
Vanishing Voices

The Extinction of the World's Languages

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Prefac.

Few people seem to know or care that most of Australia's 250 aboriginal languages have already vanished and few are likely to survive over the long term. No young children are learning any of the nearly 100 native languages spoken in what is now the state of California. The last Manx speaker died in 1974. The same gloomy story can be told for many other languages all over the world: At least half the world's languages could be extinct in the next century. What has happened to extinguish these diverse voices?

The extinction of languages is part of the larger picture of worldwide near total ecosystem collapse. Our research shows quite striking correlations between areas of biodiversity and areas of highest linguistic diversity, allowing us to talk about a common repository of what we will call "biolinguistic diversity": the rich spectrum of life encompassing all the earth's species of plants and animals along with human cultures and their languages. The greatest biolinguistic diversity is found in areas inhabited by indigenous peoples, who represent around 4 percent of the world's population, but speak at least 60 percent of the world's languages.

Despite the increasing attention given to endangered species and the environment, there has been little awareness that peoples can also be endangered. More has been said about the plight of pandas and spotted owls than about the disappearance of human language diversity. The main purpose of this book is to inform the wider scientific community and the public of the threat facing the world's languages and, by extent, its cultures.

Although our story is a largely depressing one of cultural and linguistic meltdown in progress, we think this new millennium also offers hope. In May 1992 about 500 native delegates gathered in Kari-Oca on the outskirts of Rio de Janeiro, to attend the First World Conference of Indigenous Peoples and declare their desire for self-determination, to educate their children and preserve their cultural identity. The last decades of the twentieth century have seen a resurgence of indigenous activism from the

grassroots level all the way to international pressure groups. Ironically, the same forces of globalization fostering cultural and linguistic homogenization, and the spread of English in particular, are being marshalled as tools of resistance. Many native peoples and their organizations have websites in English on the internet capable of reaching millions of people all over the world. Delegates to the 1999 World Indigenous Peoples Conference on Education in Hilo, Hawai'i, were encouraged to address the meeting in their native languages. We would like to dedicate the book to the many people whose diverse voices have already vanished and to speakers of endangered languages everywhere still engaged in the struggle to preserve and strengthen theirs.

This book began as a series of lectures on "Endangered Languages: Causes and Consequences" that we presented at the University of Oxford in Hilary Term, 1998. Our collaboration revealed we were both planning books on the topic with somewhat different emphases reflecting our interests and training: Daniel Nettle, with an academic background in anthropology and fieldwork experience in Africa, and Suzanne Romaine with a background in linguistics and fieldwork experience in the UK and Pacific islands. The resulting book is naturally somewhat different than the separate ones we had each originally envisioned, but we hope the resulting whole is greater than the sum of the respective parts.

In order to make the book easily accessible to the widest possible audience, we have avoided in-text references and footnotes. At the end of the book we have included a bibliography and further reading for each chapter indicating the sources we have drawn on.

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On

Where Have All the Languages Gone?

*Most of us feel that we could never become extinct.
The Dodo felt that way too.*

—William Cuppy

A few years ago, linguists raced to the Turkish farm village of Hacı Osman to record Tefvik Esenc, a frail farmer believed to be the last known speaker of the Ubykh language once spoken in the northwestern Caucasus. At that time only four or five elder tribesmen remembered some phrases of the language, but only Esenc knew it flu-

ently. Even his own three sons were unable to converse with their father in his native language because they had become Turkish speakers. In 1984 Esenc had already written the inscription he wanted on his gravestone: "This is the grave of Tefvik Esenc. He was the last person able to speak the language they called Ubykh." With Esenc's death in 1992, Ubykh too joined the ever increasing number of extinct languages.

Four years later in South Carolina a native American named Red Thundercloud died, the last voice of a dying tongue. No longer able to converse in his native language with the remaining members of his community, he took the language of his tribe to the grave with him. Red Thundercloud was alone among his people, but not alone among native Americans. Roscinda Nolasquez of Pala, California, the last speaker of Cupeño, died in 1987 at the age of 94, and Laura Somersal, one of the last speakers of Wappo, died in 1990.

In another part of the world on the Isle of Man, Ned Maddrell passed away in 1974. With his death, the ancient Manx language left the community of the world's living tongues. Just a hundred years earlier, not long before his birth, 12,000 people (nearly a third of the island's population) still spoke Manx, but when Maddrell died, he was the only fluent speaker left. Two years before his death, Arthur Bennett died in north Queensland, Australia, the last person to know more than a few words of Mbabaram, a language he had not used himself since his mother died twenty some years before.

Tefvik Esenc, Red Thundercloud, Roscinda Nolasquez, Laura Somersal, Ned Maddrell, and Arthur Bennett lived and died thousands of miles apart, in radically different cultural and economic circumstances. Although the precise factors that destroyed their communities and left them as the last representatives of dying languages were quite different, their stories are remarkably similar in other ways. Unfortunately, their fates reveal a common pattern, which is but the tip of the iceberg: the world's languages are dying at an alarming rate. This book tells the story of how and why languages are disappearing.

About half the known languages of the world have vanished in the last five hundred years. Some languages of ancient empires, such as Etruscan, Sumerian, and Egyptian, disappeared centuries ago. Their inscriptions are but faint reminders of mostly forgotten peoples, whose cultures and languages are long since dead. Meroitic, a language which between the eighth century BC and the fourth century AD was the official language of an empire with the same name in the Sudan, survives only in inscriptions which have not been deciphered to this day. Only three words survive of Cumbria, an ancient language of Britain. Of the many more people who left no written records we know nothing.

A brief look around the world today reveals that the trickle of extinctions of the last few centuries is now turning into a flood. Our opening



Figure 1.1 Tefvik Esenc, last speaker of Ubykh.

*[Courtesy of Okan Iscan/
George Hewitt]*



Figure 1.2 Red Thundercloud, last speaker of Catawba Sioux and Laura Somersal, one of the last fluent speakers of Wappo.

[Thundercloud reprinted from Bernard Comrie, Stephen Matthews and Maria Polinsky eds. 1996. The Atlas of Languages, Quarto Publishing plc; Somersal photograph by Scott M. Patterson; courtesy of Vicki Patterson]



Figure 1.3 Ned Maddrell, last speaker of Manx

[Courtesy of the Cregeen and Manx Museum, Douglas, Isle of Man]

examples show that language death is not an isolated phenomenon confined to ancient empires and remote backwaters. It is going on before our very eyes in all parts of the world. Manx, for instance, is not alone among the languages in western Europe in being near extinction. Two hundred years before Manx died, Dolly Pentreath, the last known native speaker of Cornish, passed away at the age of 102 in 1777. The few remaining modern Celtic languages such as Irish, Scottish Gaelic, Welsh and Breton are in great danger.

