew up and went to school, instead of

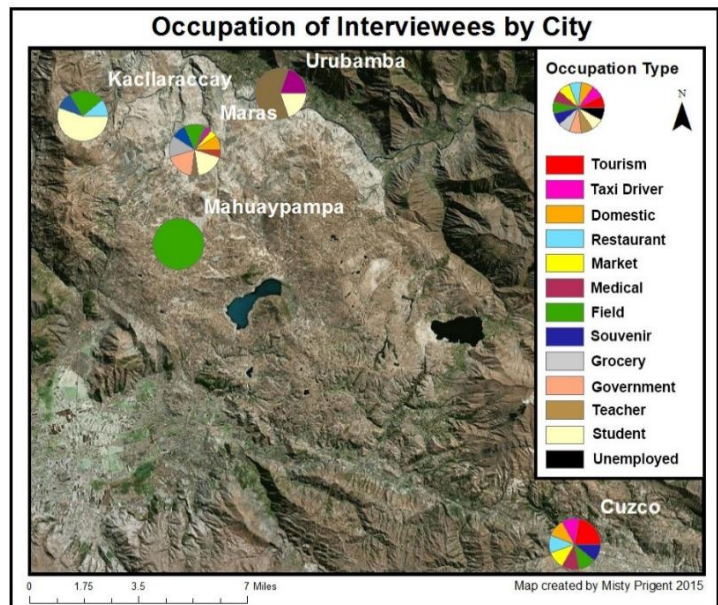


Figure 16 Interviewee Occupations

their current residence, because this is where they would have learned language. As such, I won't reiterate responses to the questions concerning where the interviewee was born or grew up. Question 28 asks what the interviewee's occupation is. In total, there were two

individuals that worked in tourism, one that was a taxi driver, three that worked in their home, two that worked in restaurants, two that worked in the market, three that worked in a hospital, seven that worked in the field, four that worked in retail (but labeled as souvenir), three that worked as grocers, four that worked in the municipality, four that were teachers, ten that were students, and one that was unemployed. Figure 2 shows the distribution of workers by city.

Occupation	Total
Tourism	2
Taxi	1
Domestic	3
Restaurant	2
Market	2
Medical	3
Field	7
Souvenir	4
Grocery	3
Government	4
Teacher	4
Student	10
Unemployed	1

Table 4 Occupation of Interviewees

Question 6 asked each interviewee how much formal schooling they had received. Levels of education were re-categorized (as explained in the methods section), into the following categories: primary school or less, secondary school or less, university, and currently in school. Out of the 44 responses to this question, 11

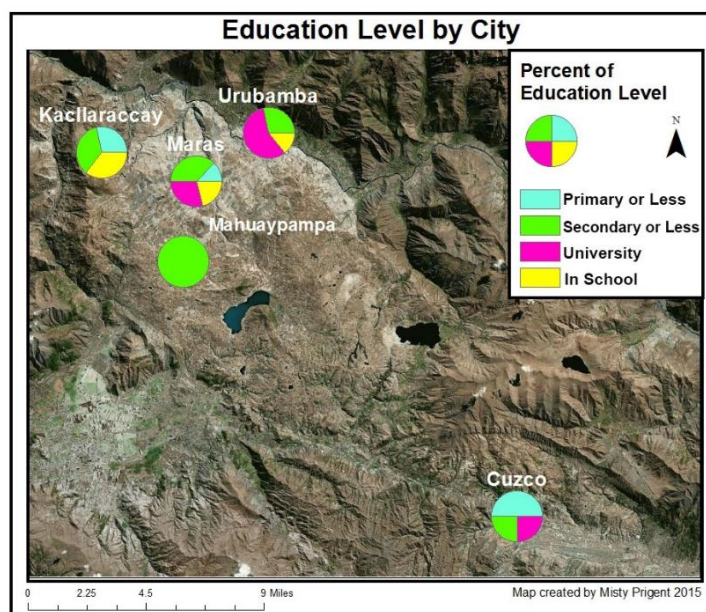


Figure 17 Education Level by City

City	Primary school or less	Secondary school or less	University	Currently in school
Maras	3	9	7	5
Kacllaraccay	4	8	0	5
Cuzco	4	2	2	0
Urubamba	0	2	4	1
Mahuaypampa	0	2	0	0
Totals	11	20	13	11

Table 5 Education Levels of interviewees by city

interviewees had an education up to primary school or less. Four of those interviewees were from Cuzco, three from Maras, four from Kacllaraccay, and zero from Urubamba and Mahuaypampa. Twenty interviewees had received education up to secondary school or less, with two of the interviewees being from Cuzco, nine from Maras, five from Kacllaraccay, two from Urubamba, and two from Mahuaypampa. Thirteen individuals had attended university, with two of those individuals living in Cuzco, seven in Maras, four in Urubamba, and zero from Kacllaraccay or Mahuaypampa. Eleven interviewees were still in school, with five from Maras, five from Kacllaraccay, one from Urubamba, and zero from Mahuaypampa and Cuzco. Figure 17 shows this distribution by city.

However, this map is most likely misrepresentative of the education levels in each city because the occupations and ages of interviewees among each city are not proportional. For example, some cities have a high number of interviewees that are children, and some have no children interviewed at all. Also, some cities have a high number of interviewees from one occupation type. As such, this map is only moderately reliable, but I'll summarize trends nevertheless. In Kacllaraccay, a city that is dominated by Quechua language (as calculated by observation data), we can see that zero respondents attended university. Those who were in school or received education up to secondary school made up two-thirds of the respondents living in Kacllaraccay. The two interviewees from Mahuaypampa had education up to secondary school. Maras and Cuzco have very similar percentages of individuals who attended university, with Urubamba having the highest percentage of interviewees attending university. Fifty percent of the respondents from Cuzco only attended school up to the primary level, while half of the interviewees attended only primary school. Despite the possible

unreliability of this map, it does show lower levels of education in Kacllaraccay and Mahuaypampa, two cities that were observed to use Quechua more often than Spanish.

Questions 7 and 8 concerned the dialect of Quechua the interviewee spoke, as well as if the interviewee was acquainted with speakers of languages other than Spanish and Quechua. Responses to Question number 7, which asks which dialect of Quechua the person spoke, resulted in 16 responses as the “Cuzco dialect” (only six of which actually lived in Cuzco), six responses as the “Kacllaraccay” dialect (all of which were living in Kacllaraccay), two responses as the “Mahuaypampa” dialect (both of whom lived in Mahuaypampa), 11 responses as the “Maras” dialect (all of which lived in Maras), one response as the “Cuzco or Urubamba” dialect (from an interviewee living in Maras), one

City	Maras	Kacllaraccay	Cuzco	Urubamba	Mahuaypampa	Total
Cuzco Dialect	3	4	6	3	0	16
Kacllaraccay Dialect	0	6	0	0	0	6
Mahuaypama Dialect	0	0	0	0	2	2
Maras Dialect	11	0	0	0	0	11
Cuzco or Urubamba dialect	1	0	0	0	0	1
Cuzco or Maras Dialect	1	0	0	0	0	1
Don't Speak Quechua	2	0	0	0	0	2
Cruzpata Dialect	1	0	0	0	0	1
Orquillos dialect	0	0	0	1	0	1

Table 6 Self-Reported Dialect of Quechua Spoken by City

response as the “Cuzco or Maras” dialect (from an interviewee living in Maras), two who said they did not speak Quechua (both from Maras), one who answered the “Cruzpata” dialect (from an interviewee living in Maras), and one who answered the “Orquillos” dialect (from an interviewee living in Urubamba) (Cruzpata is an area within Cuzco, and I was told that Orquillos is a suburb of Urubamba, but I can’t confirm this because I fail to find it on a map). In general, interviewees either responded with their dialect as the same as the name of the city they grew up in, or as the name of the district or province that the city they grew up in was located. Cuzco is both a region and a province,

encompassing all of the cities that are focused on in this study. Urubamba is also a province, within Cuzco but encompassing Maras, Kacclarraccay, and Mahuaypampa. Maras is a district within the Urubamba province, encompassing Kacclarraccay and Mahuaypampa. The interviewee that answered Cruzpata was the only to provide a response that didn't follow this trend. I am assuming this response was showing alliance with Cruzpata due to family or emotional connections to the area. Most respondents didn't know anyone who spoke

any other languages besides

Quechua or Spanish.

Twenty interviewees didn't

answer this question due to

confusion about the question in

general, 14 responses were "no", two responses were "Aymara", and the rest of the

answers were either

"tourists" or "English". I

was asking this question to

see if connections to other

languages influenced

perceptions and use of

Quechua, but because the

question was so poorly

phrased and/or understood,

City	Yes	No	A little
Maras	5	11	4
Kacclarraccay	3	2	4
Cuzco	3	5	0
Urubamba	2	3	1
Mahuaypampa	0	2	0
Totals	13	23	9

Table 7 Was Quechua taught in School when you were young?

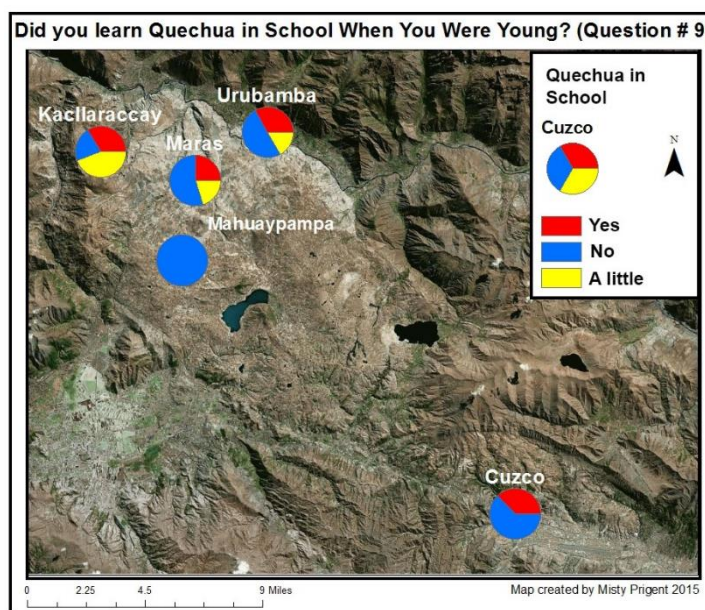


Figure 18 Did you learn Quechua in school when you were young?

I will not be using it to develop any conclusions.

Question 9 (figure 18) asked if Quechua was taught in school when the interviewee was young. If the interviewee was currently in school, they were asked if Quechua is currently being taught in school. Answers were re-categorized as “Yes”, “No”, or “A little”. Out of the 45 responses to this question, 13 individuals responded “Yes”, 23 responded “No”, and nine responded with “A little”. The following map shows

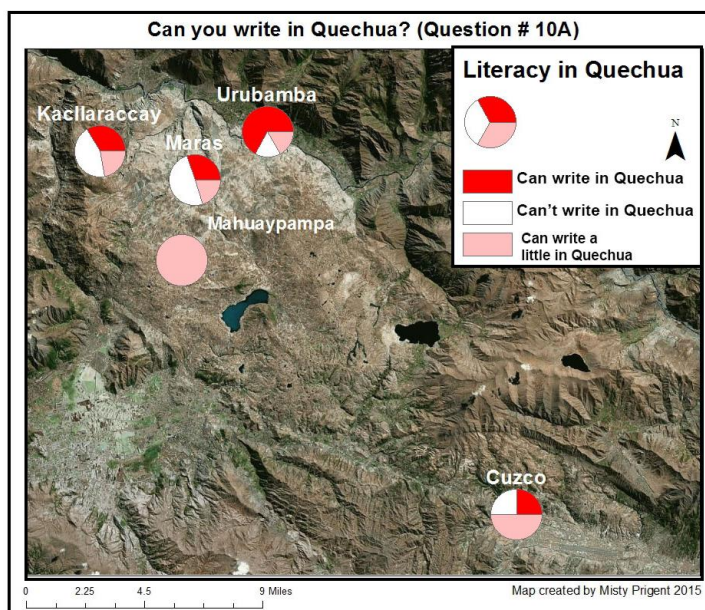


Figure 19 Can you write in Quechua?

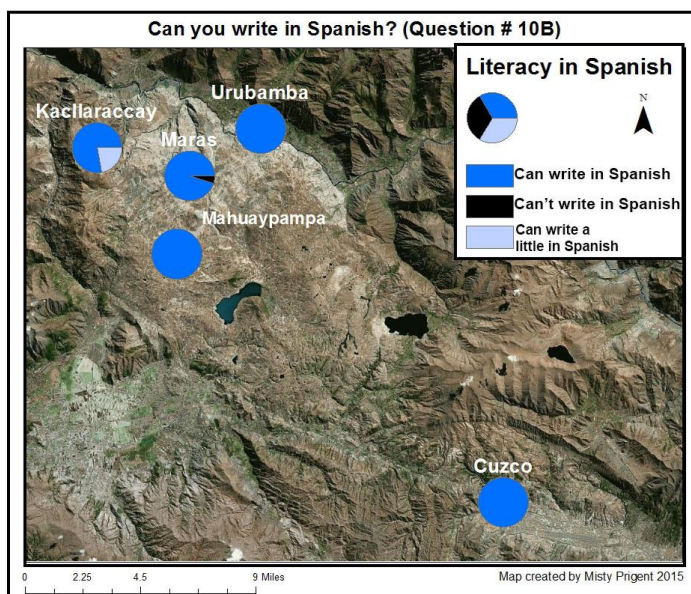


Figure 20 Can you write in Spanish?

this distribution by city. Kacllaraccay, Urubamba, and Cuzco all show over 30% of interviewees learning Quechua in school. Besides Mahuaypampa (which will be left out of the discussion because there were only two representatives from this

city), Maras had the lowest amount of interviewees that learned Quechua in school. Kacllaraccay stands out as the area with most Quechua being taught in school, since when “Yes” and “A little” responses are combined, almost 80% of respondents reported to have learned at least some Quechua in school. All other cities show that 50 or more percent of interviewees did not learn Quechua in school, with over 60% of Cuzco interviewees reporting to have not learned any Quechua in school.

Questions 10A, 10B, 11A, and 11B all concern literacy. 10A and 10B ask whether the interviewee can write in Quechua and/or in Spanish. 11A and 11B ask whether the interviewee can read in Quechua and/or in Spanish. Figure 19 shows that the ability to write in Quechua is highest among respondents from Urubamba (probably because half of these respondents are teachers who teach Quechua at the elementary school in Kacllaraccay). The ability to write Quechua is the second highest in Kacllaraccay, with the

ability to write in Quechua being lower in Maras, and the lowest in Cuzco. Although I am showing Mahuaypampa, I have still chosen to exclude it from the conversation due to a

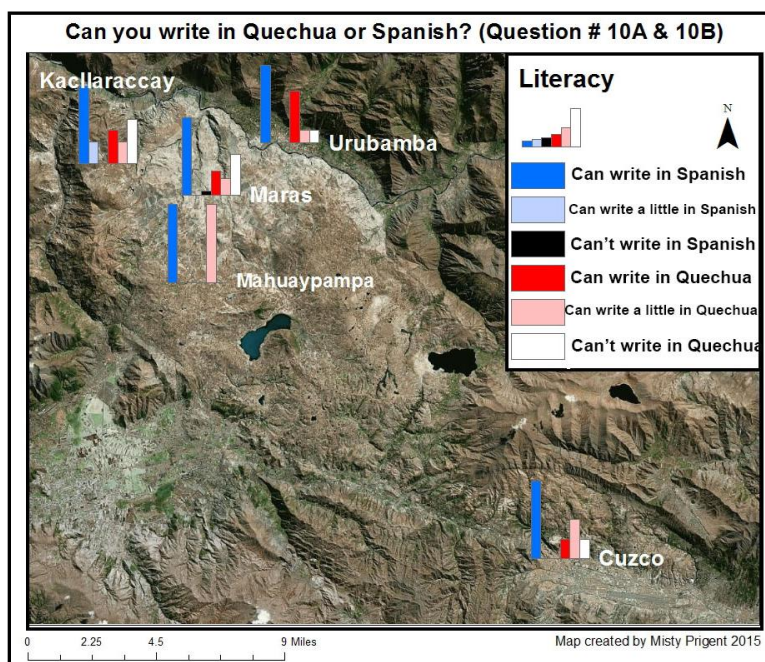


Figure 21 Ability to write in Quechua or Spanish

low sample number. Although Cuzco has the lowest number of respondents saying they can write in Quechua fully, Cuzco does have the highest number of respondents claiming to be able to write in Quechua “a little”. (Being able to write in Quechua “a little” is a term extracted from actual interview responses, and was never defined by me or the interviewees, so it is a rather arbitrary term). Maras, followed by Kacllaraccay, have the highest amount of respondents saying that they can’t write in Quechua at all. In figure 20, the ability to write in Spanish is displayed, and results are strikingly different when compared to the ability to write in Quechua. In Urubamba and Cuzco (and Mahuaypampa if you want to count it), there is 100% ability to write in Spanish by all interviewees. Some interviewees in Kacllaraccay (two people, only 4% of total respondents from all cities) had lower confidence in their ability to write in Spanish, but still the results are high. In Maras, only one respondent, a 69 year old woman, reported to not be able to write in Spanish. This shows that 43 of 45 (or 93%) of all interviewees in all cities were able to write in Spanish, and two out of the three that provided other answers still said they could write in Spanish “A little”.

If we look at the ability to write in Spanish versus the ability to write in Quechua, we see that Spanish literacy is much higher. I combined this data into one map in figure 21 and table 8 using a bar graph to represent responses. Here, we can compare the

City	Can write in Quechua	Can't write in Quechua	Can write in Quechua a little	Can write in Spanish	Can't write in Spanish	Can write in Spanish a little
Maras	6	10	4	19	1	0
Kacllaraccay	3	4	2	7	0	2
Cuzco	2	2	4	8	0	0
Urubamba	4	1	1	6	0	0
Mahuaypampa	0	0	2	2	0	0
Totals	15	17	13	42	1	2

Table 8 Ability to write in Quechua and Spanish

abilities to write in Spanish and Quechua side by side.

Questions 11A and 11B show similar results to 10A and 10B (except for a slightly higher confidence in the ability to read Quechua than write it), and so I won't provide a map for them. These questions pertain to the abilities to read Spanish and Quechua. Two interviewees in Cuzco reported to be able to read Quechua while eight said they could read Spanish, two said they couldn't read Quechua, and four said they could read Quechua a little. In Maras, nine could read Quechua while 19 could read Spanish, eight could not read Quechua while only one could not read Spanish, and three could read it a

City	Can read in Quechua	Can't read in Quechua	Can read in Quechua a little	Can read in Spanish	Can't read in Spanish	Can read in Spanish a little
Maras	9	8	3	19	1	0
Kacllaraccay	5	2	2	7	0	2
Cuzco	2	2	4	8	0	0
Urubamba	6	0	0	6	0	0
Mahuaypampa	1	0	1	2	0	0
Totals	23	12	10	42	1	2

Table 9 Ability to read in Quechua and Spanish

little Quechua. In Kacllaraccay, five could read Quechua while seven could read Spanish, two could not read Quechua, and two could read a little Quechua and a little Spanish. In Urubamba, all six interviewees said they could read Quechua and Spanish. In Mahuaypampa, one interviewee said they could read Quechua while the other said they could only read Quechua a little. Both interviewees in Mahuaypampa were able to read Spanish.

Question 12 asked in what types of situations it was necessary to write in Quechua. After trying this question on about half of the interviewees, I stopped asking it because it was confusing the interviewees. I only have 19 responses out of 45

interviewees for this question. In general, the responses were that there were no situations in which it was necessary to write in Quechua, unless the interviewee was a student, in which they would say that they needed to write in Quechua in school or for their homework.

Question 13 asked which type of Quechua was taught in the schools when the interviewee attended school. Much like question 12, this question did not make sense to the interviewees. Many of them responded with “Quechua from here”, “*Cuzquenian*” (from Cuzco) Quechua, or “none”, but again, I only have 20 responses from this question and won’t include the responses in any conclusions because it was poorly understood and answers may not be reliable.

Question 14A asks if people in the community are worried that Quechua is not spoken enough in their community, and 14B asks what the people might do to alleviate this problem of a lack of Quechua (14B was suggested by my language teacher in Cuzco and it ended up sounding offensive to the first couple of interviewees, so I didn’t ask 14B).

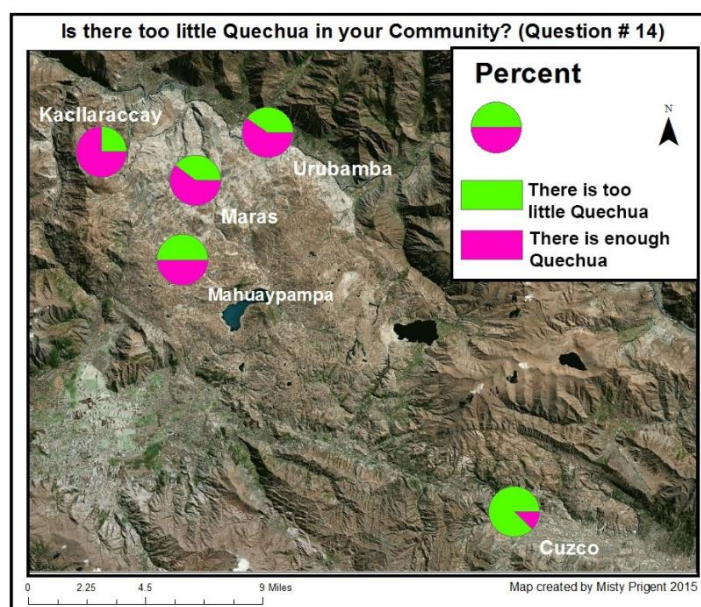


Figure 22 Is there too little Quechua in your community?

Out of the 43 responses for this question, 20 respondents said they were worried that there

City	Too little Quechua	Enough Quechua
Maras	8	12
Kacllaraccay	2	6
Cuzco	7	1
Urubamba	2	3
Mahuaypampa	1	1
Totals	20	23

Table 10 Is there too little Quechua in your community?

was too little Quechua in their community, and 23 said that they weren't concerned and that there was enough Quechua being spoken in their community. See figure 22 and table 10.

