

The stakes: Linguistic diversity, linguistic human rights and mother-tongue-based multilingual education - or linguistic genocide, crimes against humanity and an even faster destruction of biodiversity and our planet

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1. Introduction: are endangered languages archived rather than maintained?

Much work by sociolinguists and educationists on linguistic diversity and endangered languages is descriptive. It often stops at asking ‘what?’ questions and some ‘how?’ questions. This gives too little prominence to a focus on analysing (= ‘why?’ questions) and, especially, on trying to change the economic, techno-military, social and ideological circumstances that lead to language endangerment and disappearance of linguistic diversity in the first place (Skutnabb-Kangas 2000). Documenting endangered languages is often necessary and always positive, but it should be secondary to a holistic/ecological analysis, and change. I start with some definitions of concepts that I use in this introductory section. Building on Christina Bratt Paulston (1994) and others, we can put together adjectives used about endangered or extinct languages (“dead”, “dying”, and “neglected”), with nouns describing what is needed for those languages if one wants them to be “alive” and continue to be maintained and developed. When a language is “*dead*”, it needs **revival**; when it is “*dying*”, it needs **reversal**, and when it is “*neglected*”, it needs **revitalisation**.

What do linguists and others interested in endangered languages discuss? A Google search 2nd January 2007 gave 249,000 hits on “language revitalisation” (a language is “neglected”), 1,110,000 hits on “language reversal” (a language is “dying”), and 1,320,000 hits on “language revival (a language is “dead”). This was a total of 2.679,000 hits. Most of the entries (49,3%) were thus about “dead” (=extinct) languages. The next largest number (41,4%) was on “dying” (“moribund” = very seriously endangered) languages. The smallest number (9,3%) was about “neglected” languages, i.e. those that are still used but are endangered. These languages could be maintained if they were supported, through funds, mother-tongue-based multilingual education (MLE), research, etc.

We can then ask: Is most of the work (research and practical) done on “dead” and/or “dying” languages? Describing them, archiving them? Is this also true for international organisations such as UNESCO, or UNICEF, etc.? We might also ask: Do funds follow the same principles? More funds for work with “dead” and/or “dying” languages? Less for those still in daily use, i.e. languages that would benefit most from funds? A third question could be: Are researchers more interested in describing and “archiving” languages just before they “die” or when they are already “dead”, rather than working, also politically, for conditions that enable languages to be maintained and developed by the speakers/signers themselves (sometimes with outsider support too)? My

fourth question is: Do the two exclude each other? Even if some Archivists¹ claim that they are doing both, the results often show that they are NOT.

Many positive-sounding concepts in this area, such as diversity, partnership, human rights, etc., suffer and are watered down or narrowed down, through an avoidance of analyses of the full ecological contexts (including economic, biological, techno-military, social, ideological and spiritual contexts) in which people use or stop using certain languages.

Linguistic diversity' is often narrowed down to a few hundred languages that 'can "realistically" have a future' (and Sign languages are mostly completely excluded). 'Partnership' is between unequals and contributes to enlargement of the gaps between super-haves and never-to-haves. Human rights violations are either ignored (LHRs in education), or criticized and regretted by the same people/ forces that are perpetrators of economic genocide, caused by the implementation of Milton Friedman's Chicago School disastrous neoliberalism principles (privatization, deregulation, 'free' market) see, e.g. Naomi Klein's 2007 book *The Shock Doctrine*.

2. Forced assimilation in education kills languages

2.1. What do parents want?

Parents "want" English-medium education and assimilation for their children, hoping this leads to better jobs, it is claimed – and often this is true. But mother tongue learning and identification are often prevented by external forces and by presenting English (or any other dominant language) and the mother tongue (hereafter MT) as either/or, as if one cannot get both.

The United Nation's 2004 **Human Development Report** linked cultural liberty to language rights and human development (<http://hdr.undp.org/reports/global/2004/>) and argued that there is

no more powerful means of 'encouraging' individuals to assimilate to a dominant culture than having the economic, social and political returns stacked against their mother tongue. Such assimilation is not freely chosen if the choice is between one's mother tongue and one's future.

We also need to discuss the ideological forces that may fool some parents, namely glorification, stigmatisation, and rationalisation. Ideological forces, 'manufactured consent' (Herman & Chomsky 1988), may prevent parents from seeing why mother-tongue-based multilingual education (hereafter MLE) would do the job better than dominant-language-medium assimilatory submersion education. Glorification of dominant languages, stigmatisation of Indigenous/tribal and minority (hereafter ITM) languages and the rationalisation of the relationship between them may make ITM groups 'wish' to shift languages, and assimilate, through false promises of the benefits accrued. Without solid research-based knowledge of long-term consequences, and without alternatives (e.g. mother tongue-based MLE), this 'wish' to shift/assimilate is not based on a real choice. Most ITM parents do not have this knowledge, and mostly alternatives (i.e. a full good quality MLE taught by well-qualified minimally bilingual teachers) do not exist.

