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Preserving Endangered Languages

Suzanne Romaine*
Merton College, University of Oxford

Abstract

Over the last few decades an increasing number of books, scholarly articles and media reports have predicted that as many as 60 to 90% of the world's some 6900 languages may be at risk of extinction within the next 100 years. This article provides an overview of the current state of the world's languages, explains some causes and consequences of the loss of linguistic diversity, in addition to outlining some of the range of efforts currently underway worldwide to preserve endangered languages. We should think about languages in the same way as we do other natural resources that need careful planning: they are vital parts of complex local ecologies that must be supported if global biodiversity is to be sustained.

1. Introduction

Over the last few decades an increasing number of books, scholarly articles and media reports have predicted an alarming decline in the number of languages (e.g., Robins and Uhlenbeck 1991; Krauss 1992; Crystal 2000; Nettle and Romaine 2000; Gibbs 2002; Abley 2003; Dalby 2003). Some linguists think that as many as 60 to 90% of the world's approximately 6900 languages may be at risk of extinction within the next 100 years. Nettle and Romaine (2000: 2) estimate that about half the known languages in the world have disappeared over the past 500 years. Crystal (2000: 19) suggests that an average of one language every 2 weeks may vanish over the next 100 years. Krauss (1992) believes that only the 600 or so languages with the largest numbers of speakers (i.e., more than 100,000) may survive. If this is true, few of the approximately 6000 remaining languages will have a secure future. No children are learning any of the nearly 100 native languages in what is now the state of California. Only a handful of the hundreds of Aboriginal Australian languages may survive into the next century. Similar dismal statistics and gloomy prognostications emerge from various parts of the globe.

The aim of this article is to offer a more sophisticated understanding of what works and what does not in efforts to preserve endangered languages. However, the first step in the solution to any problem is to acknowledge its existence and understand its origins. Only by understanding the historical

and social circumstances that have created the current threat to the world's languages can we hope to reverse it. This article will provide a detailed overview of the scale and character of the problem of language endangerment, consider some of its causes and consequences, and outline some of the range of efforts currently underway worldwide to ameliorate the situation.

2. Current State of the World's Languages: Character and Scale of the Problem of Language Endangerment

A lot is known about the character of the problem, if by that we mean why and how languages become endangered. Nettle and Romaine (2000) provide a global overview of some of the causes of the loss of linguistic diversity. For most of the many millennia of human history, it seems likely that the world was close to linguistic equilibrium, i.e., the number of languages lost roughly equalled the new ones created. The reason why this balance persisted so long is that there were no massive, enduring differences among the expansionary potentials of different peoples, of the kind that might cause the sustained expansion of a single, dominant language. Over the past 10,000 years, various events have punctured this equilibrium forever. First, the invention and spread of agriculture, the rise of colonialism, later the Industrial Revolution, and today globalization, electronic technology, etc., have created the global village phenomenon. These forces have propelled a few languages – all Eurasian in origin – to spread over the last few centuries. Although I have placed these events in their chronological order in human history, they have not by any means played themselves out to completion across the globe. For example, in Africa and elsewhere hunter gatherers and semi-nomadic pastoralists are currently being pushed out by the expansion of farmers, while China and other parts of the world are just now undergoing the industrial revolution.

As large language communities expand, others contract. Over the last 500 years, small languages nearly everywhere have come under intense threat. Speakers of large languages like English and Chinese find it difficult to imagine the prospect of being the last speaker of their language, but the last speakers of probably half the world's languages are alive today. Only two fluent speakers remain of the Warrwa language traditionally spoken in the Derby region of West Kimberley in Western Australia. Only about half a dozen elderly people on the island of Erromango in southern Vanuatu can still speak Ura. Marie Smith Jones is the last person who still speaks Eyak, one of Alaska's 20 some native languages. Only two (Siberian Yup'ik in two villages on St. Lawrence Island, and Central Yup'ik in 17 villages in southwestern Alaska) are spoken by children as the first language of the home. Tefvik Esenc, believed to be the last known speaker of the Ubykh language once spoken in the northwestern Caucasus, died in Turkey in 1992. The disappearance of Ubykh is the final result of a genocide of

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the Ubykh people, who until 1864 lived along the eastern shore of the Black Sea in the area of Sochi (northwest of Abkhazia). The entire Ubykh population left its homeland when Russia conquered the Muslim northern Caucasus in the 1860s. Tens (and possibly hundreds) of thousands of people were expelled and had to flee to Turkey with heavy loss of life, and the survivors were scattered over Turkey. And Turkey itself is a country that until recently recognized no minorities and prohibited languages such as Kurdish from public use.

