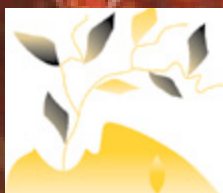


Assessing the State of the World's Languages



Terralingua



Linguistic Diversity: a barometer for planetary sustainability

Diversity is the natural state of the world. It is the quintessence of the evolutionary process, as found in nature with its multiplicity of flora and fauna, called biodiversity, and in human society with its multiplicity of cultures, called cultural diversity. Diversity in nature and diversity in culture are integrally related and connected with the health and sustainability of ecosystems. This link has given rise to the idea of biocultural diversity as a unified phenomenon. Language diversity is part of the co-evolution of humans with biodiversity. Languages are a key component of cultural diversity. They enable representation and transmission of the core aspects of cultures. Cultural diversity emerges and sustains itself through language diversity. Public concern about the loss of biodiversity is both local and global, in that it extends from saving species in people's immediate environment to the global context of biological extinction. Likewise, public concern about the loss of language diversity must start by necessity with the local, that is, with the loss of local languages, spoken by smaller communities, which are at greater risk of extinction. Moving from the local to the global loss of language diversity, and from individual and community language loss to humanity's loss of diverse cultural options for human survival must be a logical progression.

Prof. E. Annamalai, Director Emeritus of the Central Institute of Indian Languages (CIIL), Mysore, India

BIOCULTURAL DIVERSITY TOOLKIT

Volume 2 - Assessing the State of The World's Languages

Copyright ©Terralingua 2014

Designed by Ortixia Dilts

Edited by Luisa Maffi and Ortixia Dilts





Table of Contents

Introduction

What Is Linguistic Diversity, and Why Does It Matter?

Talking the Walk in Tanzania: Language as the Missing Ingredient of Biodiversity Conservation?

Language Diversity Index Tracks Global Loss of Mother Tongues

The Index of Linguistic Diversity: An Overview of a New Measure of Trends in the World's Languages

For More Information

Image Credits: Cover and photo above © Anna Maffi; Montage left page ©Terralingua (photos 1, 3), © Cristina Mittermeier (photo 2,4).

Introduction

Text: Luisa Maffi

Photos: Anna Maffi

Over the past two decades, there has been growing interest in developing tools to assess the state and trends of the world's linguistic diversity. The initial impulse for this interest came from the realization that many of the world's languages are increasingly at risk of extinction, due to the breakdown of intergenerational language transmission. Until recently, however, evidence about the state of languages was mostly anecdotal and unsystematic. Linguists offered educated guesses and tentative projections about the magnitude of global linguistic diversity loss, suggesting that 50% to 90% of the approximately 7,000 languages spoken

on earth today might be extinct or nearly extinct by 2010.¹ It was readily apparent that more rigorous and systematic measures were needed to properly estimate the scale and pace of this alarming extinction crisis.

More recently, another impulse for assessing global linguistic diversity has arisen in an international policy context, through recognition of the links between biodiversity and cultural diversity (including linguistic diversity), and of the role of language and traditional environmental knowledge (TEK) for biodiversity conservation. Major international organizations (such as IUCN, WWF, UNEP, CBD, UNESCO, and others) have adopted statements of principles and in some cases also programs of work that stress the links between biodiversity and cultural diversity. The UN Convention on Biological Diversity (CBD) has highlighted the importance of TEK for biodiversity conservation. Its Article 8j states that each Contracting Party (that is, each country that is a signatory to the CBD) must:

*"Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices."*²

The implementation of the CBD has led to intensive and long-term discussions and negotiations among governments, NGOs, and indigenous and local communities who are the holders of the





More than half of the world's known languages are spoken by fewer than 10,000 people, and 85 percent of the world languages are indigenous ones - the most vulnerable.

“knowledge, innovations and practices... relevant for the conservation and sustainable use of biological diversity” referred to in Article 8j. One of the outcomes of this process has been the establishment of a series of targets and related indicators to assess and monitor progress toward the CBD’s goal of reducing biodiversity loss.³ This includes targets that address Article 8j’s provisions related to the protection and promotion of traditional knowledge.⁴ One of the indicators chosen for this purpose is “Trends of linguistic diversity and numbers of speakers of indigenous languages”. Because of the links between language and traditional knowledge, the state of languages is considered to be a legitimate, if indirect, indicator of the vitality of TEK.

In 2005, Terralingua was invited to be a member of the Biodiversity Indicators Partnership (BIP)—a CBD-mandated global initiative in charge of promoting and coordinating development and delivery of biodiversity indicators for the CBD Targets—and to create a template for the linguistic diversity indicator called for by the CBD. Building on their previous work,⁵ in

2006-2009 Terralingua researchers David Harmon and Jonathan Loh developed the template, methodology, and first version of an Index of Linguistic Diversity (ILD), which was published in 2010.⁶ The ILD is featured in the “Aichi Passport”, an app for smart phones and tablets developed by the BIP to present indicators relevant to the CBD’s 2020 Targets to participants in CBD COPs (Conferences of the Parties). The ILD also figures on the BIP website as one of the indicators of interest for Target 18 of the CBD’s 2020 Targets.⁷ The indicator and its methodology and results have also been presented at various CBD and BIP meetings.

The ILD is the first-ever quantitative measure of trends in global linguistic diversity, based on a rigorous statistical methodology. It systematically tracks trends in linguistic diversity by recording changes over time in the numbers of mother-tongue speakers of a statistically significant sample of the world’s languages, and then computing changes in the share of the world’s population represented by the speakers of each



Linguistic rights - the right to the full-fledged use and unhindered transmission of one's language - are a fundamental aspect of human rights.

language. In so doing, the ILD provides solid data for researchers, policy makers, and language communities, which can be used to better direct interventions and mobilize resources in support of the maintenance of languages and the traditional knowledge they embody.

This manual is meant as an introduction to the ILD for potential users. The following sections first present the concept of linguistic diversity and its relevance, as well as a case study that illustrates the links between language and traditional knowledge and the implications for biodiversity conservation, and then introduce the ILD through excerpts of an interview with the ILD developers and of the ILD peer-reviewed publication.

NOTES

1. Krauss M. 1992. *The world's languages in crisis*. Language 68: 4-10.
2. See: <http://www.cbd.int/convention/text/>, accessed 4 July 2013.
3. The CBD Biodiversity Targets were first established in 2002, with a commitment to achieve "a significant reduction of the current rate of biodiversity loss at the global, regional and national level" by 2010 (<http://www.cbd.int/2010-target/>). At its 10th meeting in 2010, the Conference of the Parties to the CBD renewed its commitment to the goal of reducing biodiversity loss, and adopted the Aichi Biodiversity Targets for 2011-2020 (<http://www.cbd.int/sp/targets/>).
4. Targets 9.1 and 9.2 in the 2010 Targets; Target 18 in the 2020 Targets.
5. Harmon, D. 1995. *The status of the world's languages as reported in Ethnologue*. Southwest Journal of Linguistics 14(1/2): 1-28; Harmon, D, and Loh, J. 2004. *The IBCD: a measure of the world's biocultural diversity*. Policy Matters 13 271-280; Loh, J. and Harmon, D. 2005. *A global index of biocultural diversity*. Ecological Indicators 5(3): 231-41.
6. Harmon, D. and Loh, J. 2010. *The Index of Linguistic Diversity: An Overview of a New Measure of Trends in the World's Languages*. Language Documentation and Conservation 4: 97-151. Additional information and data from the ILD can be found on the ILD site at www.terralingua.org/linguisticdiversity/. The project was supported by a grant to Terralingua from The Christensen Fund.
7. Found at <http://www.bipindicators.net/indicators>.

What Is Linguistic Diversity, and Why Does It Matter?

Text: Luisa Maffi

Photos: Anna Maffi

Language is the capacity to acquire and use complex communication systems that are based on social convention and learned through social interaction. Beside its function as a communication tool, language serves many social and cultural functions: from signifying social identity to expressing and transmitting the worldview, cultural values, beliefs, feelings, knowledge, practices, and artistry of its speakers. As well, language reflects and conveys the historic adaptations of humans to their local environment, developed through long-term interactions between people and the natural world on which they depended for survival. Language, culture, and the environment, therefore, are closely linked to one another, bound together in an interrelated and interdependent whole.¹

A remarkable characteristic of the human species is that, while we have remained a single biological species, we have diversified into a dizzying array of thousands of different cultures speaking a multitude of different languages. Comprehensive and reliable sources of figures about the diversity of cultures are hard to come by. As a consequence, generally the diversity of languages is taken as a proxy for cultural diversity as a whole.² Although languages differ from one another in a number of ways—in form, in function, in the cultural meanings they convey, in their historical relationships to one another—most commonly, “linguistic diversity” is understood as the number of different languages found in a given region, or in the world at large. Current estimates put the number of distinct languages spoken at present to 6,000–7,000, an estimated 80% to 85% of which are spoken by indigenous peoples.³ Only a handful of the world’s⁴ languages are spoken by more than 1 million people. The overwhelming majority of languages have fewer speakers, with about half of all languages having less than 10,000 speakers each. That means that most languages are spoken by small or very small communities of people.

Over the past few decades, alarm has arisen that our planet is fast becoming less and less of a linguistically (and culturally) diverse place. Many linguists and concerned others have called attention to this crisis, which has been described as the “other extinction crisis”, with reference to the better-known biodiversity extinction crisis that is also unfolding on earth. This “other” crisis is affecting in particular indigenous peoples, as the generally smaller size of their languages makes the languages especially vulnerable to the breakdown of intergenerational language transmission. Worldwide, a rapidly increasing





If linguistic diversity is part and parcel of the diversity of life in nature and culture, then any loss in linguistic diversity is a loss in the vitality and resilience of the whole web of life.

number of languages—perhaps as many as a third of all languages⁵ — are considered “endangered”, or at risk of extinction as mother tongues (languages learned from birth, or in which a person expresses him/herself best). An “endangered” language is one that is no longer being passed on from one generation to the next. As language is a learned capacity, the vitality of a language is entirely dependent on intergenerational transmission. If children no longer acquire the language of their parents and grandparents, then that language begins to go down the path toward extinction, as the older generations of speakers pass away without a new

generation of speakers to take their place. As a consequence, linguistic diversity has been declining on all continents, with the steepest losses recorded in Australia and North America. Over half of the languages currently considered “nearly extinct” worldwide are spoken in these two regions of the world.