Though few speakers of English know it, until around AD 1000 Irish was a militantly expanding language; it has the oldest literature in Europe after Latin and Greek. Yet, despite the fact that virtually every child studies Irish extensively in school, it is little used at home. Thus, Irish has continued to die as the language of a rural peasantry in a few remaining pockets along the west coast of the country. Scholars believe the long-term future of the language is not any more secure now than it was sixty years ago. According to one estimate, in 1990 there were just under 9,000 speakers with sufficient attachment to Irish to transmit it to their children. Languages not passed on to the younger generation will eventually die out.

A brief look at other parts of the world confirms the same dismal picture. Australian Aboriginal languages are dying at the rate of one or more per year. Although there may have been more than 250 languages

before European contact, some linguists predict that if nothing is done, almost all Aboriginal languages will be dead by the time this book is published. The United States alone is a graveyard for hundreds of languages. Of an estimated 300 languages spoken in the area of the present-day US when Columbus arrived in 1492, only 175 are spoken today. Most, however, are barely hanging on, possibly only a generation away from extinction.

A survey of the North American continent done some time ago in 1962 revealed that there were 79 American Indian languages, most of whose speakers were over 50 (for example, the Pomo and Yuki languages of California). There were 51 languages with fewer than 10 speakers, such as the Penobscot language of Maine; 35 languages had between 10 and 100 speakers. Only six languages—among them Navajo, Cherokee, and Mohawk—had more than 10,000 speakers. It is almost certain that at least 51 of these languages have all but disappeared. Languages with under 100 speakers are so close to extinction that revival for everyday use seems unlikely. The remaining native American languages in California are not being taught to children. Among the many native American languages already lost are some which gave the Pilgrims their first words for the new things they found in America, such as *moose* and *raccoon*. Our only reminders of them now are these words and state names such as *Massachusetts*.

Why and how are languages dying?

We have used terms such as “death” and “extinction” in relation to languages just as a biologist would in talking about species. This may sound strange or inappropriate. What justification is there for this? After all, languages are not living things which can be born and die, like butterflies and dinosaurs. They are not victims of old age and disease. They have no tangible existence like trees or people. In so far as language can be said to exist at all, its locus must be in the minds of the people who use it. In another sense, however, language might be regarded as an activity, a system of communication between human beings. A language is not a self-sustaining entity. It can only exist where there is a community to speak and transmit it. 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.

Some have also used the terms “language murder” and “language suicide,” suggesting that languages do not die natural deaths. They are instead murdered. English, as Glanville Price put it, is a “killer language.” Thus, it has been said that Irish, for instance, was murdered by

English. Others, however, have in effect put the blame on Irish by saying that the language committed suicide. The Irish writer Flann O'Brien, although pro-Irish, resented and rejected the attempt to revive the Irish language, because he was of the opinion that the difficulties faced by Irish were "due mainly to the fact that the Gaels deliberately flung that instrument of beauty and precision from them."

Terms such as "death," "extinction," "murder," and "suicide" applied to language are metaphors, but are such metaphors useful? We will argue that the death and extinction (and even murder) perspective is useful because languages are intimately connected with humans, our cultures, and our environment. The notion of language suicide of course puts the blame squarely on the victim. This view is not constructive and in any case, is ill-founded. People do not kill themselves on a whim. Suicide is indicative of mental and often physical illness brought about by undue stress. Likewise, people do not fling away their languages for no good reason. We will show throughout this book how many instances of language shift and death occur under duress and stressful social circumstances, where there is no realistic choice but to give in. Many people stop speaking their languages out of self-defense as a survival strategy.

As a telling example, we can take what happened in El Salvador in 1932, when after a peasant uprising anyone identified as Indian either by dress or physical appearance was rounded up and killed by Salvadoran soldiers. Some 25,000 people were killed in this way. Even three years later radio broadcasts and newspapers were calling for the total extermination of the Indians of El Salvador to prevent another revolt. Many people stopped speaking their languages to avoid being identified as Indian, in order to escape what they feared was certain death in a country which officially had no Indians. Ironically, in the 1970s there was a reversal of attitudes, particularly among non-Indian Salvadorans, who lamented their lost cultural heritage. Unfortunately, we have other cases of human rights abuses to relate in this book, instances where people face punishment and imprisonment for using their own languages. Kenyan writer Ngũgĩ Wa Thiong'o's decision to write in his native language, Gikuyu, resulted in his imprisonment and eventual exile.

Likewise, the extinction of Ubykh is the final result of a genocide of 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 of thousands of people were expelled and had to flee to Turkey, no doubt with heavy loss of life, and the survivors were scattered over Turkey. Russian conquest of the Caucasus continues to this day, threatening the lives, lifestyles and languages of people such as the Chechens. Meanwhile, Turkey itself is a country with

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a long history of human rights abuses directed against the Kurds and their language, which is banned from public use.

Linguistic diversity, then, is a benchmark of cultural diversity. Language death is symptomatic of cultural death: a way of life disappears with the death of a language. The fortunes of languages are bound up with those of its speakers. Language shift and death occur as a response to pressures of various types—social, cultural, economic, and even military—on a community. Every time a language stops performing a particular function, it will lose some ground to another that takes its place. Death occurs when one language replaces another over its entire functional range, and parents no longer transmit the language to their children.

In this book we will show how the various factors responsible in the past for language death pose an even greater threat to many languages today. Indeed, there are good reasons to believe that the processes leading to the disappearance of languages have greatly accelerated over the past two hundred years. Linguists estimate that there are around 5,000–6,700 languages in the world today. At least half, if not more, will become extinct in the next century. In the next chapter we will demonstrate that this puts the problem of linguistic extinction on a par with biologists' most pessimistic estimates for species extinction. Knowledge of the various historical events which shape the evolution of languages and lead to the expansion of some and the contraction of others is necessary if we are to do anything about the loss of linguistic diversity. Why is it, for instance, that the Greeks still speak Greek today after thousands of years, but that people in Ireland, Scotland, and Wales are losing their languages?

Where and when are languages at risk?

The Summer Institute of Linguistics (SIL), a fundamentalist mission group based in the United States and the largest Protestant missionary society sent abroad, probably has a better idea of the scope of the problem of language endangerment than most academic linguists. Although SIL's primary interest is not language maintenance, but the provision of Bible translations for the peoples of the world, their workers have more first-hand experience in documenting languages on a large scale. Their current capacity is 850 languages, cumulatively 1,200. From their work we learn that Bible translation has either begun or is needed for about 50 percent of the languages of the world. We know very little about this 50 percent, many of them perhaps in danger. The Summer Institute's publication, *Ethnologue*, suggests that as many as 20 percent of the world's languages are moribund, but this is likely to be a very conservative estimate.

