Translators in a global community

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The popular yet paradoxical idea of a diverse global community raises questions about language and translation. Would a global community with a global language lose its other languages? Would a global community without a global language be able to interact efficiently across thousands of linguistic frontiers? One strategy that might make global community compatible with linguistic diversity is *panlingual transparency* via *aspectual phased translation*. With it, translators translate aspects of a discourse at each phase of a multiphase process, rather than translating the discourse in its entirety in a single act. In an initial simple model, communication in a global community relies on translation partitioned into four phases; the translation in each is either *linguistic* or *cultural*, but not both. A source discourse is translated culturally (within the source language), then linguistically (from the source language to a global representation), then linguistically (from the global representation to the target languages), then culturally (within the target languages). Such partitioning could elevate productivity by facilitating divisions of labor between professional and lay translators and between human and machine translators, and by letting monolinguals act as translators.

We have to appreciate the diverse cultures on the planet. But that should not be used as an obstacle to developing a new culture.... There is a new culture developing. It's a shared culture. It incorporates the best of Western and Eastern and Asian and African culture, and it is part of the new planetary civilization of the future. (Kurtz 2006)

The Problem

Global diversity and global integration are popular ideas, not only among cosmopolitan elites but also, as international opinion polls show (e.g., World 2006, items A035, A125, A129; Globescan 2003), among the world population. So it is no surprise when people like Kurtz express the hope that these two values can be made compatible. This aspiration is evident in norms of human rights guaranteed by the

"international community" amidst respect for nation-state sovereignty (e.g., Smith 1999), in demands that indigenous small-scale agricultural producers growing local varieties participate directly in world trade (e.g., Shiva 2005), and in other expressions of ideals.

The hope that diversity and integration can coexist applies to language as well. It suggests an ideal world where all persons have access to literature and to live interaction with their fellow human beings, while the many languages used across the globe continue to thrive.

But, contrary to this ideal, global integration may accelerate language assimilation and language death. Of the reportedly 7,000 natural languages in the world (Gordon 2005), most are expected to be extinct within a century (Woodbury 2006). The incompatibility seems obvious. How could all of humanity interact with the world's literature and with one another across the boundaries of thousands of languages: with a global natural or artificial language known by the masses along with their native languages, and with publication, broadcasting, lecturing, and other public utterances normally taking place bilingually? Perhaps, but mass bilinguality may be unstable and lead to the atrophy and intergenerational nontransmission of local languages (e.g., Schiffman 1987: 66–71). Where it is not possible to earn one's living in a language, the maintenance of that language may be problematic (Mufwene 2002: 390). Or could mass monolinguality be the norm, with translators providing the linguistic integration? Perhaps, but this would include translation of each general-interest publication into thousands of languages, and translation of person-to-person communications between arbitrary pairs of languages, thus often with two translators performing relay translation. The cost of such a regime in money and delay is presumably higher than its beneficiaries would agree to bear, as illustrated by a popular commercial translation-on-demand service supporting 170 languages, which takes three business days and charges $66 for 100 words between most language pairs (Language 2005). Machine translation is an unlikely savior, since high-quality translation takes into account the principals' knowledge, beliefs, and values (Clark 1996: 98–120), and there is no evidence that automated translation can be made to do this satisfactorily, even among the few languages with multimillion-word corpora.