The roots of this extinction crisis reside in the profound social, political, and economic changes that have affected language communities around the world ever since the beginning of the era of European expansion and colonization in the late 1400s. The process has continued to this day, through the successive formation of colonial empires and nation-states, industrialization, the rise of social and economic ideologies disconnected from any awareness of our planet’s natural limits, and a push for unfettered economic growth, which is now fueling globalization. All along, dominant societies have directly or indirectly imposed just a few dominant languages over a plurality of local languages. In so doing, they have progressively suppressed the linguistic diversity that is one of the defining features of our common humanity, rendering the world more and more homogenous in thought and expression.

But why does this matter? Why is the loss of so many small languages relevant in the world today? Aren’t these languages just relics of the past, using which condemns their speakers to remaining “frozen in time” like so many “museum specimens”, cut off from the benefits of present-day civilization? Isn’t the reduction of linguistic diversity just a minor price to pay for progress, modernization, conflict reduction, and the ability to more widely communicate in one or other of those few dominant languages? Such questions reflect a widespread attitude among speakers of the world’s majority languages, many of whom have been deeply influenced by the strong monolingual (and monocultural) ideologies of their countries. This attitude often also influences speakers of the smaller languages, who may be led to see their mother tongues as a hindrance to “progress”, and feel compelled to abandon them (rather than keeping them while becoming fluent in dominant languages as well, as is entirely possible).

Many major international organizations have adopted statements of principle, and in some cases even programs of work, about the links between biodiversity and cultural diversity (including linguistic diversity).

On the other hand, along with growing awareness of the mounting pace and scale of language endangerment and loss worldwide, has come better understanding of why we should “bother”⁶ with maintaining linguistic diversity. A number of important reasons have to do with shared cultural heritage and social identity. Language is an intrinsic and defining part of a people’s history and collective identity; it marks societal boundaries and plays a role in shaping and regulating people’s interactions with others within and outside one’s language community.⁷ Contrary to the popular belief in the “curse of Babel”—the idea that speaking different languages is not a good thing as it breeds misunderstanding, conflict, and war—the presence of linguistic boundaries is usually not, in and of itself, at the root of conflict. Peaceful interactions are both possible and frequent across linguistic and cultural boundaries. It is commonly political and economic reasons, rather than linguistic and cultural reasons as such, that lead to conflict.⁸

In fact, it has been argued that the maintenance and development of local languages are crucial for achieving global social, economic, health, and environmental goals, such as those enshrined in the UN’s Millennium Development Goals.⁹ As well, linguistic rights—the right to the full-fledged use and unhindered transmission of one’s mother tongue—have been recognized as an essential aspect of human rights, along with social and cultural rights. They are implied or explicitly included in many human rights declarations and conventions—from the 1948 Universal Declaration of Human Rights to the 2007 United Nations Declaration on the Rights of Indigenous Peoples—that affirm the right of individuals and communities to develop and maintain their own social, cultural, and linguistic identities, without any discrimination or pressure for assimilation, and without being forcibly deprived of the conditions (including the language conditions) needed for the deployment of their fullest human potential.



The Index of Linguistic Diversity is the very first quantitative measure of trends in linguistic diversity.

Language maintenance is also a crucial factor of social cohesion and individual and group health and well-being. Language has a major role in fostering social cohesion, by acting as an anchor for the mutually shared understandings, meanings, and interactions that keep a culture together and give people a common sense of belonging. Language loss, on the other hand, represents both a warning sign and a contributing factor of loss of social cohesion. In turn, this has a profound impact on people's health and well-being and on the ability, particularly among youth, to be a well-adjusted contributing member of society.

Some of the most striking evidence of the connection of language maintenance with social cohesion and human well-being comes from studies that have revealed a strong correlation between the level of maintenance of native languages in indigenous communities and the incidence of health problems and youth suicide. As an example, among First Nations youth in British Columbia (BC), Canada, the rates of suicide are lowest (and in fact near zero) in those few communities where the native language is still vital, while they skyrocket where the use of the native language is on the wane.¹⁰ The full significance of this finding becomes apparent when considering that, between 1890 and 2010, the percentage of fluent native language speakers among BC First Nations plummeted from 100% to merely 5.1%.¹¹ Taken together, these two findings suggest that the precipitous drop in fluent native language speakers among BC First Nations has had profound implications for social cohesion in their communities, and thus for community health and well-being. These implications are tremendously costly in both human and economic terms. Similar findings are emerging for indigenous communities elsewhere. Many of the language revitalization efforts now taking place worldwide are motivated by awareness of this critical social role of language.

Another major argument in support of linguistic diversity stems from the link between language and culture, and in particular between language and traditional knowledge. Cultural



Many language communities are fully aware of the plight of their languages, and have been hard at work to reverse that situation.

worldviews, values, beliefs, knowledge, meanings, and practices are conveyed through language in a myriad ways—from everyday interactions among people, to rituals and ceremonies, oral histories, elders’ teachings, stories, songs, myths, poetry, and other forms of oral traditions and art. These cultural traditions are essential to the formation of individual and social identity, sense of place, and connections between generations as well as with ancestors and the spiritual realm. Language has a primary role in ensuring the continuity of these fundamental societal processes and in communicating and transmitting the many facets of culture.

The relationship between language and traditional ecological knowledge (TEK) has gained special prominence in recent years, because of the growing awareness of the global importance and value of TEK. Historically, human cultures have developed an extraordinary wealth of nature knowledge, born out of the close adaptive bond and interdependence between people and the natural environment. This knowledge has been and continues to be critical for survival among the world’s cultures, particularly among indigenous peoples and local communities. TEK from all over the world also offers lessons for sustainable living that are crucial to address our global environmental problems and thus are essential for the future of humanity at large. As languages are living repositories of TEK, the thriving of languages contributes to ensuring the vitality of TEK.

Recognition of the “inextricable link” between language, knowledge, and the environment at the local level, and between biodiversity, cultural diversity, and linguistic diversity at the global level, has been a key factor in the emergence of the concept of biocultural diversity (BCD)—the idea that the diversity of life is diversity in nature, cultures, and languages—and of the related field of knowledge and action.¹² From a biocultural perspective, protecting and sustaining linguistic and cultural diversity is intrinsically necessary for maintaining biodiversity and healthy ecosystems, and vice versa.¹³ These interlinkages provide what is perhaps the most far-reaching argument for linguistic diversity: if linguistic diversity is part and parcel of the diversity of life in nature and culture, then any loss in linguistic diversity is a loss in the vitality and resilience of the whole web of life. Every time any language, no matter how small, disappears, and with it go the cultural traditions and traditional knowledge that language conveys, it is a piece of the planet’s living fabric that gets torn off, leaving all of the living world more fragile, more vulnerable, and with fewer options for the future.



Alarmingly, the Index of Linguistic Diversity (ILD) reveals that, over the 35-year period covered by the indicator (1970-2005), the top 16 of the world's languages have increased their collective share of the world's population from 45% to 55%, correspondingly shrinking the collective share of the rest of the approximately 7000 languages spoken today. Overall, these changes have resulted in a significant downward trend in global linguistic diversity: a reduction of 20% between 1970 and 2005. As indigenous languages represent 80%-85% of the world's languages, it follows that most of this reduction is due to the shrinking share of indigenous languages among the world's languages.

It is our hope that, as the ILD methodology and results become better known in both research and policy, this indicator will become more widely used in the relevant circles, and thus that it will provide a significant contribution to halting the loss of linguistic diversity. From a biocultural perspective, this means helping to arrest the loss of the whole diversity of life.

NOTES

1. Maffi, L. (ed.) 2001. *On Biocultural Diversity: Linking Language, Knowledge, and the Environment*. Washington, DC: Smithsonian Institution Press.
2. Harmon, D. 2002. In *Light of our Differences: How Diversity in Nature and Culture Makes Us Human*. Washington, DC: Smithsonian Institution Press.
3. Harmon, D. 1996. *Losing species, losing languages: Connections between linguistic and biological diversity*. *Southwest Journal of Linguistics* 15(1/2): 89-108; Harmon, D. 2002. In *Light of Our Differences: How Diversity in Nature and Culture Makes Us Human*. Washington, DC: Smithsonian Institution Press.
4. UNESCO estimates about 6,000 languages (<http://www.unesco.org/culture/languages-atlas/index.php>, accessed 28 June 2013). The 2013 17th edition of *Ethnologue* (www.ethnologue.com) gives a figure of 7,105 living languages.
5. Harmon, D. and Loh, J. 2010. *The Index of Linguistic Diversity: An Overview of a New Measure of Trends in the World's Languages*. *Language Documentation and Conservation* 4: 97-151.
6. According to UNESCO (<http://www.unesco.org/culture/languages-atlas/index.php>, accessed 28 June 2013).
7. Thieberger, N. 1990. *Language maintenance: Why bother?* *Multilingua* 9(4): 333-358.
8. Foley, R. A. 2004 *The evolutionary ecology of linguistic diversity in human populations*. In *Traces of Ancestry: Studies in Honour of Colin Renfrew*, M. Jones (ed.). Cambridge, UK: McDonald Institute for Archaeological Research.
9. Maffi, L. 1998. *Language: A Resource for Nature*. *Nature and Resources: The UNESCO Journal on the Environment and Natural Resources Research* 34(4): 12-21; Maffi, L., Skutnabb-Kangas, T., and Andrianarivo, J. 1999. *Linguistic Diversity*. In *Cultural and Spiritual Values of Biodiversity*, D. Posey (ed.). Pp. 21-57. London/Nairobi: Intermediate Technology Publications/UN Environment Programme.
10. See www.sil.org/why-languages-matter, accessed 1 July 2013.
11. Hallett, D., Chandler, M.J., and Lalonde, C.E. 2007. *Aboriginal language knowledge and youth suicide*. *Cognitive Development* 22: 392-399.
12. *First Peoples' Heritage, Language, and Culture Council* 2010. *Report on the Status of BC First Nations Languages*. Brentwood Bay, BC: First Peoples' Heritage, Language, and Culture Council.
13. Maffi, L. (ed.) 2001. *On Biocultural Diversity: Linking Language, Knowledge, and the Environment*. Washington, DC: Smithsonian Institution Press.
14. Maffi, L. and Woodley, E. 2010. *Biocultural Diversity Conservation: A Global Sourcebook*. London: Earthscan.