The pulse of a language 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. Even languages which older, but not younger, children in a community have acquired are at risk. The key question then is: how many languages still spoken today are no longer being learned by young children?

Using SIL's *Ethnologue* data, we can calculate that 90 percent of the world's population speaks the 100 most-used languages. This means that there are at least 6,000 languages spoken by about 10 percent of the people on earth. Linguist Michael Krauss of the Alaska Native Language Center suggests that by including all the languages which have more than 100,000 speakers, there may be only as few as 600 "safe" languages. He believes that few of the other 6,000 can be regarded as having a secure future. In other words, the overwhelming majority of the world's languages may be in danger of extinction.

More specifically, Krauss estimates that in the United States and Canada, 80 percent (149 out of 187) of the native Indian languages are no longer being learned by children. At least 60 native languages were spoken in what is now Canada, but Kinkade estimates that only 4 of these (Cree with 60,000, Ojibwa with 30,000 in Canada and 20,000 in the US, Dakota with 5,000 in Canada and 15,000 in the US, and Inuktitut with 16-18,000 in Canada, 6,000 in Alaska, and 41,000 in Greenland) are truly viable since only these few have a large enough base of speakers and younger children acquiring the languages to ensure survival. Only five of the native languages spoken in what is now the US have as many as 10,000 to 20,000 speakers, and only two have as many as 40,000 to 50,000. The Navajo language is the only native language with more than 100,000 speakers.

For Central America, Krauss suggests that 17 percent (50 out of 300) are no longer viable, and for South America, 27 percent (110 out of 400). While this region has a much smaller number of languages than, say, Africa, it has a considerable number of unique languages not related to any others. Brazil, for example, is a country still in great need of linguistic documentation: almost half its languages are located in the remotest and least accessible regions of the country and have not been studied. The only known speakers of Koaia, for example, are the women in one household in the state of Rondonia. The comparatively few languages in South America are probably the result of the near total elimination of the native population. The number of speakers of Indian languages has never returned to pre-Conquest levels. Uruguay, for instance, no longer has an Indian population and no indigenous Indian language is preserved there. No modern South American nation expresses its national culture and identity through the use of an indigenous language with the possible exception of Paraguay, where practically everyone, Indian and non-Indian

alike, knows and uses Guaraní on some occasions even though Spanish is the official language.

The worst case, however, is Australia, with 90 percent of its estimated 250 Aboriginal languages near extinction. Only some 50 languages are widely spoken today and of these only 18 have at least 500 speakers. These 18 account for roughly 25,000 of the remaining 30,000 speakers of Aboriginal languages. There is no Aboriginal language that is used in all arenas of everyday life by members of a sizeable community. It is possible that only two or three of the languages will survive into the next century.

Africa and Asia are the continents with the highest number of living indigenous languages, although European languages have spread over both regions during the last 200 years. A recent attempt to assess the problem of language death in Africa revealed, not surprisingly, that virtually all African nations were affected to some degree. The conclusion determined that 54 languages were already extinct, and another 116 were in the process of extinction. These figures are not based on an actual field survey but rather on the existing literature on African languages and questionnaires sent to researchers, so they are likely to be underestimates. Kenya is the only country for which reliable estimates exist on this topic and it has already lost eight languages. Again, not surprisingly, Nigeria, which has the largest number of languages, also has the largest number of extinct and endangered languages (10 already extinct and a further 17 in the process of extinction, according to one very conservative estimate).

Although there is some obvious safety in large numbers, they do not tell the whole story, for reasons we explain in the next chapter when we take a more detailed look at what some of these statistics mean. We mentioned earlier Krauss's figure of 100,000 as a rough estimate of safety. However, we cannot automatically conclude that all small languages are at risk, or conversely that all large languages are safe. Icelandic, for instance, has only 100,000 speakers but is in no danger of extinction. Other languages with much larger numbers of speakers can be and are at risk. Some of the precarious languages of Central India such as Kurux, for instance, have over a million speakers—and so did Breton, as recently as 1926. Similarly, Navajo had well over 100,000 speakers a generation ago, but continues to decline. In Vanuatu none of the indigenous languages has more than 3,000 speakers, yet most of them seem to be maintained. In Micronesia the two languages most at risk today are the largest (Chamorro with 60,000 speakers on the island of Guam) and the smallest (Sonsorolese with about 300 speakers on the island of Sonsoral in Palau). Therefore, small population in and of itself does not tell us much without examining other indicators such as the status of the language. Unfortunately, relatively few linguists tend to work with these very small languages, so we know much less about them.

Very often all the information we have about the existence of a particular language spoken by small groups consists of the material collected by a missionary or a linguist on one field trip.

Even then, attempts to assess the health of many of these smaller languages are often frustrated by the fact that the linguist who worked on the language in question made no mention of how many people spoke the language and what its likely prognosis was. Apart from an isolated field visit, many linguists have no further contact with the languages they investigate. Although there are still many languages we know nothing about, new languages are always being discovered, but sometimes not soon enough to do anything. The Ugong people of western Thailand have been in decline ever since they were discovered by outsiders. In the 1920s a surveyor commented that the language was already on its last legs. An anthropologist who worked among the Ugong in the 1960s also noted the moribund nature of the language. In the 1970s a linguist began working on the language in the several locations where it is still used. By that time it had already become extinct in the two locations previously visited by the surveyor some five decades earlier.

In the late 1970s the Electricity Generating Authority of Thailand built two hydroelectric dams on the two branches of the River Kwai. These dams flooded the locations of two Ugong villages and the inhabitants were relocated elsewhere. With the unity of the villages destroyed and their speakers scattered, the older speakers who still preserve the language have few, if any, people to speak to in Ugong. Ugong has literally been swamped and the speakers immersed in Thai villages.

As in the case of species, languages urgently need documentation and monitoring. The state of health of a small language and its speakers can change very rapidly. For instance, in 1962 the speakers of Trumai, a language spoken in a single village on the lower Culuene River in Venezuela, were reduced by an influenza epidemic to a population of fewer than 10 speakers.

Why worry about languages dying?

At first glance, a linguist's interest in preserving languages seems both self-evident and self-serving. For scientific reasons alone, languages are worth preserving. Linguists need to study as many different languages as possible if they are to perfect their theories of language structure and to train future generations of students in linguistic analysis. Thanks to the efforts of linguists, at least there will be some record of Ubykh with its unusual sound system containing 81 consonants and only 3 vowels. (Compare English with only 24 consonants and approximately 20 vowels, depending on the combination of sounds in a particular variety; or

Rotokas, a language spoken on Bougainville island in Papua New Guinea, with the smallest number of sounds in any language, only 5 vowels and 6 consonants.) Yet, descriptions based on the last living speakers can usually capture only a fragment of what that language must have been like in its full-blown version in active use by a living community of younger and older speakers. One consequence of declining use of a language is a loss in its complexity and richness of expression.