2.2. Submersion education – still the most common way of educating Indigenous/tribal and minority children

Today, most Indigenous/tribal/local students (with some exceptions, e.g. Saami, Māori), many national minority and most immigrant minority students and many students in post-colonial contexts in the world are being taught through the medium of dominant languages in submersion programmesⁱⁱ, at least after the first few grades, often from the start - provided they attend school at all. “Minority” here is not (only) a demographic concept about numbers; it means a group with little power. Thus most ethnic groups in Africa, for instance, are “minorities” in this sense as far as education is concerned.

Do we KNOW how these dominated group children should be educated? YES: mother-tongue-based MLE. Research results about both the negative consequences of subtractive education through the medium of a dominant/ foreign language and the positive results of mainly mother tongue medium education for Indigenous/ tribal/local and minority children are solid and consistent. The existing (fewer and fewer) counterarguments are political/ideological, not scientific.

There is a lot of well-intentioned hot air... also in Africa: ‘[W]e are not making any progress at all’ (Alexander 2006: 9); ‘most conference resolutions were no more than a recycling exercise’ (Bangbose 2001, quoted in Alexander 2006: 10); ‘these propositions had been enunciated in one conference after another since the early 1980s’ (Alexander 2006: 11); ‘since the adoption of the OAU [Organisation for African Unity] Charter in 1963, every major conference of African cultural experts and political leaders had solemnly intoned the commitment of the political leadership of the continent to the development and powerful use of the African languages without any serious attempt at implementing the relevant resolutions’ (Alexander 2006: 11). This has led to ‘the palpable failure of virtually all post-colonial educational systems on the continent’ (Alexander 2006: 16). Similar pronouncements abound on other continents. Minority education is organised against solid scientific evidence of how it should be organised. Resolutions are full of nice phrases. Will ACALAN’s Bamako conference (19-21 Jan. 2009) get further? How? Or is it possible at all, in practice?

One example of doing what one promises: The former Minister of Education in Kurdistan, Iraq, Abdul-Aziz Taib, said to me in an interview (15 March 2006) the following memorable words: “Every child in the world has the right to education through the medium of their mother tongue”. Kurdistan is trying: in addition to Kurdish-speakers, also Assyrian-, Turkoman-, and Arabic-speaking children are taught through Assyrian/Syriac, Turkoman and Arabic in Kurdistan; they learn Kurdish and English as second/foreign languages, and minorities have their own Departments in the Ministry of Education, each with their own DG. There are obviously also critical voices (for Assyrian education, see Odisho, 2004). Assyrian/Syriac, Armenian, Chaldean, Turkoman, and Arabic are taught as mother tongues. All these languages are also taught as elective subjects to those who want to learn them, while English (and Kurdish for non-Kurdish speakers) are obligatory as second/foreign languages (Skutnabb-Kangas & Fernandes 2008, Taylor & Skutnabb-Kangas 2009).

What kind of rational arguments can we use to make politicians wake up? Is it naïve to think that arguments count? Are states acting intentionally in genocidal education? (Skutnabb-Kangas & Dunbar, in press). The rest of my keynote will present some multidisciplinary and overlapping arguments/ reasons why full well-conducted MLE is rational (i.e. can achieve positive goals and avoid negative consequences) for individual children, for their groups/ communities/peoples, for

society as a whole, and for the world. Full MLE means minimally 8 years of using mainly a mother tongue or an extremely well-known other language as the main medium of education, with good teaching of additional languages as subjects and with well-qualified minimally bilingual teachers.

3. What does submersion education do to children? Results of submersion education through the medium of a dominant language

Magga, Nicolaisen, Trask, Dunbar & Skutnabb-Kangas 2005 and Dunbar & Skutnabb-Kangas 2008 were Expert papers written for the United Nations Permanent Forum on Indigenous Issues, UNPFIIⁱⁱⁱ. Some of our conclusions in them are as follows. Sociologically and educationally most ITM education fits two of UN Genocide Convention's five definitions of what genocide is. Submersion models for ITM children fit two of the definitions of genocide in the UN International Convention on the Prevention and Punishment of the Crime of Genocide (E793, 1948):

- Article II(e): 'forcibly transferring children of the group to another group'; and
- Article II(b): 'causing serious bodily *or mental* harm to members of the group' (emphasis added)

Dominant-language medium submersion education for ITM children prevents access to education, because of the linguistic, pedagogical and psychological barriers it creates. It may lead to the extinction of Indigenous/tribal/local languages, thus contributing to the disappearance of the world's linguistic diversity. Education is planned language shift:

More than most other authoritative specialists, the authorities of the educational system are deeply implicated in planned language shift... Education [is] a very useful and highly irreversible language shift mechanism”(Fishman 2006: 320).