If the demand for global interaction and mass access to the world's information increases, it seems likely that the smallest languages will continue to die, an increasing fraction of humanity will invest in becoming fluent in whichever language offers the greatest access to knowledge and interchange (the "global language"), and an increasing fraction of all transactions (courses taught, newspapers published, Web sites posted, etc.) will take place in the global language. The taste for linguistic diversity will persist, but the amount of linguistic diversity that those with this taste are willing to buy will be far smaller than 7,000 living languages.
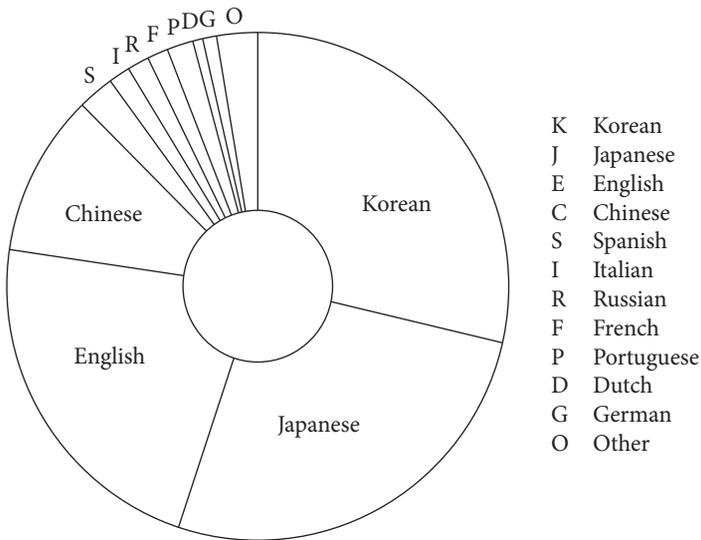
Figure 1. Web Logs by Language, March 2006
Sources: Sifry 2006, Duncan 2006

If, alternatively, the demand for access and participation were predominantly local or regional rather than global, local or regional languages might thrive, remain dominant (or recover dominance) in their own territories, and make increasing use of advanced communication technology. As one manifestation, the evolution of the World Wide Web from a predominantly English-language medium into a linguistically diverse one could continue, led by the blogosphere, whose current diversity is shown in Figure 1. Some individuals would acquire competence in a global language, but not enough (i.e. not enough individuals and not enough competence) to render the local and regional languages redundant. Under this alternative scenario, global linguistic diversity persists because there is no pervasive demand for a global community.

A solution

Suppose, however, that a world consensus insisted on mass participation in global information exchange plus the continued vitality of thousands of languages. Could this demand be satisfied? The prospects seem weak, but at least one concept merits consideration. This is a concept I shall call *panlingual transparency*. With it, human monolingualism is a norm, so global information access and interaction depend on massive translation among all languages, and translation is so efficient

that what is uttered in any language can be practically accessed in any other language. Panlingual transparency would resemble the world imagined by Adams (1979: 51–52) where people wear Babel fish in their ears and can thereby "understand anything... in any form of language" (except for Adams's conjecture that the removal of barriers to intercultural communication would cause "more and bloodier wars than anything else in the history of creation").

The details

A strategy that might make panlingual transparency nonfictional is *aspectual phased translation*. Such translation would take place in phases, and different phases would accomplish different aspects of translation. Abstractly, we might model translation as having two aspects: *cultural* and *linguistic*. Aspectual phased translation would partition these aspects into distinct phases. In particular, translation would take place in four phases, the translation being cultural in two and linguistic in the other two. Each of the four phases would have a different translator or translation team.

Consider an original text in, say, the Bantu language Yao (spoken by about 2 million people in Malawi, Mozambique, Tanzania, and Zambia), to be published on the Web for global consumption, including by a monolingual speaker of Muong (spoken by about 1 million people in Vietnam).

In my model of aspectual phased translation (Figure 2), the Yao-speaking author or another speaker of Yao performs phase 1 of the translation. In this phase the text is translated from standard literary Yao into *global* Yao. Global Yao is a standard
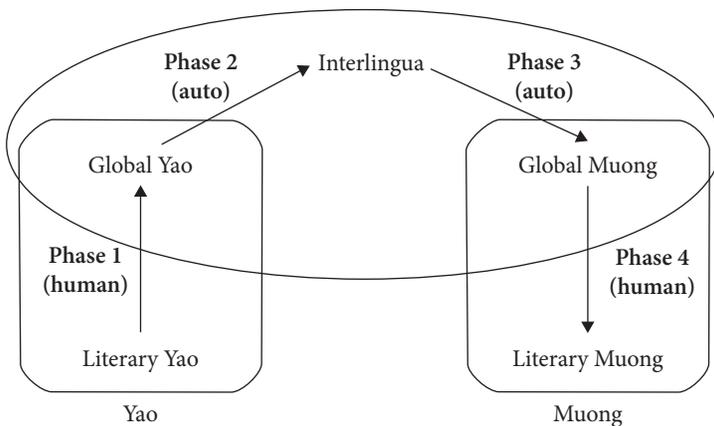