Language shift is symptomatic of large scale processes and pressures of various types (social, cultural, economic, and military) on a community that have brought about the global village phenomenon, affecting people everywhere, even in the remotest regions of the Amazon. Language shift may be thought of as a loss of speakers and domains of use, both of which are critical to the survival of a language. The possibility of impending shift appears when a language once used throughout a community for everything becomes restricted in use as another language intrudes on its territory. Usage declines in domains where the language was once secure, e.g., in churches, the workplace, schools, and, most importantly, the home, as growing numbers of parents fail to transmit the language to their children. Fluency in the language is higher among older speakers, as younger generations prefer to speak another (usually the dominant societal) language.

2.1 GLOBAL DISTRIBUTION OF LINGUISTIC DIVERSITY

The global distribution of linguistic diversity in the modern world is strikingly uneven. Some indications of this can be obtained by looking at statistics about the number of languages and the peoples who speak them in various parts of the world. According to the *Ethnologue* database compiled by the Summer Institute of Linguistics, 6912 languages are spoken by a world population of 5,723,861,210 (Gordon 2005; see also the *Ethnologue* website: http://www.ethnologue.com/). Note that these are only estimates and that this population figure is lower than most other official statistics which place the world's population at about 6.34 billion. This is because the *Ethnologue* lacks population estimates for about 5% of the languages. These figures also do not include endangered dialects of healthy or relatively healthy languages (see Wolfram and Schilling-Estes 1998 for discussion of dialect endangerment). No one knows exactly how many languages and dialects there are, and there is still very little research on most of the world's languages. Linguists have tended to work on the familiar and easily accessible languages spoken by large numbers of people. While thousands of linguists have probably worked on French or English over the last 100 years or so, there are thousands of other languages that have received little attention, and thousands still that have received none at all. The *Ethnologue* singles out more than 3000 languages in need of surveys. Skutnabb-Kangas (2000: 27) comments that we know more about the number of pigs in

Denmark, their size and weight, than we do about the world's languages. Denmark is a bacon-exporting country and pigs are a critical economic resource. Few people see languages as a resource. More often, linguistic diversity is seen as a problem.

Nevertheless, if we accept the *Ethnologue* figures as rough working estimates, we see huge disparities between the sizes of the populations speaking the world's many languages. If all languages were of equal size, each would have about 828,000 native speakers (or 917,000 using the population figure of 6.34 billion). Yet, only about 5% of the world's languages have at least 1 million native speakers. These 347 languages account for 94% of the world's population (and this figure is increasing). In contrast, the remaining 95% of languages are spoken by only 6% of the world's people.

Figure 1 displays the inverse relation between world population and number of native speakers per language. Nearly 80% of the world's population speaks a total of only 75 languages. Each of these has 10 million or more speakers. Only eight languages in the world have more than 100 million speakers; they are spoken by about 40% of the population. These include Mandarin Chinese (873,014,298 speakers), Spanish (322,299,171), English (309,352,280), Hindi (180,764,791), Portuguese (177,457,180), Bengali (171,070,202), Russian (145,031,551), and Arabic (136,411,737).

These very large languages are all spoken in more than one country, such as English, for instance, with large groups of speakers in the UK, USA, New Zealand, Canada, Australia, and South Africa. For similar historical reasons, Spanish and Portuguese spread through colonial conquest and settlement, and are now widely spoken in Latin America, parts of Africa, the Pacific, and North America. Today an Indo-European language, either English, Spanish, Portuguese, (or French, not among the top eight, with

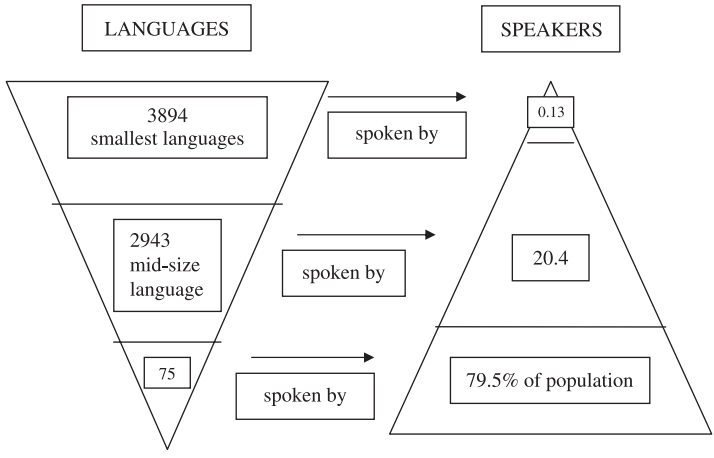

Fig. 1. Inverse relation between number of languages and size of population.

its 65 million speakers) is the dominant language in every country in North, Central and South America. Languages such as Bengali and Hindi have been brought by post-colonial diaspora populations to the UK. Likewise, Mandarin Chinese, now spoken by more people than any other language in the world, is found not only in mainland China, but also in Singapore, Taiwan, and Hong Kong (as are other Chinese languages such as Wu, Cantonese, etc.).