Dominant-language medium education for ITM children often curtails the development of the children's capabilities, perpetuates poverty (according to theories by Amartya Sen, economics Nobel laureate, Sen 1985; see Mohanty & Misra 2000, especially Mohanty 2000) and can and does cause serious mental harm. It is organized against solid research evidence about how best to reach high levels of bilingualism or multilingualism and how to enable ITM children to achieve academically in school. Dominant-language-only submersion programmes “are widely attested as the least effective educationally for minority language students”, Stephen May and Richard Hill write (2003: 1), in a study commissioned by the Māori Section of the Aotearoa/New Zealand Ministry of Education (<http://www.minedu.govt.nz/>).

Even when children have a year or two of mother-tongue-medium education (early-exit transitional models^{iv}) before being transitioned to education through the medium of dominant language, the results are disastrous educationally, even if the child may psychologically feel a bit better initially. According to Kathleen Heugh (2009),

Early transition to the international language of wider communication/ILWC across Africa is accompanied by *Poor literacy in L1 and L2* (SACMEQ 11 2005; UIE-ADEA study, Alidou et al. 2006; HSRC studies in South Africa 2007), *Poor numeracy/mathematics & science* (HSRC 2005; 2007); *High failure and drop-out rates* (Obanya 1999; Bamgbose 2000), and *High costs/wastage of expenditure* (Alidou et al 2006).

Both subtractive education completely through the medium of a dominant language and early-exit transition can and often do have harmful consequences socially, psychologically, economically, and politically. They can cause very serious mental harm: social dislocation, psychological, cognitive, linguistic and educational harm, and, partially through this, also economic, social and political marginalization. They can also (and often do) cause serious physical harm, partly as a long-term consequence of the educational, economic and political marginalisation. The conclusion in Dunbar & Skutnabb-Kangas 2008 was:

The various forms of subtractive education ... are now at odds with and in clear violation of a range of human rights standards, and in our view amount to ongoing violations of fundamental rights. They are at odds with contemporary standards of minority protection". In our view, the concept of 'crime against humanity' is less restrictive [than genocide], and can also be applied to these forms of education. In our view, the destructive consequences of subtractive education ... are now clear. The concept of 'crimes against humanity' provides a good basis for an evolution that will ultimately lead to the stigmatisation through law of subtractive educational practices and policies.

Our new book (Skutnabb-Kangas & Dunbar, in press) gives much more evidence and discusses the international human rights law interpretations in much more detail.

4. What can good mother-tongue-based multilingual education achieve educationally?

Subtractive and early-exit transitional programmes belong to non-models or weak models of bilingual education. In contrast to them, all strong successful MLE models (for both ITM and dominant group children) use mainly a minority language as the main teaching language during the first many years. The most important educational Linguistic Human Right (LHR) in education for ITM children is an unconditional right to mother tongue medium education in a non-fee state school, at least during the whole primary education (minimally 6 but preferably 8 years).

Solid research results show that the longer ITM children in a low-status position have their own language as the main medium of teaching, the better the general school achievement and the better they also become in the dominant language, provided, of course, that they have good teaching in it, preferably given by bilingual teachers. In addition, they learn their own mother tongues, L1(s) (L = language). If we want to learn from research and experience, mainly MT-medium education of ITM children should last minimally 8 years. Everything else is irrational and costly compromises. Research conclusions about results of present-day indigenous and minority education also show that the length of mother tongue medium education is more important than any other factor (including socio-economic status) in predicting the educational success of ITM students, including their competence in the dominant language (e.g. Thomas & Collier 2002a,b, Ramirez et al. 1991a, b; May & Hill 2003; May, Hill & Tiakiwai 2003; Alidou et al 2006; Heugh et al. 2007; several articles in García, Skutnabb-Kangas & Torres-Guzmán (eds) 2006, Skutnabb-Kangas et al. (eds) 2009, Heugh & Skutnabb-Kangas, forthcoming, and Tollefson & Tsui (eds) 2003; see also Cummins 1996, 2000, 2009). There are studies comparing several types of programmes for ITM children (this includes children in Africa and Asia in countries with many different ethnolinguistic groups and no numerical majorities, and often with an ex-colonial language as a dominant language).

The following types of programmes have been compared:

- a) completely dominant-language medium submersion education from grade 1;
- b) early-exit transitional programmes, with mother tongue medium education for the first 1-2 years, followed by using a dominant language as the teaching language;
- c) late-exit transitional programmes where the transition from a mother tongue medium programme to a dominant language medium programme is more gradual but is mostly completed by grade 5 or 6; and
- d) programmes where the mother tongue is the main medium of education at least for the first eight years, or even longer.