Question 15 asks, "In order to not lose Quechua, would you be willing to only speak Quechua with your family?" This question resulted in many answers that did not lend to binary categorization and were rather irresolute. Out of 44 responses, the answer "yes" was given by 25 respondents. However, 16 of those respondents said that although they would be willing to speak only Quechua with their family, they still would need to speak Spanish too. These answers should then result in a "no", because they all expressed that they needed to speak Spanish as well as Quechua. As such, only nine respondents said yes, they could speak only Quechua with their family, and most of them referenced their parents being Quechua monolingual. The rest of the answers are composed of those who said "No, we need both languages", those who described the dynamics that were actually occurring in their family, such as "We speak both languages in my family", or those who responded "We still need to speak Spanish" or "We speak mostly Quechua in my family".

Question 16 asks which language the interviewee thinks children should learn first, Quechua or Spanish. Out of 42 responses, 11 interviewees said that they would

prefer their
children to
learn Spanish
first, and then

City	Quechua first	Spanish first	Both at the same time
Maras	4	12	3
Kačllaraccay	3	5	1
Cuzco	3	1	3
Urubamba	1	4	0
Mahuaypampa	0	2	0
Totals	11	24	7

Table 11 Which language should children learn first?

Quechua. Twenty-four interviewees said that they would prefer their children to learn Quechua first. Seven respondents said they think children should learn both languages at the same time (see table 11). Many of the respondents not only responded to the question, but told me which language children typically learn first. They explained that children learn Quechua at home with their family, and then start to learn Spanish at school once they start to attend. Generally, it seems like there is agreement about children learning Quechua first with their family, and then learning Spanish at school. A few of the respondents that said they wanted children to learn Spanish first expanded their answer by saying that everyone already knew Quechua, so they were concerned about the children not learning Spanish.

Question 17 asked if it would be a bad or good thing that children stopped learning Spanish and only learned Quechua. Fourteen respondents said that this would be a good thing. Eighteen said that it would be a bad thing. Four respondents said that it wasn't possible for that to happen because children would just learn Spanish in school anyway. The rest of the respondents didn't answer if it would be good or bad, but that both languages should be learned.

Question 18 asked in what type of situation it was not acceptable to speak in Quechua. There were 30 responses to this question, the other interviewees were either not asked this question, or they misunderstood the question. Nineteen individuals answered

that you can always speak Quechua, there is never a situation when it would not be appropriate or allowed. Six answered that you shouldn't speak Quechua when others won't understand it. This applies to both situations in which Spanish monolinguals are present, or while directly speaking to a Spanish monolingual. Only four individuals actually provided locations in which it wasn't okay to speak Quechua. Two of those individuals said you shouldn't speak it in the city because many people in the city don't understand it. One said you shouldn't speak it while traveling, and the last said that you shouldn't speak it in formal situations.

Question 19, "When do you choose to speak Quechua over Spanish", was eventually excluded from my interview because the first four interviewees that were asked the question thought the question was redundant, and that they had already answered that with question number 18. As a result, I stopped asking this question. However, the four answers that I did receive were: "whenever, always"; "When talking to my parents"; "I like to mix it. I'm proud to speak Quechua"; and "I prefer to speak Spanish in areas where Spanish is spoken most".

Question 20 asks if the interviewees think children want to learn Quechua. Out of 40 responses, 34 interviewees said that they do think children want to learn Quechua, and six said that they think children don't want to learn Quechua (see table 12). What is interesting about this question is that all of the respondents who

City	Yes	No
Maras	14	4
Kačllaraccay	6	0
Cuzco	7	1
Urubamba	5	1
Mahuaypampa	2	0
Totals	34	6

Table 13 Do children want to learn Quechua?

City	Could disappear	Won't disappear
Maras	3	17
Kačllaraccay	0	9
Cuzco	0	8
Urubamba	1	4
Mahuaypampa	0	2
Totals	4	40

Table 12 Do you think Quechua will disappear?

answered that they didn't think children wanted to learn Spanish were either children themselves, or were under the age of 25, and gender didn't seem to play a part in this response.

Question 21 asked if respondents think Quechua will disappear. Four respondents said that it could disappear, but every respondent mentioned in their answer that it was possible that it could disappear, but not certain that it would. This is why responses are categorized as “could

disappear” instead of “will disappear” despite the use of the word “will”. All other respondents answered that Quechua will not disappear, and I remember interviewees responding to this question with vigor and certainty. I also noticed that some

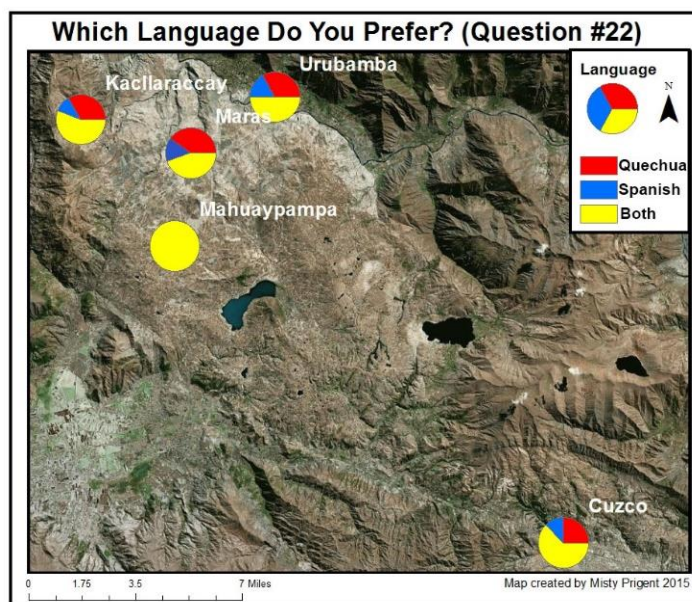


Figure 23 Which language do you prefer, Spanish or Quechua?

interviewees seemed offended

by this question, as if it were a threat instead of a question. Of those respondents who said it was possible that Quechua could disappear, three were from Maras and one was from Urubamba (see table 13).

Questions 22, 23, and 24 concern interviewees' value of the Quechua language. In Question 22, "Which language do you prefer?", answers by city are rather similar, with everyone preferring Spanish a little bit more than Quechua, while a few in each city answered that they prefer them the same. When we look at Question 23, "Which language is more important?", Manhuaypampa stands out by showing perceived importance at 100%, but we should remember that there are only two interviewees for this city. If we exclude Manhuaypampa from our analysis of these maps (figures 23-25), we can see, interestingly, that interviewees from Urubamba placed the importance of Quechua, or both Quechua and Spanish equally over the importance of Spanish alone. In comparison with the smaller cities, Maras and Kaccllaraccay valued Spanish more, and Cuzco didn't value Spanish alone at all over the importance of Quechua or the importance of both languages equally. The next and most interesting interview question, number 24 asks "Which language is more beautiful?" and shows an overwhelming agreement of Quechua being more beautiful than Spanish. The pattern from questions 22 and 23 continues, showing

smaller cities (where more Quechua is spoken) valuing Quechua less, and larger cities (where Quechua is spoken less) valuing Quechua more. The most important difference I can see is city size. As already mentioned by various authors,

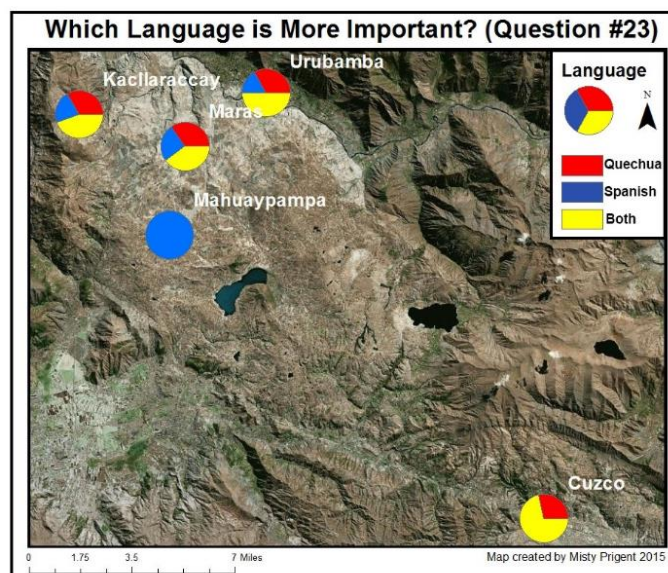


Figure 24 Which language is more important, Spanish or Quechua?

as cities become larger and more urban, the amount of Spanish speakers increases while Quechua speakers decrease. It seems that in areas with less Quechua spoken, it is valued more. Those areas where Quechua is spoken often, Spanish is valued more (see table 14).

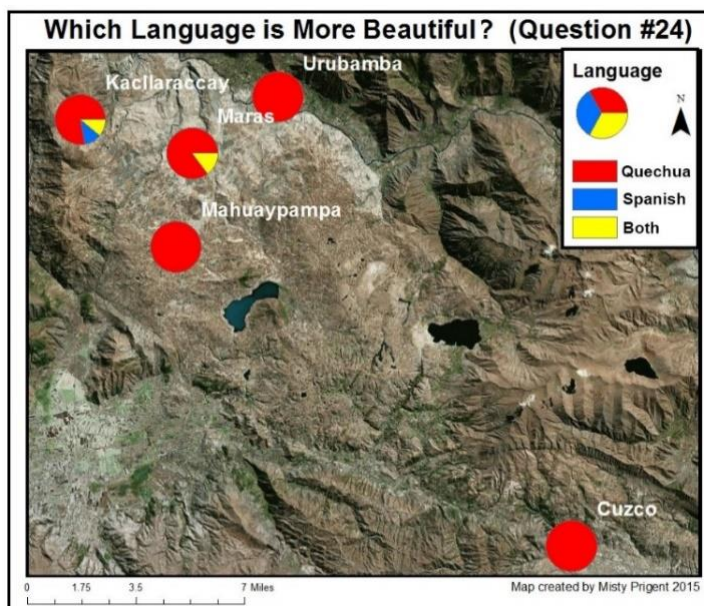


Figure 25 Which language is more beautiful, Spanish or Quechua?

Question 25, “In what situations do people in your city only speak Quechua” was also not asked of interviewees due to redundancy, as it is extremely similar to questions 18 and 19. Questions 26A through 26P asked “What language do

City	Prefer Quechua	Prefer Spanish	Prefer both equally
Maras	8	3	9
Kacllaraccay	3	1	5
Cuzco	2	1	5
Urubamba	2	1	3
Mahuaypampa	0	0	2
Totals	15	6	24
City	Quechua is more important	Spanish is more important	Both are equally important
Maras	7	6	8
Kacllaraccay	3	2	4
Cuzco	2	0	5
Urubamba	2	1	3
Mahuaypampa	0	2	0
Totals	14	11	20
City	Quechua is more beautiful	Spanish is more beautiful	Both languages are equally beautiful
Maras	17	0	3
Kacllaraccay	7	1	1
Cuzco	8	0	0
Urubamba	6	0	0
Mahuaypampa	2	0	0
Totals	40	1	4

Table 14 Question 22, 23, and 24. Which language do you prefer, is more important, and is more beautiful.

you use...” in different locations or situations. The locations or situations were the following: at home; at church; at a party or celebration; at school (or your child’s school); with teachers; at the market; in the hospital; in government places; with strangers; while dreaming; while thinking; while doing math or calculations; when angry; while traveling; with your neighbor; and at work. Responses were categorized as “Spanish”, “Quechua”, or “Both”. (Responses of either Quechua or Spanish didn’t always mean a person used only that language in a location, but sometimes that the interviewee expressed using that language most in that situation).

Domains and Language Use

Table 15 shows results of the responses to Questions 26A through 26P in percentages, concerning which language is used in different locations and situations. In

Domain	Quechua %	Spanish %	Both %	Majority	Total participants
At Home	51.11	15.56	33.33	Quechua by 35.5% (Spanish) and 17.77% (Both)	45
At Church	6.81	52.27	40.91	Spanish by 45.46% (Quechua) and 11.36% (Both)	44
At a Party/celebration	21.43	40.48	38.1	Spanish by 19.05% (Quechua) and 2.39% (Both)	42
At School	4.651	60.47	34.88	Spanish by 55.82% (Quechua) and 25.59% (Both)	43
With teachers	2.27	56.82	40.91	Spanish by 54.55% (Quechua) and 15.91% (Both)	44
At the Market	32.56	18.6	48.84	Both by 16.28% (Quechua) and 30.24% (Spanish)	43
At the Hospital	13.33	37.78	48.89	Both by 35.56% (Quechua) and 11.11% (Spanish)	45
At the Municipality	11.63	41.86	46.51	Both by 34.88% (Quechua) and 4.65% (Spanish)	43
With Strangers	9.30	51.16	39.53	Spanish by 41.86% (Quechua) and 11.63% (Both)	43
While Dreaming	33.33	47.62	19.0	Spanish by 14.29% (Quechua) and 28.62% (Both)	42
While Thinking	28.57	35.71	35.71	Spanish/both by 7.14 % (Quechua)	42
While Doing Math/Counting	9.52	59.52	30.95	Spanish by 50% (Quechua) and 28.57% (Both)	42
While Mad	35.71	38.095	26.19	Spanish by 2.385% (Quechua) and 11.91% (Both)	42
While Traveling	21.95	53.66	24.39	Spanish by 31.71% (Quechua) and 29.27% (Both)	41
With Neighbors	39.53	18.60	41.86	Both by 2.33% (Quechua) and 23.26% (Spanish)	43
At Work	33.33	13.89	52.78	Both by 19.45% (Quechua) and 38.89% (Spanish)	36 (students not considered workers)

Table 15 Language Used in different domains

only one location, the *Home*, is Quechua used at a higher percentage than Spanish and both Spanish and Quechua equally or interchangeably. Quechua is spoken in *the Market*, *at Work*, and *With Neighbors* more than Spanish, however in all three of these cases, respondents said that they still spoke both languages interchangeably more often than

only Quechua. While speaking *With Neighbors*, the percentage of Quechua use only differs about two percentage points with the use of both languages. While thinking or while mad, the percentages between dominance of Quechua or Spanish only differ by seven and three percent, respectively, showing that internal speech (*While Thinking*) and spontaneous speech (*While Mad*) are not dominated by one language by much.

Spanish was used more than Quechua or both languages interchangeably *At Church, At a Party/Celebration, At School, With Teachers, With Strangers, While Dreaming, While Doing Math/Counting, While Mad, and While Traveling*. Not only did Spanish dominate eight more domains than Quechua (which only dominated one domain), but percentages of Spanish language use *At Church, At School, With Teachers, With Strangers, and While Doing Math/Counting* dominated Quechua language use by between 42 and 55%. Still, the percentage of use of both languages equally only differed by about two percent *At a Party/Celebration*. The rest of the differences between Spanish language use and using both languages equally all differ by about 12 or more percent.

One domain, *While Thinking*, was particularly interesting in that the percentage between Spanish use and the use of both languages were the same percentage (35.71%), while the use of Quechua only differed from these two

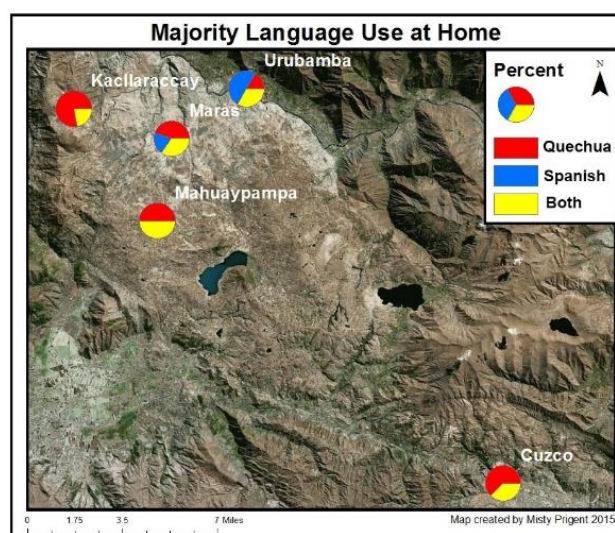


Figure 26 Majority language use at home

percentages by about seven percent.

The domains in which participants used both Spanish and Quechua equally more than just Quechua or just Spanish were *At the Market*, *At the Hospital*, *At the Municipality*, *With Neighbors*, and *At Work*. *At the Municipality*, the difference between majority Spanish use and using both languages equally is just under five percent, and the difference between majority Quechua use and using both languages equally is barely above two percent. These domains are quite volatile concerning dominant language.

What really stands out in these data are that in a majority of the domains explored in my interviews, Spanish was the dominant language, and when Spanish wasn't the dominant language, both Quechua and Spanish were spoken equally. Quechua as a majority language was rather seldom.

If we look at the difference between domain use per city, we can see interesting changes in language use. I use figures 26-43 below to show language use by city.

In figure 26, we can see that Quechua is used most in the home in Kacllaraccay, followed by Cuzco,

Mahuaypampa, Maras, and finally Urubamba. It is interesting to see that Cuzco interviewees reported to use so much Quechua, and never Spanish as a majority language

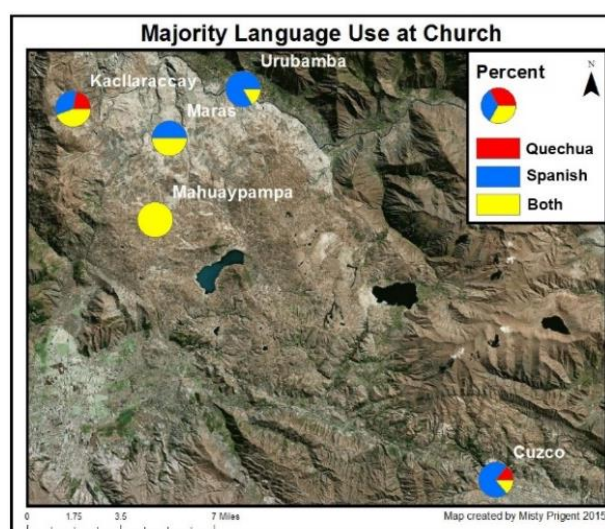


Figure 27 Majority language use at church

in their home. I would expect Maras to have a higher percentage of Quechua dominance than Cuzco in the home, but this is not the case. The percentages of language use in Maras and Urubamba seem to align with the observed use of Quechua and Spanish in the respective cities.

In figure 27, Kacclarraccay and Cuzco are the only locations in which Quechua was reported to have been used

in church mostly or only. Except for Mahuaypampa, all other cities reported to use Spanish at least 50% or more than both languages equally.

At a party or celebration (figure 28), Cuzco and Urubamba are the outliers, showing that Quechua is never the majority language used in this situation. Kacclarraccay, as usual, shows the highest amount of individuals reporting to use mostly or only

Quechua, followed by Maras. In both of these cities, Spanish is the majority language

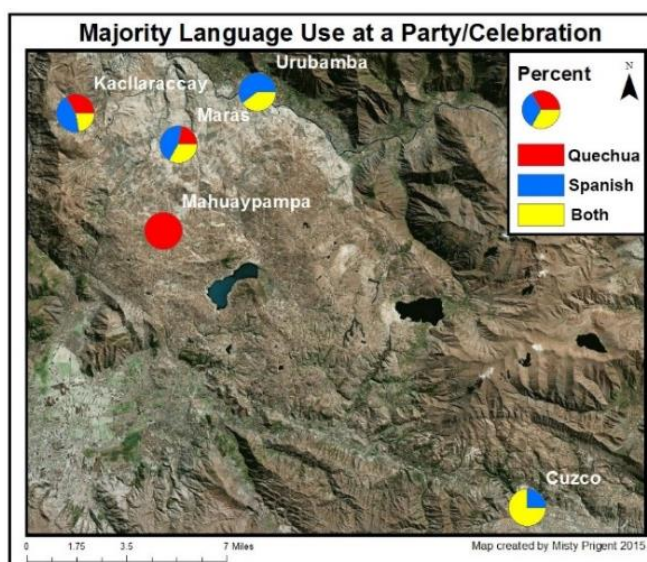


Figure 28 Majority language at a Party or Celebration

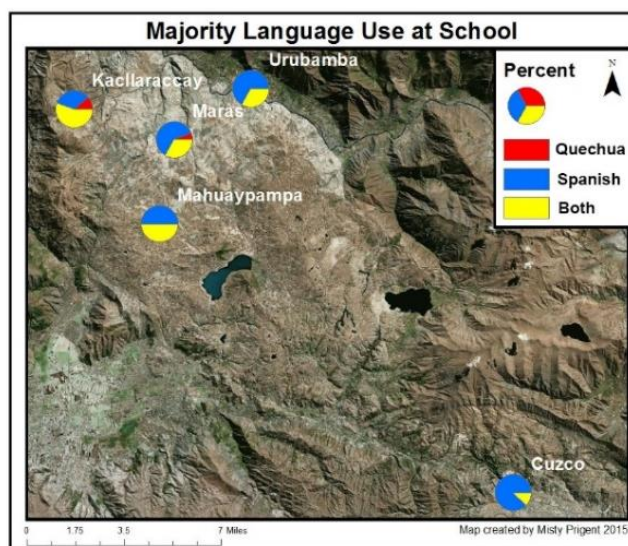


Figure 29 Majority language at school

less than 50% of the time, despite the fact that this domain is dominated by Spanish in general, and it is possible that this is related to the fact that Quechua is the majority language in these cities according to my observation data.

When looking at majority language used in or at school (figure 29), we see that Spanish is the majority language used in or at school in all cities except for Kacclarracay (and Mahuaypampa if we decide to count it). Spanish is the majority language in Cuzco according to 87% of the interviewees. 66% of interviewees from Urubamba said that Spanish was the majority language in school, 61% said Spanish was the majority language in school in Maras, and

33% said Spanish was the majority language in school in Kacclarracay. Only two respondents, one from Kacclarracay and one from Maras, said that Quechua was the majority language used in school. The interviewee from

Maras was a 69-year-old woman,

and the interviewee from Kacclarracay is a 42-year-old woman, and both mothers were referring to when they went to school, as they also happen to be the respondents that said that Quechua was the only language of instruction in school when they were younger.

In figure 30, when speaking with teachers, Spanish is used most often in Kacclarracay and Cuzco, with Spanish being the majority language used around half of

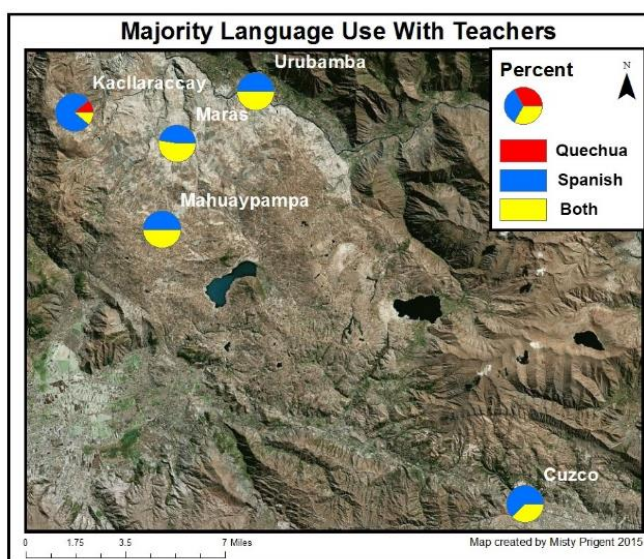


Figure 30 Majority language use with teachers

the time in Urubamba, Maras, and Mahuaypampa. Many of the adults mentioned that they could speak either language with the instructors because most instructors could speak both Spanish and Quechua. A lot of respondents commented that instructors had to know how to speak Quechua because there were some parents who were monolingual Quechua speakers.