If I know one word in my language my creator will let me go to where I have to go when I pass away. I don't have a whole language. It is silly to think I will bring an extinct language back to fluency with only 300 people in an extinct tribe. I talk to my computer. I feed the language in, and when I make mistakes the computer talks back.

But if I have one word, it is the power of one word, and whoever is at the garden gate — the pearly gates, the happy hunting grounds — will recognize me and it will be enough for me to go in. There is so much power in just one word. Somebody asked: 'Why save the language or save your dance, why bother? Why don't you just give it up, become one of us?' Well, you can't give up the color of your eyes. You can't give up what has been running through your blood for ages.

You take away a language, take away the very last word, and this land is going to shudder and shake you off. We are getting close to that in a lot of places. We need the language because it is part of our mandate from our creators to take care of the Earth.

— L. Frank Manriquez, Tongva/Ajachmem, USA. From: "Silent No More: California Indians Reclaim Their Culture — And They Invite You To Listen". In: *On Biocultural Diversity: Linking Language, Knowledge, and the Environment* (L. Maffi, ed.), 2001.



Women singing at a wedding in Goka village, Tanzania. Photo © Sam Ross 2012



CASE STUDY

Talking the Walk in Tanzania: Language as the Missing Ingredient of Biodiversity Conservation?

Text and Photos by Samantha Ross

The Eastern Arc Mountain Chain in Tanzania is one of the 34 global biodiversity hotspots and provides an ideal opportunity to study biological and linguistic diversity. The range spreads from Southern Kenya to Southern Tanzania and was formed as the Rift Valley took shape creating isolated mountainous blocks replete with unique ecosystems and biodiversity, prompting the moniker “The Galapagos of Africa”. The mountains are home to 200 endemic species of fauna and more than 800 endemic floral species, including the popular African violet (*Saintpaulia*) and Busy Lizzies (*Impatiens*), with new species still being discovered. Tanzania is also linguistically diverse, with 126 living indigenous languages, although Kiswahili is the lingua franca, spoken by 95% of the population. President Julius Nyerere chose Kiswahili as the national language to promote peace, unity, national identity and tribal cohesion after Independence in 1961, as it is a neutral language, not favouring one ethnic group or region over any other. The many vernacular languages are used within ethnically homogenous groups, predominantly in family settings in rural areas.

In Tanzania, both the unique linguistic/cultural diversity and biodiversity are under threat. A major challenge concerning the safeguarding of linguistic diversity is the lack of documentation on languages and language speakers, and national linguistic policies that neglect the importance of African languages for development. Kiswahili has the advantage of being neutral, but without support for the other languages it dominates all walks of life – business, education, religion, entertainment and

Local languages are essential for transferring locally specific indigenous knowledge that is vital for conserving the local environment and for providing the local population with livelihood resilience and economic opportunities.

administrative duties. The local languages are not recognized in any official capacity and are actively banned from being used in education or the media. English is an additional threat, since it is the language of global development and cooperation, trade and the official language of the East African Community. The views of local people on these processes of modernization and change and how these affect the younger generations reflect current feelings and can offer insights into the future of local languages and culture in the area: 'Our children don't want to learn about the plants and the environment because they watch TV and go to school. They don't have time. They want to get jobs in the big towns.' 'Religion stops our young people from learning about their traditional knowledge. They listen to that God and not ours.' 'Traditional languages are out of date.'

Tanzania's unique biodiversity is also endangered. Changes in land use to accommodate the food needs of a growing population are the cause of habitat loss. In addition, the all-pervasive reach of globalization and westernization and the accompanying acculturation are increasing challenges for the Tanzanian population to manage their resources. Local people comment: 'The forest used to come right to the edge of our village. We could get everything we needed there. Now the

village has got bigger. There are more people. The forest has moved away, it is smaller. More people are cutting down trees to build houses and farms. The trees are less so the rain is less too and the soil is bad. It is a problem for our farms as we can't grow enough food.' 'It is now more difficult to find plants for medicine. I have to walk further and further. It takes me much longer to gather plants than it used to.' 'We used to easily find mushrooms and plants for vegetables. They were everywhere. Now it is difficult.'

In order to examine the biocultural dynamics of language in Tanzania, and explore the possible links between language and indigenous education for environmental and cultural sustainability, a research project was conducted in the Lushoto District in the West Usambara Mountains of Northeast Tanzania, an area little studied but highly threatened in terms of an increasing population living on steep-sided hills that are intensively farmed for both subsistence and cash crops. These activities, coupled with forest encroachment for medicinal plants, supplementary foodstuffs and timber, are all contributing to habitat loss, soil erosion, water shortages and the invasion of exotic species. The local population has extensive knowledge of wild plants, using them primarily as supplementary foods such as greens,



Traditional Goka Healer, Photo © Sam Ross, 2009



Some villagers looking at the first draft of the book made for them. Photo © Samantha Ross, 2011

mushrooms and fruit and medicinal plants. The project focused on the role of local languages (in this case Kisambaa and Kimbugu or Kima'a) and traditional knowledge in conserving the local environment and contributing to livelihood resilience and economic opportunity. The project investigated whether language shift is taking place as Kiswahili becomes increasingly important in daily communication and socio-economic interactions, and what the implications are of this language shift for local languages and biodiversity conservation. These findings were then related to education and biodiversity conservation policy in Tanzania.

Research results show that language shift is indeed occurring in Lushoto District. Kiswahili and English are becoming the languages of choice above the local languages Kisambaa and Kimbugu. Within traditional spheres where the local languages would customarily be used, such as around the local area, the market, and within peer groups, Kiswahili is pushing out the vernaculars into smaller and smaller arenas such as the home and among elders. This is reflected in comments from participants: 'I teach my children Kiswahili because it is the acceptable language. It is the language we speak everywhere. Everyone understands it.' 'I speak [local languages] when

I meet those who know them, but Kiswahili is everywhere.’ ‘I speak those languages [mother tongues] at home because at school we are not allowed to speak in Kisambaa. I speak to my friends in Kiswahili.’

However, there is one domain in which the local languages are remaining dominant: the area of ethnobotanical knowledge. Discussing plants—their uses and other pertinent knowledge, such as the plants’ ecological needs and locations—is better performed in the mother tongue. The inter-ethnic dominant language of Kisambaa appears to be the language most applicable for locally specific ethnobotanical knowledge and is popularly chosen for identifying plants and describing plant practices. Kisambaa is also chosen for the purpose of transferring this indigenous plant knowledge across generations.

These findings point to the need for integrated intercultural and multilingual conservation practices. Local languages are essential for transferring locally specific indigenous knowledge that is vital for conserving the local environment and for providing the local population with livelihood resilience and economic opportunities. The findings raise questions and offer insights into Tanzanian and international debates on the use of mother tongue as the language of instruction in decentralized education systems. They also shed light on the language and knowledge base best suited for use by institutions involved in biodiversity conservation, so as to put into place the most successful practices.

Most importantly, the local knowledge has been documented in three books in a format

accessible to the local communities, the first of which (Kimbugu version) is ready for local distribution in summer 2013. The books will aid environmental and cultural conservation and contribute to indigenous language preservation and maintenance. Two of them contain local folk stories written in the two local languages alongside Kiswahili and English, with pictures by local artists. A third book will have photographs of locally specific economically, socially and culturally important plants, their names in the local languages, their uses, ecological niches and conservation status. A draft copy of one of the books was shown to the research participants. Their comments show how well it was received: ‘I have never seen my language written down before. This is very special.’ ‘This is so important for us. Everyone will want one of these books to show their children and grandchildren. You must print many.’ ‘The pictures of these plants will help us, and our children, to take care of our environment.’ ‘Our language will now be known and remembered by so many people.’ It is hoped that the popularity and success of these books will encourage people in other areas to document their local knowledge in their own languages for future generations, inspiring and motivating the government and other funding bodies to set aside resources for similar vitally important projects.

Modified from pp. 36-38 of: Maffi, L. and Woodley, E. 2010. Biocultural Diversity Conservation: A Global Sourcebook. London and Washington, DC: Earthscan.

Language Diversity Index Tracks Global Loss of Mother Tongues

Excerpts from an interview with Luisa Maffi, David Harmon, and Jonathan Loh by David Braun of National Geographic News Watch*

Photographs: Cristina Mittermeier. Wai Wai and Kayapo People, Brazil



David Braun of National Geographic News Watch interviewed Luisa Maffi, David Harmon, and Jonathan Loh about the Index of Linguistic Diversity. Harmon, of the George Wright Society/Terralingua, and Loh, of the Zoological Society of London/Terralingua, are the co-authors of a paper, *Index of Linguistic Diversity*, published in the journal *Language Documentation & Conservation*. Volume 4 of 2010.

Braun: What is language diversity, and why are we potentially on the brink of a mass extinction of languages?

Harmon: There are 7,000 languages, but there's more to diversity than just separate languages.

There's diversity within languages and structures of languages, and all that.

The reason why we're coming up to the brink of a mass extinction of languages is simply that there are a lot of pressures in the world that are enticing or even forcing people to switch from generally smaller, more geographically restricted languages to larger languages, especially global languages like Mandarin Chinese, English, or Spanish, or even languages more regionally dominant than smaller languages.

So we have 7,000 languages, which is the consensus number of discrete languages that are out there. But most of the people who study endangerment of languages are predicting that there is a potential for a mass extinction of these languages within the 21st Century. By extinction they mean that the languages are no longer going to be spoken by people as mother tongues, their principal languages.

Some of these languages might still be spoken after they are lost as mother tongues, in a restricted way, in ceremonies or in special usages like that. But in essence there is a strong possibility that we'll lose languages that people are using as their main vehicle of expression, which they may regard as one of the linchpins of their self-identity.

**This abridged version of the interview is published here with permission of David Braun. The full text can be read at: http://newswatch.nationalgeographic.com/2011/03/01/language_diversity_index_tracks_global_loss_of_mother_tongues/*

The ILD is an index of the concentration of people across languages. It's a landscape of languages of the world and people are shifting to different places in that landscape. Some languages are colonizing more of that landscape than others. Even if the numbers of people who speak a language are growing numerically, their portion of the overall landscape of languages that their language occupies is being compressed by the larger languages growing even faster than they are.