The spread of these languages is even more extensive if figures for second-language speakers are included. Although English is not the largest language in the world (Mandarin Chinese has more first-language speakers), it is one of a small handful of what may be called global languages in terms of geographic spread and number of users worldwide. Non-native speakers outnumber native speakers. As recently as the sixteenth century, knowledge of English was nearly useless outside of the British Isles, but nowadays, one can go practically anywhere in the world and hear English spoken. The language of the 'global village' is indeed English.

Most of the world's languages, however, do not show the same geographic spread as these big eight. Much of the rest of the world speaks languages with fewer than 10,000 speakers. The median number of speakers for the languages of the world is only 5000–6000, and nearly 85% of languages have fewer than 100,000. Eighty-three percent of the world's languages are spoken only in one country. Moreover, most languages do not even claim a territory as large as a country. Leaving aside the world's largest languages, spoken by more than 90% of the world's population, the remaining some 6500 are confined to 5% of the world's most marginalized peoples, who have generally been on the retreat for several hundred years. The majority of these smaller languages may be at risk. The *Ethnologue* estimates that there are 204 languages with fewer than 10 speakers, 344 languages with 10–99 speakers, and 548 languages with fewer than 99 speakers. These smallest of small languages comprise nearly one-tenth of the world's languages.

These small languages are unevenly shared among countries and across continents, as shown in Table 1 displaying the number and percentage of languages and speakers by area of the world. Certain parts of the world such as the Asia-Pacific region are hotbeds of linguistic diversity in terms of number of languages, while others such as Europe are more uniform. Indeed, if some horrific catastrophe wiped out all the languages of Western Europe tomorrow, we would lose relatively little of the world's linguistic diversity. Europe has only about 3% of the world's languages, and most of the largest European languages are also widely spoken outside Europe. More importantly, however, most of the languages of Europe are structurally quite similar, because they are related historically. If we were to lose the same number of languages in Papua New Guinea or South America, the loss would be far more significant, because the divergence between languages there runs much deeper (see Nettle and Romaine 2000: 33–39).

Table 1. Number/percentage of languages/speakers by area of the world (from data compiled in the *Ethnologue*, table 1)

Area	Number of languages	Percentage of languages	Number of speakers	Percentage of speakers
Africa	2092	30.3	675,887,158	11.8
Americas	1002	14.5	47,559,381	0.8
Asia	2269	32.8	3,489,897,147	61.0
Europe	239	3.5	1,504,393,183	26.3
Pacific	1310	19.0	6,124,341	0.1
Total	6912	100.0	5,723,861,210	100.0

Overall, the risk to rare languages is greater than the risk to more common ones (Nettle and Romaine 2000: 62–67).

Papua New Guinea alone contains 11.9% of the world's languages, but only 0.1% of the world's population and 0.4% of the world's land area. The overall ratio of languages to people is only about 1 to 5000. If this ratio were repeated in the USA, there would be 50,000 languages spoken there (Nettle and Romaine 2000). Around 80% (N = 5542) of all the world's languages are found in just 20 nation-states, among them some of the poorest countries in the world. They include Papua New Guinea (820), Indonesia (742), Nigeria (516), India (427), USA (311), Mexico (297), Cameroon (280), Australia (275), China (241), Democratic Republic of Congo (216), Brazil (200), the Philippines (180), Malaysia (147), Canada (145), Sudan (134), Russia (129), Tanzania (129), Nepal (125), Vanuatu (115), and Myanmar (113). As the list reveals, considerable diversity is found in some of the most highly developed, industrialized nations. Canada and the USA account for 456 languages or 6.5% of the world's linguistic diversity. If we add Australia with its 275 languages as the other large predominantly Anglophone nation in the list, this yields a total of 731 languages, amounting to 10.5% of the world's linguistic diversity.

2.2 ASSESSING ENDANGERMENT

Having examined some substantial disparities in the geographic spread and size of languages, we are in a better position to address the question of how much of the world's linguistic diversity is in danger. Estimates of the number of threatened languages vary a great deal from 50 to 90% depending on the criteria used to assess risk. UNESCO's *World Atlas of the World's Languages in Danger of Disappearing* (2001) estimates that 50% of languages may be in various degrees of endangerment. (See www.unesco.org/culture/en/endangeredlanguages/atlas for an online version of the *Atlas* currently under development; see also the UNESCO *Red Book of Endangered Languages* at http://www.tooyoo.l.u-tokyo.ac.jp/Redbook/index.html.)