Forty-eight percent of interview respondents said that both Quechua and Spanish were spoken equally at the market (figure 31). Spanish as a majority language is lower in Maras and Cuzco than Quechua as a majority language. Urubamba shows that both languages are used equally 83% of the time, and the other 17% percent is mostly Spanish. These proportions seem to be expected. Some might have imagined that Spanish would serve as a *lingua franca* in this situation, but because Quechua monolinguals and Spanish

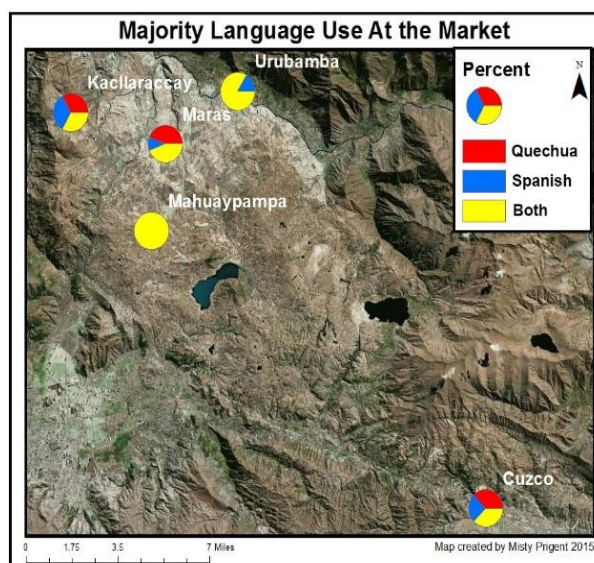


Figure 31 Majority language use at the market

monolinguals are coming to the markets, it is probably necessary for sellers to be bilingual and speak whichever language is necessary to sell their product.

In figure 32, overall the use of both languages used equally at the hospital was higher than using mostly Spanish or mostly Quechua. In Kacllaraccay, a considerably higher number of individuals said that Spanish is the language most spoken at the hospital. The only other map in which we see these

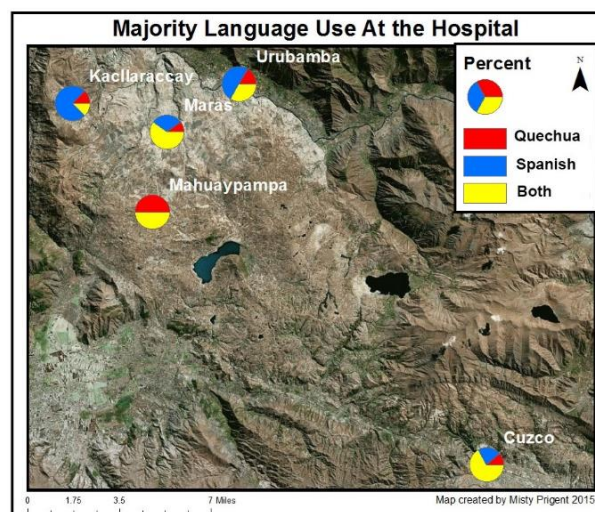


Figure 32 Majority language use at the hospital

proportions of Spanish being spoken in Kacllaraccay is with teachers. It is possible that there is a pattern of Spanish speaking with authority figures. The city of Kacllaraccay does not have a hospital (although it does have a mini-clinic recently built by Dr. Elizabeth Cartwright and her NGO,

Crescendos Alliance), and the closest city with a hospital is Maras, so residents of Kacllaraccay often go to the hospital in Maras. As such, it might seem interesting at first glance to see that interviewees in Kacllaraccay have such different responses from interviewees in

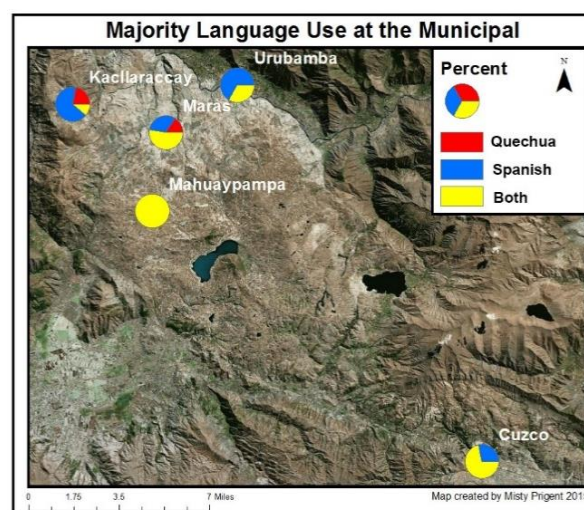


Figure 33 Majority language use at the municipality

Maras, since they are usually both going to the same hospital. However, if we consider that respondents from Maras said that doctors usually speak whichever language their

patient wants to speak (and that most doctors know how to speak Quechua), then if the preferred language of inhabitants of Kaccllaraccay is indeed Quechua, this would explain why Kaccllaraccay residents speak mostly Quechua in Maras hospitals more than Maras inhabitants speak mostly Quechua in Maras hospitals.

When looking at language dynamics at the municipality (figure 33), overall, both languages used equally is just barely higher than Spanish as a majority language at 46% and 42%, respectively. Only a few interviewees from Kaccllaraccay and Maras (five total) reported that Quechua was the majority language at the municipality. No interviewee from Urubamba or Cuzco (or Mahuaypampa) reported Quechua to be a majority language at the municipality. There is a considerably larger percentage of majority Spanish use at the municipality in Urubamba than in Maras or Cuzco, according to these responses. However, as suspected from the last map, Kaccllaraccay interviewees reported a higher amount of Spanish as the majority language. This is the third map to show that interviewees from Kaccllaraccay spoke more Spanish than Quechua or than both languages equally, and the other two maps (at the hospital and with teachers) are both related to speaking with figures of authority (teachers and doctors).

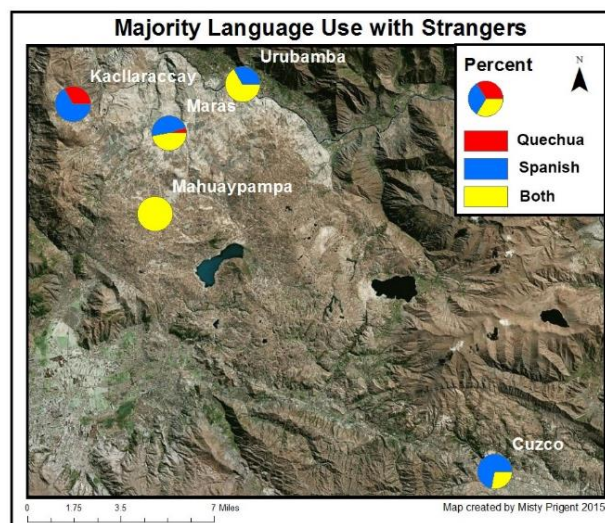


Figure 33 Majority language use with strangers

Over 50% of respondents from all cities reported to have used Spanish with strangers more often than Quechua or both languages equally. However, in figure 34, Kacllaraccay and Cuzco are the only two cities with Spanish as the majority language over 50%. Also, Kacllaraccay and Maras are the only two cities with any interviewees reporting that Quechua was the majority language while speaking with strangers. Cuzco and Kacllaraccay both have a high amount of interviewees who said that Spanish is spoken with strangers more often.

In an attempt to capture the dynamics of inner speech among interviewees (defined by Fishman (1965) as the language of thought, talking to oneself, and dreams), I asked which language was more prevalent while dreaming and while thinking.

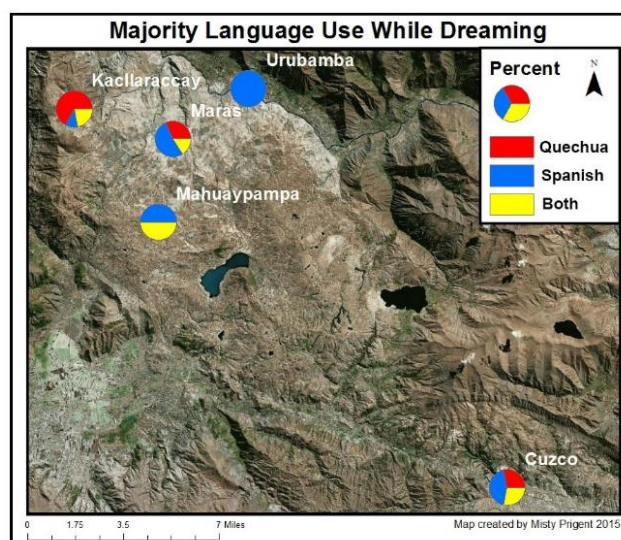


Figure 34 Majority language use while dreaming

Fishman notes that, "There is some evidence from individual as well as from group data that where language shift is resisted by multilinguals, inner speech remains most resistant to interference, switching and disuse of the mother tongue. Where language shift is desired the reverse frequently obtains (10)" (Fishman 1965:78). Figures 35 and 36 capture this. While dreaming (figure 35), 48% of interviewees from all cities said that their dreams were mostly in Spanish, while 33% said that most of their dreams were in Quechua. When we look at these figures by city, we find that Quechua is

the majority language for interviewees while dreaming in Kacllaraccay, while Spanish is the majority language of dreaming for interviewees in Urubamba at 100%. Spanish is the majority language in interviewees' dreams in Maras by just barely over 50%, while interviewees from Cuzco seem to be dreaming in Spanish more often than Quechua or both languages equally. Figure 36, concerning majority language while thinking, is not dominated by Spanish, but instead, the overall response of interviewees from all cities is that 35% of the interviewees' reported that their thoughts were in Spanish, and 35%

reported that their thoughts were in both languages equally, with Quechua as a majority language being referenced by a total of 11 interviewees out of 42, or 28%.

When looking at language majorities by city, proportions change. The numbers for

Kacllaraccay and Maras are still fairly similar to the numbers in the

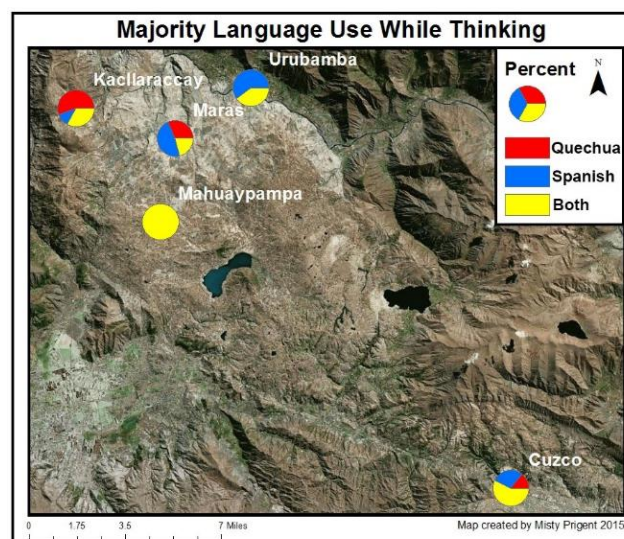


Figure 35 Majority language use while thinking

previous map, but we do see significant changes in Urubamba and Cuzco, where the amount of both languages being spoken equally rises in both cases. According to the aforementioned quote by Fishman, this could show that language shift is being resisted most by those in Kacllaraccay, and embraced most by those in Urubamba, while Maras and Cuzco tend to be on the fence but leaning toward Spanish dominance concerning the shift toward Spanish.

Immediately upon my arrival to Maras, I noticed that numbers higher than five were often said in Spanish by those speaking Quechua. As a result, it is not surprising that the majority language used to do math or count was Spanish. In figure 37, all cities

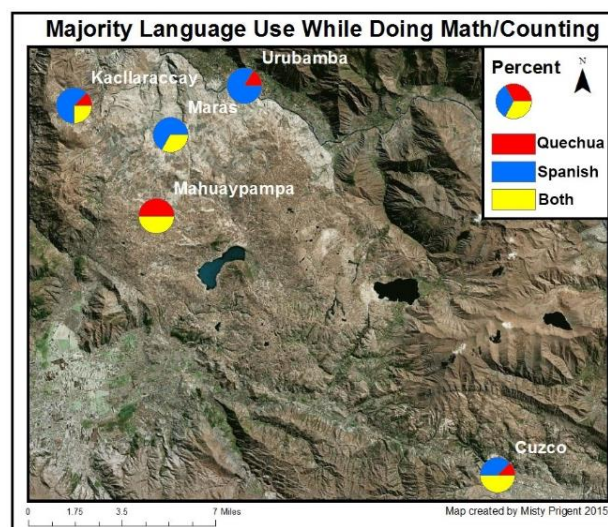


Figure 36 Majority language use while doing math or counting

except for Cuzco and Mahuaypampa show a higher dominance of Spanish used while doing math or counting. In fact, Maras showed that Quechua was never the dominant language used for counting or doing math. In all cases (except for Mahuaypampa), less than 20% of respondents claimed to use mostly Quechua for

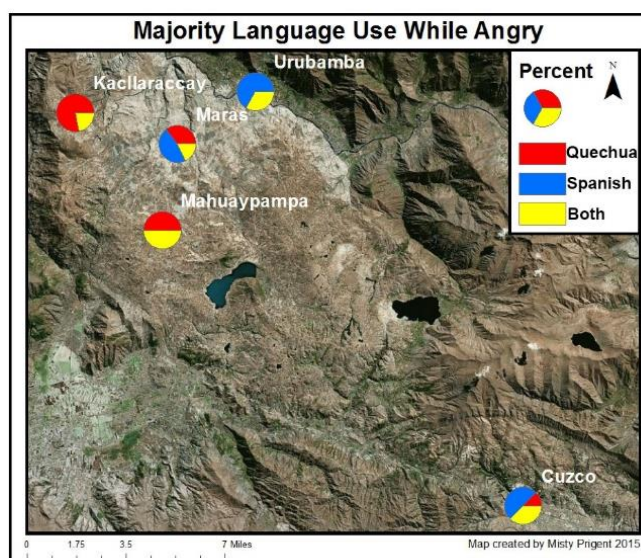


Figure 37 Majority language use while angry

doing math or counting. Again, Cuzco stands out for having a high percentage of interviewees reporting to use both languages equally while doing math or counting. As will be mentioned below, I observed repeatedly that Quechua speakers were not using Quechua to discuss numbers if they were higher than five. And in no case was a Spanish speaker using Quechua to talk about numbers.

Responses concerning language use while mad (figure 38) had a striking resemblance to responses concerning language use while thinking (excluding Mahuaypampa, which changed significantly based on one interviewee response).

Kacilaraccay showed a high

number of respondents

using mostly Quechua while

angry/mad (I use the term

angry so the term ‘mad’

isn’t thought to be

synonymous with crazy).

Urubamba shows a high

number of respondents

using mostly Spanish while

angry. And finally, Maras

and Cuzco show 50% of

their respondents as using

Spanish while angry while

using mostly Quechua or

both languages equally make up the other half of the percentage. Interviewees often

referenced Quechua as being an emotional language, able to elicit stronger feelings and to

attract attention quicker, so I am surprised to see that Quechua was not a more common

response for this question.

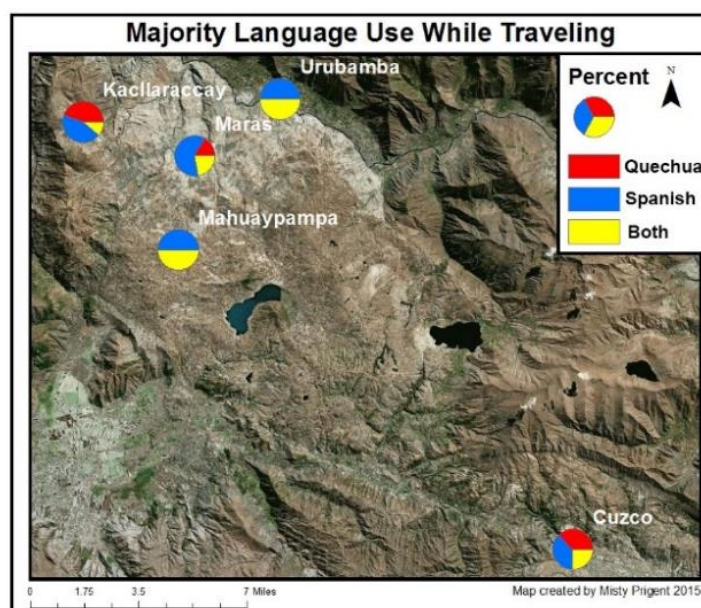
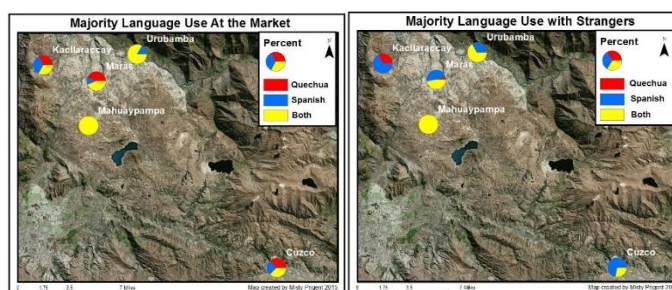


Figure 38 Majority language use while traveling



In figure 39, Spanish was the majority language used among all interviewees while traveling. However, Maras has the most respondents answering that Spanish is the majority language used while traveling at 61%. All other cities showed that Spanish was the majority language used while traveling for 50% or less of the respondents from each city. Urubamba interviewees never reported using mostly Quechua while traveling, while Kacclarraccay and Cuzco interviewees reported using Quechua mostly while traveling at 44% and 37%, respectively. I would expect percentages in this chart to match up with

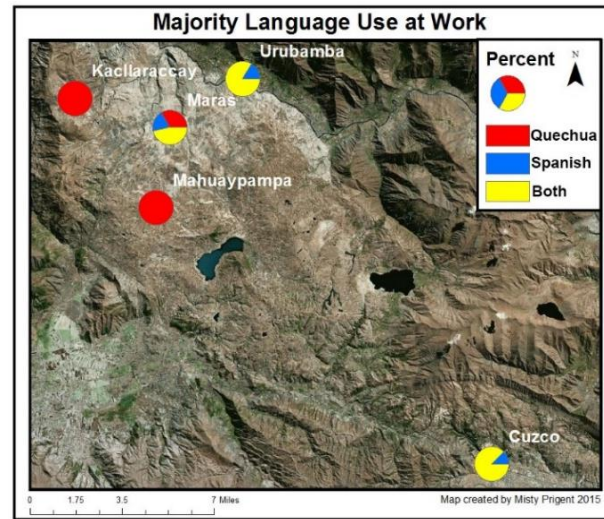


Figure 40 Majority language use at work

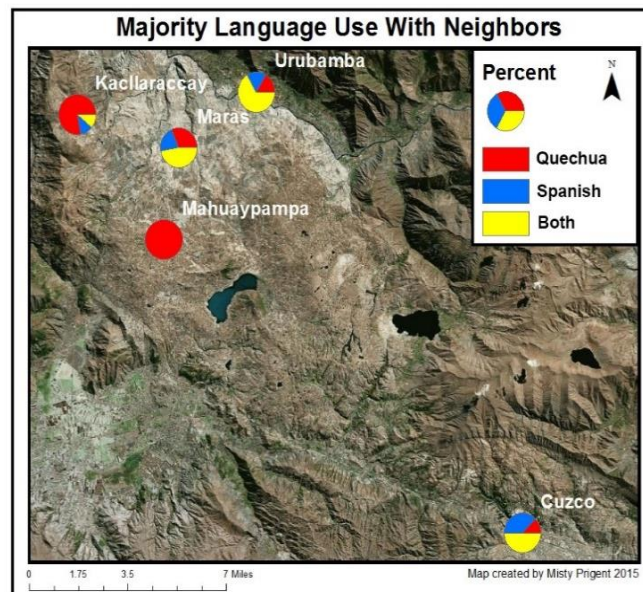


Figure 39 Majority language use with neighbors

percentages concerning language used at the market and with strangers (figures 40 and 41), since all situations would require a *lingua franca* between individuals who don't know which language to expect. However, a quick glance back shows that this is not the

case, and the only coincidence between these three maps are the similarity between proportions in Cuzco among the market and traveling maps, and the lack of Quechua as a majority language in Urubamba in all three of the maps.

The last two maps for domains show proportions of language use with neighbors and at work (figures 40 and 41). Both of these maps show a considerably higher amount of Quechua as majority language than Spanish, but overall, most respondents 42% and 53%, respectively, reported to use both languages equally with neighbors and at work. Kacllaraccay and Mahuaypampa show that an overwhelming majority of the respondents used mostly Quechua with their neighbors. In figure 41, we can see that in Urubamba, 66% of respondents said they use both languages equally with neighbors. Maras and Cuzco are relatively similar, showing the use of both languages equally among about 50% of the respondents, although Maras shows a higher number of respondents who used mostly Quechua with their neighbors than Cuzco respondents.