New and exciting discoveries about language are still being made. There is every reason to believe that what we know now is but the tip of the iceberg. For many years linguists thought Ubykh to be the world record-holder for number of consonants. Now it seems that some African languages surpass Ubykh in this respect—if only there is time to find out. Many African languages are dying rapidly too. Only in the 1970s did linguists discover the existence of a language called Hixkaryana, which has about 350 speakers. It is one of many languages spoken by small numbers of speakers in Amazonia. Structurally speaking, Hixkaryana and its neighboring languages are interesting because they represent the only known cases of languages which construct sentences by putting the object first, as if we were to say in English, for instance, *a book read Mary* instead of *Mary read a book*. Other languages, for example Japanese and Guugu Yimidhirr (spoken around Cooktown in north Queensland, Australia), typically have the order Subject Object Verb (SOV), as in *ngayu Billy nhaadbi* (literally, *I Billy saw*). Modern English has the order SVO, although that has not always been the case. Around 10 percent of the world's languages put the verb first, like Irish: *is cailin og Maire*, meaning *Mary is a young girl*, translates literally as *is girl young Mary*. Hixkaryana and other object-initial languages may not survive into the next century. Except by chance, we might not have known that it was possible for human languages to have OSV word order.

Satisfying answers to many current puzzles about languages and their origins will not emerge until linguists have studied many languages. To exclude exotic languages from our study is like expecting botanists to study only florist shop roses and greenhouse tomatoes and then tell us what the plant world is like. Linguistic diversity gives us unique perspectives into the mind because it reveals the many creative ways in which humans organize and categorize their experience.

In fact, from the evidence we have to date, it would appear that the most grammatically complicated and unusual languages of the world are often isolates—unrelated to any other language—and often spoken by small tribes whose traditional way of life is under threat. The majority of “world” languages such as Chinese, English, Spanish, and Arabic, spoken by 50 million or more people, are, by contrast, not isolates and they are also not as grammatically complex as many of the world's smaller languages. There is a strong tendency for languages to simplify upon

expansion and contact with other languages. After the Norman Conquest, for example, English absorbed much vocabulary from French and over the centuries has lost much of the grammatical complexity still found in more conservative Germanic languages such as German and Icelandic. The differences are obvious when we consider that a modern Icelandic can still read the Icelandic sagas, while the language of Old English epics such as *Beowulf* is a completely different language to modern day English speakers. Majority languages have been grammatically streamlined. Moreover, the world's major languages are becoming more like one another through the process of intertranslation and culture contact. Most languages have borrowed English terms for words in the field of science and technology.

Speakers of isolated languages only rarely use their own languages to communicate with outsiders. Such languages are generally learned only by children growing up in the local community and almost never as second languages. Languages that are used only for in-group communication in small groups can afford complexity. We can observe the same tendency towards complexity among close friends or members of the same family who communicate regularly with one another. They often have conversations that are hard for outsiders to understand because they contain many references to things shared only by that group. In-group jokes, teenage slang, and professional jargon are some examples. When weather forecasters talk to one another at meteorological conventions they use terms such as *positive vorticity advection*—which, in lay terms, means that conditions are favorable to rain.

In small language groups innovations and new usages can quickly spread throughout a whole village. Sociologist Eliezer Ben-Rafael relates how on one Israeli kibbutz the local doctor was named Zigmund. Years after the doctor left a doctor is still a “zigmund” for the children as well as adults. It has even been known that twins have developed their own language unintelligible to other family members. The very processes that make a language more complex, more localized and specific to a small group also make it ideally suited to marking a distinctive identity. The more different it is, the better it serves this function. In Chapter 4 we will show how this has happened in Papua New Guinea, which provides a good model of linguistic equilibrium of the type that characterized human societies before the industrial revolution.

The complexity found in some of these small languages spoken in out of the way places may come as a surprise to some people, because non-linguists often think of some of these languages and communities as primitive. Consider the hundred or so people who live in the remote village of Gapun, which lies roughly midway between the Sepik and Ramu rivers in Papua New Guinea. In this isolated village most people support themselves through hunting and agriculture. They speak a language

called Taiap. Up until the 1970s no linguist had worked on the language of Gapun. In fact, in 1938 a German missionary, who was the first European to discover the language, predicted that no linguist would ever want to bother with it because the village where it was spoken was so small and located in a relatively inaccessible mosquito-infested swamp. We now know that Taiap is an amazingly rich language in terms of its structural diversity and particularly distinctive vocabulary, unlike any other in the Sepik. It is not clearly related to any other language in the area or indeed to any other language in Papua New Guinea as far as we can tell. While further research might provide clues about the precise genetic relationship between Taiap and other languages, this is unlikely to happen.

Taiap is dying. The younger generation of villagers grow up speaking Tok Pisin (*talk pidgin*, or pidgin English) and are no longer fluent in Taiap. What has happened? We will see in Chapter 6 how contact with the outside world has brought many changes to the village. Roads, schools, Christianity, and the new ideas brought with these things have changed the way people think in Gapun. They see Tok Pisin as a language that will give them access to the modern world and so they shift their allegiance to it, and no longer speak exclusively in Taiap to their children. When Taiap dies, it will leave a black hole. Closer study of it may reveal a vital clue to the huge puzzle of human origins in New Guinea, an island rich in biodiversity.

In the next chapter we examine in more detail the geographic distribution of linguistic diversity and what it tells us about human evolution. We will show how cultural diversity and biological diversity are not only related, but often inseparable, perhaps causally connected through coevolution in specific habitats. Our research has shown quite striking correlations between areas of biodiversity and areas of highest linguistic diversity, allowing us to talk about a common repository of what we will call *biolinguistic diversity*: the rich spectrum of life encompassing all the earth's species of plants and animals along with human cultures and their languages.

The greatest biolinguistic diversity is found in areas inhabited by indigenous peoples, who represent around 4 percent of the world's population, but speak at least 60 percent of its languages and control or manage some of the ecosystems richest in biodiversity. Although the fate of indigenous peoples is decisive for the maintenance of biolinguistic diversity, they too are endangered. In 1993, the United Nations Year of Indigenous Peoples, most of the world's fourteen million refugees were indigenous people. According to one estimate, as many as 200,000 indigenous people are killed every year.