However, more research is needed before we can start understanding the importance of various factors in promoting or hindering language maintenance. The pulse of a language quite clearly lies in the youngest generation. Languages are at risk when they are no longer transmitted naturally to children in the home by parents or other caretakers. UNESCO suggests that languages being learned by fewer than 30% of the younger generation may be at risk. Not surprisingly, we have very little information about the number of languages no longer being transmitted naturally to children, but the statistics we do have from several parts of the world, for example, Canada and Australia, as well as reports from fieldworkers on the ground are quite alarming. In Canada perhaps only three languages out of around 50 (Cree, Atikamek, and Inuktitut) are viable in the long term. (See, for example, Norris and Jantzen's 2002 work on assessing the continuity of Aboriginal languages using census statistics, and the Task Force on Aboriginal Languages and Cultures 2005.) The Australian continent is a linguistic graveyard, with 90% of Aboriginal languages near extinction (McConvell and Thieberger 2001). Only some 50 languages are widely spoken today; of these only 18 have at least 500 speakers. These 18 languages account for roughly 25,000 of the remaining 30,000 speakers of Aboriginal languages today. No Aboriginal language is used in all spheres of everyday life by members of a sizeable community.

If we use size as a proxy for degree of endangerment, estimates of the scale of the problem will still vary, depending on how many speakers are thought to be needed for a language to be viable. Table 2 shows the percentage of indigenous languages in different continents with fewer than some number of speakers. The languages in Australia and the Pacific and the Americas are mostly very small; over 20% have fewer than 150 speakers, and nearly all have fewer than 100,000. Africa, Asia, and Europe, in contrast, have a fair number of medium-sized ones (100,000 to 1 million speakers), in addition to some giant languages. Such languages are probably safer in the short term at least. If Krauss (1992) is right in thinking that

Table 2. Percentages of languages according to continent of origin having fewer than indicated number of speakers (from Nettle 1999: 114)

Continent/region	< 150	< 1000	< 10,000	< 100,000	1 million
Africa	1.7	7.5	32.6	72.5	94.2
Asia	5.5	21.4	52.8	81.0	93.8
Europe	1.9	9.9	30.2	46.9	71.6
North America	22.6	41.6	77.8	96.3	100
Central America	6.1	12.1	36.4	89.4	100
South America	27.8	51.8	76.5	89.1	94.1
Australia/Pacific	22.9	60.4	93.8	99.5	100
World	11.5	30.1	59.4	83.8	95.2

only languages with over 100,000 speakers are safe, then up to 90% of the world's languages may be at risk.

Size does not tell the whole story, but it may be the best surrogate at the moment for vulnerability to the kinds of pressures leading to language loss. A large language could be endangered if the external pressures on it were great (e.g., the South American language Quechua, with millions of speakers), while a very small language could be perfectly safe as long as the community was functional and the environment was stable (e.g., Icelandic, with fewer than 300,000). Small size has been a stable characteristic of languages in Australia and New Guinea for millennia, many of which were quite healthy until a couple of centuries, generations, or decades ago. However, small languages can disappear much faster than large ones, and forces have now been unleashed in the world that small communities find very difficult to resist, while larger groups may have the resources to do so. In present circumstances size may be quite critical in determining survival. All our estimates are guesses, but even if the viability threshold is set at the lower level of 10,000 speakers, 60% of all languages are already endangered. The situation is slightly better in Africa (33%), Asia (53%), and Europe (30%), but much worse in North and South America (78% and 77%) and Australia and the Pacific (93%).

Not only is the geographic spread of languages unequal, but so is their status. The functions a language is used for may also tell us something about its long-term viability. Fewer than 4% of the world's languages have any kind of official status in the countries where they are spoken. A small minority of dominant languages prevail as languages of government and education. English is the dominant de facto or official language in over 70 countries; French has official or co-official status in 29 countries. The fact that most languages are unwritten, not recognized officially, restricted to local community and home functions, and spoken by very small groups of people reflects the balance of power in the global linguistic marketplace.