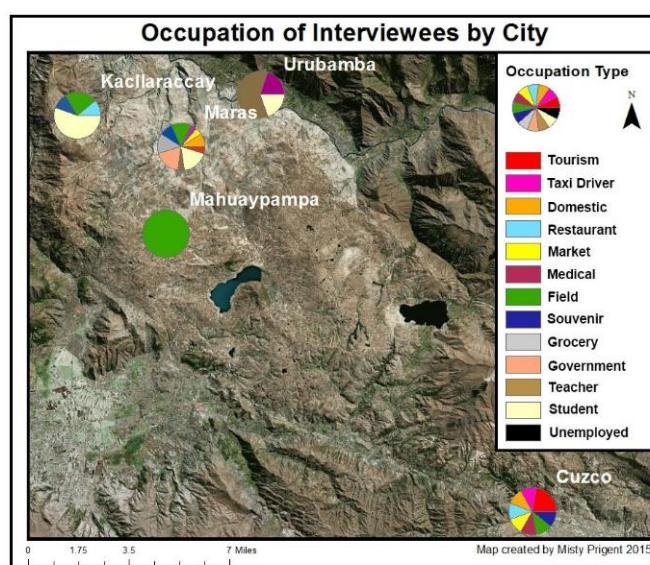


Figure 41 Occupation of interviewees by city

Figure 40 shows quite a distinction between the two larger cities, Urubamba and Cuzco, and the rest of the cities. Interviewees from Urubamba and Cuzco speak both languages equally most, followed by Spanish most. One hundred percent of respondents

from Kacllaraccay (and Mahuaypampa) said they use Quechua mostly or only at work. Maras still shows an interesting proportion of language use, with Spanish as the majority language at work occurring the least often. An interesting way to look at how this data could be skewed is to return back to the map showing the distribution of interviewees' job types. In figure 42 we can see that most respondents were students. In the highlands of Peru, such as Kacllaraccay, many older children do work in fields and around the house, so their responses were collected for the question concerning majority language use at work. Because most of the children work in the fields or at home, and these two locations are associated with speaking mostly Quechua, then adding the proportion of students to field workers would naturally provide us with a high percentage of Quechua being spoken at work in Kacllaraccay. It is still interesting that the individuals selling souvenirs and working in restaurants in Kacllaraccay are speaking Quechua. Those individuals from Kacllaraccay selling souvenirs do not do so in Kacllaraccay proper, but instead sell them at a nearby tourist attraction, Moray. Also, as far as I know, there are no restaurants in Kacllaraccay, and if there are, they are restaurants within someone's home. Urubamba's interviewees are composed of over 50% school teachers, and the rest are students and medical workers. As such, it is understandable why both languages are used equally at work. Maras and Cuzco's variety of occupation types makes language use at work much less apparent.

Attitudes and Use

In order to look at the relationship between Quechua language attitudes and Quechua language use, I designated scores for participant responses. I wanted to represent responses quantitatively so that I can compare questions against one another. I

categorized a portion of my interview questions into two categories: use and attitude (sometimes represented as preference). Below, I present the questions used to determine Quechua Language Use, and also those used to determine Quechua Language Attitudes. This procedure is extracted from Feke's "Quechua Value Score" for her interview responses to her Language Attitude Interview (Feke 2004:227).

Questions categorized under Quechua language attitudes: 16, 20, 21, 22, 23, 24.

Questions categorized under Quechua language use: 9, 10A, 11A, 26 A-26P (16 questions).

Some interview questions could have been added or subtracted from each group based on multiple viewpoints or objectives. Many responses didn't lend to binary categorization, which aided me in the choice of questions for both categories.

Scoring Questions

Quechua Language Attitudes Group

I scored the responses to questions categorized under Quechua language attitudes as 1, 0, or -1, with 1 representing positive views of the Quechua language, 0 representing neutral views, and -1 representing views in favor of Spanish over Quechua:

In question 16, "Do you think children should learn Quechua before Spanish?", responses were categorized as "Yes" and "No", or "Both at the same time". I scored "Yes" answers as 1, and "No" answers as -1, and "Both" answers as 0, where I assumed that yes answers show a concern about children learning Quechua language, and no answers show a lack of concern.

In question 20, “Do your children want to speak Quechua?”, responses were categorized as “Yes” or “No”, where parents who thought their children wanted to speak Quechua were scored as 1, and those who thought their children didn’t want to speak Quechua were scored as -1.

In question 21, “Do you think Quechua will disappear?”, responses were categorized as “Yes” or “No”, where “No” answers were considered positive attitudes about Quechua’s permanence and were scored as 1, and “Yes” answers were scored as -1.

In question 22, “Which language, Spanish or Quechua, do you prefer?”, responses were categorized as “Spanish”, “Quechua”, or “Both”. Those who preferred Quechua were given a score of 1, those who preferred Spanish were given a score of -1, and those who answered both were given a score of 0.

In question 23, “Which language is more important?”, responses were categorized as “Spanish”, “Quechua”, or “Both”. Those who preferred Quechua were given a score of 1, those who preferred Spanish were given a score of -1, and those who answered both were given a score of 0.

In question 24, “Which language is more beautiful?”, responses were categorized as “Spanish”, “Quechua”, or “Both”. Those who preferred Quechua were given a score of 1, those who preferred Spanish were given a score of -1, and those who answered both were given a score of 0.

Quechua Language Use Group

I scored the responses to questions categorized under Quechua Language Use the same as the previous group of questions, with 1, 0, or -1, where 1 represents positive

views of the Quechua language, 0 represents neutral views, and -1 represents views in favor of using Spanish over Quechua. The following questions were used for this group: 9, 10A, 11A, 26 A-P (16 questions).

In question 9, “Did you learn Quechua in your school when you were young?”, responses were categorized as, “Yes”, “No”, or “A little”. Those who answered “Yes”, were given a score of 1, where “No” answers were given a score of -1, and “A little” answers were given scores of 0.5.

In question 10A, “Do you know how to write in Quechua?”, responses were categorized as, “Yes”, “No”, or “A little”. Those who answered “Yes”, were given a score of 1, where “No” answers were given a score of -1, and “A little” answers were given scores of 0.5.

In question 11A, “Do you know how to read in Quechua?”, responses were categorized as, “Yes”, “No”, or “A little”. Those who answered “Yes”, were given a score of 1, where “No” answers were given a score of -1, and “A little” answers were given scores of 0.5.

In questions 26A through 26P, I asked “What language do you use...” in different locations or situations. The locations or situations were the following: at home; at church; at a party or celebration; at school (or your child’s school); with teachers; at the market; in the hospital; in government places; with strangers; while dreaming; while thinking; while doing math or calculations; when angry; while traveling; with your neighbor; and at work. Responses were categorized as “Spanish”, “Quechua”, or “Both”. (Responses of either Quechua or Spanish didn’t always mean a person used only that language in a

location, but sometimes that the interviewee expressed using that language most in that situation). Those who answered “Quechua” were given a score of 1, “Spanish” were given a score of -1, and “Both” were given a score of 0.

Score outcomes

Quechua Language Attitude scores were the following:

Question # 16:= -13
Question # 20:= 28
Question # 21:= 36

Question # 22:= 9
Question # 23:= 4
Question # 24:= 39

Out of the six questions asked in this category, only one question had a negative score, which shows an attitude preference for Quechua over Spanish. Scores are listed above. The question with a negative score of -13 was question #16, which asked which language, Quechua or Spanish, should be learned by children first. Question #23, concerning which language is more important, is also quite low with a score of 4, but still positively in favor of Quechua. It is interesting to note that the two questions which resulted in low attitude scores concerning Quechua were those which are also related to utility of the language.

I did not include the average score for this group because the number of participants for each question differs by five or so individuals. (Participant numbers for questions varied from 40 to 45 participants, because some questions were either not asked or not answered during the interview. This means that there is a slight difference in sample size when comparing scores from question to question.) The highest score for each question ranged from 40 to 45, while the lowest possible could range from negative

40 to negative 45. Half of the questions' responses had positive scores near or above 30, while the other half had questions ranging from negative 13 to negative 9.

Quechua Language Use scores were the following:

Question # 9 = -15.5
 Question # 10A = 4.5
 Question # 11A = 16
 Question # 26 A = 16
 Question # 26 B = -20
 Question # 26 C = -8
 Question # 26 D = -24
 Question # 26 E = -24
 Question # 26 F = 6
 Question # 26 G = -11

Question # 26 H = -13
 Question # 26 I = -18
 Question # 26 J = -6
 Question # 26 K = -3
 Question # 26 L = -21
 Question # 26 M = -1
 Question # 26 N = -12
 Question # 26 O = 8
 Question # 26 P = 7

Average # is -6.26

All 45 participants answered these questions, so I calculated the average score for this group of questions, which is -6.26, showing that overall, Spanish language is used more often than Quechua in these situations. Out of 19 questions, there were only six questions in which Quechua was the majority language used, with scores ranging from 4.5 to 16.

These questions were: 10A and

11A, which concerned Quechua reading and writing; 26A which was language use in the home; 26F, which was language use in the market; 26O which was language use with

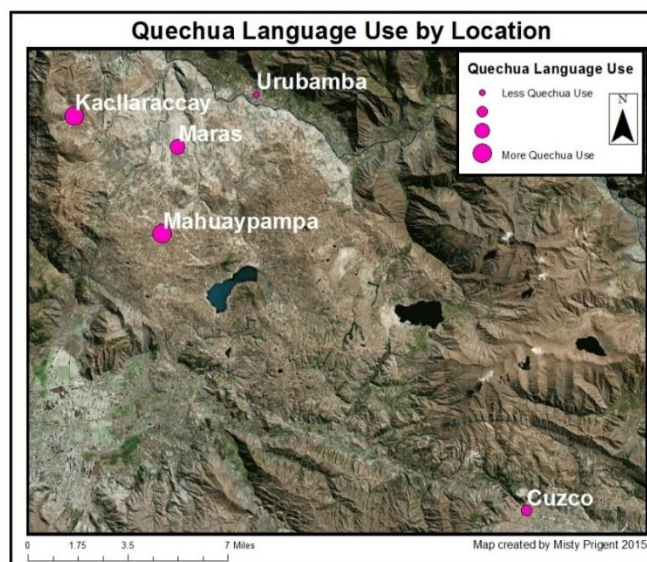


Figure 42 Quechua language use by location

neighbors; and 26P which was language use at work. The remainder of the questions showed that Spanish was used more often, with negative scores ranging from -1 to -24. The highest score for these questions was 45, while the lowest was negative 45.

Breaking these questions into groups and scoring them allows us to compare many questions

against one another

at the same time. It

shows us that

although language

attitude scores are

high, with 83.3% of

the questions

demonstrating

respondents

favoring Quechua

over Spanish,

Quechua language *use* is rather low, with only 31.57% of responses revealing majority

Quechua language use.

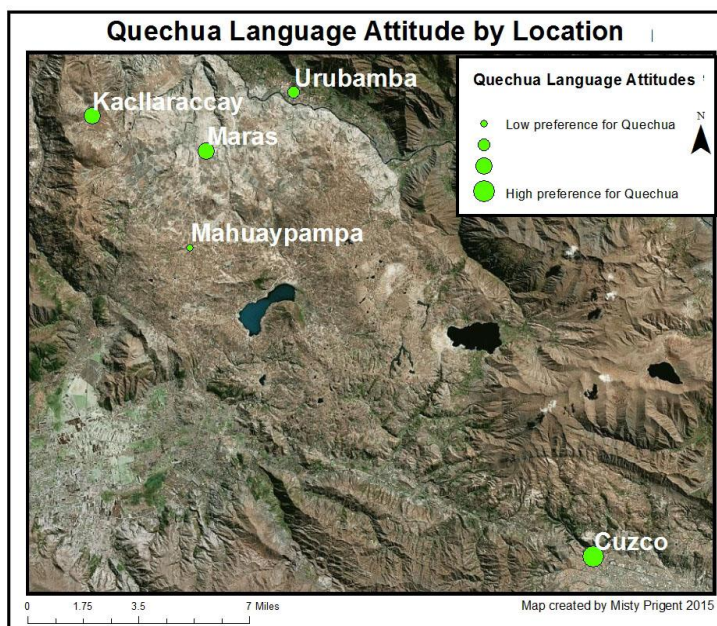


Figure 43 Quechua language attitudes by location

We can also look at attitude and use by city. Figures 43, 44 and 45 show Quechua language use by location,

Quechua language attitudes by location and Quechua language use and attitudes in the same map, respectively. In order to create a map to show attitude and use compared against one another, I used the “field calculator” in ArcMap to

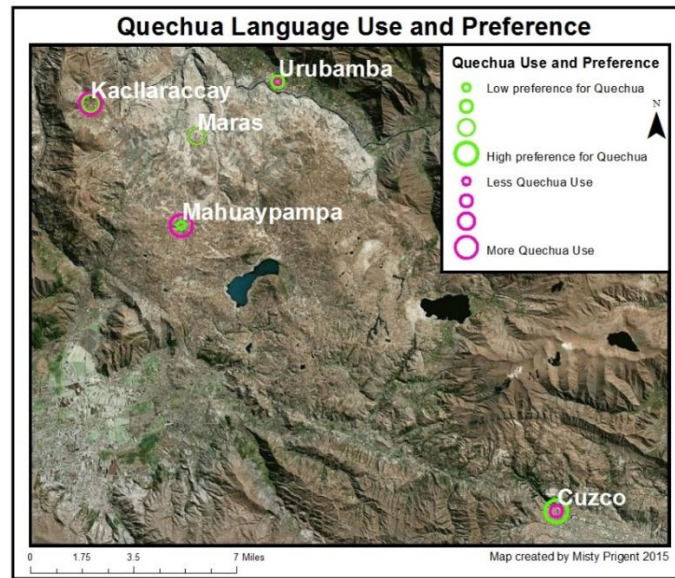


Figure 44 Quechua language use and attitudes by location

calculate the total number of positive Quechua answers minus positive Spanish answers per city, and divided that number by interviews per city.

In attitudes map (figure 44), in order to calculate the total number for responses from Cuzco, I added the responses from all six interviewees (there were eight interviewees from Cuzco, but two interviewees didn’t answer all of these questions, so they were left out of the calculation) that were in favor of Quechua over Spanish for

Calculation for Quechua Use/Attitudes Map					
City	Positive Quechua answers for questions 16, 20, 21, 22, 23, and 24	Positive Spanish answers for questions 16, 20, 21, 22, 23, and 24	Quechua minus Spanish	Total interviewees per city	Final total
Urubamba	$4+5+4+2+2+6=23$	$12+1+1+1+1+0=16$	$23-16=7$	6	1.67
Maras	$3+14+17+8+7+17=66$	$5+4+3+3+5+0=20$	$66-20=46$	20	2.3
Kacllaraccay	$0+6+9+3+3+7=28$	$2+0+0+1+2+1=6$	$28-6=22$	9	2.44
Cuzco	$3+7+8+2+2+8=30$	$1+1+0+1+0+0=3$	$30-3=27$	8	3.38

Table 16 Calculations for Quechua Use/Attitudes Map

question 16, 20, 21, 22, 23, and 24 individually. I then subtracted the number of responses that were in favor of Spanish over Quechua for each question and then divided that total by number of interviewees. The following chart (Table 16) provides numbers and final calculations for both preference and use per city divided by interviewees per city.

For the Quechua Language Use map (figure 43), the same calculations were performed, except, as explained above, answers to questions 9, 10A, and 11A had the options of the response, “A little”. I counted all instances of “A little” as positive instances toward Quechua use, divided by two. I gave these answers less weight than answers concerning “yes” answers, because they represented less use of Quechua. The equation for question 9, for example, was the following:

$$(\text{Can write in Quechua} - \text{Can write in Spanish} + (\text{Can write in Quechua a little} \div 2))$$

**Totals for questions 26A through 26P all had a weight of “1”.*

Totals for each group cannot be compared against one another using exact totals because there are a different number of questions that make up the Quechua Attitudes

Abbreviated Calculations for Quechua Use Map			
City	Quechua minus Spanish	Total interviewees per city	Final total
Urubamba	-37	6	-6.17
Maras	-66	20	-3.3
Kacllaraccay	15	9	1.67
Cuzco	28	8	-3.5

Table 17 Abbreviated Calculations for Quechua use map

Score and the Quechua Use Score. Instead, relative comparisons were represented in the maps. Each scale was divided into four symbols, where smaller circles indicate a lower preference or amount of use of Quechua as compared with Spanish, and as the circles are

larger, the preference becomes larger. The symbols are relative to proportions between the attitude scale and the use scale.

In Cuzco, Mahuaypampa, and Kacllaraccay, it seems that high use of Quechua language is found in areas of low preference for Quechua. Perhaps those who speak and hear Quechua every day have a lower appreciation for it, and those who value Quechua more may do so because of its absence. Looking at the data in the first map, and with general knowledge of the population of each location, we can see that Quechua is used less in larger cities, such as Cuzco and Urubamba, while it is used more in smaller villages, such as Maras, Kacllaraccay, and Mahuaypampa. In the second map, it is difficult to see any relationship between city size and perceptions about Quechua. However, it is interesting to see that attitudes are much more positive in Cuzco as compared to Urubamba and Mahuaypampa especially, and also in Kacllaraccay and Maras.

Adding Observational Data to Interview Data

Originally, I wanted to use my observational data in order to compare interview responses with what I actually saw happening in different domains. For example, I asked what language was spoken in the hospital in my interviews, and I was able to collect various speech instances in the hospital as part of my observations. However, if we look at these domain data in conjunction with my observation and audio/video data, I find that the observation and audio/video data are inconclusive in terms of which languages I actually observed in these locations. My observations and recordings were not very numerous for certain domains, sometimes equaling only two or so instances. As a result, the observation data can only provide insightful hints about language use in domains

rather than definitive language use patterns. Because much of the data from observations and audio/video recordings are not very numerous, and sometimes only from one city, I will not represent most of this data with maps. Additionally, when I do present data in maps, I will exclude Mahuaypampa from the maps, since I have no observed or audio/video data from this city.

The locations that I observed speech or had audio/video data from were the following: At the *Chicheria* (locations, often homes, where *chicha*, a local alcoholic drink, is made and served), at the market, in the city center plaza, at internet cafes, in restaurants, in the hills, in the street, in stores, in the hospital, at church, at bus stops, on city loudspeakers, at the municipality, at schools, at parties, and in homes (see table 18). I will discuss those domains which overlap with interview data for comparison and to test accuracy of interview responses. Overlapping domains are: at the market, in the hospital, at church, at the municipality, at schools, at parties, and in homes.

At the market in Urubamba, I observed two different speech instances, one in Spanish, and one in Quechua. My data from observations and audio/video at the hospital were much more robust, with 23 instances of language use, 16 of which were in Spanish, and seven of which were in Quechua. I observed one instance of church held in Maras, which was conducted in Spanish. There were over 100 attendees, since it was a saint's day and a parade was to be held in the city later on, and my notes say that the conversations before and after church between attendees were all in Spanish as well. I observed three speech instances at the municipality, one in Maras and two in Cuzco. One instance in Cuzco was in Spanish while the other was in Quechua, both amongst municipality workers. The instance in Maras was in Quechua, between a worker and a

community member. I observed 18 instances of speech in schools, 17 in Kacllaraccay, and one in Maras. Eight of the instances in Kacllaraccay were in Quechua, while the other nine were in Spanish. In Maras, the one instance I observed was in Spanish. I observed 11 instances of speech at a party or celebration, eight of which were Quechua and three of which were Spanish. Three of those instances took place in Cuzco, two in Maras, and six at Moray (a sacred location between Maras and Kacllaraccay, during the festival of Watakayari). In Cuzco, I observed two instances of Spanish and one of Quechua. In Maras, I observed one instance each of Spanish and Quechua. At Moray, my notes show all six instances of speech in Quechua, although this was during the Watakayari festival, an agricultural event, and although my notes don't include this information, I remember quite clearly that participants at Watakayari were selling food and other items in both Spanish and Quechua. I observed eight instances of speech in homes, one in Kacllaraccay, and seven in Maras. In Kacllaraccay, Quechua was spoken

in the home,
while in Maras,
four of the
instances were
in Quechua and
three were in
Spanish.

It is hard
to conclude that
my observation

Domain	Quechua instances	Spanish instances	Total instances	Majority
Chicheria	2	1	3	Quechua 66.7%
Market	1	1	2	Both 50%
City center/plaza	4	2	6	Quechua 66.7%
Internet Cafe	0	2	2	Spanish 100%
Restaurant	3	6	9	Spanish 66.67%
Hills	7	0	7	Quechua 100%
Street	92	30	122	Quechua 75.41%
Store	4	2	6	Quechua 66.67%
Hospital	7	16	23	Spanish 69.58%
Church	0	1	1	Spanish 100%
Bus Stop	4	2	6	Quechua 66.67%
Loudspeaker	3	13	16	Spanish 81.25%
Municipality	2	1	3	Quechua 66.67%
School	8	10	18	Spanish 55.56%
Party/Celebration	8	3	11	Quechua 72.72%
Home	5	3	8	Quechua 62.5%

Table 18 Use of Quechua and Spanish by domain from observational data

	Quechua	Spanish	Total
Cuzco	2	8	10
Maras	113	62	175
Urubamba	9	9	18
Kacllaraccay	13	10	23
Total	137	89	226

Table 19 Observed speech instances by city

and audio/video data reinforce interview data because there are so little data for each domain.

However, in locations in which I had the most observations, at the hospital, at schools, and at parties, with 23, 18, and 11 instances, respectively, we see that

there is a higher use of Spanish than Quechua, which aligns with my interview data. But I failed to observe the use of both languages by any one interlocutor at the hospital, which

	Quechua	Spanish	Total
<i>Chicheria</i>	2	1	3
Plaza	4	2	6
Internet café	0	2	2
Restaurants	3	5	8
Hills	4	0	4
Streets	92	30	122
Stores	4	2	6
Bus stops	4	2	6
City loudspeakers	3	13	16

Table 20 Quechua and Spanish use observed by location

would have been important

considering that the majority of interviewees said they use both languages equally at the hospital. At schools, my observations and audio/video data Quechua and Spanish language use were both around 50%, but in my interview data, Spanish was the majority language by over 55%. It is unfortunate that my data include so many instances of speech only at Kacllaraccay. Because I was informed by Katie and Dr. Elizabeth Cartwright (and later observed) that Kacllaraccay is much more Quechua-monolingual than all of the other cities (besides Mahuaypampa), this is probably why the data are skewed toward Quechua here. At parties or celebrations, I also find inconsistencies with interview responses, and I am positive that this is because of my observations during the Watakayari festival in Moray skewed my data toward Quechua.

A brief summary of the rest of my observation data (tables 19 and 20) that didn't overlap with my interview data was the following: at the *chicheria*, in the city center plaza, at internet cafes, in restaurants, in the hills, in the street, in stores, at bus stops, and on city loudspeakers. These data are a little more plentiful than data that overlap with my interviews, with three instances at the *chicheria*, six in the city center plaza, two at internet cafes, eight at restaurants (one more but it was observed in Lares, so I'm excluding it for now), four in the hills (three excluded because they were on the way to Lares), 122 instances in the street, six in the stores, six at bus stops, and 16 through city loudspeakers.