Research results comparing academic achievement of these children show unanimously that the children from programme types a) and b) are as a group never likely to reach a native-like competence in the dominant language, at the same time as they will not learn their own language properly either (they do not learn to read and write it, for instance, even if a writing system and materials exist) (e.g. Williams 1998, 2006; Ramirez et al. 1991a, b; Thomas & Collier 2002a, b; Alidou et al. 2006; Mohanty 1995, 2000, 2006, 2008, 2009; Skutnabb-Kangas 2000). Their academic achievement results are mostly very poor at a group level (even if some individuals may manage^v). Children in late-exit transitional programmes (c) fare somewhat better, but even their results are much below what they could be.

One example follows. Ethiopia has an innovative and progressive national education policy, which is in principle based on 8 years of mother-tongue medium education. Regions have the authority to make their own decentralized implementation plans. Some regions transfer to English medium already after 4 or 6 years. The Ethiopian Ministry of Education commissioned a study across all the regions (Heugh et al. 2007; see also Heugh 2009, Benson 2009, Heugh & Skutnabb-Kangas, forthcoming). There is an efficient collection of system-wide assessment data. These show very clear patterns of learner achievement at Grade/Year 8, 10 and 12. The Grade 8 data show that those learners who have 8 years of MTM education plus English as a subject perform better across the curriculum (including in English^{vi}) than those with 6 years or 4 years of mother tongue medium.

Burkina Faso (e.g. Ilboudo & Nikiema, forthcoming), Peru (Pérez 2009) and many other countries are now either implementing or on the verge of implementing minimally late-exit transitional programmes. See, for instance, the new National Multilingual Education Resource Centre in India <http://www.nmrc-jnu.org/> and the Resource Centre for the Rights of Indigenous Peoples in the Norwegian part of the Saami country www.galdu.org. There are now many books describing successful mother-tongue-based MLE (search in <http://www.tove-skutnabb-kangas.org/en/Tove-Skutnabb-Kangas-Bibliography.html>).

5. Concrete recommendations on how good MLE should be organised

Here are some of my concrete recommendations on how good MLE can be organised^{vii}. They are based on the best research evidence that I know of, from many different teaching models, languages and countries, and my own 45 years of research experience from most parts of the world.

Recommendation 1: *the mother tongue should be the main teaching language for the first eight years.* All Indigenous/tribal and (other) linguistic minority children should have their first or own language/ mother tongue (or one of them, in case of multilingual children) as their main medium

of education, during minimally the first eight years (but absolutely minimally the first six years), in non-fee state schools. Even if the mother tongue might no longer be used as a teaching language after grade 8, it should be used orally in the classroom, and it should be studied as a subject throughout the entire education process.

Recommendation 2: *good teaching of a dominant local or national language as a subject.* ITM children should have good teaching of a dominant local or national language as a second (or foreign) language, given by competent bilingual teachers, from grade 1 or 2 (or even later if they are surrounded by speakers of it). It should be studied as a subject throughout the entire education process. It should be studied as a second (or foreign) language, using second/foreign language pedagogy/methods; it should not be studied as if it were the children's mother tongue.

Recommendation 3: *transfer from mother tongue medium teaching to using a dominant local or national language as a teaching language* may happen in the following way: Some subjects can be taught through the medium of a dominant national language and/or an international language in the upper grades, but not before grade 7 and only if there are competent teachers. If necessary one or two practical subjects (physical education, music, cooking, etc) can be taught earlier through the medium of a second language, but cognitively and/or linguistically demanding subjects (such as mathematics or history) should be taught in the child's first language minimally up to grade 7, preferably longer.

Recommendation 4: *additional languages as subjects.* ITM children should have an opportunity to learn further languages as school subjects, including a language in international use such as English, Spanish, French, Russian, Hindi, etc, if it is not a dominant local or national language mentioned in Recommendation 2 above.

Recommendation 5: *context-sensitive cultural content and methods.* Just using the MT as the main teaching language is not enough. The cultural content of the education and the teaching methods need to fulfil two requirements. First, they need to be context-sensitive and applicable in the situation that the indigenous/tribal people or minority is in: they need to respect the traditions, knowledges, values, history and identities of the group, including their status as oral or literate people, and the teaching methods need to be acceptable to the group (see, e.g., Hough, Thapa Magar & Yonjan-Tamang 2009). Secondly, the methods and content need to start from the children's and community's experience and knowledges and take the children from pragmatic everyday thinking to scientific thinking (including taking them from BICS – Basic Interpersonal Communicative Skills - to CALP - Cognitive-Academic Language Proficiency, in Jim Cummins' terms^{viii}, see Cummins 1991, 2009; see Panda & Mohanty 2009 on how this can be done).