So all the pressures that are out there in terms of globalization, government policies that may favor certain official languages and actively or at least tacitly suppress smaller languages, economic pressures, all these things come together to put pressure on smaller languages. Therefore the diversity of languages is going to be compressed, from 7,000 separate languages to something much smaller than that.

But it is even more nuanced than that. There is also the factor of distribution of languages and how even that distribution is, and that is part of our conception of linguistic diversity. Most people talk about separate languages and they talk about extinctions. But one of the things that we are doing in this ILD is trying to move the conversation beyond those two factors, to try to get to a richer view of linguistic diversity.

Maffi: In some cases the shift to a dominant language can very much be part of government policy, and it can happen from one generation to the next. That's what happened to native communities in North America, both Canada and the U.S., where the system of residential schools was put in place, and children were consciously taken from their families and communities and put in residential schools far away, where they were forbidden to speak their own language.

When they came home they were not communicating with their parents and grandparents in their own language, they spoke English. For some of them the pain and the shame were such that they didn't want to speak their own language anymore, because they were told it was primitive, and anyway it was associated with all their suffering.

So they didn't transmit their language to their children and grandchildren, and now we are faced with a situation in which many of these communities are beginning major efforts to re-acquire and re-affirm their languages as part of their identity.



You can make the argument that as part of that larger biocultural diversity language diversity is absolutely essential for both individuals and human groups to establish identity, to understand who we are, what our place is in both the larger civilization of humans and also the natural world. At that deep level is why you really need to be concerned about language diversity, because ultimately you are diminishing our own humanness.



Braun: Why should we be concerned about language diversity?

Harmon: Diversity is really the underpinning of all life on Earth. We've just come through the International Year of Biodiversity. There was a lot of focus on that concept during this year, but here at Terralingua we have a biocultural diversity approach. Our view is to emphasize those parts of biological, cultural and linguistic diversity that inter-penetrate one another.

You can make the argument that as part of that larger biocultural diversity language diversity is absolutely essential for both individuals and human groups to establish identity, to understand who we are, what our place is in both the larger civilization of humans and also the natural world. At that deep level is why you really need to be concerned about language diversity, because ultimately you are diminishing our own humanness.

Braun: Why do we need a linguistic diversity index? What does it measure?

Loh: The idea of creating the index was the attempt to quantify the loss of linguistic diversity, which hasn't been until now expressed in quantitative terms. But there was a sense that the world is rapidly losing linguistic diversity, that we're heading to a mass extinction of languages.

We wanted to put this in quantitative terms. So we thought about measuring it by looking at data for the numbers of speakers of different languages around the world, and the index is based on trends in speaker numbers across a large sample of about 1,000 of the 7,000 languages. We then looked at these trends, and we said overall what's the average trend across these 1,000 or so languages?

But it's a slightly more sophisticated measure than that, because we had to take into account the fact that the world's population is growing, and over the period which the index of linguistic diversity covers, which is 1970 to 2005, the world's population roughly doubled. This meant that many languages, if not most languages, are increasing in numbers of speakers, just by dint of population growth.

What we really wanted to measure was the concept of evenness. How are different languages shared among the world's population? What the index actually measures is how even is the distribution of speakers among the world's languages. What we see is that that distribution is becoming more and more skewed.



In other words, some languages are growing faster than others, and for most languages the share of the world's population speaking those languages is declining [against] a few dominant global languages which are increasing their share of the world's population. So the distribution is becoming more and more uneven and speakers are becoming concentrated into an ever smaller set of languages.

Imagine languages are represented by different color jelly beans. You have a tall jar half filled by ten different color jelly beans. You add more jelly beans to the jar, but only red ones, until it is nearly full. Then you put only a couple more of each color on top, put the lid on and shake it up.

What happens is that the overall color of the jar has become redder and the diversity has reduced, because now the red jelly beans are dominating and the other color jelly beans occupy a smaller proportion of the total jar. Although the overall number of all colors has increased, the diversity is reduced. The evenness is reduced—and that's exactly how the index of linguistic diversity works. It measures what is that evenness of jelly beans in the jar.

Languages come in many different sizes. Some have tiny numbers of speakers and they occupy a very small proportion of the jar. Now when that proportion reaches the lowest threshold, the jelly beans change colors, and either through their own volition or through coercion they switch to the dominant color, and that accelerates the process until the original color disappears.

Maffi: It is also (and some would say foremost) a matter of human rights for the speakers of the smaller languages to be able to continue to speak their languages. The UN Declaration of Human Rights states (Art. 2) that everyone is entitled to all the rights and freedoms set forth therein, without distinction of any kind, including based on language.

From this one can infer that discrimination based on what language one speaks is against human rights. And the UN Declaration on the Rights of Indigenous Peoples touches extensively on rights to own language—and, as Dave and Jonathan point out in the ILD paper, 80%-85% of the world's languages are indigenous! So to apply linguistic human rights to indigenous languages really means protecting an overwhelming proportion of the linguistic diversity that we have on this planet.



Language revitalization programs need to be supported, even if there isn't a realistic prospect of ever reviving such languages as mother tongues. They can still have a place in the world of linguistic diversity. They might be diminished in terms of richness, but languages of heritage can still be extremely valuable. Extinction in that sense is not the end of the story.

Braun: Your paper mentions that the language extinction metaphor does not necessarily imply absolute irreversibility. How can the ILD assist with irreversibility?

Harmon: The way we use the term language extinction, we are talking about extinction as a mother tongue. In other words, a first language people are using, not necessarily exclusively, because a lot of people are bilingual or multilingual, but are using it in their daily lives and would consider their allegiance to that language as their first language.

When you talk about extinction as mother tongues, you are talking about people who no longer use their ancestral language for the whole wide range of life-navigating purposes. They may still retain a language that was their mother tongue, but maybe they speak it only during religious ceremonies or special occasions. Or more likely, they will know just a few words of that language. Their competency in being able to produce sentences and express themselves in that language will decline.

What happens is that these languages are lost as mother tongues and they are assumed to have gone extinct. There are no more native speakers of whatever the language might be.

That doesn't mean that those languages couldn't be revived as mother tongues, as was the case, most famously I think, with Hebrew, which was dormant as a mother tongue for a long time, and then through some passionate advocacy in the early part of the 20th Century was revived and now is the mother tongue of a lot of people.

Languages can also be revived as languages of heritage, as I call them, which means they might not come back as full mother tongues of many people, but they might be a language retained by speakers and taught to children, and so remain vital in at least some domain. There are a lot of language revitalization programs going on around the world.

We can lose lots and lots of languages in the coming decades as mother tongues, and we should fight to avoid that as much as possible. But even if that happens, the languages might still be around as languages of heritage. There's a lot of value to having languages like that.



There are still elders who are fluent speakers, and those elders have been put together with children in so-called language nests so that the children begin to learn their language the way they would normally, just by talking to adults and being spoken to by adults.

Maffi: There are extreme cases in which indigenous communities have, after going past the brink of extinction, made heroic efforts to recover as much as possible of their languages from existing data.

Work like this done by linguists and communities has been extremely valuable. I know for instance, of some Native Californian languages where the only extant documentation was really in pages of transcriptions by linguists done in the early 1900s or even earlier, and recordings on wax rolls. Members of those native communities have gone out to museums and archives

to retrieve those materials, put them on computers and try to reconstruct as much as possible of the language, then train themselves by talking to a computer.

There are still elders who are fluent speakers, and those elders have been put together with children in so-called language nests so that the children begin to learn their language the way they would normally, just by talking to adults and being spoken to by adults. Or even putting together elders with teenagers in so-called master-apprentice programs where the youth are essentially in full-immersion mother-tongue medium, with the elders speaking to the youth and doing activities together so that the language becomes alive.

In a large number of cases, native-language communities around the world have established school programs. Just the other day I was visiting a school near where I am, on Salt Spring Island in British Columbia, on the west coast of Canada, run by the Saanich First Nation–British Columbia having been a hotbed of linguistic diversity, with 32 different languages, most of which are endangered.

In some cases like this one there are still elders around who speak the languages and who became language advocates and contributed to documenting their language and creating a script for the language, and on that basis language programs have been established in the schools. They are not getting all the financial support that they need in order to establish full-fledged language programs or teaching in the native language, but that's the direction in which things are going. People express a lot of pride in this. It motivates them to get their language back.

THE INDEX OF LINGUISTIC DIVERSITY: AN OVERVIEW OF A NEW MEASURE OF TRENDS IN THE STATUS OF THE WORLD'S LANGUAGES*



“Language allows us to interact with the world in so many ways, almost like seeds adapted to local conditions, land races that make the best use of local conditions.”

Felipe Montoya Greenheck

The Index of Linguistic Diversity (ILD) is the first-ever quantitative measure of global trends in linguistic diversity. It measures changes in the number of mother-tongue speakers of a globally representative sample of the world's languages. Its objective is to provide solid data that show whether the world's languages (particularly indigenous languages) are losing speakers, and if so at what pace.

The ILD tracks trends in language demographics over the period 1970–2005. The key findings are:

GLOBALLY, LINGUISTIC DIVERSITY DECLINED 20%.

THE DIVERSITY OF THE WORLD'S INDIGENOUS LANGUAGES DECLINED 21%.

REGIONALLY, INDIGENOUS LINGUISTIC DIVERSITY DECLINED OVER 60% IN THE AMERICAS, 30% IN THE PACIFIC (INCLUDING AUSTRALIA), AND ALMOST 20% IN AFRICA.

THE TOP 16 LANGUAGES SPOKEN WORLDWIDE INCREASED THEIR SHARE OF THE GLOBAL POPULATION FROM 45% TO 55%.

* The following is an abridged version of the original paper published in 2010 in the online journal Language Documentation and Conservation. The full article can be found at the following address: <http://nflrc.hawaii.edu/ldc/2010/>. Licensed under Creative Commons.

1. INTRODUCTION

Concern about the future of the world's languages has been building for the better part of two decades. A large amount of qualitative evidence points to an impending mass extinction of languages. The quality of this evidence ranges from merely anecdotal to very accurate narrative accounts based on firsthand knowledge of the language demographics of individual speech communities. It is a highly valuable body of evidence, leaving no room to doubt that the entirety of the world's languages—not just their number, but also the linguistic and cultural diversity they represent—is being severely diminished.