In *chicherias*, two of the speech instances I noted were in Urubamba, one Spanish, one Quechua, while one was in Kacllaraccay in Quechua. Speech instances at city center plazas took place in Urubamba (five instances) and Maras (one instance). All of these instances included one or two individuals communicating to crowds in the plaza, often through microphones or while standing on platforms. Three of the instances in Urubamba were in Quechua, while two were in Spanish. In Maras, the instance was in Quechua. The two instances of speech at internet cafes were in Cuzco and Urubamba, both Spanish. Two instances of speech in restaurants were in Cuzco, both in Spanish, two instances in Maras, one Spanish and one Quechua, and four instances in Urubamba, two Spanish and two Quechua. Two speech instances in the hills were observed in Urubamba and two in Moray, all of which were in Quechua. All instances at bus stops were observed in or around Maras, four of which were in Quechua and two of which were in Spanish. The city loudspeaker speech instances were composed of 13 instances in Maras (two Quechua, 11 Spanish), two instances in Urubamba (one Quechua, one Spanish), and

one instance in Moray in Spanish. Of the 122 instances of speech observed or recorded in the street, four were in Cuzco in Spanish, 112 were in Maras (88 of which were in Quechua, 24 of which were in Spanish), two instances were in Urubamba, one in Quechua, one in Spanish, and four instances were in Kacllaraccay, three of which were in Quechua and the fourth in Spanish.

My observation data along with video and audio recordings are still useful despite their inability to reinforce my interview data, if I simply consider instances by city instead of instances per domain (or instances per domain by city). I find this data particularly useful to calculate majority language use per city, as well as majority language use by gender and by age.

Figure 46 is a map showing language spoken by city, by using all domain data instances added together per city. Because I observed many more instances of speech in the street than other

domains, the data is skewed toward language use in the streets.

However, this data still gives a rather good idea of the majority language in each city. There is much more Spanish being spoken in Cuzco than any

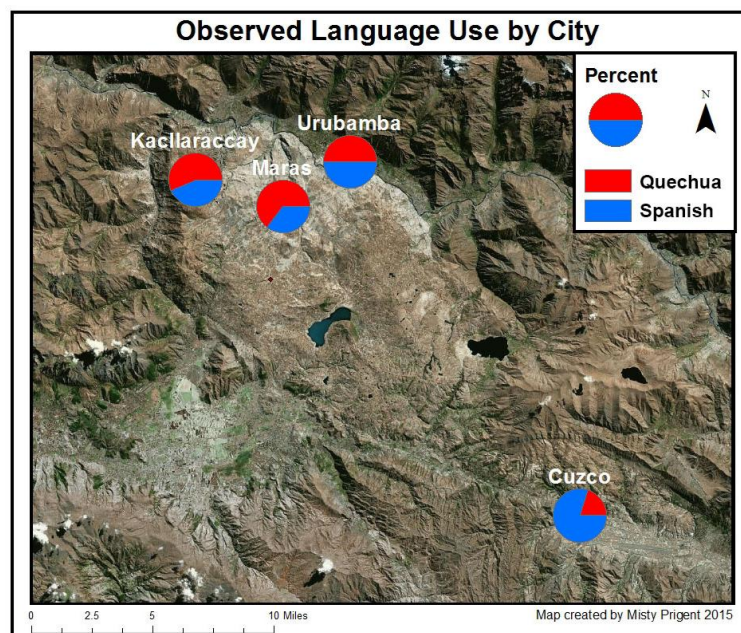


Figure 45 Observed language use by city

of the other cities. Spanish is spoken more in Urubamba less than in Cuzco, but more than in the other two cities. Interestingly, more Spanish is being spoken in Kacllaraccay than Maras, even though Kacllaraccay is smaller and more rural than Maras. I suspect that interviewing a larger sample in Kacllaraccay would provide us with a lower proportion of Spanish.

Nevertheless, the differences in language spoken by city is consistent with current literature stating that more Spanish is being spoken than Quechua in larger cities.

The next maps (figures 47 and 48) show observed language use by gender for each city, as well as observed language use by perceived age for each city. When I observed speech instances, I tried to note the interlocutors, their gender and assumed age. Of the 239 speech instances I observed, 88 females and 72

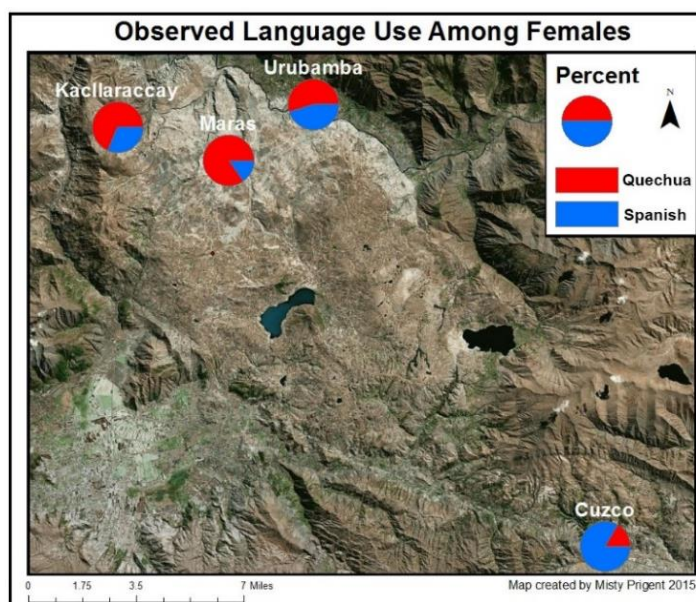


Figure 46 Language use among females

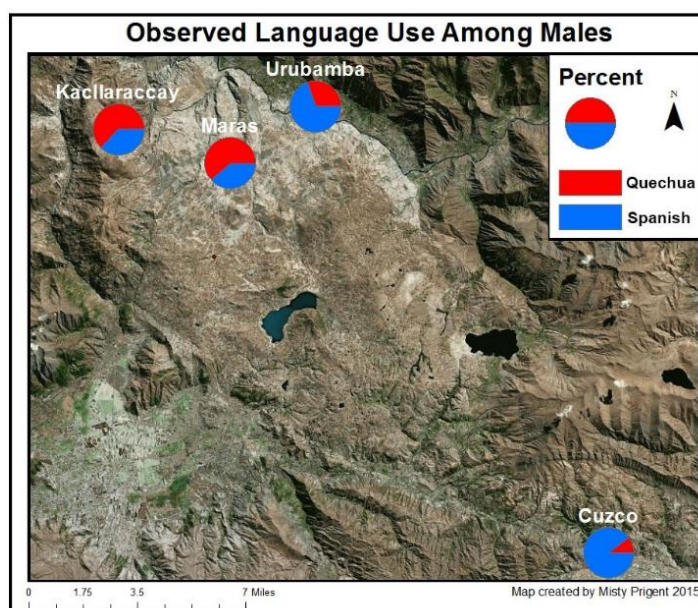


Figure 47 Language use among males

males were observed speaking Quechua, and 44 females and 67 males were observed speaking Spanish.

Initially, we see that more females were observed speaking Quechua than Spanish, and vice versa for males. However, when this is broken into speakers by city, the dynamic changes significantly.

In comparing figures 47 and 48 and examining table 21, we can see that in all cities, females were observed to speak more Quechua than males. Because the future of Quechua relies on the use of the language by the younger population, it is also interesting to look at

	Females speaking Quechua	Females speaking Spanish	Males speaking Quechua	Males speaking Spanish
Cuzco	1	5	2	18
Maras	66	12	57	36
Kacllaraccay	15	7	10	6
Urubamba	6	5	3	7
Total	88	29	72	67

Table 21 Language use by gender

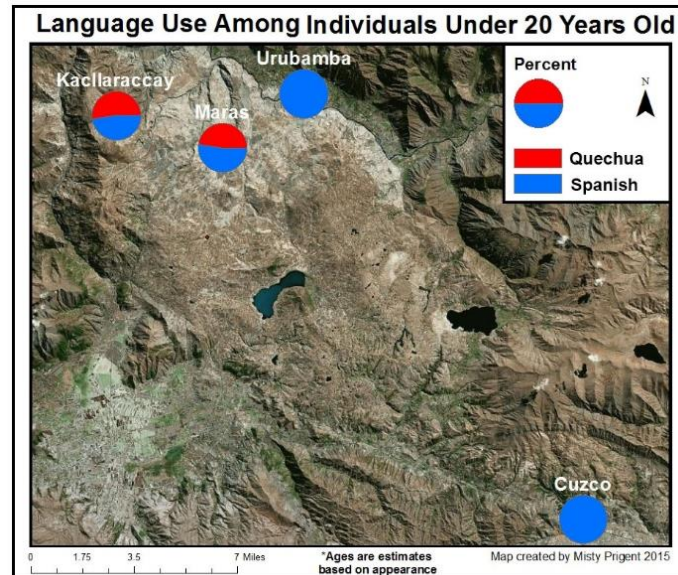


Figure 48 Language use among individuals under 20 years old

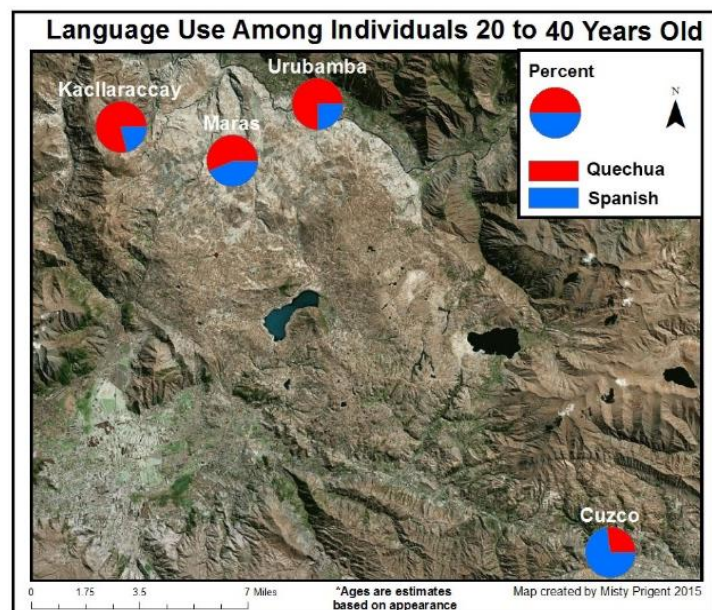


Figure 49 Language use among individuals 20 to 40 years old

language spoken by age. My observations used estimated age based on appearance (table 22). I divided ages into under 20 years old, from 20 to 40 years old, and from 40 years old and up. The age ranges were broken into generational estimates, where I assume new generations come about every

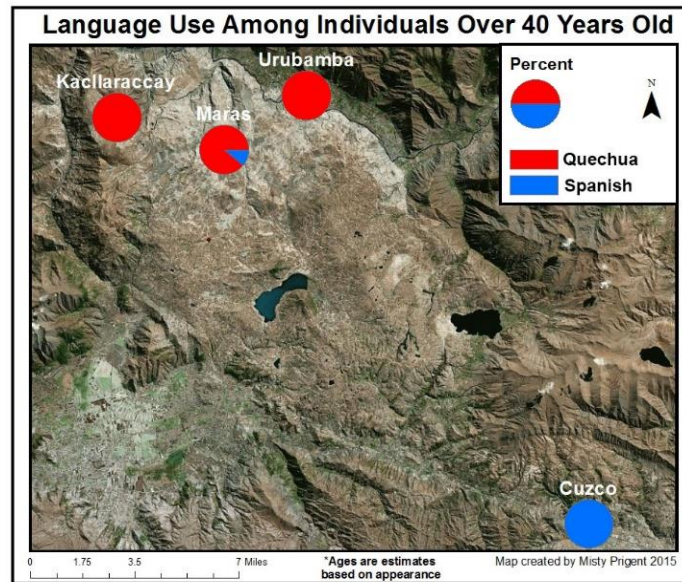


Figure 50 Language use among individuals over 40 years old

20 years (having a child at 20, a grand-child at 40, and so on). I also chose this age range because those 20 and under are usually school-age, often attending school until age 18 or so. To

remain

consistent,

I used 20

year

increments

	Under 20 speaking Quechua	Under 20 speaking Spanish	20-40 speaking Quechua	20-40 speaking Spanish	Over 40 speaking Quechua	Over 40 speaking Spanish
Cuzco	0	10	3	8	0	2
Maras	20	22	69	53	8	1
Kacllaraccay	11	10	11	3	3	0
Urubamba	0	4	9	3	2	0
Total	31	46	92	67	13	3

Table 22 Language use by age and city

for the other ranges. I decided not to make an age range of 60 and up (leaving it at 40 years old and up) because only two of my interviews (three if you count the intoxicated interviewee) were over the age of 60. While the maps for individuals under 20 and individuals between 20 and 40 years old have sample sizes of over 10 individuals per category (except for individuals under 20 in Urubamba, of which there are only four

samples), the map for individuals over 40 years old may look exaggerated due to small sample size. I only had two samples of individuals from Cuzco, nine from Maras, two from Urubamba, and three from Kacllaraccay. In order for this last map to be reliable, I would have needed more samples from this age range. Still, while we consider the first two maps with larger samples, we can see that younger individuals are using Quechua much less than those between 20 and 40 years old, and that the use of Spanish increases as the city size increases. Overall, only 27.4% of individuals who are 20 years old or younger are speaking mostly Quechua, 56.7% of individuals between 20 and 40 years old speak mostly Quechua, and 91.6% of individuals over 40 and over are speaking mostly Quechua. The gap between all of these generations is huge (figures 49, 50, and 51).

Language dominance clustering in a city

The following figure (figure 52) is a hypothetical map showing the dominant language for all locations shown. I combined interview data with observation, video, and audio data from all cities in order to

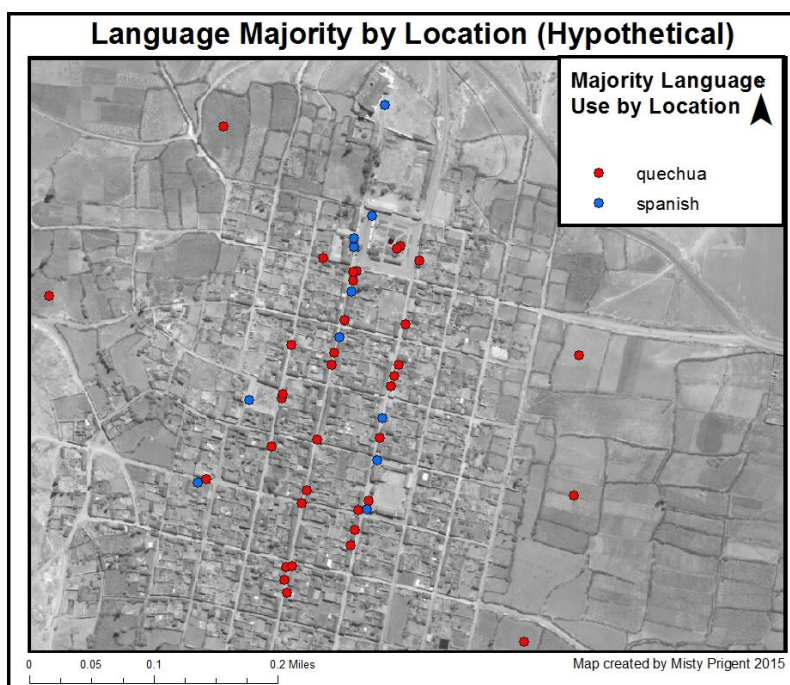


Figure 51 Language majority by location (hypothetical)

show how GIS might help elucidate patterns of language use in domains. This map is hypothetical because I represent data from all cities in this map of Maras, since there are gaps in Maras data for locations such as *chicherias* and schools, and because there are very few data for other locations, such as the restaurant and internet café. This map is an overhead view of the city of Maras, with points of actual locations in the city that were collected with a GPS device. Points in the map include stores, schools, churches, a market space, areas for celebrations, the city center/plaza, the municipality, a playing field, churches, *chicherias*, internet cafes, a restaurant, a tourist location, a souvenir shop, and a hospital.

I use the real spatial location of these locations in order to create a theoretical example to show language dynamics in different locations in the city. This technique can help us

understand not only locations of language use, but how those locations and the languages used within them are related to one another. Measuring the physical space

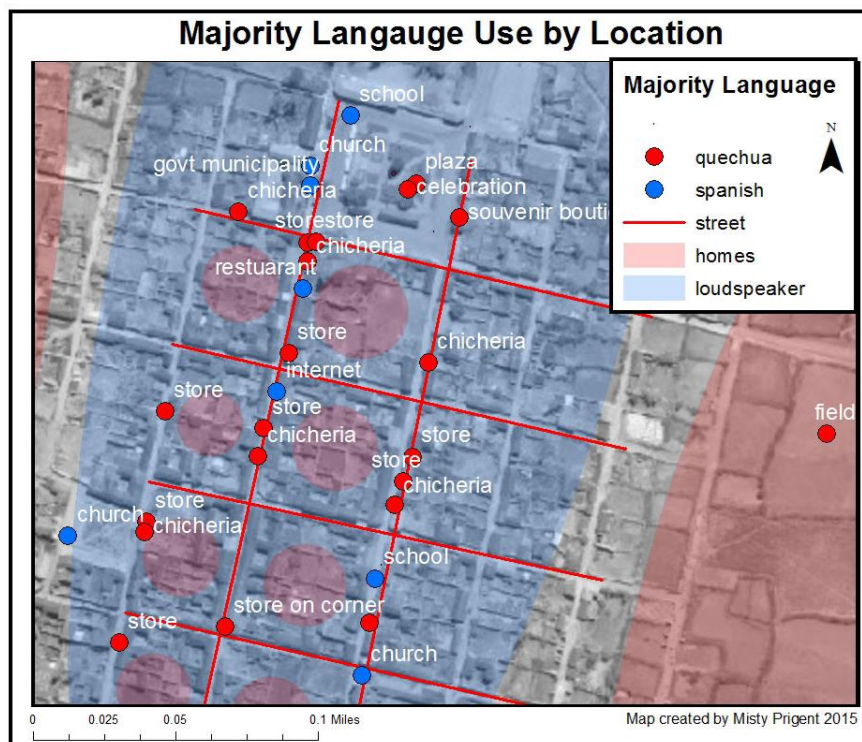


Figure 52 Language use by location

between locations, along with the languages used within those locations, it may be possible to elucidate how real space is a variable within domains that influence language choice. For example, if there are clusters of locations that are dominated by Spanish, this could help us decide to investigate whether or not the language spoken in those locations affects or is affected by language spoken in nearby locations. In this map, we do indeed see a very spread out cluster of Spanish in the northern center portion of the map, which are all locations near the city center (the actual city center is not in the center of this map, instead, it is in the northernmost center of the map, where the city plaza is labeled). The outskirts of the city have fields labeled, in which Quechua is dominant. As we travel away from the city center, we can see that there are less locations dominated by Spanish. If this data were more plentiful, and if they didn't come from cities other than Maras, then we could use the map to discuss spatial relationships between locations or even domains within

Maras.

As shown in figure 53, we could keep adding variables, such as more locations, like roads, and houses, or features such as perimeter of audible projection of the city

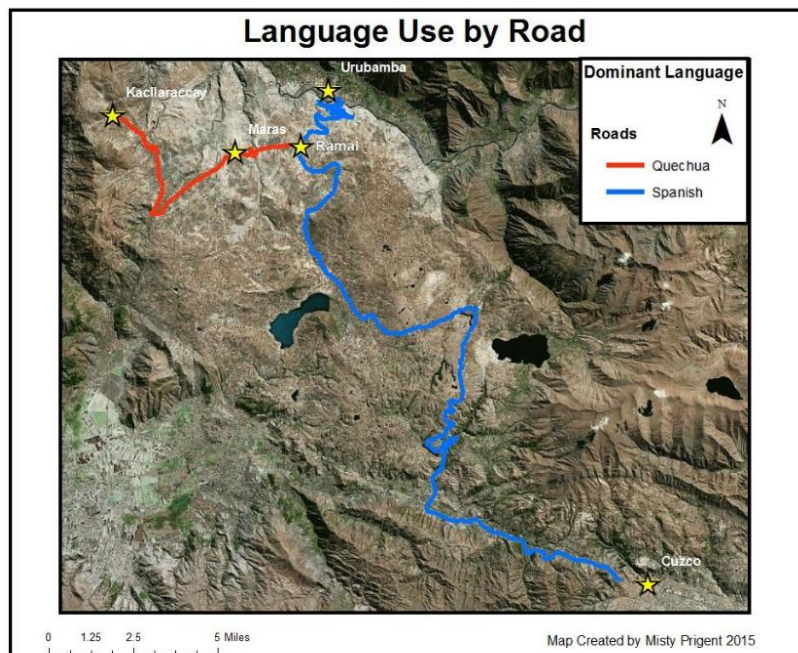


Figure 53 Language use by road

loudspeaker, etc. (Market is not shown because it is 50% for each language).

Travel routes and direction of travel

My
observation data
include a
considerable amount
of data while
traveling. I wanted
to focus on
movement from city
to city, and see if

any patterns

appeared

while

traveling.

The

following

maps

(figures 54

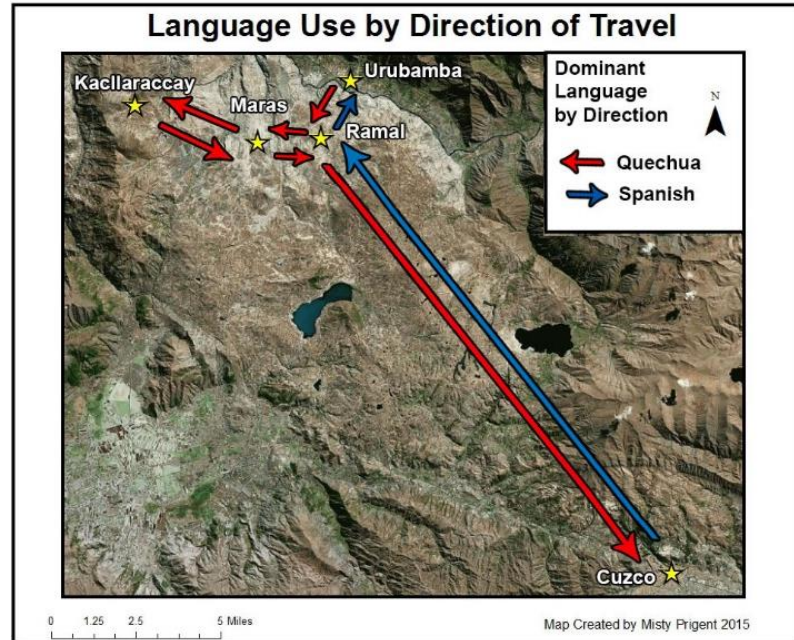


Figure 54 Language use by direction of travel

Direction	Line	Quechua dominant	Spanish dominant	Both equal	total
Cuzco to ramal	Cuzco – Ramal	0	3	0	3
Ramal to Cuzco	Cuzco – Ramal	1	0	1	2
Maras to Ramal	Maras – Ramal	3	1	3	7
Ramal to Maras	Maras – Ramal	6	2	2	10
Urubamba to Ramal	Urubamba – Ramal	6	4	0	10
Ramal to Urubamba	Urubamba – Ramal	2	3	3	8
Maras to Kacclarraccay	Maras – Kacclarraccay	8	2	0	10
Kacclarraccay to Maras	Maras - Kacclarraccay	1	0	0	1
Total	Total	20	15	9	51

Table 23 Instances of Quechua or Spanish spoken while traveling

and 55) represent the dominant language spoken in a vehicle while traveling. Three cities, Maras, Kacclarraccay, Cuzco, and one transportation hub, Ramal, are included. I did not include Mahuaypampa because I only traveled to this location once and didn't record

data while traveling. The lines of travel are broken up into four different lines, since vehicles pick up and drop off passengers at each location, and no route is non-stop (unless it's a tourist bus, for which I didn't record information). The lines are the following: Cuzco-Ramal, Maras-Ramal, Urubamba-Ramal, and Maras-Kacllaraccay. In the first map (figure 54), I show majority language spoken per line (stars are located at each stop to help separate one line from another). From Cuzco to Ramal, as represented in blue, the dominant language spoken was Spanish. From Ramal to Urubamba, the dominant language was also Spanish. However, from Ramal to Maras, and from Maras to Kacllaraccay, the dominant language was Quechua. As expected, the dominant language of each route is equivalent to the dominant language in those cities, except for Urubamba. For example, in Maras and Kacllaraccay, the majority language used (according to my observational data which are represented in figure 1) is Quechua, and in Cuzco, the majority is Spanish. Urubamba is shown to have equal Quechua and Spanish use, so it is interesting to see that the travel line from Urubamba to Ramal and from Ramal to Urubamba overall is Spanish.