Recommendation 6: *Well-trained bi- or multilingual teachers.* It is self-evident that teachers need to be well-trained, but it is also imperative that teachers for ITM children are minimally bilingual. A monolingual teacher (and especially one who does not know the child's language) cannot compare the languages and explore with the child what is common to the languages and what needs to be learned separately for each. S/he cannot help the child develop the metalinguistic awareness that is the main factor behind the benefits that high-level bilingual or multilingual children have as compared with monolingual children (e.g. Mohanty 1995). And a monolingual teacher is not a good role model for children who are to become bilingual.

Recommendation 7: *ITM parents and communities, and educational authorities need enough research-based knowledge about educational choices. Advocacy for sound models is necessary.* If ITM parents are to choose the form of education that their children are to have, they need enough

solid research-based information about the processes and methods of multilingual education and the long-term consequences of the alternatives (which have to exist), and of their choices. Otherwise the “informed consent” that indigenous/tribal peoples must give, according to the UN Declaration on the Rights of Indigenous Peoples, UNDRIP, is impossible, a sham. Educational authorities also need this information – few of them know enough and many decisions are today based on ignorance. Advocacy for sound models and the argumentation for them and the research behind them is essential.

Recommendation 8: *Systemic changes in school and society are needed to increase access to quality education. This includes knowledge about how the present system harms humanity.* Schools mirror societies. Systematic inequality in societies reflects and is reflected and reproduced in schools. Indigenous/tribal peoples and many minorities are at the bottom of societal hierarchies. Systemic changes at all levels are needed. Power holders need more information about how the present system harms not only indigenous/tribal peoples and minorities but the whole global society, through economic, educational and creativity-related wastage. On the basis of the diminishing linguistic diversity that schools are an important causal factor in, the present system also leads to loss of knowledge about how to preserve biodiversity and thus to worse conditions for humanity on the planet (e.g. Skutnabb-Kangas, Maffi & Harmon 2003, Maffi, ed. 2001). My intention here is to offer some tools for understanding why and what kind of changes might be needed and what some of the challenges are. A few more arguments for consequences of MLE are offered in the rest of the paper.

6. Good MLE, high levels of multilingualism, creativity, innovation, and investment: The causal chain

Good MLE can lead to enhanced cognitive growth and creativity (e.g. Mohanty 1995), and, through these, to innovation and investment; this is the only way towards eradication of poverty in Amartya Sen’s sense.

Creativity, innovation and investment can be results of additive teaching and multilingualism. Here is a short version of the causal chain:

- Additive MLE teaching can lead to high-level multilingualism
- Multilingualism can enhance creativity: High-level multilinguals as a group often do better than corresponding monolinguals on tests measuring several aspects of ‘intelligence’, creativity, divergent thinking, cognitive flexibility, etc. (see Baetens Beardsmore 2008).
- Creativity precedes innovation, also in commodity production.
- Investment follows creativity.

The forced assimilation in education leads to homogenisation. Homogenisation, also in education, kills creativity. Homogenisation is bad economics. MLE works against homogenisation; it maintains diversity and fosters creativity. Human survival depends on creative solutions to the global and local problems of our own making.

Good MLE can save children from monolingual reductionism, especially English language monolingualism, and thus maintain and develop linguistic diversity and high-level multilingualism. English (even if it were learned well in submersion programmes and it isn’t) is not enough. Supply-and-demand theories predict that when many people possess what earlier was a scarce commodity (for instance near-native English), the price goes down (see. e.g. Grin 2008).

The value of 'perfect' English skills as a financial incentive decreases substantially when a high proportion of a country's or a region's or the world's population know English well. 'Good' English will fairly soon be like literacy yesterday or computer skills today: employers see it as self-evident and necessary but not sufficient for good jobs. The future is for high-level multilinguals. Mother tongue-based MLE can "produce" high levels of multilingualism, including but not restricted to English.

7. The relationship between biodiversity and linguistic diversity

The most 'optimistic realistic' linguists estimate that half of today's oral languages may have disappeared or at least not be learned by children around the year 2100 (e.g. Wurm, ed., 2001). The 'pessimistic but realistic' researchers estimate that we may only have some 10% of today's oral languages left as vital, non-threatened languages around 2100, or even 5% (Krauss 1992, 1995, 1996; UNESCO uses both figures). Killing linguistic diversity also hastens the killing of knowledge about how to maintain biodiversity, because of the correlational and causal relationships between linguistic and cultural diversity and biodiversity. David Harmon, the first one to show the correlations (see Harmon 1995, 2002), has worked with Jonathan Loh on A *Global Index of Biocultural Diversity* (1st version 2002, 2nd version June 2004, 3rd version October 2008, <http://www.terralingua.org/projects/ibcd/ibcd.html>) which shows hundreds of detailed correlations. The work on the Index continues. They also work on an *Index of Linguistic Diversity* (ILD). ILD "is the first global index of trends in linguistic diversity, as measured in changes in the number of mother-tongue speakers of a globally representative sample of languages. The objective is to provide solid quantitative data that will show whether the world's languages (particularly indigenous languages) are losing speakers, and if so, at what pace". (David Harmon and Jonathan Loh, at <http://www.terralingua.org/projects/iLd/ild.htm>). The first version of the ILD covers the period 1970–2005. Below we have some of the first results^{ix}. The key findings are:

- Globally, linguistic diversity has declined by 20% over the period.
- The diversity of the world's indigenous languages has declined by 21% over the period.
- Of the world's six regions (Africa, the Americas, Asia, Australia, Europe and Oceania/Pacific), by far the sharpest declines in diversity occurred in the Americas and Australia.
- The top 16 languages spoken worldwide increased their share of the world population from 45% in 1970 to much over 50% in 2005.
- When the ILD global trendline is superimposed upon that of the Living Planet Index (which uses species diversity as a proxy of biological diversity), the results are remarkably similar, leading us to conclude that **the world has lost 20–25% of its biocultural diversity over the period 1970–2005.**

Since much of TEK (Traditional Ecological Knowledge), a prerequisite for human life on earth, is encoded in the small languages of Indigenous/ tribal/local people/s, killing languages hastens the disappearance of the knowledge about how to maintain biodiversity. One example of the encoding comes from the Saami and salmon spawning grounds: Finnish fish biologists had just "discovered" that salmon can use even extremely small rivulets leading to the river Teno, as spawning ground. Pekka Aikio, then President of the Saami Parliament in Finland (personal communication, 29 November 2001) told that the traditional Saami names of several of those rivulets often include the Saami word for "salmon spawning-bed". This is ecological knowledge inscribed in indigenous

languages. It may be difficult for non-experts to discover how, for instance, taboos, myths, etc, may support biodiversity, for instance by forbidding harvesting natural resources too much or too often, or making some of them sacred. Myths can protect valuable natural resources. These can be seen as sacred, or dangerous. Many bat trees are very valuable spiritually, commercially, nutritionally and medically^x.

ICSU, the International Council of Science (www.icsu.org), admitted in their 2002 report, prepared by the *ICSU Study Group* that indigenous/tribal Traditional Ecological Knowledge, TEK, is often much more accurate than western scientific knowledge. ICSU is worried about the transmission of this knowledge and blames schools (2002; no page numbers):

Universal education programs provide important tools for human development, but they may also compromise the transmission of indigenous language and knowledge. Inadvertently, they may contribute to the erosion of cultural diversity, a loss of social cohesion and the alienation and disorientation of youth. [...] In short, when indigenous children are taught in science class that the natural world is ordered as scientists believe it functions, then the validity and authority of their parents' and grandparents' knowledge is denied. While their parents may possess an extensive and sophisticated understanding of the local environment, classroom instruction implicitly informs that science is the ultimate authority for interpreting "reality" and by extension local indigenous knowledge is second rate and obsolete. [...] Actions are urgently needed to enhance the intergenerational transmission of local and indigenous knowledge. [...] Traditional knowledge conservation therefore must pass through the pathways of conserving language (as language is an essential tool for culturally-appropriate encoding of knowledge).

It is possible for (Western) researchers to discover for themselves the knowledge that was already encoded in the indigenous language - but, as in the case of salmon spawning grounds, probably at least a millennium later than the indigenous people had it. But in many cases, the knowledge may disappear in ways where (western) scientific retrieval is impossible, or a rediscovery of the knowledge may in any case come too late (agriculture or building of dams could, for instance, have drained the rivulets – something that is happening on a large scale in Asia).

One reason for maintaining all the world's languages is thus as follows:

- Linguistic diversity and biodiversity are correlationally and causally related.
- Much of the knowledge about how to maintain biodiversity (especially in various kinds of biodiversity hotspots) is encoded in the small languages of Indigenous/tribal and local peoples.
- Through killing them we kill the prerequisites for maintaining biodiversity (see Maffi, ed, 2001, Harmon 2002, Fill & Mühlhäusler (eds) 2001, Skutnabb-Kangas 2000, Skutnabb-Kangas, Maffi & Harmon 2003, Skutnabb-Kangas & Phillipson 2008, and www.terralingua.org for details).

MLE supports maintenance and development of linguistic diversity, and, through this, the maintenance of biodiversity.

Biocultural diversity (= biodiversity + linguistic diversity + cultural diversity) is essential for long-term planetary survival because it enhances creativity and adaptability and thus stability. Today we are killing biocultural diversity faster than ever before.