Figure 2. Aspectual Phased Translation

written variety of Yao that generally shares syntax, morphology, and orthography with standard literary Yao, but complies with a global semantic-pragmatic standard. This standard specifies the meanings that a global variety of *any* language must be able to express and, conversely, the ambiguities that it must prevent.

An automatic program performs phase 2 of the translation. It translates the text from global Yao into a global standard representation, an *interlingua*. This is an abstract, machine-oriented code that represents the semantics and pragmatics of the global standard with controlled ambiguity. Another automatic program performs phase 3 of the translation. It translates the text from the global standard representation into global Muong. This is the Muong analog to global Yao. Finally, a Muong-speaking reader or another speaker of Muong performs phase 4 of the translation. In this phase, the text is translated from global Muong into standard literary Muong.

In phases 1 and 4, the translation is intralingual. It takes place between a standard literary variety and a global variety of the same language. What is modified by this translation is the expression of the semantic and pragmatic denotations of the text. Thus, common knowledge, presuppositions, or evaluative connotations that may be assumed understood in a literary variety but cannot be assumed understood in a global variety are made explicit in the latter; ambiguities are preventively resolved; and distinctions made in literary varieties but missing in global varieties are erased. A work in a literary variety might describe "a hero back from Vietnam, who skulked for years in a Unabomberish cottage" (Rushdie 2002: 120), but the interlingua might not tolerate the assumptions of common knowledge behind this description, so it might require global varieties to contain more generic descriptions. "I can show you how to become an Internet service provider for $45,000" might be acceptable in a literary variety and its ambiguity resolved by knowledgeable readers, but the interlingua might prohibit reliance on the presumption that $45,000 is a more reasonable cost for becoming an ISP than for being shown how to become one, so it might require that attachment ambiguities like this be absent from global varieties. Global varieties might prevent such ambiguities by annotations (brackets, proximity symbols, etc.), word-order constraints ("show you for $45,000…"), or other constructions. Given that the translation in phases 1 and 4 is changing the assumptions about what the reader knows, believes, wants, etc., the "cultural" aspect of the text is deemed to be what is translated. The source and target texts are in two culturally different varieties of the same language.

In phases 2 and 3, the translation is interlingual. It takes place between the global variety of a language and the interlingua. These are different languages, but they are semantically and pragmatically equivalent. In these phases, the translation is deemed linguistic, not cultural.

Thus, aspectual phased translation involves collaboration between humans and machines, with humans translating interculturally (in phases 1 and 4) and machines translating interlingually (in phases 2 and 3). In addition, the intercultural translation of phases 1 and 4 can also involve human-machine collaboration, insofar as automated translation support has been developed for the language in question. There is no foreseeable end to the need for human judgment in these phases, but human productivity can be enhanced with automatically generated drafts, automatic validation of human-produced drafts, and support tools (Trujillo 1999: 57–61). Automatic validation is particularly applicable to phase 1, where the target is a variety with a formally specified grammar and lexicon. Even where a program cannot verify whether the human translation in phase 1 is correct, it can verify whether the translated text complies with the global variety's grammar and lexicon.

Aspectual phased translation also involves collaboration between professional and lay translators. The presupposition behind this claim is that a global variety of a natural language is a reasonable object of literacy. Just as some fraction of any speech community learns the literary variety of its language (if it has a literary variety), so, in the model of panlingual transparency, some fraction of each speech community learns the global variety, too. Those who do learn the global variety can compose texts directly in their global varieties and can understand texts that are automatically translated into them, obviating phases 1 and 4. They can also translate overtly between their literary and global varieties, perhaps with instruction by and advice from professional translators. Professional translators can also translate for those who do not know global varieties and those who prefer to read and write in literary varieties, and can translate literature between their language's literary and global varieties.