However, if we look at figure 55, showing language spoken by direction of travel for each line, we see a familiar representation of language use in Urubamba. The Urubamba-Ramal line shows a difference in travel by direction, where Spanish is the dominant language used from Ramal to Urubamba, but Quechua is the dominant language used from Urubamba to Ramal. It seems fitting that because both Spanish and Quechua are used in Urubamba equally (according to my observational data), the travel line is also found to have Spanish and Quechua used equally. What is interesting is that the direction of travel from Ramal to Cuzco is dominated by Quechua rather than

Spanish. I would expect this entire line, regardless of direction of travel, to be dominated by Spanish. I believe the reason for this is that there are not many instances recorded on the Cuzco-Ramal line in general, creating uncertainty about this line. There were only two instances recorded during travel from Ramal to Cuzco, one being dominated by Quechua, and one in which both languages were used equally. I would expect that with more data collection on this route, Spanish would eventually dominate this direction of travel as well. Additionally, there was only one instance of travel recorded from Kacllaraccay to Maras, in which case this line's majority language should be in question as well. However, by realizing that Kacllaraccay and Maras are both dominated by Quechua, and by looking at all other data about dominant language in Kacllaraccay, Quechua is by far the dominant language in the city. As such, it could be expected that Quechua is the dominant language used from Kacllaraccay to Maras. Table 23 shows instances for each direction.

I also collected data concerning which type of vehicle was used while traveling. Table 24 shows the type of vehicle and whether conversation in the vehicle was dominated by Quechua, Spanish, or both languages.

Quechua was dominant in cargo trucks eight out of eight times. In combis (large vans used for communal travel), Quechua and Spanish were

spoken at equal amounts, with nine instances in Quechua, nine in Spanish, and one instance of both languages being spoken equally. In taxis, Quechua was the dominant

Vehicle Type and Language spoken	Number of instances
Cargo Quechua	8
Cargo Spanish	0
Cargo Both	0
Combi Quechua	9
Combi Spanish	9
Combi Both	1
Taxi Quechua	8
Taxi Spanish	6
Taxi Both	8
Bus Quechua	0
Bus Spanish	0
Bus Both	2

Table 24 Language use by vehicle type

language, but not by much. Out of 22 instances, eight were dominated by Quechua, six were dominated by Spanish, and Quechua and Spanish were spoken equally during eight instances. In busses, neither language was dominant.

Cargo trucks are usually used to transport groceries and household items in rather large quantities, and so are often used while traveling to and from Urubamba to Ramal, Ramal to Maras, and Maras to Kacllaraccay. There are no instances recorded of cargo trucks from Cuzco to Ramal or Ramal to Cuzco. All other vehicles were recorded on multiple different trajectories.

Elevation and language

Many authors have noted that Quechua is spoken in the highlands more often than the lowlands, so I created a contour map of elevation in meters for the study area (figure 56). While Kacllaraccay and Mahuaypampa, both Quechua-dominated cities, have the

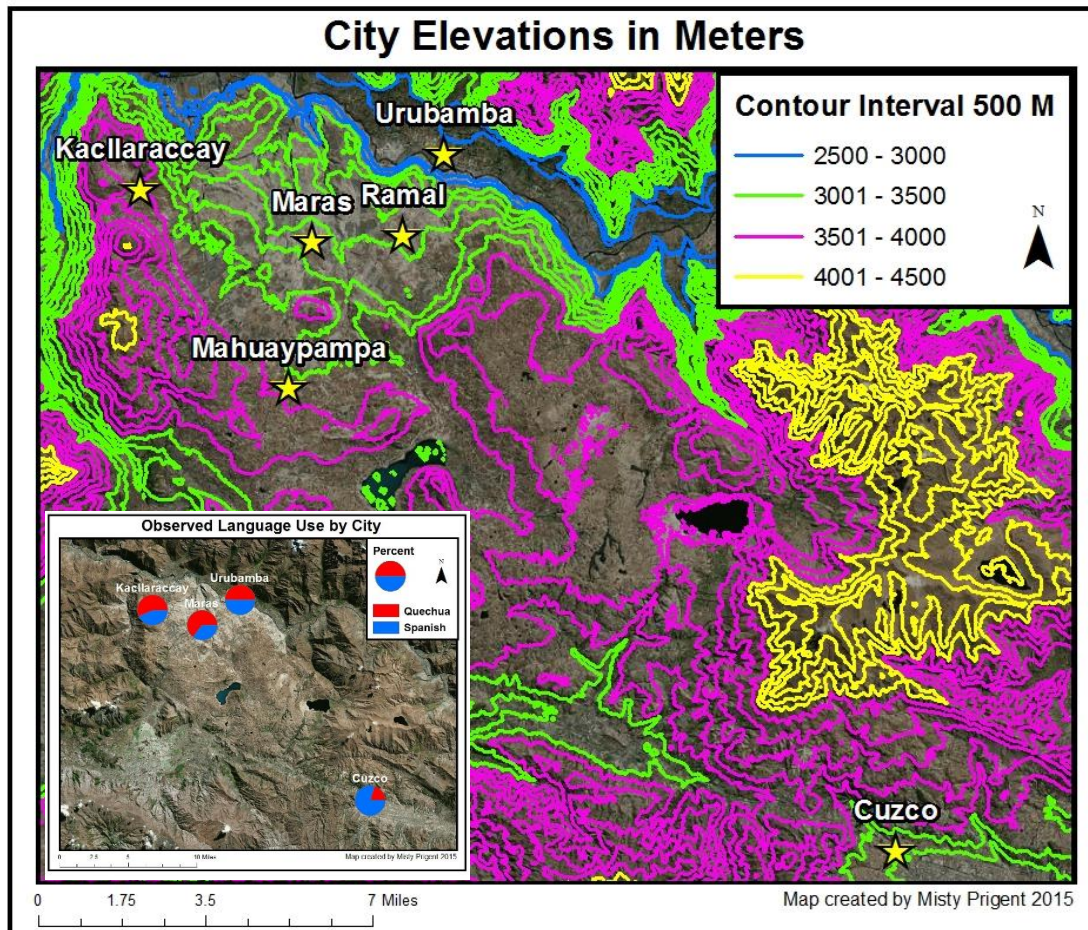


Figure 55 City elevation based on ASTER DEM

highest elevations, and Urubamba, a Spanish-dominated city, has the lowest elevation, Maras and Cuzco break the trend. Maras, dominated by Quechua, and Cuzco, dominated by Spanish, are both nearly the same elevation. Maras has an elevation ranging from 3200 to 3400 meters, making it even slightly lower in elevation than Cuzco, at 3400 to 3600 meters. However, if we exclude Cuzco from this reflection, there certainly is a

concurrence between majority language spoken and elevation (refer to small inset map for reference). (Elevation data was created with an ASTER Global DEM (GDEM), a product of METI and NASA.)

Borrowing Spanish words during Quechua Speech

As mentioned in the methods and theory section, I noted all Spanish words that were borrowed during speech in Quechua (translations are found in table 27). I counted the frequency of each borrowed word and marked the word class of each instance (which only included nouns, verbs, adjectives, adverbs, numbers, conjunctions, and prepositions). While most of the instances are Spanish words used in Quechua speech, some of the words are Spanish with Quechua suffixes added on. I was able to tally borrowed words from all media of data collected: interview responses (notably question number 29), observations, audio recordings, and video recordings.

My interview questions may have influenced how interviewees answered their questions, since most of the interviews were conducted in Spanish. I saw a lot of the same words used in my questions repeated in Quechua, and I suspect this influenced interviewees to use the Spanish words within their Quechua speech. As noted earlier, there was never any borrowing of Quechua words in Spanish, except for place names (such as *Kacllaraccay*), the name for a celebration (the *Watakayari* festival), the expression *ah lao lao* (which is used to express being cold), and the word *wawa*, which means baby. It is interesting that while speaking Spanish, the word *wawa* had a Spanish suffix *ita* added to it to make “*wawita*”, little baby.

Because my interview questions may have influenced Spanish words in Quechua speech, I’ve separated the word lists into Spanish borrowing instances collected from

interviews, Spanish borrowing instances with Quechua suffixes, and Spanish borrowing instances from observations, audio, and video data (which may be considered more natural speech than what was recorded in the interviews).

This data shows us that the amount of Spanish nouns borrowed during Quechua speech greatly outnumber all other word classes. A majority of these words are modern places or items such as hotels, lodging, a medical center, a high school, cell phones, books, a car, and pizza. Table 25 includes Spanish words or partial phrases used during

<p>From interviews: <i>semana, hotel, hospedaje, amigo, cevichera, pizza, sábado, chacra, a ves, después, centro de salud, después, a veces, para mi familia, nada, trabajo, lavo ropa, entonces, los otros días, hasta, hasta las once de la noche, hasta las, hermanos, papa (like father, not potato), cinco, provincial, las ocho, tomar, colegio, tarde, tarde, amiga, tarde, Quechua*, cinco, broma, viaje, ropa, chacra, chacra, papa (person), libre, leer, ayer</i></p> <p>* In Quechua, the name for Quechua is <i>runasimi</i></p>
<p>From interviews (with Quechua suffixes bolded)- <i>pasaqti, taxiwan, escuelapi*, estudianti, domingopi, domingopi, sabadopi, domingopi, papayta (papa referring to a man, not potatoes), las dosta, dos de la tardeta, hasta las cuatro et media de la tardecama, escuelapi, piqantetaiwan (spicy), sabadopi, domingopi, sabadopi, semana pasaqti, chacrata</i></p> <p>*Spelled isquelapi in Quechua, it is arguably considered a Quechua word, but when using Quechua-derived morphemes, school can also be expressed as <i>yachay wasi</i>, which is also a form of the word <i>school</i> in Quechua</p>
<p>From observations, audio, and video data: <i>vamos, pronto, ahora hay una matrimonio señor, noventa y tres, pero, comprende, fiesta, depende, cuatro, no más, doscientos cincuenta, Buenos días, significación, celular, rápido, cocinada, ahora, pato, dos tres bolsas de arroz, dos bolsas de azúcar, una cocina, premio gratis, ya mama, un poco más, pasar, escrito, estudio, ya papa, está mal, treinta soles, comunidad, adelante, chicha, carro, librota, alguna, libros, señores papas, de dependes, entonces, libros, familia, entonces</i></p>

Table 25 Borrowing instances during Quechua Speech

Quechua speech (some words are shown more than once):

When looking at borrowed Spanish words from interviews versus my observations, audio, and video data, there is a considerably larger amount of Quechua suffixes added to Spanish words from my interviews.

Some Spanish words were repeatedly used during Quechua speech. The following words are listed with their frequency in parentheses: *semana pasaqti* (2), *semana* (3), *estudiani* (1), *estudio* (1), *domingo* (4), *sábado* (4), *chacra* (4), *después* (3), *papa* (5), *a ves* (2), *familia* (2), *ropa* (2), *entonces* (3), *amigo/amiga* (2), *hasta/hasta las...*(4), *cinco*

Nouns	Verbs	Adjectives	Adverbs	Numbers	Conjunctions	Prepositions
<ul style="list-style-type: none"> •fiesta •significación •celular •una cocina •premio •comunidad •chicha •carro •libros •Señores papas •libros •familia •semana •hotel •hospedaje •amigo •cevichera •pizza •sábado •chacra •centro de salud •ropa •hermanos •papas •colegia •amiga •Quechua 	<ul style="list-style-type: none"> •Vamos •comprende •depende •cocinada •pasar •escrito •estudio •depende •trabajo •lava(r) •tomar •viaje •leer 	<ul style="list-style-type: none"> •gratis •alguna •provincial •tarde 	<ul style="list-style-type: none"> •pronto •rápido •ahora •adelante •entonces •entonces •a ves •después •nada •tarde •ayer 	<ul style="list-style-type: none"> •noventa y tres •cuatro •doscientos cincuenta •treinta (soles) •cinco •las ocho 	<ul style="list-style-type: none"> •pero 	<ul style="list-style-type: none"> •Hasta las...

Table 26 Categorization of Spanish words borrowed during Quechua speech

(2), *dos* (5), *cuatro* (2), *tarde* (5), *iscuelapi* (2), *quechua* (1), *ahora* (2), *depende* (2), *tres* (2), *cocina/cocinada* (2), *libro* (3)

I attempted to categorize the words into word groups in table 26. If the borrowing instance was a phrase, I categorized this as code switching (table 27). If the word had a Quechua suffix added to it, I left it out of this chart.

Code Switching or partial phrases
<ul style="list-style-type: none"> • <i>ahora hay una matrimonio señor</i> • <i>no mas</i> • <i>Buenos días</i> • <i>dos tres bolsas de arroz</i> • <i>dos bolsas de azúcar</i> • <i>ya mama</i> • <i>un poco mas</i> • <i>ya papa</i> • <i>esta mal</i> • <i>para mi familia</i> • <i>hasta las once de la noche</i>

Table 27 Code switching or partial phrases in Spanish during Quechua speech

Word in Spanish	Translation in English	Word in Spanish	Translation in English
<i>Semana</i>	Week	<i>Vamos</i>	Let's go
<i>Hotel</i>	Hotel	<i>Pronto</i>	Soon
<i>Hospedaje</i>	Lodging	<i>Ahora hay una matrimonio senor</i>	There's a wedding right now, sir
<i>Amigo</i>	Friend	<i>Noventa y tres</i>	Twenty three
<i>Cevicheria</i>	Ceviche restaurant	<i>Pero</i>	But
<i>Pizza</i>	Pizza	<i>Comprende</i>	Understand
<i>Sabado</i>	Saturday	<i>Fiesta</i>	Party
<i>Chacra</i>	Farm	<i>Depende</i>	Depends
<i>A ves</i>		<i>Quatro</i>	Four
<i>Después</i>	After	<i>No más</i>	No more
<i>Centro de Salud</i>	Medical Center	<i>Doscientos</i>	Two hundred
<i>Para mi familia</i>	For my family	<i>Cincuenta</i>	Fifty
<i>Nada</i>	nothing	<i>Buenos días</i>	Hello
<i>Trabajo</i>	Work	<i>Significacion</i>	Meaning
<i>Lavo ropa</i>	Wash clothes	<i>Cellular</i>	Cell phone
<i>Entonces</i>	Then	<i>Rapido</i>	Fast
<i>Los otros dias</i>	Other days	<i>Cocina</i>	Stove
<i>Hasta</i>	Until	<i>Ahora</i>	Now
<i>Hasta las onze de la noche</i>	Until 11:00 at night	<i>Dos tres bolsas de arroz</i>	Two, three bags of rice
<i>hermanos</i>	Brothers	<i>Dos bolsas de azucar</i>	Two bags of sugar
<i>Papa</i>	Father	<i>Premio gratis</i>	Free prize
<i>Cinquo</i>	Five	<i>Ya mama</i>	Yes ma'am (or mother)
<i>Provincial</i>	Provincial	<i>Un poco mas</i>	A little more
<i>Las ocho</i>	Eight o'clock	<i>Pasar</i>	To pass
<i>Tomar</i>	To drink	<i>Escrito</i>	To write
<i>Colegio</i>	High School	<i>Estudio</i>	To study
<i>Tarde</i>	Late/afternoon	<i>Ya papá</i>	Yes sir (or dad)
<i>Quechua</i>	Quechua	<i>Esta mal</i>	That's bad
<i>Broma</i>	Joke	<i>Trente soles</i>	Thirty soles
<i>Viaje</i>	Travel	<i>Comunidad</i>	Community
<i>Ropa</i>	Clothes	<i>Adelante</i>	In front (of the car)
<i>Chakra</i>	Field	<i>Chicha</i>	Chicha (alcoholic drink)
<i>Libro</i>	Book	<i>Carro</i>	Car
<i>Leer</i>	Read	<i>Alguna</i>	Any
<i>Ayer</i>	Yesterday	<i>Libros</i>	Books
		<i>Señores papás</i>	Gentlemen
		<i>entonces</i>	Then
		<i>familia</i>	Family

Table 28 Spanish to English translations of Spanish words borrowed during Quechua speech

CONCLUSIONS

This study concludes with a summary of my research questions, discoveries pertinent to these questions, a discussion of how my findings contribute to the literature, avenues for further research, and what I learned from this study.

Largely, this project aimed to experiment with a way to use GIS to help with language revitalization. Among the many efforts and theories surrounding language revitalization, examining domains of language use is quite prominent. By looking at domains, language use, and language attitudes spatially, I was able to examine variables that affect language in a way that has not been done before.

Research Questions

My research questions concern the variables among speech communities that affect language choice, language use among domains, and the interaction between language attitudes and use. During my research, I made an effort to link linguistic data to geographic points on earth in order to inspect language use and choices and domains with a GIS.

Variables among populations that affect language choice

Among populations, language choice was found to change depending on age, gender, domain, and direction of travel. However, location seems to affect language choice more strongly than all of these variables. Spatial factors have hardly been brought into the conversation when discussing language use and domains, and once we examined language use spatially, we could see that it impacts many aspects of language use within domains.

In general, Spanish was considered more important than Quechua, it was used more among domains associated with government, education, literacy, math and numbers, religion, parties or celebrations, health care, and strangers. Quechua was associated with the home, neighbors, the market, and employment. Spanish was found to be more important to teach children, as it would help them achieve better education and employment in the future. However, there were multiple times that interviewees mentioned that knowing both Spanish and Quechua were necessary for becoming employed in health care or the government.

Those variables which had the greatest effect on language choice will be summarized below.

My results show that age certainly affects language use. In interviews and observations, individuals over the age of 40 were seen to use Quechua much more often than those 20-40

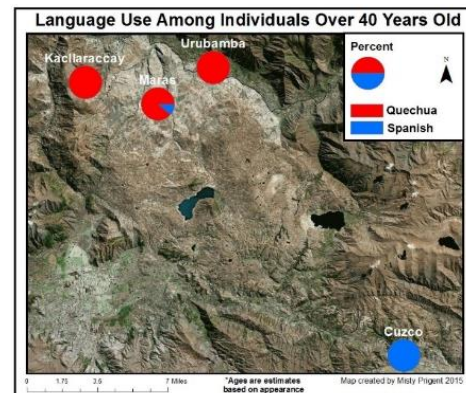


Figure 57 Language use among individuals over 40 years old

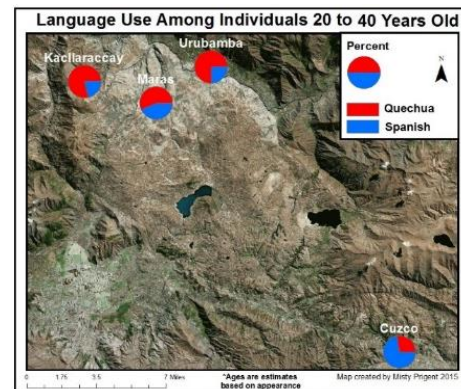


Figure 56 Language use among individuals 20-40 years old

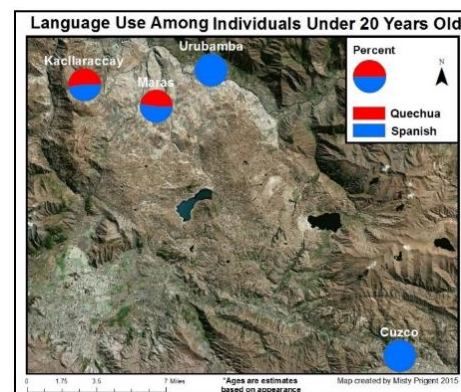


Figure 58 Language use among individuals under 20 years old

years old, and those under 20 years old. However, Hornberger (2004) claimed that among the oldest generations, Quechua is used more often regardless of domain, and regardless of migration to urban centers (Hornberger 2004:18). My data show that although older generations speak more Quechua than younger generations overall, physical location seems to affect language use among older generations. In my results, individuals in Cuzco between the ages of 20 and 40 spoke more Quechua than individuals under 20 and over 40. In all other locations, which also have smaller populations, Quechua was indeed used more among older populations (see figures 57-59). This suggests that location may have a stronger effect on language use than age. Overall, younger populations are not speaking Quechua in bigger cities, only in the smaller ones.

Furthermore, the literature shows us that Quechua use is still declining, and my data agrees with this when examining age ranges not speaking Quechua, and when realizing that locations in which Quechua is dominant are scarcely populated. In fact, we can see huge generational gaps among Quechua speakers, where only 27.4% of individuals who are 20 years old or younger are speaking the language, which is about a 30% difference from the next generation of 20 to 40 year olds at 56.7%. From this age group, Quechua language use also decreased by 30% from the following generation of individuals 40 and older, at 91.6%. When those individuals who are 20 years old or younger have children, only 27.4% of them will have the ability to raise these children with Quechua as a maternal language (unless they're living with extended family), and of that 27.4%, how many individuals will choose not to pass on Quechua to their children? As mentioned, populations in locations dominated by Quechua are quite low relative to populations in locations dominated by Spanish. As Cuzco has a population of over

400,000, Maras and Kacllaraccay with meager populations of 2,500 and 200, respectively, the number of Quechua speakers in Maras and Kacllaraccay combined makes up only a fraction of the population of Cuzco, or even Urubamba at a population of 8,000. I must not neglect the fact that Quechua revitalization programs, such as bilingual education, Quechua language schools, and governmental and nongovernmental efforts to revalorize Quechua are in place and the linguistic situation in Peru can change, but the situation looks grim as of now.