3. Language Preservation: What Is Being Done and What Can and Should Be Done

The prospect of the loss of linguistic diversity on such a large scale has prompted both communities and scholars to propose programs of intervention to preserve and revitalize languages (see Hinton and Hale 2001; Grenoble and Whaley 2006: Chapter 3 for examples). Because much typically needs to be done quickly with too few resources, setting realistic priorities is paramount. There is no one-size-fits-all solution for revitalization and preservation. The immediate need is to identify and stabilize languages under threat so that they can be transmitted to the next generation in as many of their functions as possible. This means assessing which functions are crucial to intergenerational transmission and have a reasonable chance of successful revival and continuation. Every group must decide what can best be done realistically for a particular language at a particular time.

3.1 REVERSING LANGUAGE SHIFT

Fishman's (1991, 2001) plan of action, referred to as reversing language shift (RLS), is based on an eight-point scale called GIDS (Graded Intergenerational Disruption Scale) that assesses the extent to which transmission has been disrupted in order to assist communities in targeting their efforts to specific activities needed at each point of the scale. Fishman has been quite insistent about the necessity of proceeding from the bottom up, and of securing intergenerational transmission at home (Stage 6) before proceeding to higher levels, such as use in schools, media, government, etc. One of the most frequent mistakes activists make is to attempt to reverse language shift by promoting the minority language in the domains now dominated by the majority language. Fishman (1991: 54–5) compares the distribution of Basque and Spanish in 1957 and 1987, noting that over this 30-year period there has been a decrease in the use of Basque at home and in private domains, while there has been a slight increase in the use of Basque in public, formal domains such as government, education, etc. In Wales too, where Welsh has been introduced in public domains where it used to be excluded, for example, public administration and education, its previous dominance in other critical domains such as the home, and even the chapel in some areas, has been weakened. The family is no longer the main agency of language reproduction (Romaine 2006).

King (2001: 26) distinguishes between RLS and language revitalization, which can be understood as not necessarily attempting to bring the language back to former patterns of familial use, but rather to bring the language forward to new users and uses. In doing so, however, we must not deceive ourselves that the efforts directed at the latter will restore intergenerational transmission. There may be an increase in users and uses of language without intergenerational transmission, but the observations made by Dauenhauer and Dauenhauer (1998: 97) are shared by many communities whose languages are facing loss of intergenerational transmission:

> [I]t is unrealistic to expect the Native languages of Southeast Alaska to recover fully and thrive as they did sixty to a hundred years ago. But they can continue to be used in many ways, both oral and written, that are of enduring spiritual value to the individual and the community, even if these new uses are far more limited and restricted than they would have been in the past.

3.2 REVITALIZATION THROUGH IMMERSION

Communities around the world have increasingly looked to schools and other teaching programs as a way to revitalize their languages. Immersion models of various types are widely used to promote indigenous and minority languages. Some programs are total immersion, such as the Hawaiian and Blackfeet ones, modelled on the Maori 'language nest' (Te Kōhanga Reo), while others may be partial. Language nests typically aim to provide

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a sheltered environment in which young children are exposed to the language by fluent elders and other caretakers. In Hawaiian immersion schools Hawaiian is used across the curriculum from pre-school onwards, and English is introduced as a subject from the fifth grade (around age 10) for 1 hour a day. Most of the students attending are English speakers and are learning Hawaiian as a second language. The language nest/immersion model contrasts with more conventional language teaching where the language is taught as a subject for a limited number of hours with fewer opportunities for high levels of academic or informal engagement with the language in use. In immersion there may be little, if any, focus on language learning *per se* in the form of direct teaching of grammar and vocabulary. Language is acquired through the meaningful interaction required to learn academic content in various subjects.

Other variants of the model may rely on bilingual immersion combined with a third language taught as a subject. In parts of the Basque Country, Basque and Spanish are used for instruction during primary education, and English is taught as a subject beginning in kindergarten. The Kahnawake Survival School in Quebec, dedicated to preserving Mohawk language, culture, and history, combines total and partial immersion at various levels.

Successful immersion programs obviously rely on the availability of fluent teachers and teaching materials and are therefore less easily implemented when a language has only a small handful of speakers. In California and elsewhere in native North America, learners have benefited from a Master–Apprentice program, which brings together a fluent elder and a learner, who use the language for everyday activities (Hinton 2002). Another variant brings together elders and learners of various ages in immersion camps for several days or longer, often during the summer, to engage in cultural activities in which native languages are used to varying extents.

Where transmission has ceased altogether or been interrupted for a long period, prospects for revitalization rely on documentation and/or reconstruction to 'reclaim' what some have called 'sleeping languages'. One example is the Kaurna language once used by Aboriginal people in what is now the area of Adelaide in South Australia. Although it has not been spoken for more than a century, some people are now using the language for limited activities such as greetings, songs, and naming activities (Amery 2001).