For a host of complex reasons, people are abandoning their mother tongues and switching to other languages, almost always ones with larger numbers of speakers; thereby, more and more people are being concentrated into fewer and fewer languages.

However, there is much less *quantitative* evidence of a global linguistic diversity crisis. To help fill this gap we have created the Index of Linguistic Diversity (ILD), which we believe to be the first-ever quantitative index of trends in linguistic diversity based on time-series data on numbers of mother-tongue speakers. The ILD assesses trends in linguistic diversity by comparing changes in the relative distribution of mother-tongue speakers against a benchmark of the situation prevailing in 1970, the earliest year we could set the index based on the data available. The index does this by measuring changes in the number of mother-tongue speakers from a globally representative sample of 1,500 languages over the period 1970–2005. The ILD can be calculated at different geographic scales and for different groupings of languages; each of these versions of the index uses the same methods.

The main finding of this research is that linguistic diversity has seriously declined since 1970. The overall linguistic diversity of the world, as measured by ILD Global, declined by 20% over the 35-year period (see Figure 1). We also assessed the diversity of the world's indigenous languages—which make up 80–85% of the total number—on both global and regional levels. We did this because the status of the world's indigenous languages is important to global initiatives such as the Convention on Biological Diversity, as well as to indigenous communities themselves. ILD Global Indigenous, which measures the diversity of the world's indigenous languages, declined by 21% (Figure 2). The diversity of indigenous languages declined in all regions as well.

2. WHAT IS LINGUISTIC DIVERSITY?

Linguistic diversity is often viewed from three related perspectives: *language richness*, or the number of different languages spoken in a given geographical area; *phylogenetic diversity*, or the number of different lineages of languages found in an area; and *structural diversity*, or the variation found among structures within languages.

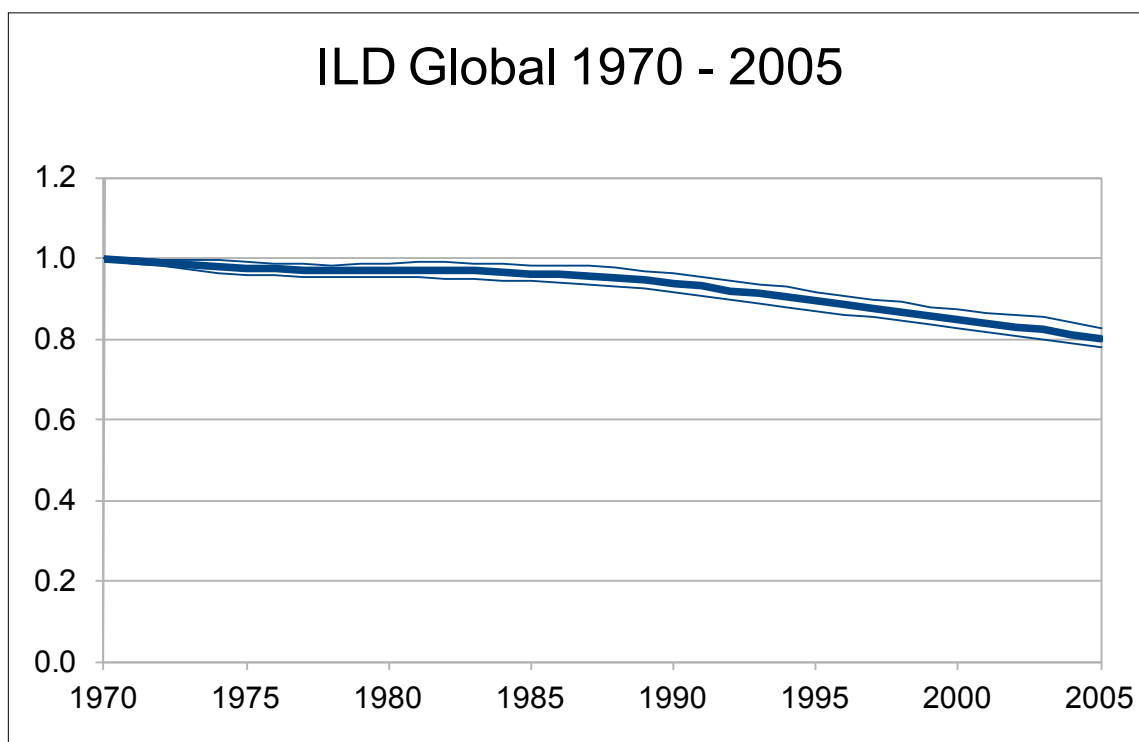


FIGURE 1: DECLINING TREND OF GLOBAL LINGUISTIC DIVERSITY, 1970-2005

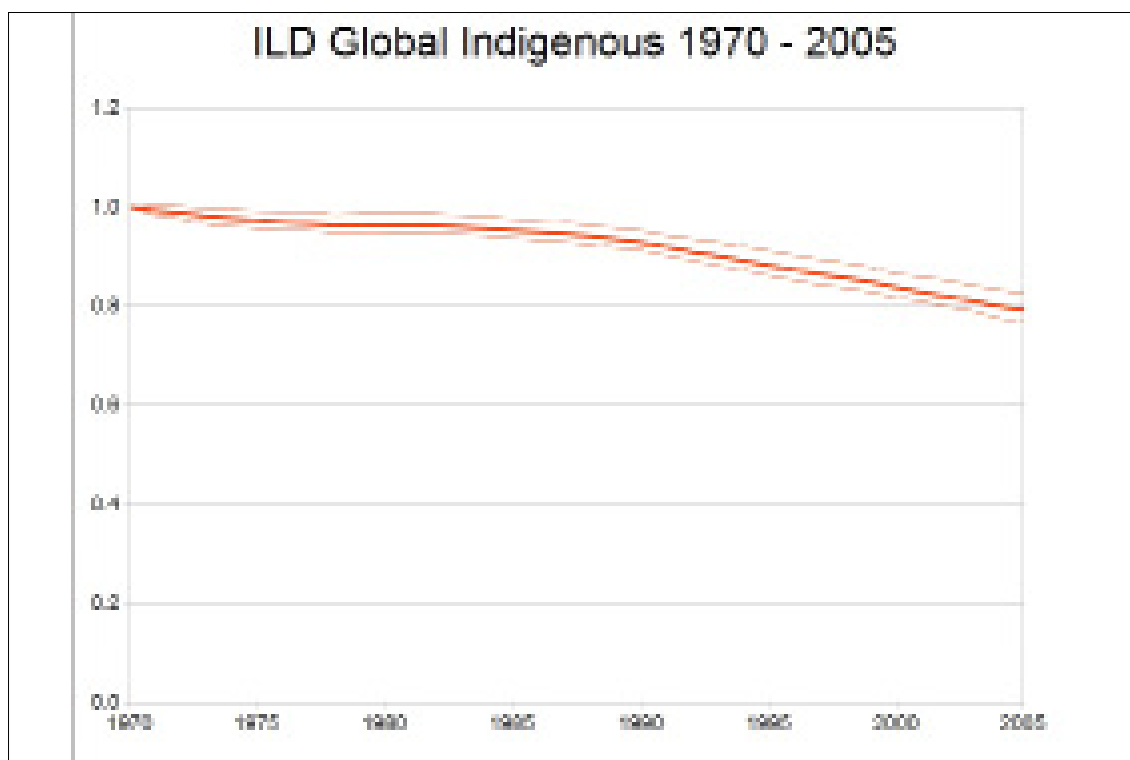


FIGURE 2: DECLINING TREND OF GLOBAL INDIGENOUS LINGUISTIC DIVERSITY, 1970-2005

For the purposes of developing a quantitative measure such as the ILD, we departed slightly from these standard definitions of linguistic diversity, and borrow some related concepts from the field of ecology. Language richness can be thought of as being analogous to species richness, the number of species found in a given area. In addition to richness, a second component in species diversity is evenness, or the distribution of individual organisms among species. In the case of linguistic diversity, evenness is the distribution of individual speakers among languages. For example, two regions in both of which ten languages are spoken each have the same richness, but the region in which each language is spoken by 10% of the population has greater evenness, and therefore higher linguistic diversity, than one in which 91% of the population speaks one language and only 1% of the population speaks each of the other nine.

We think that this concept is critical in measuring changes in linguistic diversity over comparatively short time scales. Relatively few of the world's languages have become extinct as mother tongues in the last few decades, so language richness in most areas of the world has declined only slightly. And yet, we would argue, diversity has declined much more than this because the distribution of mother-tongue speakers among extant languages has become more uneven: more speakers are becoming concentrated in fewer languages. While phylogenetic and structural diversity are important, these concepts are not currently incorporated into the index. In summary, for the purposes of the ILD, we define linguistic diversity as the number of languages and the evenness of distribution of mother-tongue speakers among languages in a given area.

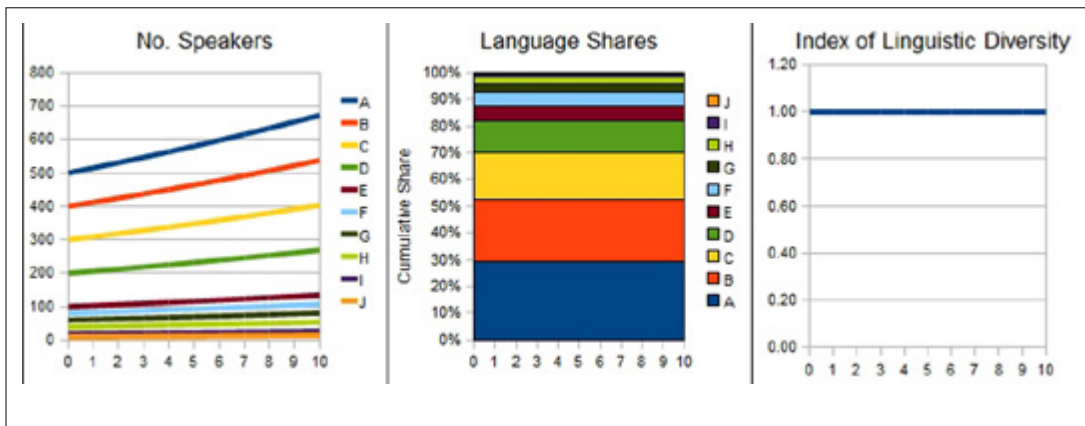
3. THE NEED FOR A LINGUISTIC DIVERSITY INDEX

If there are already projections of the future magnitude of language extinctions, why is there a need for an index like the ILD? First, published estimates of the percentage of languages likely to die out during this century are, to date, little more than informed conjecture. Categorical statements of the rate of extinction—"X number of languages are dying every year"—are widely quoted but almost never referenced to a rigorous estimate.