According to various sources, Quechua is used by women more often than men (Lefebvre 1976; Hornberger 1988B; Hornberger 2012). My data show that Quechua is certainly used more among women than men in all locations surveyed. However, the percentages of difference between male and female use of Quechua are not consistent among different cities. In Cuzco, 20% of females versus 10% males were observed to speak Quechua over Spanish, which is a 10% difference.

In Urubamba, 54.5% of females versus 30% males spoke Quechua over Spanish, which is a 24.5% difference. In Maras, 84.6% of females versus 61.3% of males spoke Quechua over Spanish, which is a 23.3% difference. Finally, 68.2% of females versus 62.5% of males spoke Quechua

over Spanish in Kacllaraccay, which is a 5.7% difference. These differences, from largest

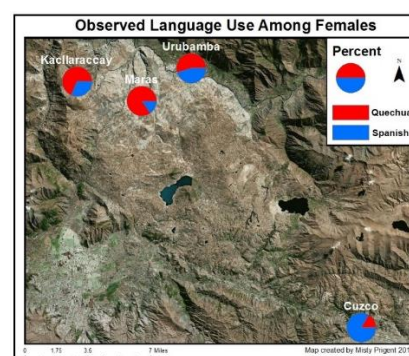


Figure 59 Language use among females

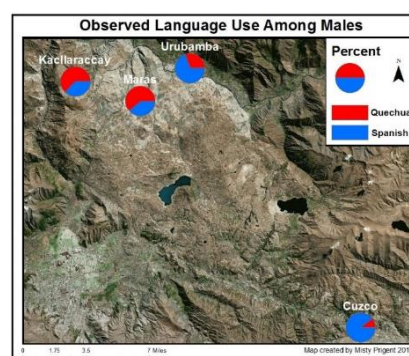


Figure 60 Language use among males

cities to smallest cities, show a 10% difference, a 24.5% difference, a 23.3% difference, and a 5.7% difference, showing that in the largest and smallest cities, the lowest differences between male and female Quechua use exists. Because women are the main caretakers in Peru, perhaps this is good news in terms of passing Quechua on to children. However, the perceived importance of Quechua is lower than Spanish, and my data confirm that mothers are more concerned about teaching their children Spanish so they can survive rather than teaching them Quechua so it can survive.

City (Largest to smallest in population)	% female use of Quechua	% of male use of Quechua	% difference between male and female use of Quechua
Cuzco	20	10	10
Urubamba	54.5	30	24.5
Maras	84.6	61.3	23.3
Kacallaraccay	68.2	62.5	5.7

Table 29 Language use among women and men by city

Quechua is dominated by Spanish in most domains. Many sources agree that Spanish dominates formal situations, education (especially writing and literacy), public places, young people, religion, employment, industry, bureaucracy, commerce, law, internationally, and the capital domain (used in/around the national capital) (Lefebvre 1976; Hornberger 1988B, 2012; Coronel-Molina 1999; Howard 2004, Stross 1976; Luykx 2004). Quechua is said to dominate domains that are intimate, informal, provincial domain (the official language of a province or region), the domestic domain, and the community domain or for traditional indigenous community life (Hornberger 1988B, 2012; Luykx 2004; Coronel-Molina 1999; Lefebvre 1976). However, my data show that while Quechua does dominate the domestic domain, which is intimate and informal, it does not dominate the party or celebration domain, nor the provincial domain. Over 40%

of interviewees said they use Spanish at parties or celebrations, while only 21% said they used mostly Quechua at parties or celebrations. Concerning the dominance of Spanish in the provincial domain, we can consider all of the locations in this study to belong to the Cuzco region, while Urubamba is a province encompassing Urubamba, Maras, Kacllaraccay, and Mahuaypampa. If a language dominates a province or region, then it is considered to dominate the provincial domain. Within the Cuzco region, and likewise, within the Urubamba province, there are radical differences

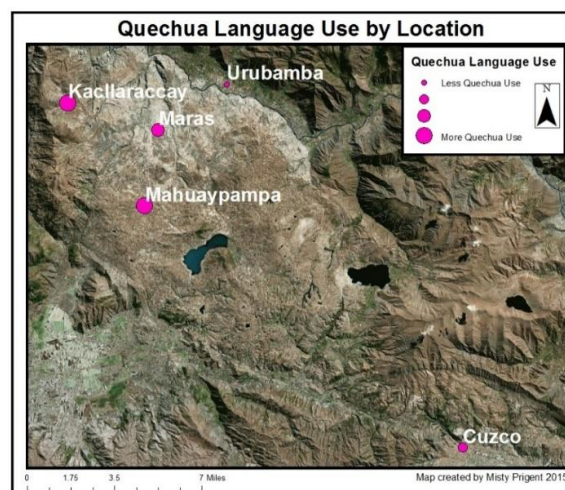


Figure 61 Quechua language use by city from interview data

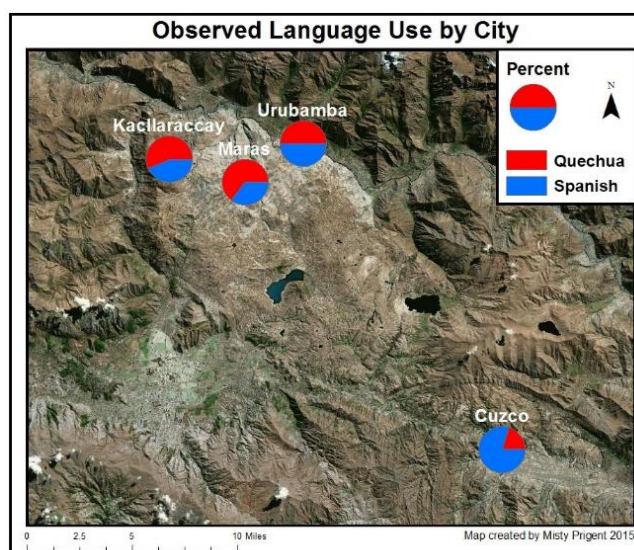


Figure 62 Quechua and Spanish language use by city from observations

between language use. Although figure 63, showing observed instances of language use (which I will consider less reliable than the first map, because it has a lower sample number), may seem to show a similarity in language use among those cities within the Urubamba province, the first map, figure 62, language use based on interviews, shows

quite a difference between the smaller cities in Urubamba province versus Urubamba itself. Furthermore, even if a domain is dominated by a certain language overall, some cities show dominance of the opposite language that is actually supposed to dominate the domain. For example, although Spanish is spoken more in churches overall, in Kacllaraccay and Cuzco, Quechua was reported to have been dominantly used in churches. Also, while dreaming, 48% of interviewees from all cities said that their dreams were mostly in Spanish, but we find that Quechua is the majority language for interviewees while dreaming in Kacllaraccay at 66.6%. Interview questions about dominant languages while thinking and while angry resulted in nearly equal percentages of Quechua and Spanish use, but in both of these cases, when looking at Kacllaraccay, the percentage of Quechua as a dominant language was over 50%. In fact, a surprising 77% of interviewees in Kacllaraccay reported that Quechua was the dominant language while they were angry. Kacllaraccay also shows 77% and 100% of interviewees reporting to use Quechua more than Spanish with neighbors and at work, respectively, while the use of Spanish and Quechua were reported to be used equally among these domains. Although a language can be found to dominate a domain, this dominance is highly variable depending on location.

While traveling, the dominant language of each travel route is equivalent to the dominant language in the start and stop locations, except between Ramal and Urubamba. Urubamba is shown to have equal Quechua and Spanish use, but the travel line from Urubamba to Ramal and from Ramal to Urubamba overall is dominantly Spanish. There is potential value in examining language use based on direction of travel, but due to a lack of samples from location to location, I am considering my data for this question to

be inconclusive. We do begin to see trends of language use from location to location. While traveling South to North (from Cuzco to Urubamba), Spanish is the dominant language spoken. While traveling North to South or North to East (From Urubamba to Cuzco, or Urubamba to Maras and Kacillaraccay), the dominant language is Quechua. We can't say here that language spoken is dependent on direction of travel, but we can begin to build relationships between factors such as dominant language spoken and populations or majority language of primary locations and destinations. It would also be important to note who is travelling in each vehicle, as age, gender, and other factors can affect majority language spoken.

Interaction between language attitudes and use

One of the most important topics concerning why languages become and/or stay marginalized concerns language attitudes and identities. Many researchers claim that negative attitudes toward a language make people speak that language less. Feke (2004) notes that, "...according to Thomason (2001:85), the social factor found to be the most influential on cross-linguistic influence is speaker attitude, which can be either a barrier or promoter of language change" (Thomason 2001:34). In my study, attitudes are neither barriers nor promoters of language change, but instead, attitudes and use are inversely related. Those who value Quechua over Spanish are those who don't speak it as often. According to Hornberger and Colonel-Molina (2004), speakers of any indigenous language often choose to speak the higher-status language in an effort to disassociate themselves with the lower-status indigenous language. Joshua Fishman's concept of language loyalty (1965) lays out the foundation of these issues, noting that multilingual speakers frequently consider one of their languages to be, "...more dialectal, more

regional, more substandard, more vernacular-like...” (Fishman 1965:70), and that those speakers often choose to speak the dominant language over their maternal language, even if they don’t speak the dominant language as fluently. In contrast, in my study, those who value Quechua less than Spanish are found to speak it more. My results show that having a better attitude or valuing Quechua over Spanish does not lead to a higher amount of Quechua speakers. It could be assumed that those individuals who speak Quechua most often—inhabitants of Kacllaraccay and Maras—are less concerned about its disappearance, less aware of its decline, and value it less than Spanish because they do not take part in the larger populations where Spanish is replacing Quechua. The least common language seems to be the most valued. These communities can see that the language is already lost in their community, and this could create greater awareness of the importance of the language. In Cuzco, and less so in Urubamba, Quechua is rare, and therefore highly valued. There are surely other factors attributing to a higher value of Quechua in these cities besides its rarity. Overall, valuing Quechua over Spanish does not, however, lead to higher use of Quechua in the area of interest for this study.

I cannot say that a study encompassing northern Peru would show this trend, however. In coastal and northern Peru, especially in Lima, language dynamics are much different, and Quechua is spoken much less (Coronel-Molina 1997 and 1999; Stross 1976). In Lima, open and unashamed degradation of the Quechua language and culture is more acceptable, as evidenced by literature (Delforge 2012; Garcia 2005) and the existence of degradation through media, such as in the television show *La paisana Jacinta*, which is a racist parody of Quechua highlanders among Peruvians who don’t identify as indigenous. It is possible that northern populations of Peru could value

Quechua much less than Spanish while also speaking it less than Spanish, making it seem that a lessened value of Quechua leads to less use of Quechua. A study comparing language use and attitudes in the north of Peru is needed to investigate this.

How this contributes to the literature

Among efforts to revitalize languages by focusing on expanding domains, there seem to be two opposing opinions: there are those who want to expand the amount of domains dominated by Quechua, and those who want to strengthen domains already dominated by Quechua. Hornberger and Coronel-Molina, two of the most prominent researchers of Quechua revitalization, suggest expanding domains in which Quechua can be used (Hornberger and Swinehart 2012; Coronel-Molina 1999), pushing for bilingual education in Peru and insisting on opening up more domains to indigenous languages. Garcia and Luykx take the other stance, saying that Quechua language revitalization is aimed toward the wrong goals and the wrong population. Garcia and Luykx reproach bilingual education, and argue (based on Fishman's work) that instead of expanding new domains, planners should aim to safeguard those domains that are still open to Quechua. Furthermore, Coronel-Molina reminds us that revalorizing Quechua should not be aimed toward those who already speak and value Quechua, but that the Spanish-speaking population who devalue Quechua in the first place.

Based on my research, I support expanding domains in which Quechua can be used, but before this effort is endeavored, each speech community, city, district, or region should be examined carefully, making sure unexpected domains that are traditionally dominated by Spanish are not, in fact, dominated by Quechua in this certain location. Domains dominated by Quechua might already be numerous depending on location, and

it is upon those domains that Quechua should be further established before opening up new domains that may not end up being successfully dominated by Quechua. If you travel to Kacllaraccay or Maras, for example, domains dominated by Quechua are numerous compared to domains dominated by Quechua in Cuzco or Urubamba. The percentage of Quechua spoken in each domain differs from city to city. Keeping the use of Quechua strong means looking at Quechua use differently depending on location, city size, and demographics. For example, if Quechua is dominant in the religious domain, the domestic domain, and the educational domain in one city, planners should work to keep Quechua dominant in these domains in this city instead of designating Quechua use for a new domain that is currently dominated by Spanish. My data show that the demographics and dynamics of a city greatly influence which language dominates which domain. Trying to unnaturally establish a domain for Quechua to dominate could fail, and those domains that were naturally dominated by Quechua could be overtaken by Spanish.

Top-down efforts alone are too broad to decide which domains should be expanded or strengthened for Quechua language use in each city. When the national government decides to expand domains in which Quechua should be used, their decisions don't take into account which domains are already dominated by Quechua in each individual city. Currently, bilingual education programs (which introduce Quechua into the educational domain) are implemented at the national level, while in all the cities I studied, the educational domain is far from being dominated by Quechua. This is an example of how a top-down effort is ignoring the fact that domains dominated by Quechua exist in the first place. Introducing Quechua in the schools in Kacllaraccay (a population of children who already speak Quechua) ignores the fact that Quechua is the

dominant language spoken with neighbors, at work, with family, while traveling, while angry, while thinking, and while dreaming. Quechua language use should be fostered in these domains that are already dominated by Quechua, instead of trying to gain Quechua dominance in the educational domain. In Maras, domains that are just barely dominated by Quechua are the market, with neighbors, and at work. Instead of letting Spanish eventually dominate these domains, planners should aim to keep Quechua strong in these areas, a task that might take less effort than trying to get Quechua to dominate one single domain (education). In a location such as Urubamba where there is no domain that is dominated by Quechua, but one domain that has equal Quechua and Spanish use (with neighbors), efforts could be made to increase Quechua use within that domain, eventually making Quechua the dominant language without having to increase use drastically. In a city where no domain is dominated by Quechua, it may be decided that the domains with the most Quechua use (even if not majority Quechua use) could be targeted. It makes no sense to neglect the areas in which Quechua is already used, but instead to begin pushing for Quechua use where there is none. Language planners should build on Quechua language use in areas where Quechua is already most common. Imagining that Quechua language dynamics are the same (even within dialects) from city to city is a gross error, and writing off domains that are thought to be closed off to Quechua is where the real damage is being done.

Top-down efforts need to meet with bottom-up efforts to adjust each language planning effort to the context of each location, and by bringing GIS into linguistic studies, we can do just that. Language planners should carry out studies similar to mine, keeping track of dominance in domains per city, and establish community groups or

committees to help form the bottom-up efforts. Language planners should seek out community members with high prestige and influence in the community, such as teachers, and they should allow these individuals to engage their own community. Planners who are not members of the community experiencing revitalization will only be imposing external views and plans for a community that they don't take part in, but their relationship with the community members will also not be as strong. This would be an excellent employment of *Participatory Mapping*, in which community members are able to help create language maps and designate domains and locations that are dominated by Quechua. Empowering community members with the ability to decide where Quechua use should be increased can help engage the rest of the community to take part in the effort. Garcia (2003 and 2005), Coronel-Molina (1999:177), and Luykx (2004) noted that many revitalization efforts are shunned by Quechua speakers because they are forced on them, and that Quechua speakers should be able to take control of their own linguistic revitalization movement. Motivating and activating community members should come from first showing the community members how quickly Quechua is being replaced with Spanish. My interview data shows that only 9% of individuals think there is even a possibility of Quechua disappearing, and showing them the reality of the displacement of Quechua could be eye-opening. Explaining how languages are passed on through children, and then discussing the low percentage of Quechua-speaking individuals who are still capable of bearing children could also be useful. Certainly, there may be situations in which a community does not want any revitalization efforts initiated, and although this doesn't seem the case, this should be respected. I don't find much difference between forcing revitalization of an indigenous language and forced

assimilation of a colonizing language. However, we can already see that 88.89% of interviewees find Quechua to be more beautiful than Spanish, and the Quechua value scores are high even in communities where use is low, so motivation to participate in revitalization programs may already exist.

My research provides valid examples of how to use GIS in linguistics. Examining domains spatially has, to my knowledge, not been done, and certainly has not been done with GIS. Multiple authors have called for increased use of GIS in linguistic research, and I hope my efforts open avenues for further studies to use language data with GIS to observe spatial intricacies of linguistic issues. Authors have also asked for transparent methods and calculations of data within a GIS, and so I made an effort to show how to calculate interview data and insert it into a spatially-organized database. Using GIS makes my data not only visually appealing, but quickly understandable. I display multiple data at the same time, making it easily apparent what the results are. Additionally, Luebbering et al. (2013B) noted, monolingual language mapping is misrepresentative of multilingual locations in the world. This research also shows how to include multiple languages into a map, combined with affecting variables. Although I have not refined my techniques of displaying multiple attributes at a time (my pie charts only allow for a few variables at a time), the maps are still more appealing than analyzing tables, percentages, or pie charts alone, and they provide spatial reference that is not possible without using maps. I hope my attempt gives a glimpse of the power of GIS for linguistic research.

Using GIS in linguistic studies can help us monitor threatened languages at fine resolutions, and spatially, as languages should be examined. Language is not used uniformly over space nor time, and so should not be looked at as though it were.

Limitations

An issue that I find inherent to cartography is that it is quite easy to misrepresent data within a map. When one variable is being displayed, there are often many other variables that are not being displayed. For example, in Mahuaypampa there were only two interviewees. However, when displaying data amongst cities with pie charts, one couldn't tell that there were more interviewees in Mahuaypampa than in Maras, with 20 interviewees. I could have represented population simultaneously, by changing the size of each city's pie chart to represent population size. In this case, Cuzco's pie chart would be enormous while Mahuaypampa's pie chart would be quite small. However, representing too much data in a map can become perplexing, and it is up to the cartographer to decide which information they will hide or show their viewers. I tried to make up for this misrepresentation by pointing out any bias a map may show, but if the maps are taken out of context, they could surely be deceiving.

A limitation to my study was that interviews excluded monolingual Quechua speakers. I was unable to speak Quechua, except for the interview questions that I had practiced, and a few introductory phrases. As such, it was impossible to explain my research project and the consent forms to Quechua monolinguals, even if I was able to ask interview questions in Quechua. I had the option of showing interviewees a written consent form in Quechua, but those potential interviewees that were Quechua monolingual could not read.

Further research

Language is inherently spatially organized, and linguists need to be looking at it spatially not just in terms of dialect, but in terms of language use within the same dialect. Future researchers working with GIS and linguistics could take advantage of making linguistic maps with GIS, integrating more thorough spatial calculations, such as interpolation. Finding statistical patterns between points of information is simple to calculate in ArcMap with such features as *Nearest Neighbor*, *Kriging*, *IDW (Inverse Distance Weighted)*, and more. Language planners can use this technology to not just examine domains, or confront language loss in a locality or region, but to examine language loss issues in actual physical locations, with knowledge of variables that affect these language choices, such as demographics, spatial relationships with other domains, and attitudes. As mentioned, planners could also initiate *Participatory Mapping*, where they involve indigenous communities into the process of creating and analyzing linguistic maps. Furthermore, the visual displays of a GIS lend it to participatory research, where the untrained eye can follow patterns on maps much easier than they might in charts, numbers or words.

If I were to carry out this study again, I would increase the size of the area of interest, including cities in the north, center, and south of Peru. Although I would increase the scope of the project, I would keep the same scale (city to city). I would also aim for much higher sample numbers, and more even numbers across each city. I had a lot of access to students and teachers in Kacllaraccay (the Kacllaraccay teachers were living in Urubamba) since we volunteered at the school often and created the library. If I were able conduct a more lengthy study, I would be able to have access to a more varied

demographic, and could designate a target number of interviewees by age, gender, occupation, etc. before I began my interviews.

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APPENDIX A

INTERVIEW QUESTIONS

Questionnaire - English, Spanish, Quechua

Each question is in English (first line), Spanish (second line), and Quechua (third line). Highlighted areas are added, changed, or removed.

- 1) Name
Nombre
Sutiyunki
- 2) Age
Edad
Hayq'a watayoq kanki?
- 3) City of Residence
¿Ciudad de residencia?
Maypi tiyanki (llaqta manta)?
- 4) Where were you born?
¿Dónde nació usted?
Maypin naciranki?
- 5) What village did you grow up in?
¿Qué pueblo creciste en?
May llaqtapi wiñaranki?
- 6) How many years of education have you had?
¿Cuántos años de educación ha tenido?
Hayq'a wata riranki yachaywasiman?
- 7) What dialect of Quechua do you speak? The Cuzco dialect, Puno, Allacucho, other villages?
¿Qué dialecto del Quechua hablas? El dialecto de Cuzco, Puno, Allacucho, otros pueblos?
May llaqtamanta rimanki runasimita? Qosqomanta? Punumanta?
Allacuchomanta? Hoq llaqtamantachu?
- 8) Do you know anyone that speaks a language other than Quechua or Spanish?
¿Conoces a alguien que habla un idioma diferente al Quechua o Español?
Reqsinkichu pitapas rimaqta hoq rimayta mana runasimitachu ni taq Castellanotachu?
 - 8A) Who?
Quien?
Pin?