If Taiap were a rare species of bird or Ubykh a dying coral reef, maybe more people would know of their plight and be concerned. Yet in Papua New Guinea and all over the world, many unique local languages are

dying at an unparalleled rate. Few people know or care. Should we be any less concerned about Taiap than we are about the passing of the California condor? Although the greatest threat is posed to the languages spoken by peoples whose cultures and traditional lifestyles are also at risk, language death is a problem found within modern nations as well, as our earlier examples of the Celtic languages show. In the Hawaiian islands, for instance, the majority of native plants and animals are, like the Hawaiian language, found nowhere else on earth and face impending extinction. Although the island state represents less than 1 percent of the US total land mass, it has 363 (over 30 percent) of 1,104 species federally listed as threatened or endangered, including the yellow hibiscus, the state flower, and the Hawaiian goose (*nēnē*), the state bird. It is not coincidental that language endangerment has gone hand in hand with species endangerment. Languages are like the miner's canary: where languages are in danger, it is a sign of environmental distress.

We think there are many reasons why all of us—not just linguists, or those whose languages are under threat—should be alarmed at what is happening and try to do something to stop it. As a uniquely human invention, language is what has made everything possible for us as a species: our cultures, our technology, our art, music, and much more. In our languages lies a rich source of the accumulated wisdom of all humans. While one technology may be substituted for another, this is not true of languages. Each language has its own window on the world. Every language is a living museum, a monument to every culture it has been vehicle to. It is a loss to every one of us if a fraction of that diversity disappears when there is something that can have been done to prevent it. Moreover, every people has a right to their own language, to preserve it as a cultural resource and to transmit it to their children.

It is hard for most English speakers to imagine what it might mean if the English language were to die and they would no longer be able to speak it as they went about their daily activities. How would it feel to be the last speaker of English on earth? Marie Smith, the last Eyak Indian of Cordova, Alaska explained how she felt at being the only full-blooded Eyak and the only speaker of her language: "I don't know why it's me, why I'm the one. I tell you, it hurts. It really hurts. . . . My father was the last Eyak chief, and I've taken his place. I'm the chief now, and I have to go down to Cordova to try to stop the clear cutting on our land."

English has always seemed such a secure possession, despite the fact that after the Norman Conquest, its future was actually in some doubt. Yet it was likewise difficult for English speakers at that time to imagine that their language would one day spread all over the globe. Most English speakers take the present position and status of English for granted, and do not realize that English was very much once a minority language initially in all of the places where it has since become the mother tongue

of millions. It has gained its present position by replacing the languages of indigenous groups such as Native Americans, the Celts, and the Australian Aborigines, and now many more.

Most of us also take the diversity found in the world's languages for granted, just as the cow takes her tail for granted in this Jamaican proverb: *Kau neva no di yus of im tel til di butcha kot it of* ("the cow didn't know what use her tail was until the butcher cut it off"). While campaigns are mounted to protect and conserve whales, spotted owls, and other natural resources, languages are overlooked. There has been little support from international organizations like the United Nations for preserving languages. As we will show in this book, there are many reasons why the plight of languages has been neglected. This is, however, a strategic error that will be regretted as time goes on.

In Chapter 3 we will illustrate how some of the detailed knowledge of the natural environment encoded in human languages spoken by small groups who have lived for centuries in close contact with their surroundings may provide useful insights into management of resources on which we all depend. At the moment, as many as one-quarter of the prescription medicines used in the United States are derived from plants which grow in the world's rain forests. We know that many more plants and trees growing in tropical rain forests may contain remedies and even cures for human diseases, but we may never learn about some of them because the rain forests are being destroyed.



Figure 1.4 Marie Smith, last speaker of Eyak

[Courtesy of Art Wolfe]

Moreover, traditional knowledge tends not to be valued as a human resource unless it makes an economic contribution to the West. Even though the United States government recognized the Pacific yew as the most valuable tree in American forests because its bark can be processed to yield taxol, a drug useful in the treatment of ovarian cancer, the bark is still being burned as scrap or left to rot on the forest floor in the aftermath of wasteful logging operations. The next great steps in scientific development may lie locked up in some obscure language in a distant rain forest.

The Inuit people who inhabit northern Arctic regions developed ways for surviving in an extremely cold and adverse climate. Knowledge of which kinds of ice and snow could support the weight of a man, a dog, or a kayak was critical for the continued survival of the Inuit, so they were named individually. In the Native American language, Micmac, trees are named for the sound the wind makes when it blows through them during the autumn, about an hour after sunset when the wind always comes from a certain direction. Moreover, these names are not fixed but change as the sound changes. If an elder remembers, for example, that a certain stand of trees used to be called by a particular name 75 years ago but is now called by another, these terms can be seen as scientific markers for the effects of acid rain over that time period. One Palauan traditional fisherman born in 1894 and interviewed by marine biologist R.E. Johannes had names for more than 300 different species of fish, and knew the lunar spawning cycles of several times as many species of fish as have been described in the scientific literature for the entire world.

Today scientists have much to learn from the Inuit people about the Arctic climate, and from Pacific Islanders about the management of marine resources. Much of this indigenous knowledge has been passed down orally for thousands of years in their languages. Now it is being forgotten as their languages disappear. Unfortunately, much of what is culturally distinctive in language—for example vocabulary for flora, fauna—is lost when language shift takes place. The typical youngster today in Koror, Palau's capital, cannot identify most of Palau's native fish; nor can his father. The forgetting of this knowledge has gone hand in hand with over-fishing and degradation of the marine environment.

The next two chapters will reveal many striking similarities between the loss of linguistic diversity and the loss of biodiversity. We believe these are not accidental. The areas with the greatest biological diversity also have the greatest linguistic/cultural diversity. These correlations require close examination and must be accounted for. 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 interven-

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tion. Now they are taking place on an unprecedented scale through our intervention—in particular, through our alteration of the environment. The extinction of languages can be seen as part of the larger picture of worldwide near total ecosystem collapse. Our failure to recognize our intimate connection with the global ecosystem lies behind what we will call the biolinguistic diversity crisis facing us today. What has brought us to this brink?

Paleontologist Niles Eldredge is of the opinion that humans first began to impose a significant and different kind of impact on the environment when they made the transition from hunter-gatherers to sedentary farmer societies, a change we will examine in more detail in Chapter 5. Hunters may have been responsible for the destruction of individual species, but farmers and the alteration of the landscape required for agricultural subsistence enabled humans to destroy the ecosystems necessary for the support of species, including our own. Several other major transformations in human history require further consideration as well, in particular, the expansion of Europeans into the New World from 1492, and the Industrial Revolution of the 18th century, which was responsible for many farmers leaving the countryside to become urban factory workers. By the latter half of the nineteenth century Britain had already become a largely urban nation, and its capital, London, the largest metropolis in Europe. Later, the application of science to industry in the twentieth century would create what C.P. Snow refers to as the “scientific revolution.” The agrarian revolution and the industrial-scientific revolution are in his view the two major transformations in human social history.