Second, even if better estimates were available, merely tracking when particular languages go extinct does not account for the loss of linguistic diversity occurring during the course of pre-extinction language shift. A great deal of linguistic diversity is lost well before a declining language finally goes extinct, as speakers shift to other (usually larger) languages, intergenerational transmission declines, and usage becomes restricted to fewer speakers, domains, and functions. Quantifying changing distributions of mother-tongue speakers prior to extinction is therefore important.

Moreover, focusing on language extinction rates places undue emphasis on what is perceived to be the terminal state of linguistic diversity decline. If "language extinction" is to have any useful meaning, it must be specified that the term actually refers to the condition of a language no longer being spoken as a mother tongue.

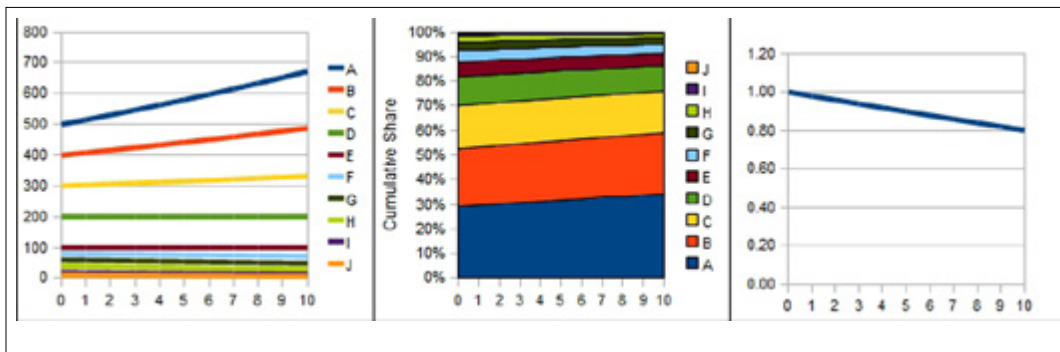
HOW THE ILD IS CALCULATED:



Scenario 1: Stable Equilibrium

The ILD indicates the rate of change in linguistic diversity by measuring how far, on average, the languages in a given grouping deviate from a hypothetical situation in which each language is neither increasing nor decreasing its share of the total population of that

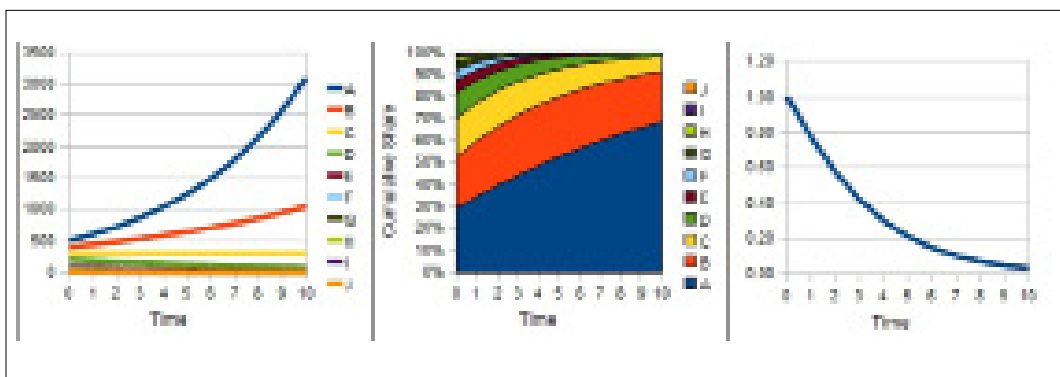
grouping. Scenario 1 shows that hypothetical situation. Imagine a world with just 10 languages, here marked A through J. The largest of these languages, Language A (in dark blue) has 500 speakers at the beginning of our imaginary survey; this is shown on the left-side graph. It, along with the other 9 languages, gets bigger over 10 years (time is the X axis, at the bottom of all the graphs). But each languages gets bigger at exactly the same rate, so that each one's share of the total population — shown in the middle graph — is flat across the 10-year span. This is the condition of hypothetical stability against which the ILD measures change. As you can see in the rightmost graph, the ILD remains unchanged under this stable equilibrium scenario.



Scenario 2: Steady Erosion

In Scenario 2, we see something very similar to what is happening in the real world. Here, the 3 largest languages are increasing in population while the rest remain flat (leftmost graph). This is shown in the middle graph, where the amount of

available space is being taken up more and more by the three largest languages (dark blue, orange, and yellow). The ILD in this scenario declines by 20%.



Scenario 3: Serial Extinction

In Scenario 3 of our illustration of our simplified world we look at what would happen if the 3 largest languages really increase their share of the world's population at the expense of smaller languages that go extinct one after another.

The blue, orange, and yellow bands in the middle graph bulge dramatically, literally helping to squeeze out small languages as more and more of the world's people become concentrated in fewer and fewer languages, The ILD in the rightmost graph plunges dramatically.

So, while obtaining accurate projections of mother-tongue language extinctions is important, they need to be augmented by a quantitative measure of current global trends in linguistic diversity. Clearly, the claims of those who tout the loss of linguistic diversity as a major problem for the world would be strengthened if there were quantitative evidence to support their arguments. Government officials, other decision-makers, and the general public will likely take the decline of linguistic diversity more seriously if there is a readily understandable global metric that captures the current magnitude of the problem. That is what the ILD is designed to provide.

4. WHAT THE ILD MEASURES

The ILD uses language evenness in conjunction with language richness as a proxy for linguistic diversity. Because the goal of the index is to measure trends in linguistic diversity, it must account for changes in evenness and richness: that is, changes in the relative distribution of mother-tongue speakers among discrete languages within the total population, as measured from the starting point of the index (currently 1970) to its ending point (currently 2005). The ILD indicates the rate of change in linguistic diversity by measuring how far, on average, the languages in a given grouping deviate from a hypothetical situation in which each language is neither increasing nor decreasing its share of the total population of that grouping.

For example, ILD Global, an index of the world's overall linguistic diversity, measures the average deviation of the world's languages from a hypothetical situation in which each language is neither increasing nor decreasing its share of the global population.

The ILD can be said to measure the concentration or distribution of mother-tongue speakers among the world's languages. What does it mean to say that ILD Global declined 20% over the period 1970–2005? It means that, for all languages spoken worldwide in 1970, their average share of the world's population declined by 20% over 35 years.

It is worth noting again that the ILD is not a measure of language extinction: a 20% decline in the index does not mean that 20% of languages went extinct over the period being measured. For example, it is possible to imagine that most of the world's languages could decline until only a few speakers of each are left, while a few languages become dominant with many millions of speakers: the ILD would show a marked decline and yet the total number of extant languages would remain constant. In that case the number of extinctions would remain zero, yet the ILD would indicate that almost all linguistic diversity had been lost.



SCREENSHOT OF THE ILD DATABASE

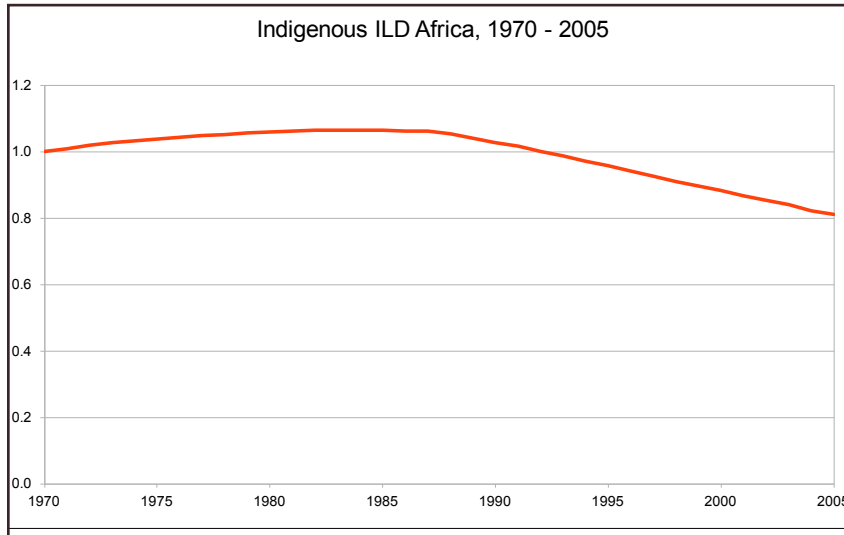


FIGURE 3: TREND OF INDIGENOUS LINGUISTIC DIVERSITY OF AFRICA, 1970-2005

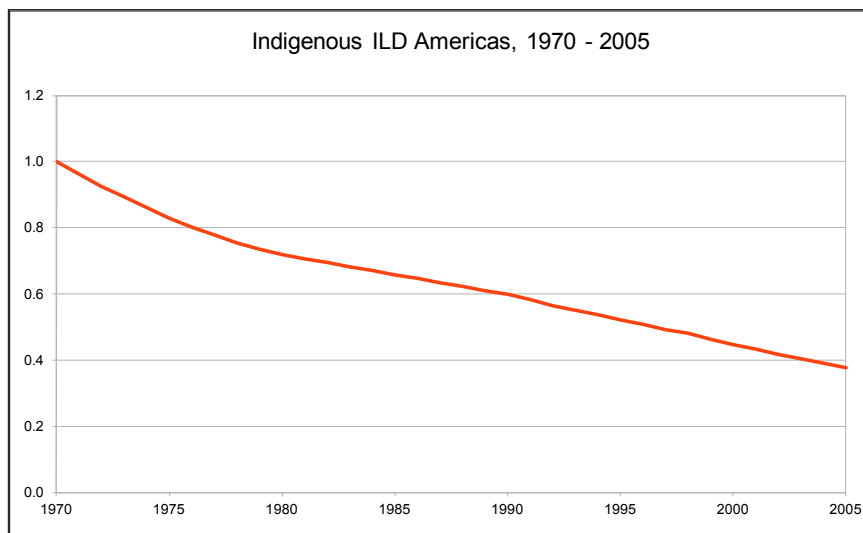


FIGURE 4: TREND OF INDIGENOUS LINGUISTIC DIVERSITY OF THE AMERICAS, 1970-2005

5. THE ILD DATABASE

The ILD database of time-series data on language demographics, which we believe to be the world's largest to date, contains information from nine editions of *Ethnologue*, the most comprehensive compendium of the world's languages, as well as five other compendia of speaker numbers.