- 8B) What language? Aymara, English, Chipina...
 ¿En qué idioma? Aymara, Ingles, Chipina...
 Ima rimayta riman? Aymara, Ingles, Chipina...
- 9) Did you learn Quechua in your school when you were Young?
 ¿Has aprendido Quechua en su escuela cuando eras joven?
 Yacharankichu runasimita yachaywasipi herq'e katiki?
- 10A) Do you know how to write in Quechua?
 ¿Sabes cómo escribir en Quechua?
 Yachankichu qelqayta Runasimipi?
- 10B) Do you know how to write in Spanish?
 ¿Sabes cómo escribir en Español?
 Yachankichu qelqayta Castellanupi?
- 11A) Do you know how to read in Quechua?
 ¿Sabes cómo leer en Quechua?
 Yachankinchu ñawanchayta Runasimipi?
- 11B) Do you know how to read in Spanish?
 ¿Sabes cómo leer en Español?
 Yachankinchu ñawanchayta Castellanupi?
- 12) In what type of situation do you need to write in Quechua? In what type of situation do you write in Spanish?
 ¿En qué tipo de situaciones necesitas se escribe en quechua? ¿En qué tipo de situaciones necesitas se escribe en español?
 Ima situacionpi rimanki Quichuapi ?Ima situacionpi rimanki Castellanupi?
- 13) What kind of Quechua did they teach in your school? Cuzco Quechua, Puno, Ayacucho...?
 ¿Qué tipo de Quechua se enseñan en la escuela? Cuzco Quechua, Puno, Ayacucho...?
 Ima llaqtamanta yachanki runasimita yachaywasipi? Qosqomanta, Punomanta, Ayacuchomanta...?
- 14A) Are people in your town worried that people speak too little Quechua?
 -¿La gente en su ciudad les preocupaba que la gente habla muy poco el quechua?
 Llaqta masiykikuna preocupascachu kashanku pisi rimaywan runasimipi?
 (If Yes) 14B) What are your country people going to do with this problem of less Quechua?
 ¿Cuáles son sus campesinos van a hacer con este problema de menos quechua?
 Imataq ruwashanku llaqtamasigkikna kay pisi rimaywan runasimipi?

- 15) In order to not lose quechua, would you want to speak only Quechua with your family?
 ¿Con el fin de no perder el quechua, ¿le gustaría hablar sólo el quechua con su familia?
 Mana chinkanapaq runasimi, mnankichu rimayta rusasimillapi alluykiwan?
- 16) Do you think children should learn Quechua before Spanish?
 ¿Cree usted que los niños deben aprender el quechua antes de Español?
 Munankichu herq'ekunayki yachananta runasimita ñawpaqtaraq Castell anumanta?
- 17) What if children stopped learning Spanish and only learned Quechua? Would this be a bad thing?
 ¿Qué pasa si los niños dejaron de aprender español y sólo aprendió el quechua?
 ¿Sería esto algo malo?
 Pinsankichu herq'ekunayki manan yachanankupaq Castellanuta, paykuna yachananku runasimillata. Kay allinchu o mana allinchu?
- 18) When is it not okay to speak Quechua?
 ¿Cuándo no está bien de hablar quechua?
 Ima ruwaykunapi llaqtamasiykikuna mana rimanankuchu runasimipi?
- 19) When do you choose to speak Quechua over Spanish?
 ¿Cuándo se decide a hablar quechua sobre el español?
 Hayq'a akllaranki rimayta ruasimipi castellanumata?
- 20) Do your children want to speak Quechua?
 ¿Sus hijos quieren hablar el quechua?
 Herq'ekunayki munankuchu rimayta runasimipi?
- 21) Do you think Quechua will disappear?
 ¿Cree usted que el quechua desaparezca?
 Pinsankichu runasimita chinkanapaq? o Chinkashanchu runasimi kay p'unchaykunapi?
- 22) Which language, Spanish or Quechua, do you prefer?
 ¿Qué lenguaje, Spanish o quechua, te gusta mas?
 Munankichu rimayta runasimipi o castellanupi?
- 23) Which language is more important
 ¿Que lenguaje es más importante?
 Qanpaq allinchu rimay runasimipi o allinchu rimay castellanupi?
- 24) Which language is more beautiful?
 ¿Qué idioma es más hermoso?
 Qanpaq mayqen rimay sumaq, runasimipi o castellanopi?

- 25) In what situations do people in your town only speak Quechua?
 ¿En qué situaciones la gente en su pueblo sólo hablan quechua?
 Ima ruwaykunapi llaqtamasiykikuna rimanku runasimillapi?
- 26) What language do you use :
 ¿Qué idioma usa usted:
 Ima rimaypi rimanki kaykunapi, runasimipichu o castellanupichu?
- A) At home
 En casa
 Wasiypi
 - B. In the church
 En la iglesia
 Sunturwasipi
 - C. At a celebration
 En una celebración
 Ramipi
 - D. At school (or at your child's school)
 En escuela (o en la escuela de su hijo)
 Yachaywasipi (o herq'ekunayki yachaywasipi)
 - E. With teachers
 Con los profesores
 Hamaut'awan
 - F. At the market
 En el mercado
 Qhatuywasipi
 - G. At the hospital
 En el hospital
 Onqonawasipi
 - H. In government places
 En lugares government
 Municipalidadpi
 - I. With strangers
 Con extraños
 Hoq runakunawan mana reqsiy
 - J. While dreaming
 Mientras soñando

Moskhoyllaykipi

- K. While thinking
Mientras que el pensamiento
Hamut'aynikipi
- L. While doing calculations/math
Mientras que hace cálculos / math
Ruwaqtyki yupaykunata (while counting things)
- M. When angry
Cuando está enojado
Phiñakuqtiki
- N. While traveling
Durante el viaje
Ch'usaqtiki / Viajaqtiki
- O. With your neighbor
Con su vecino
Llaqtamasiykiku nawan
- P. At work
En el trabajo
Llank'anaykipi
- 27) Where do you work?
Donde trabajas?
Maypi llank'anki?
- 28) Where in the village do you live?
Cuándo en el pueblo vive usted?
Maypi tiyanki/ Maypi wasiyki
- 29) Tell me what you did last weekend in Quechua.
Diga me que hizo el fin de semana en Quechua
Niway runasimipi imata ruwaranki sabadopi o domingopi

APPENDIX B

CONSENT FORMS

Parental Consent Form- English

Quechua Language Project

We are asking your child to be in a research study.

Your child does not have to be in this study.

If you and your child say yes, your child may quit the study at any time.

Please take as much time as you want to make your choice.

Why is this study being done?

We want to learn more about The Quechua language and how people feel about it.

We are asking people like your child who speak Quechua to help us.

What happens if I say yes, I want my child to be in the study?

If you say yes, we will:

- Ask your child about the Quechua language and what they and others think about the language.

How long will the study take?

This study will take about 15 minutes.

Where will the study take place?

The location of the study will take place wherever it is convenient for the interviewee, in a confidential area. The location could be at a home, in a secluded public area, outside, etc.

What happens if I say no, I do not want my child to be in the study?

No one will treat you or your child any differently. You and your child will not be penalized. You and your child will not lose any benefits.

What happens if I say yes, but change my mind later?

You may take your child out of the study at any time. You and your child will not be penalized. Your relationship and your child's relationship with Idaho State University and myself will not change.

Who will see my answers and information?

The only people who will see your child's responses will be the people who work on the study and those legally required to supervise our study. Any work published may contain your child's responses but your name will not be associated with your responses.

Your child's responses and a copy of this document will be locked in our files.

When we share the results of our study in professional journals, at conferences, or in my thesis paper we will not include your child's name. We will do our best to make sure no one outside the study will know that your child is a part of the study.

Will it cost me anything to be in the study?

No.

Will being in this study help me or my child in any way?

Being in this study will not help you or your child directly, but may help people who speak Quechua in the future.

This study could help revitalization efforts for the Quechua language and perhaps help your community in efforts to keep the language alive.

Will I or my child be paid for my time?

No.

Is there any way being in this study could be bad for me or my child?

Yes, there is a chance that:

- Someone could find out that your child was in this study and learn something about your child that you or your child do not want them to know.

We will do our best to protect your privacy.

What if I have questions?

Please contact the head of the study Misty Clover Prigent. In the US, contact information is (208) 760-9739. In Peru, email clovmist@isu.edu or call Skype name: mistyclover if you or your child:

- Have questions about the study.
- Have questions about your rights.
- Feel you or your child have been injured in any way by being in this study.

You can also call the Idaho State University Human Subjects Committee office at 208-282-2179 to ask questions about your rights as a research subject.

Do I have to sign this document?

No. You only sign this document if you want your child to be in the study.

What should I do if I want my child to be in the study?

You sign this document. We will give you a copy of this document to keep.

By signing this document you are saying:

- You agree to allow your child to be in the study.
- We talked with you about the information in this document and answered all your questions.

Your Name (please print)

Your Signature

Date

[When appropriate, add signature lines for interpreters, legal representatives, etc.]

[Not all consent forms need to be signed. This document could be used to inform the potential subjects about the study. The subject can give implied consent by participating in the study.]

Parental Consent Form – Spanish

Formulario de Consentimiento de los Padres - Proyecto de la lengua Quechua

Estamos pidiendo a su hijo a participar en un estudio de investigación.

Su hijo no tiene que participar en este estudio.

Si usted y su hijo dice que sí, que su hijo puede dejar el estudio en cualquier momento.

Por favor, tómese todo el tiempo que desee para hacer su elección.

¿Por qué se realiza este estudio ?

Queremos aprender más sobre la lengua quechua y cómo se sienten al respecto.

Estamos pidiendo a la gente como su hijo que hablan quechua para ayudarnos.

¿Qué pasa si digo que sí , quiero que mi hijo participe en el estudio?

Si dice que sí , vamos a:

- Pregúntele a su hijo acerca de la lengua quechua y lo que ellos y otros piensan acerca de la lengua .

¿Cuánto tiempo durará el estudio?

Este estudio se llevará unos 15 minutos.

¿Dónde se llevará a cabo el estudio ?

La ubicación del estudio se llevará a cabo siempre que sea conveniente para el entrevistado, en una zona confidencial. La ubicación podría estar en una casa, en un área pública aislada, fuera, etc

¿Qué pasa si digo que no , yo no quiero que mi hijo participe en el estudio?

Nadie va a tratar a usted o a su hijo de manera diferente . Usted y su hijo no será penalizado . Usted y sus hijos no perderá ningún beneficio

¿Qué pasa si digo que sí , pero cambio de opinión más adelante?

Usted puede llevar a su hijo fuera del estudio en cualquier momento . Usted y su hijo no será penalizado . Su relación y la relación de su hijo con la Universidad Estatal de Idaho y yo no va a cambiar .

¿Quién verá mi respuestas y información?

Las únicas personas que verán las respuestas de su hijo serán las personas que trabajan en el estudio y los que la obligación legal de supervisar nuestro estudio. Los trabajos publicados puede contener las respuestas de su hijo , pero su nombre no se asocia con sus respuestas.

Las respuestas de su niño y una copia de este documento serán encerrados en nuestros archivos.

Cuando compartimos los resultados de nuestro estudio en revistas profesionales , en

conferencias , o en mi trabajo de tesis no vamos a incluir el nombre de su hijo. Haremos todo lo posible para asegurarse de que nadie fuera del estudio sepa que su hijo es una parte del estudio .

¿Me cuesta nada participar en el estudio ?

No.

Será en este estudio yo o mi hijo de cualquier manera ayuda?

Estar en este estudio no le ayudará a usted o a su hijo directamente , pero puede ayudar a las personas que hablan quechua en el futuro.

Este estudio podría ayudar a los esfuerzos de revitalización de la lengua quechua y tal vez ayudar a su comunidad en los esfuerzos por mantener viva la lengua.

¿Voy o mi hijo pagarán por mi tiempo ?

No.

¿Hay alguna forma en este estudio podría ser malo para mí o para mi hijo?

Sí , existe la posibilidad de que:

- Alguien podría saber que su hijo estaba en el estudio y aprender algo acerca de su hijo que usted o su hijo no quiere que se sepa.

Haremos todo lo posible para proteger su privacidad.

¿Qué pasa si tengo preguntas ?

Por favor, póngase en contacto con el jefe del estudio Misty Clover Prigent . En los EE.UU. , la información de contacto es (208) 760-9739 . En Perú , el correo electrónico o llame clovmist@isu.edu Nombre de usuario Skype : mistyclover si usted o su hijo:

- ¿Tiene alguna pregunta sobre el estudio.
 - Tiene preguntas sobre sus derechos .
 - Sentir que usted o su hijo ha sido herido en modo alguno por participar en este estudio .
- También puede llamar a la oficina del Comité Idaho State University Human sujetos al 208-282-2179 para hacer preguntas sobre sus derechos como sujeto de investigación .

¿Tengo que firmar este documento?

No. Sólo firme este documento si desea que su hijo participe en el estudio.

¿Qué debo hacer si quiero que mi hijo participe en el estudio?

Usted se inscribe el presente documento. Le daremos una copia de este documento a guardar.

Al firmar este documento, usted dice :

- Usted se compromete a permitir que su hijo participe en el estudio.
- Hemos hablado con usted sobre la información contenida en este documento y respondió a todas sus preguntas.

Nombre (en letra de imprenta)

Su Firma

Fecha

[Cuando corresponda, líneas de la firma para el despliegue de intérpretes , representantes legales, etc][No todos los formularios de consentimiento deben ser firmados . Este documento podría ser utilizado para informar a los potenciales sujetos sobre el estudio. El sujeto puede dar un consentimiento tácito al participar en el estudio.

Youth Consent Form – English

Quechua Language Project

We are asking you to be in a research study.

You do not have to be in this study.

If you say yes, you may quit the study at any time.

Please take as much time as you want to make your choice.

Why is this study being done?

We want to learn more about The Quechua language and how people feel about it.

We are asking people like you who speak Quechua to help us.

What happens if I say yes, I want to be in the study?

If you say yes, we will:

- Ask you about the Quechua language and what you and others think about the language.

How long will the study take?

This study will take about 15 minutes.

Where will the study take place?

The location of the study will take place wherever it is convenient for the interviewee, in a confidential area. The location could be at a home, in a public area, outside, etc.

What happens if I say no, I do not want to be in the study?

No one will treat you any differently. You will not be penalized. You will not lose any benefits

What happens if I say yes, but change my mind later?

You may stop being in the study at any time. You will not be penalized. Your relationship with Idaho State University and myself will not change.

Who will see my responses?

The only people who will see your responses will be the people who work on the study and those legally required to supervise our study. Any work published may contain your responses but your name will not be associated with your responses.

Your responses and a copy of this document will be locked in our files.

When we share the results of our study in professional journals, at conferences, or in my thesis paper we will not include your name. We will do our best to make sure no one outside the study will know that you are a part of the study.

Will it cost me anything to be in the study?

No.

Will being in this study help me in any way?

Being in this study will not help you, but may help people who speak Quechua in the future.

This study could help revitalization efforts for the Quechua language and perhaps help your community in efforts to keep the language alive.

Will I be paid for my time?

No.

Is there any way being in this study could be bad for me?

Yes, there is a chance that:

- Someone could find out that you were in this study and learn something about you that you do not want them to know.
- You could have a legal problem if you told us about a crime such as child abuse that we have to report.

We will do our best to protect your privacy.

What if I have questions?

Please call the head of the study Misty Clover Prigent (208) 760-9739 if you:

- Have questions about the study.
- Have questions about your rights.
- Feel you have been injured in any way by being in this study.

You can also call the Idaho State University Human Subjects Committee office at 208-282-2179 to ask questions about your rights as a research subject.

Do I have to sign this document?

No. You only sign this document if you want to be in the study.

What should I do if I want to be in the study?

You sign this document. We will give you a copy of this document to keep.

By signing this document you are saying:

- You agree to be in the study.
- We talked with you about the information in this document and answered all your questions.

Your Name (please print)

Your Signature

Date

[When appropriate, add signature lines for interpreters, legal representatives, etc.]
 [Not all consent forms need to be signed. This document could be used to inform the potential subjects about the study. The subject can give implied consent by participating in the study.]

Youth Consent Form - Spanish

Formulario de Consentimiento - Proyecto de la lengua Quechua

Le estamos pidiendo que participar en un estudio de investigación.
 Usted no tiene que participar en este estudio.
 Si dice que sí, puede dejar el estudio en cualquier momento.
 Por favor, tómese todo el tiempo que desee para hacer su elección.

¿Por qué se conduce este estudio?

Queremos aprender más sobre la lengua quechua y cómo se sienten al respecto.
 Estamos pidiendo a la gente como usted que habla quechua para ayudarnos.

¿Qué pasa si digo que sí, quiero participar en el estudio ?

Si dice que sí, vamos a:

- Preguntarle sobre la lengua quechua y lo que usted y otras personas piensan de la lengua.

¿Cuánto tiempo durará el estudio?

Este estudio se llevará unos 15 minutos.

¿Dónde se llevará a cabo el estudio?

La ubicación del estudio se llevará a cabo siempre que sea conveniente para el entrevistado, en una zona confidencial. La ubicación podría estar en una casa, en un área pública, exterior, etc.

¿Qué pasa si digo que no, yo no quiero estar en el estudio?

Nadie le tratará de forma diferente. Usted no será penalizado. No perderá ningún beneficio

¿Qué pasa si digo que sí, pero cambio de opinión más adelante?

Usted puede dejar de participar en el estudio en cualquier momento. Usted no será penalizado y su relación con la Universidad Estatal de Idaho no va a cambiar.

¿Quién verá mis respuestas, información, etc.?

Las únicas personas que verán sus respuestas serán las personas que trabajan en el estudio y los que supervisan nuestro estudio. Los trabajos publicados pueden contener sus respuestas, pero su nombre no se asocia con sus respuestas.

Sus respuestas y una copia de este documento serán encerrados en nuestros archivos. No incluiremos su nombre cuando compartimos los resultados de nuestro estudio en revistas profesionales, en conferencias, o en mi trabajo. Haremos todo lo posible para asegurarse de que nadie fuera del estudio sepa que usted es una parte del estudio.

¿Qué me cuesta para participar en el estudio?

Nada.

¿Qué beneficios recibiré de participar en este estudio?

Estar en este estudio no le ayudará, pero puede ayudar a las personas que hablan quechua en el futuro.

Este estudio podría ayudar a los esfuerzos de revitalización de la lengua quechua y tal vez ayudar a su comunidad en los esfuerzos por mantener viva la lengua.

¿Me pagarán por mi tiempo?

No.

¿Hay alguna forma que este estudio podría ser malo para mí?

Sí, existe la posibilidad de que:

- Alguien podría saber que estabas en este estudio y aprender algo acerca de usted que usted no quiere que ellos sepan.
- Usted podría tener un problema legal si usted nos dijo acerca de un crimen como el abuso infantil que tenemos que reportar.

Haremos todo lo posible para proteger su privacidad.

¿Qué pasa si tengo preguntas?

Por favor llame a la principal del estudio Misty Clover Prigent (208) 760-9739 si usted:

- ¿Tiene alguna pregunta sobre el estudio.
- Tiene preguntas sobre sus derechos.
- Siente que usted ha sido lesionado en un modo en este estudio.

También puede llamar a la oficina del Idaho State University Human Subjects Committee al 208-282-2179 para hacer preguntas sobre sus derechos como sujeto de investigación.

¿Tengo que firmar este documento?

No. Sólo firme este documento si desea participar en el estudio.

¿Qué debo hacer si quiero participar en el estudio?

Usted firmará el presente documento. Le daremos una copia de este documento para guardar.

Al firmar este documento, usted dice:

- Usted se compromete a participar en el estudio.

- Hemos hablado con usted sobre la información contenida en este documento y respondió a todas las preguntas.

Nombre (en letra de imprenta)

Su Firma

Fecha

[Cuando corresponda, líneas de la firma para el despliegue de intérpretes , representantes legales, etc]

[No todos los formularios de consentimiento deben ser firmados . Este documento podría ser utilizado para informar a los potenciales sujetos sobre el estudio. El sujeto puede dar un consentimiento tácito al participar en el estudio.

Youth Assent Form – English

 X **Youth Assent Form (Ages 13-17)** **Child Assent Form (Ages 7-12)**

Quechua Language Project

1. My name is Misty Clover Prigent
2. We are asking you to take part in a research study because we are trying to learn more about the Quechua language and how you and your family feel about it.
3. If you agree to be in this study. I will ask you questions about the Quechua language and I will record and write down your answers with a tape recorder, a video recorder, or on paper.
4. There are no risks associated with participating in this research.
5. Direct benefits of participating in the research could be improved education about the Quechua language.
6. Participating in this research will make other people interested in your language and might help your schools be able to teach more things in Quechua.
7. We have already received permission from your parent(s) for you to participate in this research. Even though your parent(s) have given permission, you still can decide for yourself if you want to participate.

8. If you don't want to be in this study, you don't have to participate. Remember, being in this study is up to you and no one will be upset if you don't want to participate or even if you change your mind later and want to stop.

9. You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can ask me later.

10. Signing your name at the bottom means that you agree to be in the study. You and your parents will be given a copy of this form after you have signed it.

Name of Subject

Signature of Subject

Date

Signature of Witness (if appropriate)

Date

(Child assent must be witnessed when the research involves medical procedures and research of more than minimal risk. The witness must be someone not related to the research project.)

Youth Assent Form - Spanish

 X (edades 13-17) **Formulario de Consentimiento para jóvenes**

 Formulario de Consentimiento para Niño(edades 7-12)

Dialecto de Quechua y proyecto de mantenimiento

1 . Mi nombre es Misty Clover Prigent

2 . Estamos pidiendo en participar en un estudio de investigación porque estamos tratando de aprender más sobre la lengua quechua y cómo usted y su familia se sientan sobre él idioma.

3 . Si usted acepta participar en este estudio, voy a preguntarle sobre el idioma Quechua y voy a grabar y escribir sus respuestas con una grabadora de voz, una grabadora de vídeo , o en papel.

4 . No existen riesgos asociados con la participación en esta investigación.

5 . Los beneficios directos de participar en la investigación podría ser una mejor educación sobre la lengua quechua.

6 . La participación en esta investigación podría interesar otras personas sobre su idioma y podría ayudar a que sus escuelas sean capaces de enseñar más cosas en quechua.

7 . Ya hemos recibido el permiso de su padre (s) para que usted participe en esta investigación. Pueden decidir no participar.

8 . Si no desea participar en este estudio , usted no tiene que participar. Recuerda, este estudio depende de usted y nadie se molestará si usted no quiere participar o incluso si cambia de opinión más tarde y quiere parar.

9 . Usted puede hacer cualquier pregunta que usted tenga sobre el estudio. Si usted tiene una pregunta despues que usted no tenga ahora, usted puede preguntarme más tarde.

10 . La firma de su nombre en la parte inferior significa que usted está de acuerdo en participar en el estudio . A usted y a sus padres se le entregará una copia de este formulario después de haber firmado.

Nombre del sujeto

Firma del Participante

Fecha

Firma del testigo (si necesario)

Fecha

(Asentimiento del niño debe de tener testigo cuando la investigación implica procedimientos médicos y de investigación de más de un riesgo mínimo. El testigo debe ser alguien que no esté relacionado con el proyecto de investigación.)