We are accustomed nowadays to hearing people say that everything is interconnected. We live in what Marshall McLuhan called the “global village,” where international languages, and English in particular, are key links. The world is now tightly linked by electronic media. With the launching of Intelsat III in 1967, for the first time in history no part of the globe was completely out of touch with any other part. Now there are hundreds of such satellites orbiting the earth. Increasingly sophisticated and rapid telecommunications brought about through computers in the late twentieth century have created a network of computers, popularly called the “information superhighway.” Following this revolution in mass communications, some few languages have spread all over the world. Because the technology facilitating these developments originated largely in the English-speaking world, not surprisingly, English has become its lingua franca. Until 1995 it was difficult to communicate via the internet in any language that could not be expressed in the standard English alphabet as defined by the American Standard Code for Information Interchange (ASCII), set down in 1982.

Similarly, the corporations and financial institutions of the English-speaking countries have dominated world trade and made English the

international language of business. Books in the English language have dominated the publishing business; there are few countries in the world where English books cannot find a market of some kind. Even other major languages, such as French and German, have continued to lose ground against English over the course of this century as mediums of scholarly publication. By 1966, 70 percent of the world's mail and 60 percent of its radio and television broadcasts were already in English. Compare this to the state of the language in the year 1600, however, when the idea that English might become a world language was not seriously entertained since it was thought to have many flaws. At that time knowledge of English was virtually useless in traveling abroad. Nowadays, it is regarded as essential.

Language shift is thus symptomatic of much larger-scale social processes that have brought about the global village phenomenon, affecting people everywhere, even in the remotest regions of the Amazon. Many smaller languages are dying out due to the spread of a few world languages such as English, French, Chinese, and so on. In today's global village, a mere handful of about 100 languages are spoken by around 90 percent of the world's population. We will argue that this radical restructuring of human societies, which has led to the dominance of English and a few other world languages, is not a case of "survival of the fittest," nor the outcome of competition or free choice among equals in an idealized market place. It is instead the result of unequal rates of social change resulting in striking disparities in resources between developed and developing countries.

Another reason why language death has been ignored reflects a common but mistaken belief that the existence of many languages poses a barrier to communication, to economic development, and to modernization more generally. Shouldn't we instead be glad that so many languages are dying out? Isn't multilingualism the curse of Babel? Wouldn't the sharing of a common language lead to better understanding? Monolingual English speakers are usually unaware of the fact that their circumstances are NOT the norm in a world that has long been and is still predominantly multilingual.

Danish linguist Louis Hjelmslev related how a Finnish colleague told him of an American visitor to Finland who had heard about the complexity of Finnish, a language with over twenty cases and a pronunciation of considerable difficulty to the average English speaker, and unrelated to most other western European languages. The American seemed amazed that a small population of only four million should maintain such a seemingly impractical language, which in effect cut them off from their neighbors and their neighbors from them. He proposed an exceedingly drastic measure to get rid of it by ceasing to teach Finnish and engaging instead a sufficient number of teachers of English to teach

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all Finnish children English. In one generation this little practical problem would be overcome once and for all.

We can either laugh at the American's naive utilitarianism or decry his solution as draconian and imperialistic. Such misinformed views blinded by monolingualism, are, however, all too common, and part of the legacy of the Tower of Babel. Genesis relates how all people once spoke the same language, but God decided to punish them for their presumptuousness by erecting the tower and making them speak different languages. The association of multilingualism with pernicious outcomes is still with us, as was evident, for instance, in media mogul Rupert Murdoch's speech on Australian radio in 1994. His gist was that multilingualism was divisive, and monolingualism, cohesive. Multilingualism was in his view the cause of Indian disunity, and monolingualism the reason for the unity of the English-speaking world. He rejoiced in the fact, however, that Hindi was finally spreading as a major lingua franca, due to the availability of Hindi TV programming being spread by his Asian television company, Star.

It takes but little reflection to find the many obvious flaws in Murdoch's reasoning, and to come up with cases in which the sharing of a common language has not gone hand in hand with political or indeed any other kind of unity. Northern Ireland is one such example from the English-speaking world that comes readily to mind. But there are many others from other parts of the globe. A very high degree of linguistic and religious uniformity in Somalia, for example, did not prevent a brutal civil war from breaking out there. Certainly, the attempt at Russification of the former republics of the Soviet Union did not ensure unity in that part of the world either. Indeed, one of the first political acts undertaken by the newly independent Baltic states was to reassert their linguistic and cultural autonomy by reinstating their own national languages in place of Russian. After the demotion in status of Russian, Russia was not slow to accuse these countries of depriving Russian speakers of their linguistic human rights.

Because languages and dialects are often potent symbols of class, gender, ethnicity, religion, and other differences, it is easy to think that language underlies conflict. Yet disputes involving language are not really about language, but instead about fundamental inequalities between groups who happen to speak different languages. It is easy to lose sight of this point when language is often such a prominent symbol in the much larger struggle for minority rights. In 1951, for example, Frisian language activists were involved in a street riot in the Dutch town of Ljouwert, protesting the inadmissibility of the Frisian language spoken by many of the members of the major indigenous minority group in Dutch courts.

As we demonstrate in Chapter 8, language has played a key role in past struggles for cultural and political distinctiveness all over the world,

and it continues to do so today. In Quebec the controversial law requiring all signs to be in French only represented the symbolic ability of the Quebec government to control and maintain the Frenchness of Quebec in the midst of a predominantly anglophone Canada. Above all, however, it is an attempt on the part of Francophones to gain control over their own affairs, to exist as a people with their own identity and culture, and their own language. In introducing legislation designed to protect French, Quebec Francophones seek no more than to guarantee for themselves similar rights that anglophone Canadians have felt unnecessary to state as policy because they were implicit in practice already. There has also been violence in Wales over the presence of English signs, and the purchase of vacation homes by people from England.

Not surprisingly, signs carry a lot of symbolic freight. They do more than identify places and things. They reveal social hierarchies. Jerusalem's political history is encapsulated in the city's multilingual signs. Trilingual signs with English on top and Arabic and Hebrew underneath, such as the Jaffa Gate sign in Figure 1.6, date from the period when Palestine was ruled under British mandate from 1919 to 1948. When the Jordanians conquered the Old City, their use of Arabic-English signs with Arabic on top signaled the political pre-eminence of Jordan. The absence of Hebrew in effect



Figure 1.5 Welsh Language Society protest against sale of houses

[Courtesy of Marian Delyth]

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Figure 1.6 Trilingual signs in Jerusalem

[Adapted from Spolsky and R.L. Cooper, *The Languages of Jerusalem*. Oxford: Oxford University Press, 1991, p. 7, Fig. 5.1 and p. 94, Fig. 6.8]

declared Jewish claims as illegitimate. When the Israelis captured the Old City in 1967, they put up trilingual signs, this time with Hebrew on top, and English and Arabic underneath. The Arabic on a number of street signs in the Jewish quarter was painted over around 1984, or defaced.