Revitalization activities of these various types, however, will not save languages without firm community foundations for transmission. There is an important distinction to be made between learning a language in the artificial environment of the classroom and transmitting it in the natural environment of the home. Schools in Ireland have achieved most of what can be expected from formal language education, namely, knowledge of Irish as a second language acquired in late adolescence. They have not led to its spoken use in everyday life, nor its intergenerational transmission.

Nowhere have language movements succeeded if they relied on the school or state to carry the primary burden of maintenance or revival. Indeed, Grenoble and Whaley (2006: ix) note that 'an honest evaluation of most language revitalization efforts to date will show that they have failed'.

Moreover, in most communities revitalization and shift proceed in tandem because not all community members agree on what can and should be done. Language revitalization movements tend to affect only a small minority of individuals, usually a small group of urban intellectuals initially, and they do not always succeed in gaining widespread popular support. The movement to revive Irish, for example, began among the educated middle classes in Dublin, a place usually perceived as alien and interfering by the remaining native speakers in the remaining Irish-speaking areas in the west. New varieties of language often emerge in immersion schools that are different to the varieties traditionally learned at home. Lack of secure home and community foundations for transmitting minority languages means that these new varieties may eventually replace traditional varieties, but until they do their authenticity will be contested. In some cases disputes have erupted over control of schools and linguistic resources.

Language can easily become politicized when it is no longer unselfconsciously reproduced within families. Language choices become scrutinized as an index of one's authenticity and degree of commitment to the cause of language revitalization. On the Scottish island of Skye, Macdonald (1997: 238) observed that to the local Gaelic-speaking population, Gaelic was part of a local identity rooted in everyday practice rather than as part of a politicized package of language, heritage and culture advocated by those outside the community. Most of those who opt for the new Gaelic medium programs are those who speak very little Gaelic at home. One 40-year-old man who grew up speaking Gaelic at home said: 'I speak the Gaelic here with my parents and when I go up to the [hotel bar], but I speak it not because I have to but because this is what we speak. I like the Gaelic. But if it is going to become something artificial, then well, I won't feel like speaking it at all. I don't want Gaelic to be kept alive by making it artificial . . . For myself, I'd prefer if it died' (MacDonald 1997: 218).

3.3 DOCUMENTATION

Documentation and revitalization activities go hand in hand, although some linguists, such as Newman (1998), view endangered languages as a 'hopeless cause', while regarding documentation as an urgent scientific task. A substantial literature is emerging on documentary linguistics in an effort to establish a set of best practices (Himmelmann 1998; Lehmann 2001). A number of national funding bodies, such as the US National Science Foundation and the German Volkswagen Stiftung, and international agencies, such as UNESCO, have undertaken documentation projects and set up archives to serve as repositories for data. HRELP (Hans Rausing

Endangered Languages Project) at the University of London's School of Oriental and African Studies (SOAS) has placed its emphasis on documentation.

Estimates of the costs of providing adequate documentation range from around $55,000 per language to fund 2 years of work by a linguist to provide a basic dictionary and grammar to $2 million per language to fund an in-depth study over 15 years, complete with audio-visual archives and other comprehensive materials. Crystal (2000: Chapter 4) proposes a figure of $585 million ($65,000 per year for 3 years' work to provide basic documentation for 3000 languages). Depending on one's perspective, this figure represents a lot of money or not very much at all. For example, the USA pledged $350 million to aid victims of the 2004 Indian Ocean tsunami; about the same amount is spent to wage war on Iraq for a day and a half (Monbiot 2005). Even assuming that this sum was available for language documentation, there is a shortage of people who are able and willing to do the work. This is to say nothing of the political and logistical impediments of getting to places where the most endangered languages are spoken.

The enormity of the task as well as the rate of technological change pose formidable challenges to scholars working to record endangered languages, relying on ever more sophisticated forms of technology. Some of the new information technologies that we think of as 'advanced' are actually proving to be far less durable than the older technologies of print and stone that technology gurus assured us they would replace. As old storage mechanisms become obsolete, information must be continuously moved to the latest medium or the data will be lost. Yesterday's cutting edge technologies all too quickly turn into today's obsolete technologies. What is salvaged will inevitably be small compared to what will be lost.

Although salvage operations aimed at recording a language for preservation in books are worthwhile endeavors, and may be all that can be accomplished for some severely eroded languages, they do not address the root causes of language decline, and without further action they do not contribute substantially to language maintenance efforts in the long term (Romaine, forthcoming a). Grammars and dictionaries are artificial environments for languages. They reflect only a fraction of the diversity of a language in its everyday use and cannot capture the ever-changing nature of language. Focusing on documentation in books is like concentrating our efforts on preserving the spotted owl by building a museum where we can display stuffed owls but doing nothing to preserve the bird in its natural habitat or guarantee that it can reproduce itself.