The ILD is based on a sample of 1,500 languages selected at random from the 7,299 languages listed in the 15th edition of *Ethnologue* (2005). (The 16th edition, 2009, appeared too late for us to include in this study.) This sample size—representing just over 20% of the world's languages—is higher than is needed to constitute a statistically representative global sample. Having a sample size much larger than required for global analysis allows statistically valid analysis of subglobal samples.

Our long-term aim is to base the ILD on a variety of data sources, not just *Ethnologue*. However, we decided to restrict the first version of the ILD to *Ethnologue* data to minimize potential inconsistencies in language-status assessment that could come from incorporating multiple sources of data into a single time series.

The ILD database and methodology are described in the appendixes to the published version of the ILD.

The ILD data tables can be found at <http://www.terralingua.org/linguisticdiversity/downloads/>

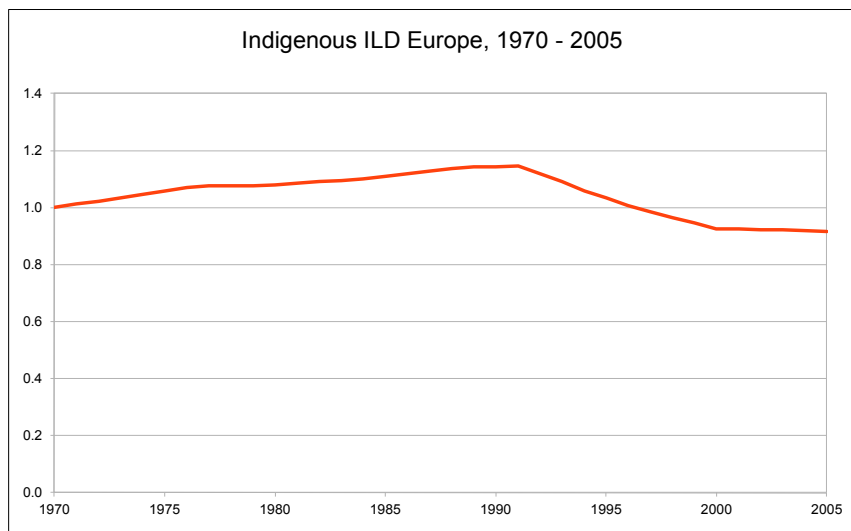


FIGURE 5. TREND OF INDIGENOUS LINGUISTIC DIVERSITY OF EURASIA, 1970–2005

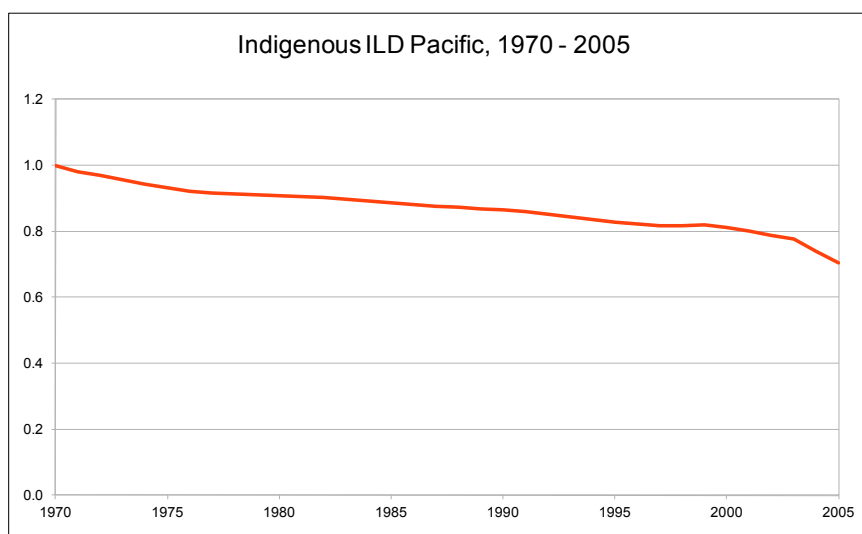


FIGURE 6: TREND OF INDIGENOUS LINGUISTIC DIVERSITY OF THE PACIFIC, 1970–2005

and early 1980s suggests that African indigenous languages were becoming more equally distributed in terms of speaker numbers during that period, but from the mid-1980s on the distribution became increasingly skewed, with many languages' share of the total African population declining.

6. RESULTS

Global Linguistic Diversity. ILD Global (see Figure 1 above), which covers all the languages in the sample, both indigenous and non-indigenous, shows a slow decline from 1.0 to 0.95 between 1970 and 1988, but a steeper decline from 0.95 to 0.80 between 1988 and 2005. The upper and lower confidence limits show the boundaries of the 95% confidence interval, and are depicted in this and the other graphs as small lines above and below the main trendline.

Global Indigenous Linguistic Diversity. ILD Global Indigenous (see Figure 2 above), which covers only the indigenous languages in the sample, declined from 1.0 to 0.94 between 1970 and 1988, and from 0.94 to 0.79 between 1988 and 2005. It shows a marginally greater decline than the global ILD, but the two trends are largely similar as most of the languages in the global dataset are indigenous languages.

Regional Indigenous Linguistic Diversity. Changes in indigenous linguistic diversity differ among regions. ILD Africa Indigenous increased from 1.00 to 1.07 between 1970 and 1985, and then declined rapidly from 1.07 to 0.83 in 2005 (Figure 3). The increase in the 1970s

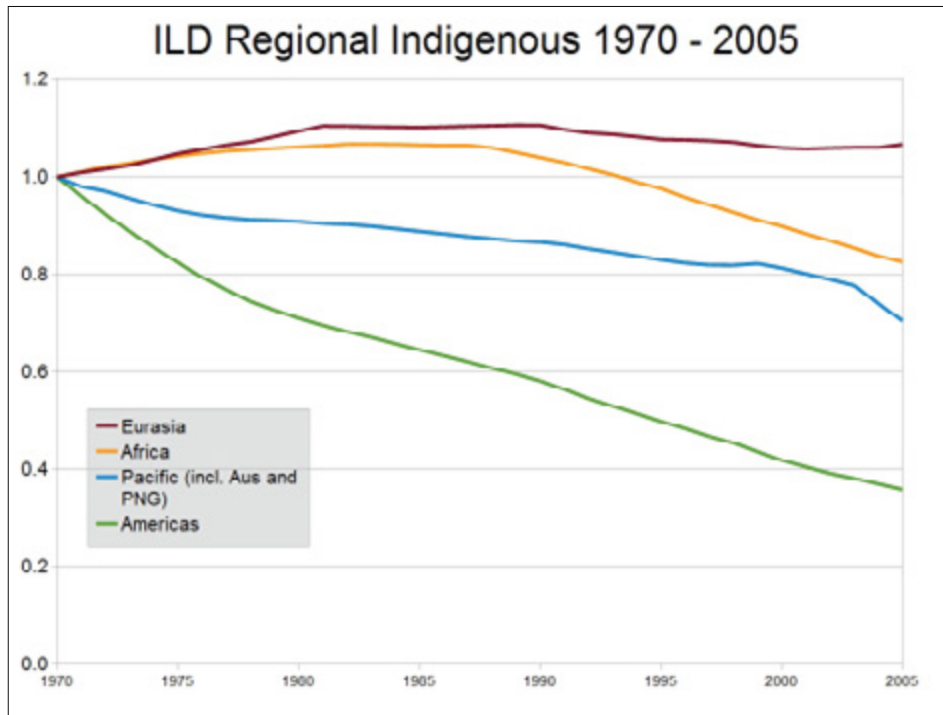


FIGURE 7: COMPARISON OF REGIONAL TRENDS OF INDIGENOUS LINGUISTIC DIVERSITY, 1970-2005

ILD Americas Indigenous shows the steepest decline of any region, falling from 1.00 to 0.71 between 1970 and 1980, and from 0.71 to 0.36 between 1980 and 2005 (Figure 4).

ILD Eurasia Indigenous, like its African counterpart, showed an initial increase from 1.00 to 1.10 between 1970 and 1981, suggesting that there was a slight gain the proportion of the total population speaking an indigenous language. It flattened out for about a decade between 1981 and 1991, and then declined very slightly to 1.07 in 2005 (Figure 5). Overall the index shows little change in

linguistic diversity in Eurasia.

ILD Pacific Indigenous (which includes Australia) shows the second steepest decline after the Americas. The index fell steadily from 1.0 to 0.82 in 1999, then dropped steeply from 0.82 to 0.70 between 1999 and 2005 (Figure 6). The widening confidence intervals in the last few years of the index suggest a higher degree of uncertainty in the trend after 1999, which would be reduced with additional data.

The four regional ILDs are compared in Figure 7.

7. DISCUSSION

Decline in Global Linguistic Diversity. Figure 1 shows the global trendline for the ILD. ILD Global shows a slow decline from 1.0 to 0.95 between 1970 and 1988, but a steeper decline from 0.95 to 0.80 in 2005. The overall decline of 20% in the space of 35 years shows that linguistic diversity is being lost at a significant rate, but even more importantly, the rate of loss has increased from about -0.3% per year in the 1970s and 1980s to more than -1.0% per year in the 1990s and 2000s. This is a stark indication of the scale of the recent loss of global linguistic diversity. The rapid disappearance of one-fifth

of the linguistic diversity that existed in the world in 1970 is a quantitative depiction of the continuing widespread shift from smaller languages to larger languages. The more the ILD Global declines, the more the world's mother-tongue speakers are concentrated into fewer languages.

Decline in Global Indigenous Linguistic Diversity. Figure 2 shows that the decline in the diversity of the world's indigenous languages has been similar, which is unsurprising in that most of the languages in the world (by our estimate, 80–85%) are indigenous languages. ILD Global Indigenous declined from 1.0 to 0.79 between 1970 and 2005—a 21% decrease. The average annual rate of decline in indigenous linguistic diversity was slightly faster than the global average in the 1970s and 1980s, but only by a fraction of a percent per year.