Languages and language varieties are always in competition, and at times in conflict, as the cases of Quebec and Jerusalem illustrate. There may be approximately 6,000 languages in the world, but there are only about 200 countries—which means that multilingualism is present in practically every country in the world. As the following chapters will show, however, the boundaries of modern nation-states have been arbitrarily drawn, with many of them created by the political and economic interests of Western colonial powers. Many indigenous people today, such as the Welsh, Hawaiians, and Basques, find themselves living in nations they had no say in creating and are controlled by groups who do not represent their interests—and, in some cases, actively seek to exterminate them, as is the case with the Kurds in Iraq and Turkey. More than

80 percent of the conflicts in the world today are between nation-states and minority peoples.

All nation-states, whatever their political ideology, have persecuted minorities in the past and many continue to do so today. While not all states are actively seeking the eradication of minorities within their borders, they pursue policies designed to assimilate indigenous people into the mainstream or dominant culture. Many immigrants to the United States, for instance, were brainwashed into thinking that their languages and cultures were inferior and therefore had to be abandoned for the sake of being American. As recently as 1971 it was illegal to speak Spanish in a public school building in Texas. The widespread assimilation of minorities in this way in democratic countries such as the US is generally ignored, since it is assumed that assimilation is voluntary and not coerced. Consideration of the larger picture, however, reveals a fuzzy boundary between forced and voluntary assimilation.

Most older Saami (Laplanders) in Finland, for instance, were indoctrinated by the school system into believing that the speaking of Saami even at home weakened the child's knowledge of Finnish. Many parents from various south Asian minorities now living in Britain have been told by teachers and social workers that speaking languages other than English at home would put their children's learning of English at risk. The research evidence indicates otherwise, as we show in Chapter 8, but most of the so-called experts who offer such advice are monolinguals and think of bilingualism as a problem in need of remediation. Children all over the world have been punished and ridiculed at school for speaking their parents' languages.

Political scientists once thought that the spread of both global capitalism as well as communism would eventually eliminate long-standing narrow allegiances to local ethnicities in favor of a broader loyalty to modern nation-states. Yet ethnic nationalism has repeatedly resisted the melting pot. Ethnicity also grows stronger when actively denied or suppressed. Throughout its 74 years of existence the territory once called Yugoslavia has been a powder keg of ethnic rivalries going back centuries. The country that has been dissolving these past few years was an artificial creation of conflicting cultures held in check by a centralized Communist government until 1980; once the old regime crumbled, old tensions surfaced, leading to the unraveling of the country. We will see in more detail in Chapter 8 how the virtual collapse of the economies of the former Soviet bloc countries has revealed the difficulties of centralized planning that rides roughshod over regional and ethnic affiliations and their related languages.

We see in these examples that languages perform a fundamental act of identity for their speakers: you are what you speak. Sir James Henare, a Maori leader who died in 1989, expressed such sentiments about the

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Maori language: "The language is the life force of our Maori culture and *mana* ['power']. If the language dies, as some predict, what do we have left to us? Then, I ask our own people who are we?" Likewise, a Romani saying, *Varesave foki nai-len pengi nogi chib, si kokoro posh foki*, translates as *a people without their own language is only half a people*, and the Welsh proverb *Heb iaith, heb genedl* means *no language, no nation*.

Although the existence of distinct cultures within one nation has often been seen by the powers that be as a threat to the cohesiveness of the state, our examples (and many more like them that we consider in coming chapters) show that denying people the right to their own language and culture does not provide a workable solution either. When large portions of the population are denied forms of self-expression, the nation's political and social foundations are weakened. This is not to deny the existence of considerable problems, particularly where the traditional patterns of behavior of a minority group conflict with those of the dominant culture in a society. We argue in Chapter 8 that a nation that incorporates cultural and linguistic diversity is also richer than one that denies their existence. Difference itself is not the problem, but rather lack of respect for difference, its meanings, and its values.

To preserve our languages is also to preserve ourselves and our diverse heritage—admittedly an ultimately selfish goal. Sociolinguist Joshua Fishman says that we should not be embarrassed about the fact that support of language maintenance is basically a value position, because the position of its opponents is also a value position. They assume it would be better if small cultures and languages were simply to die out. Just because people can evidently survive without their languages and traditional cultures does not necessarily mean that enforced uniformity is a good thing, or that nothing of consequence is lost when a people loses a language.

What can be done?

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 which have created this threat can we hope to reverse it. Hence, the main purpose of this book is to inform the wider scientific community and the public of the threat facing the world's languages and cultures.

The language endangerment crisis is only just beginning to be taken seriously among linguists and their professional organizations. It very much needs to be brought to the public's attention in the way that the environmental crisis has been popularized through activities such as Earth Day, held annually since 1970. Before the popular environmental movement, for instance, the US had no Environmental Protection Agency, no

Clean Air Acts, no Endangered Species Act, and there were few environmental laws at either the federal or state level. Consumer knowledge today, however, is such that many people now refuse to buy furs or sprays which damage the ozone layer, or other products known to have a negative impact on the environment. Recycling is today a household word.

We are encouraged by the fact that even though it is only relatively recently that serious thought has been given to the possibility that human interference with nature was having disastrous consequences for the environment, many people now recognize that resources must be managed if we are to survive. Although there is still a long way to go, this increased awareness has contributed to a slowing of environmental damage. Yet few people think of languages in the same way they do of other natural resources such as air, water, and oil, which need careful planning. Of the many similarities between threatened languages and endangered species, the most obvious one is their irreplaceability. There is no substitute for either type of resource.

By directing our efforts to saving the components of our global village—our peoples, languages, and cultures—we aim to preserve ourselves as a species with all its rich variation. As Joshua Fishman points out, in this sense the task of preserving languages is a “good problem” because its solution will contribute to solving related problems rather than to making things worse. The solution to the environmental crisis involves preserving local ecosystems through the empowerment of indigenous peoples who live there. Preserving and creating small-scale community habitats in turn support languages and cultures.

Environmental damage, like language death, has global effects, but the burden at the moment falls most heavily on the developing countries, which have some of the highest rates of biolinguistic diversity. This is yet another reason why the extinction of biolinguistic diversity has been ignored: it is seen as largely a Third World problem. The destruction of the rain forest, for instance, affects directly and immediately developing countries in the tropics for the most part, but the aftermath affects us all. When the forests are burned or otherwise cleared, biodiversity is lost and there is atmospheric buildup of greenhouse gases, which contributes to global warming.