8. It costs too much to maintain small languages? Or – the political will is lacking?

Politicians' lack of knowledge about language-and-education issues everywhere in the world is appalling. In California, there have been many discussions about children who leave high-school without being able to read. Stephen Krashen's astute observation is that California's reading problem consists partly of politicians who do not read research. Lack of political will is one of the important issues here. Ngũgĩ, wa Thiong'o's (1987) *Decolonising the mind* is more needed than ever, and so are the insights in Robert Phillipson's (1992) *Linguistic imperialism* and 2009 *Linguistic imperialism continued*. In addition to new codified Linguistic Human Rights (LHRs), especially in education (which might be developing through UNESCO's latest plans?), we need implementation of the existing good laws and intentions. But the political will for that is mostly lacking. Neville Alexander's analysis of reasons for it (2006: 16) states:

The problem of generating the essential political will to translate these insights into implementable policy ... needs to be addressed in realistic terms. Language planners have to realize that costing of policy interventions is an essential aspect of the planning process itself and that no political leadership will be content to consider favourably a plan that amounts to no more than a wish list, even if it is based on the most accurate quantitative and qualitative research evidence.

What Alexander advocates necessitates the type of multidisciplinary approach that minimally includes sociolinguists, educators, ethnobiologists, lawyers and economists. Some of us work like this...

What would, then, be reasonable costs for maintaining indigenous/tribal and minority languages, and for respecting children's LHRs (see Skutnabb-Kangas 2008 a,b), and should it be the state that pays them? François Grin offers through his discussion of 'market failure' (2003) excellent arguments for resisting market dominance for public or common assets/goods like cultural products: Even mainstream economics acknowledges that there are some cases where the market is not enough. These cases are called "market failure". When there is "market failure", the unregulated interplay of supply and demand results in an inappropriate level of production of some commodity (Grin 2003: 35). In Grin's view, many public goods, including minority language protection, 'are typically under-supplied by market forces' (ibid.). The level becomes inappropriately low. Therefore it is the duty of the state(s) to take extra measures to increase it.

Francois Grin (http://www.geneve.ch/sred/collaborateurs/pagesperso/d-h/grinfrancois/francoisgrin_eng.html) and his team are just finishing a Swiss National Science Foundation project on the economics of the multilingual workplace.

One significant finding of the project is that we can, for the first time, provide estimates of the share of GDP due to bi-/multilingualism. As far as I know, this is a world premiere -- the often-mentioned ELAN study is confined to the effects on the export sector. But this is only a very indirect approach, because exports are only a part of GDP (which roughly varies from 10% to 50% in most economically important countries), and language is used for many more purposes than only selling exports (e.g. for accessing supplies, for internal communication, etc.) and language increasingly matters domestically (clearly in multilingual countries like Switzerland, but also in any country [with large-scale] multilingualism). We're presenting the first estimates at a series of events in Berne over November and December [2008], but as a 'sneak preview', I can mention that even after controlling for the input of capital and labour (taking account not

just of hours worked, but also of the work experience and educational level of the workforce), the net contribution of multilingualism to the Swiss economy probably represents about 9% of GDP, which is considerable. This opens up new ways to assess the relevance of investment in multilingualism (essentially macroeconomic, as distinct from the microeconomic perspective applied in rates-of-return estimation procedures). One of the advantages is that this approach, though technically more complex, is less data-hungry than the microeconomic approach, which is based on so-called "Mincerian" equations requiring micro-data that are expensive to collect. The offshoot is that estimates could in the future be produced for less affluent countries" (from a personal email from Francois Grin, 20 Oct. 2008).

When assessing the empirical question of why one should maintain minority languages, Grin uses both 'positive' and 'defensive' (or 'negative') cost-and-benefit arguments, but both are then used within a welfare-considerations based paradigm (i.e. not within a moral considerations based argumentation, such as violations of human rights). He asks both what the costs and benefits are if minority languages ARE maintained and promoted, and what the costs (and benefits) are if they are neither maintained nor promoted.

Some of Grin's promising conclusions are as follows:

- 'diversity seems to be positively, rather than negatively, correlated with welfare'
- 'available evidence indicates that the monetary costs of maintaining diversity are remarkably modest'
- devoting resources to the protection and promotion of minority cultures [and this includes languages] may help to stave off political crises whose costs would be considerably higher than that of the policies considered' [the peace-and-security argument].
- 'therefore, there are strong grounds to suppose that protecting and promoting regional and minority languages is a sound idea from a welfare standpoint, not even taking into consideration any moral argument (Grin 2003: 26).