Despite these realities, much of the professional linguistic literature on language maintenance and preservation has been concerned with preserving the structures of individual languages in grammars and dictionaries, or has directed its attention to educational programs in threatened languages. There is a tendency to reify languages as artifacts when we should be focusing

on living communities and language ecologies. Language ecology refers to the social environment and domains in which a language is used. There is a distinction to be made between documenting language data and sustaining a language. What is being saved or preserved? Nora and Richard Dauenhauer put it well when they write that 'Preservation [. . .] is what we do to berries in jam jars and salmon in cans. [. . .] Books and recordings can preserve languages, but only people and communities can keep them alive' (quoted in Lord 1996: 68). As Mühlhäusler (2002) argues, we cannot preserve languages, but we can try to preserve language ecologies.

4. The Ecology of Language

The preservation of a language in its fullest sense ultimately entails the maintenance of the group who speaks it, and therefore the arguments in favour of doing something to reverse language death are ultimately about preserving cultures and habitats. Languages can only exist where there is a community to speak and transmit them. A community of people can exist only where there is a viable environment for them to live in and a means of making a living. Where communities cannot thrive, their languages are in danger. When languages lose their speakers, they die. Extinctions in general, whether of languages or species, are part of a more general pattern of human activities contributing to radical alterations in our ecosystem. In the past, these extinctions took place largely without human intervention. Now they are taking place on an unprecedented scale through our intervention, in particular, through our alteration of the environment. Nettle and Romaine (2000) see the extinction of languages as part of the larger picture of worldwide near total ecosystem collapse.

Although we are still in the early stages of understanding the ramifications of the loss of diversity in ecosystems, species, cultures, and languages, there is a growing body of factual evidence and supporting theory pointing to an extinction crisis in the realms of both biological and cultural–linguistic diversity. A new wave of interdisciplinary studies is yielding a holistic view of diversity and considering how these two worlds of difference, biological and cultural/linguistic, are related and what common factors are at work to diminish them, or conversely, to sustain them (Maffi 2001; Harmon 2002; Romaine, forthcoming b). Nettle and Romaine (2000: ix) use the term 'biolinguistic diversity' as a key concept in a holistic approach to the understanding of diversity. It refers to the rich spectrum of life encompassing all the earth's species of plants and animals along with human cultures and their languages.

Figure 2 shows the areas of greatest linguistic diversity, which coincide with areas that are high in biodiversity (Nettle and Romaine 2000: 43). In other words, the areas identified as biodiversity hot spots by conservationists, such as Myers, Mittermeier, Mittermeier, da Fonseca, and Kent (2000) are also hotbeds of linguistic diversity, for example, New Guinea and tropical

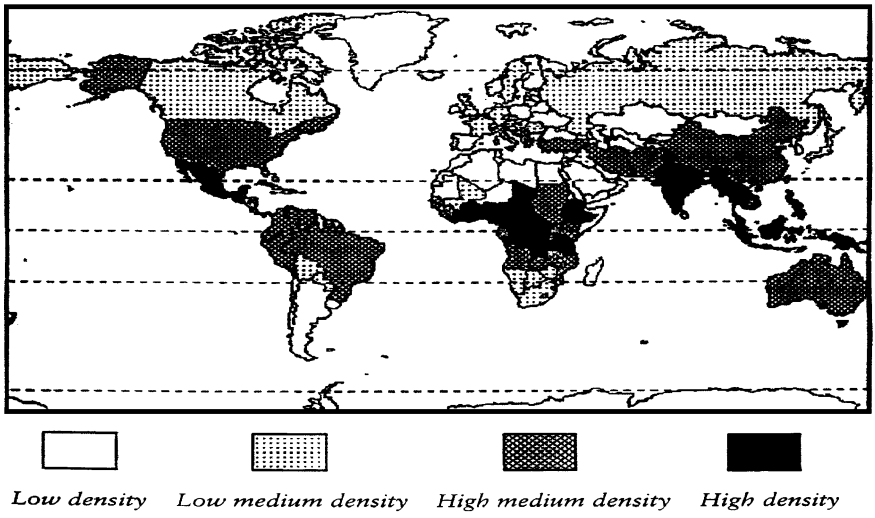

Fig. 2. Geographic distribution of languages of the world (adapted from Nettle and Romaine 2000: 33, figure 2.1).