Indigenous communities themselves would certainly want to know the status of indigenous languages. Moreover, the Convention on Biological Diversity (CBD) identified stemming the rate of loss of linguistic diversity and in the number of speakers of indigenous languages as one of its indicators for assessing progress toward meeting its 2010 Biodiversity Target. The acceleration in the loss of linguistic diversity indicated by the ILD Global Indigenous implies that this particular CBD target could not be met. Prospects remain uncertain for the next CBD target (2020).

Declines in Regional Indigenous Linguistic Diversity. A comparison of the various regional indigenous ILDs (see Figure 7) shows some interesting results. Some regions are declining more rapidly than others, particularly the Americas, which declined by 64% over the period (Figure 4). The fact that the Americas showed the greatest overall decline should not necessarily be interpreted as meaning that linguistic diversity is, consequently, lower there than in other regions. It simply means that the Americas underwent the most rapid decline of all four regions between 1970 and 2005. It may well have been the case that the Americas were much more linguistically diverse in 1970 compared with other regions, such as Europe for example, in which the majority of linguistic diversity was lost prior to 1970.

The Pacific region (Figure 6) shows the second greatest rate of decline, 30% over 35 years, while ILD Africa Indigenous (Figure 3) declined by nearly 20%. This suggests that indigenous languages are in very rapid decline in comparison to total population growth in the region as a whole in the Americas, and in rapid decline in Africa and the Pacific.

Eurasia was the only region to show an increase in its indigenous ILD (Figure 5). There, indigenous languages are growing at the same rate as the overall population.

Some Caveats and Limitations. While we expect the ILD to prove a useful tool to communities, analysts and academics, policymakers, and the general public, any index is only as good as the underlying data available at the time. *Ethnologue* is the best single source for data on the numbers of speakers of languages around the world, and information from its various editions is an indispensable part of any analysis of recent trends in language demographics. Nonetheless, *Ethnologue* data come from a variety of primary and secondary sources and are, inevitably, uneven. We believe that *Ethnologue* time-series data are valid, but without question language demographic data in general can be improved. It should be borne in mind when using the initial version of the ILD that better data will, in the future, produce even more accurate trendlines.

It is also important to acknowledge that global indices such as the ILD should be used to provide broad contextual background for policy frameworks, rather than as guidance for on-the-ground policy decisions. No large-scale language index can hope to fully represent the complexities that must be accounted for in any policy affecting individual language communities. Nor can a global or regional index do more than outline the state of linguistic diversity at these levels; much more fine-grained analyses are required to get a complete picture.

Quantitative analyses such as the ILD must be supplemented by knowledge derived through other methods. This is especially relevant with respect to languages because most linguistic diversity is tied to traditional knowledge systems of indigenous people. These systems primarily rely on non-quantitative observational science and narrative, often transmitted orally rather than in writing. Therefore, any global numerical index, including the ILD, runs the risk of being irrelevant (or, worse, antithetical) to the needs of indigenous communities if it is not properly qualified—and, in addition, supplemented by other information that is generated by the communities themselves.

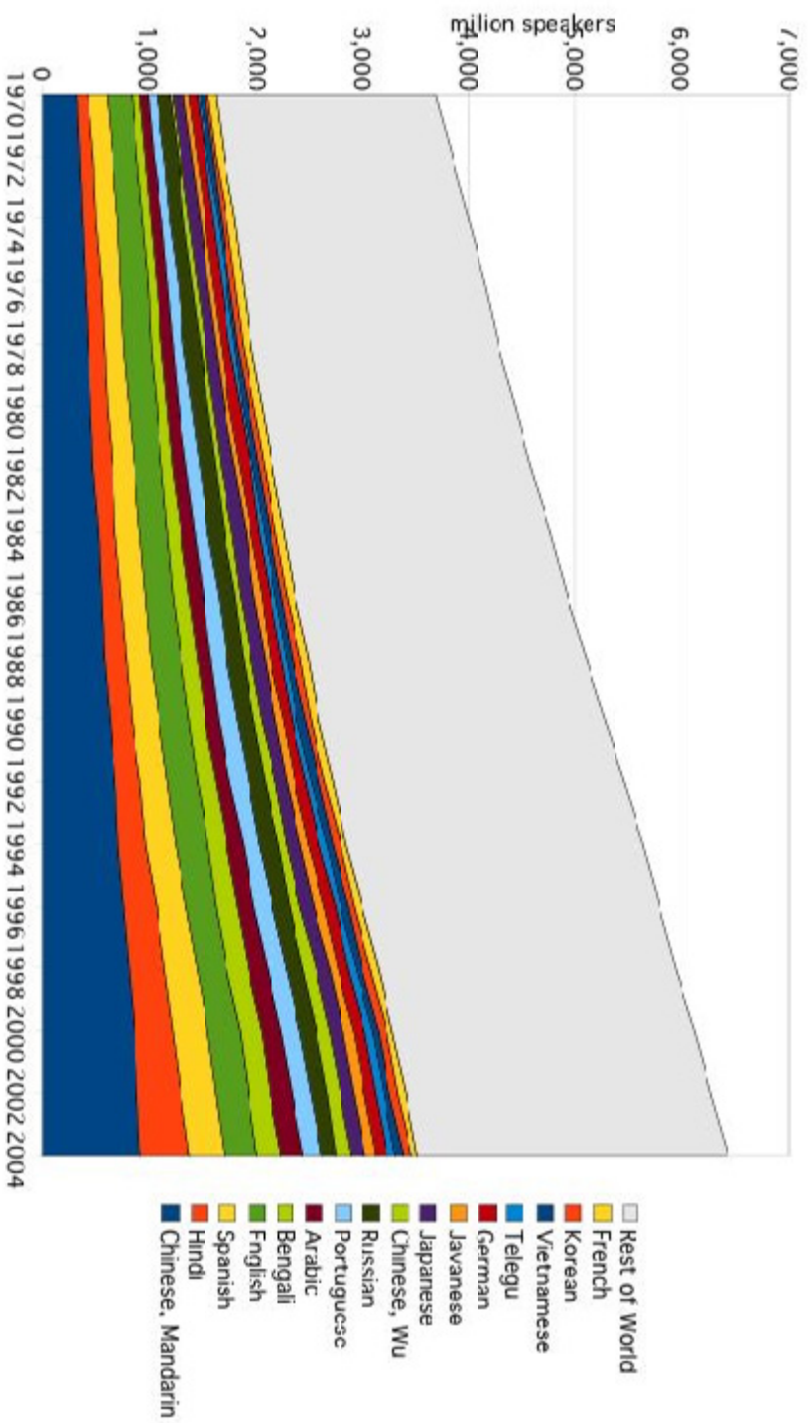
The ILD and similar global indices that deal with potentially controversial phenomena, such as language policy, must carefully be placed in context whenever they are used as an educational or policy-orientation tool, and should never be used as a sole source of information.

Future Development of the ILD. As part of future work, we plan to add data from the 16th and 17th editions of *Ethnologue* and hope to expand the database to achieve complete coverage of all the world's languages. We also would like to enter into

the ILD database all available speaker-numbers data from other global compendia of language statistics, as well as information from UNESCO's *Atlas of the World's Languages in Danger* and other UNESCO-led data-gathering efforts. All of these will provide data with which to compare, or add to, those from *Ethnologue*.

But the full potential of the ILD methodology won't be realized until we are able to expand it to include other language demographic data in addition to counts of mother-tongue speakers. To fully understand the status of and trends in the world's linguistic diversity, we need to go beyond using language richness (the number of discrete languages) and language distribution as a proxy. For example, it may be possible to create versions of the ILD that address phylogenetic diversity by using data on language family affiliations that are already included in *Ethnologue*. The methodology could also be applied to certain special language categories, thus producing versions such as ILD Creoles or ILD Isolates. There may be scope for incorporating structural diversity into the ILD by drawing on data from the *World Atlas of Language Structures*. Even better understanding will come when we are able to augment speaker-numbers data with deeper knowledge about all the factors that determine language demographics and drive trends in linguistic diversity.

Largest World Languages by number of speakers 1970 - 2004



Distribution of the world's population growth since 1970 across the 25 largest languages (colored bands) and the rest of the world's languages (gray band). Source: *Terralingua's Index of Linguistic Diversity*. Original work by David Harmon and Jonathan Loh, based on Harmon and Loh (2010).

For More Information

Dr. Luisa Maffi

Co-founder and Director, Terralingua
217 Baker Road
Salt Spring Island, BC, V8K 2N6
Canada
email: maffi@terralingua.org
phone: 1.250.538.0939

David Harmon

ILD Co-developer
The George Wright Society / Terralingua
dharmon@georgewright.org

Jonathan Loh

ILD Co-developer
Zoological Society of London / Terralingua
jonathan@livingplanet.org.uk

Website:

www.terralingua.org/linguisticdiversity

ACKNOWLEDGMENTS

Terralingua's Biocultural Diversity Toolkit project was supported by the Swift Foundation.

We also acknowledge the general support of The Christensen Fund (TCF) and the Kalliopeia Foundation.

The development of the Index of Linguistic Diversity was supported by TCF.



- 1. Linguistic diversity is a world heritage that must be valued and protected.*
- 2. Respect for all languages and cultures is fundamental to the process of constructing and maintaining dialogue and peace in the world.*
- 3. All individuals learn to speak in the heart of a community that gives them life, language, culture and identity.*
- 4. Different languages and different ways of speaking are not only means of communication; they are also the milieu in which humans grow and cultures are built.*
- 5. Every linguistic community has the right for its language to be used as an official language in its territory.*
- 6. School instruction must contribute to the prestige of the language spoken by the linguistic community of the territory.*
- 7. It is desirable for citizens to have a general knowledge of various languages, because it favours empathy and intellectual openness, and contributes to a deeper knowledge of one's own tongue.*
- 8. The translation of texts, especially the great works of various cultures, represents a very important element in the necessary process of greater understanding and respect among human beings.*
- 9. The media is a privileged loudspeaker for making linguistic diversity work and for competently and rigorously increasing its prestige.*
- 10. The right to use and protect one's own language must be recognized by the United Nations as one of the fundamental human rights.*

--Girona Manifesto on Linguistic Rights, PEN International, 2011