I agree. The question whether states can afford MLE should rather be: **can states afford not to implement MLE?**

9. Summing up

Mother-tongue medium MLE for Indigenous/tribal/ local children and national minorities, for at least the first 8 years of education is necessary for the access to education and for EFA. MLE is cost-effective, both in short-term and in long-term. MLE is necessary for maintenance of linguistic and cultural diversity on earth and for creativity, and, through them and Traditional Ecological Knowledge, for the maintenance of biodiversity. Biodiversity is necessary for any future for humans on the planet. The costs of NOT implementing mother-tongue-based MLE properly NOW are catastrophic for humanity. The practicalities CAN be solved.

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Notes:

ⁱ See Skutnabb-Kangas 2000: 237-238 and 2009 on this concept.

ⁱⁱ “**Submersion/”sink-or-swim” programme**. Linguistic minority children with a low-status mother tongue are forced to accept instruction through a foreign majority/official/dominant language, in classes in which the teacher does not understand the minoritised mother tongue, and in which the dominant language constitutes a threat to that language, which runs the risk of being replaced; a *subtractive* language learning situation. In another variant, stigmatised majority children (or groups of minority children in a country with no decisive numerical and/or power majorities) are forced to accept instruction through the medium of a foreign (often former colonial) high-status language (because mother tongue medium education does

not exist). This often occurs in mixed mother tongue classes, mostly without native speakers of the language of instruction, but also in linguistically homogenous classes, sometimes because mother tongue education does not exist or because the school or teachers hesitate to implement a mother tongue-medium programme. The teacher may not understand children's mother tongue(s). The foreign language is not learned at a high level, at the same time as children's mother tongues are displaced and not learned in formal domains (e.g., mother-tongue literacy is not achieved). Often the children are made to feel ashamed of their mother tongues, or at least to believe in the superiority of the language of instruction" (Skutnabb-Kangas & McCarty 2008: xx).

iii Both are downloadable from my home page; go to UNPFII under <http://www.tove-skutnabb-kangas.org/en/index-en.html>).

iv **"Transitional early-exit and late-exit programmes.** Linguistic minority children with a low-status mother tongue are initially instructed through the medium of their mother tongue for a few years; the mother tongue is used as an instrument for acquisition of the dominant language and content. In *early-exit* programmes, children are transferred to a majority-language medium programme as soon as they develop (some) oral communicative competence in the majority language, in most cases after one to three years. In *late-exit* programmes children may receive some instruction through L1 up to the fifth or sixth grade; sometimes the mother tongue is taught as a subject thereafter. For both program types, the primary goal is proficiency in the dominant language" (Skutnabb-Kangas & McCarty 2008: xx).

v These children mostly manage *despite* the kind of education that they get, not *because* of it.

vi The only exception here is the capital of Ethiopia where children hear and can use English daily – their results in English were, naturally, marginally better than those of rural children, despite the fact that they did not have as many years of MTM-education. See Heugh et al., 2007.

vii I have slightly different (shorter or longer) recent version of the recommendations, e.g. in the invited Notes for the (UN) Forum on Minority Issues (Skutnabb-Kangas 2008a). They are also in Skutnabb-Kangas & Mohanty 2009 and in Skutnabb-Kangas & Dunbar, in press. They can be downloaded from my home page, <http://www.Tove-Skutnabb-Kangas.org>.

viii See Jim Cummins' home page at <http://www.iteachilearn.com/cummins/> for these two important concepts.

ix *The Index of Linguistic Diversity: Results from the First Quantitative Measure of Trends in the Status of the World's Languages*, Draft of June 8, 2009, Jonathan Loh & David Harmon, manuscript.

xThe iroko tree (*Chlorophora excelsa*) of Africa is no exception. Long before its timber had achieved its present commercial star status, the iroko tree was revered by the people who lived with it. Perhaps trees achieve sacred status because their wood builds rot-free boats and houses, because a preparation from bark, roots or leaves cures human maladies, because the trees' twig toothbrushes prevent tooth decay, because their branches burn slowly and warmly on cooking fires and their fruit destroys hunger. Perhaps for these reasons and for others, the iroko tree is a sacred tree. "In the forest there is a giant tree called by the Yorubas the "Iroko," which is shunned by all people, for in it lives the spirit of an old man who prowls about at night with a little torch and frightens travellers. Anyone who sees the Iroko-man face to face goes mad and speedily dies. Seeing the thick branches and mighty trunk of the Iroko, woodcutters are often tempted to cut the tree down and make use of the wood, but this is very unlucky, as it rouses the displeasure of the Iroko-man and brings misfortune on the woodcutter and all his family. In any house which contains furniture made of Iroko-wood, there can be heard at night strange groaning and creaking.

In any house which contains furniture made of Iroko-wood, there can be heard at night strange groaning and creaking noises; it is the spirit of the Iroko, imprisoned in the wood, who longs to wander about again through the forest with his little torch". <http://www.sacred-texts.com/afr/yl/yl10.htm>; see also <http://www.church-of-the-lukumi.org/sacredtwo.htm> for another legend about the iroko tree.