Africa. These regions richest in biolinguistic diversity are inhabited by indigenous peoples who represent around 4% of the world's population but speak at least 60% of its languages. The explanation for these linkages is not yet fully understood but will need to be sought in a sophisticated ecological theory that takes account of peoples' interactions with their environment. Nettle (1999), for instance, refers to the notion of 'ecological risk' as a significant influence on the formation and persistence of linguistic groups. This factor refers to the amount of variation people face in their food supply over time, which in turn is related to other variables such as climate, diversification of productive and income-generating activities, food storage, mobility, and patterns of social exchange. In areas where rainfall is continuous throughout the year and communities are able to produce their own food supply, they are not so dependent on their neighbors for subsistence. Distinct languages may be more likely to evolve and be maintained in small, self-sufficient communities. The greater the ecological risk, the more people must develop larger social networks to ensure a reliable food supply. Because language norms spread through social networks, the average size of a language group increases in proportion to ecological risk.

Not only do biodiversity and linguistic diversity share the same geographic locations, they also face common threats. For example, an increasing number of languages die each year, as the homelands of small indigenous communities are being destroyed, or the communities are assimilated into larger nation–states, some of which are actively seeking to exterminate them. Because the historical and current causes of the threats facing the

Table 3. Extinction predictions for languages and species (based on data from Sutherland 2003)

Fish	5%
Plants	8%
Birds	11%
Mammals	18%
Languages	32% (50–90%?)

earth's languages, cultures, and biodiversity are the same, the solutions are also likely to come from the same place: empowering local people and communities. The measures most likely to preserve small languages are the very ones that will help increase their speakers' standard of living in a long-term, sustainable way.

Despite the efforts of international organizations such as Terralingua (www.terralingua.org), founded in the USA in 1996, and the Foundation for Endangered Languages (www.ogmios.org), founded in the UK in 1995, to raise awareness of endangered languages, linguists have been rather slower in realizing the threats posed to language than ecologists have been in recognizing the impending extinction in biodiversity. Yet available evidence suggests that the threat to languages is much greater than to some of the most common species of plants and animals. Table 3 compares some projected rates of extinction for languages with those for species, using figures from Sutherland (2003), whose estimates for the threat to languages are rather smaller than the ones offered above. Sutherland acknowledges that his rates are conservative. The rates for the various species are from the IUCN (International Union for Conservation of Nature and Natural Resources) Red List Criteria and Categories for endangered species (see www.iucnredlist.org). However, even if we accept Sutherland's lower figures for language endangerment, languages are at greater risk than species in any of the individual classes of animals, and all plants.

Because language plays a crucial role in the acquisition, accumulation, maintenance, and transmission of human knowledge concerning the natural environment and ways of interacting with it, the problem of language endangerment raises critical issues about the survival of knowledge that may be of use in the conservation of the world's ecosystems. The 49 members of the Great Andanamese tribe, the last survivors of the pre-Neolithic population of Southeast Asia, face a serious threat of extinction, but all survived the huge tsunami unscathed after it hit the Indian Ocean and Bay of Bengal in December 2004 because they knew exactly which trees would not be swept away (Abbi 2006). Folk traditions and other forms of knowledge passed down orally for generations are always only a generation away from extinction.

Furthermore, the issue of endangered languages cannot be separated from people, their identities, their cultural heritage and their rights. When

we lose sight of people and the communities that sustain languages, it becomes easy to argue, as have a number of critics, that there is no reason to preserve languages for their own sake. However, maintaining cultural and linguistic diversity is a matter of social justice because distinctiveness in culture and language has formed the basis for defining human identities. We should think about languages in the same way as we do other natural resources which need careful planning to ensure their survival: they are vital parts of complex local ecologies that must be supported if global biodiversity, as well as human cultures and even humanity in general, are to be sustained.

Short Biography

Suzanne Romaine has been Merton Professor of English Language at the University of Oxford since 1984. Her research interests lie primarily in historical linguistics and sociolinguistics, especially in problems of societal multilingualism, linguistic diversity, language change, language acquisition, and language contact in the broadest sense. She has conducted extensive fieldwork in Europe (first on the language of working-class schoolchildren in Scotland and subsequently on patterns of bilingualism and language loss among Panjabi speakers in England) as well as in the Pacific Islands region (first in Papua New Guinea on the language of rural and urban school-children, and most recently in Hawaii). Her most recent book, *Vanishing Voices. The Extinction of the World's Languages* (Oxford University Press, 2000), co-authored with Daniel Nettle, won the British Association of Applied Linguistics Book of the Year Prize in 2001.

Endnote

⋆ Correspondence address: Suzanne Romaine, Merton College, University of Oxford, Oxford OX1 4JD, UK.

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