To explain what is happening to languages, and what it means, we have to understand the broader and more fundamental social pressures that are active in the world today, such as the huge differences in numbers and economic power between the peoples of the world. These contemporary disparities have not come out of nowhere in the last few decades. To explain their existence, we have to consider the broad sweep of human history over the very long term, perhaps as much as ten thousand years. The task of this book is thus a very large one indeed. We will not try to duck any aspect of it, as we are determined to pursue the

inequalities of the contemporary world all the way back to first causes as far as we can.

However, this does mean that our treatment of the issues in a book of this length will have to be painted for the most part with a rather broad brush. Although we will use concrete examples wherever we can, these are at times necessarily shorter on detail and nuance than we would like. It is not that we think that detail and nuance are unimportant; they can make the difference between a culture surviving and its dying out. However, both the patterns seen through a telescope and those seen through a microscope are true patterns, and telescopes are good for finding forests, in which microscopes can then tell us a great deal about individual trees.

In the next chapter we will take a telescopic look at the distribution of languages and linguistic diversity in order to assess the extent of language endangerment around the world. Chapters 3 and 4 zero in on some specific examples of diversity. Chapters 5 and 6 provide a broad overview of the agrarian and industrial revolutions in terms of their consequences for the spread of languages and their speakers. Having identified the major forces that now threaten the common repository of biolinguistic diversity, the final two chapters focus on planning strategies for survival of the world's biolinguistic diversity, with Chapter 8 containing some specific examples of language maintenance efforts underway around the world.

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Table 2.1 Top fifteen languages in terms of number of speakers

Rank	Language	Population	% of World's Pop.
1	CHINESE, Mandarin	885,000,000	15
2	ENGLISH	322,000,000	5.4
3	SPANISH	266,000,000	4.5
4	BENGALI	189,000,000	3.2
5	HINDI	182,000,000	3.0
6	PORTUGUESE	170,000,000	2.8
7	RUSSIAN	170,000,000	2.8
8	JAPANESE	125,000,000	2.1
9	GERMAN	98,000,000	1.6
10	CHINESE, Wu	77,175,000	1.3
11	JAVANESE	75,500,800	1.2
12	KOREAN	75,000,000	1.2
13	FRENCH	72,000,000	1.2
14	VIETNAMESE	66,897,000	1.1
15	TELEGU	66,350,000	1.1

Source: *Ethnologue*, 1996

with large groups of speakers in the UK, USA, New Zealand, Canada, Australia, and South Africa. For similar historical reasons, Spanish and Portuguese are widely spoken in Latin America; French in parts of Africa, the Pacific, and North America; and languages such as Bengali and Hindi in the UK. Similarly, Mandarin (in addition to other Chinese languages such as Wu) is spoken not only in mainland China, but also in Singapore, Taiwan, and Hong Kong. This is one reason the populations speaking these top fifteen languages are so large.

Most of the world's languages, however, do not show the same geographic spread as these top fifteen. Although as many as 250 languages are spoken by a million or more people, 83 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. In fact, there are approximately 25 to 30 times as many languages as there are countries, which means some degree of bi- or multilingualism is present to some degree in practically every country in the world.

Accurate information on many languages is difficult to come by, however, because governments often ignore and even ban certain languages—

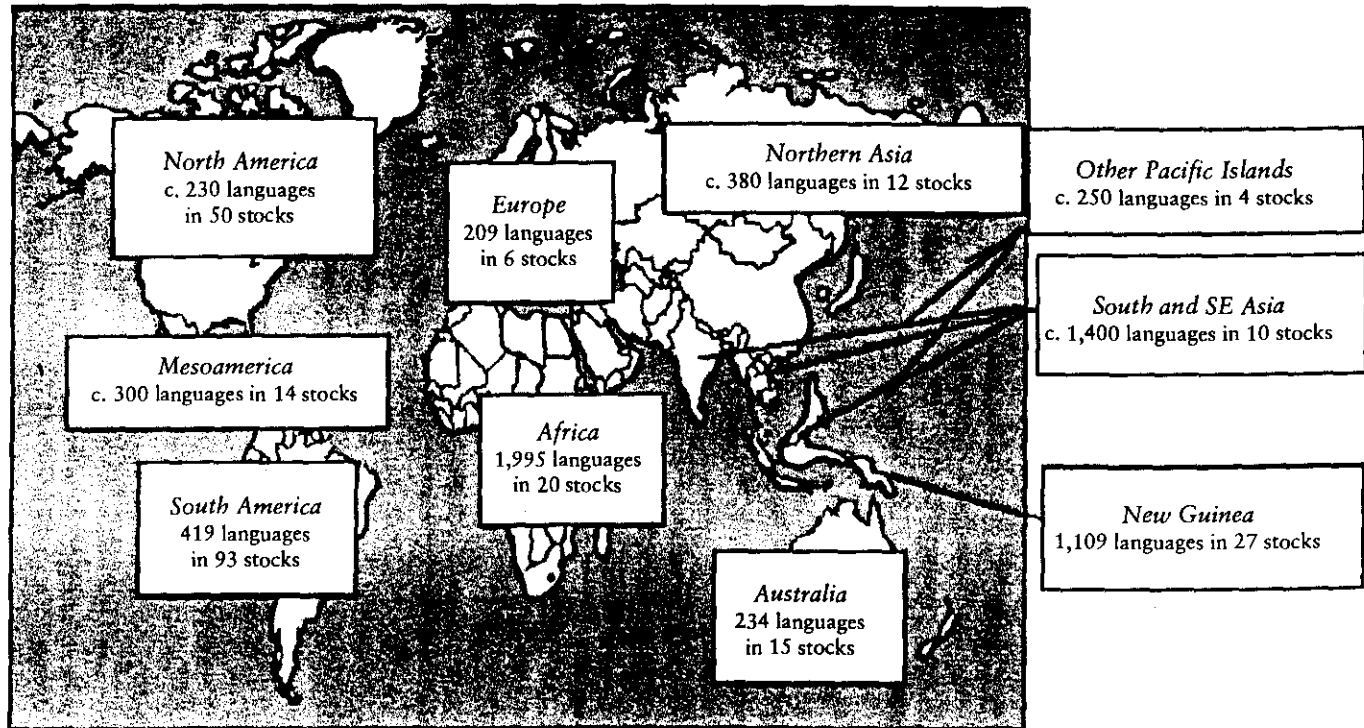


Figure 2.2 Global distribution of languages and stocks