Aspectual phased translation makes it possible for monolinguals to be translators. Both professional and lay translators in this model are monolinguals. Their ability to translate arises from their being (at least) diglossic (fluent in literary-standard and global varieties of their native languages) and bicultural (knowing what to assume when using these varieties). Bilingual translators do exist, but they are machines.

Thus, the panlingual transparency model involves language learning, human translation, and automatic translation all contributing to global linguistic integration, in a regime that makes all languages viable media for the production and consumption of both local and global information and therefore arguably satisfies the requirements for the continued vitality of all languages.

Construction and maintenance

If a regime of panlingual transparency emerged and persisted, its origin might be either spontaneous or deliberate. The more plausible (or less implausible) scenario is a deliberate standardization process involving both construction and maintenance of the regime. This is how an existing successful panlingual regime, the Unicode standard, came into existence and persists (Unicode 2006). It replaces dozens of separate encodings for the writing systems of the world with a single encoding that allows practically any language, living or dead, to be represented by computers, and the makers of computer operating systems and applications have generally embraced it. It did not evolve spontaneously. It is the outcome of, and continues to be maintained by, an international deliberative process in which differences of interest and principle are debated and resolved, mostly by consensus but partly by non-unanimous voting. The Unicode Technical Committee holds week-long quarterly meetings and conducts policymaking discussions by correspondence on its Unicore forum, which during the year ending 30 September 2006 registered a mean of 3.6 messages per day. A semantic-pragmatic standard prescribing and constraining expressible meanings, i.e. an interlingua, could be expected to arouse more conflict and be regarded as more fundamental than a character-encoding standard such as Unicode and hence would be more likely to require a perceivedly legitimate deliberative process in order to be generally adopted.

Translators, those who regularly mediated between literary and global varieties, would naturally be the main participants in the definition and maintenance of global varieties. In principle, a global variety could be defined autonomously for each language, without interference by other languages' specialists or by global standardizing bodies, as long as it complied with the global semantic-pragmatic standard. However, algorithms for automatic translation between the interlingua and particular global varieties would be most efficiently developed as generic rules with variations determined by parameters of the respective languages and their families. This is the strategy employed by an existing project, the LinGO Grammar Matrix, that provides a platform for the construction of computational grammars for all languages of the world (Bender 2006). It would thus be realistic to expect the developers of global varieties to collaborate, particularly within language families.

Global varieties would be logically dependent on the interlingua, but would also exercise de facto influence on the interlingua. Each global variety would be required to be equivalent to the interlingua, such that any expression valid in a global variety would have to correspond to exactly one expression in the interlingua and vice-versa. But the interlingua would be a standard constructed and maintained by representatives of the world's speech communities, and the persons (mainly translators) who construct and maintain global varieties would probably be the

most active participants in the definition of the interlingua. They would know about problems that any features of the interlingua were causing for the designers of global varieties and could argue for appropriate relief. Thus, the definitions of the interlingua and the global varieties would in practice be interdependent.

Another relationship of mutual dependence would be that between each language's global variety and its literary variety. As a first approximation, a literary variety would preexist, and a global variety would be defined so as to resemble the literary variety to the greatest possible extent, consistent with the obligation to be semantically and pragmatically equivalent to the interlingua. But in reality literary varieties would also depend on global varieties. Speakers who know both varieties might spontaneously exert assimilative pressure on literary varieties. In addition, global varieties would naturally act as lexical conduits for literary varieties, transmitting to them new lexemes created as equivalents to new lexemes in the interlingua. If, for example, the concept of *antiretroviral* were to be lexically recognized in the interlingua and consequently in global Yao, it might be thence adopted by literary Yao. Where literary varieties didn't preexist, they could come into existence as byproducts of the efforts to define global varieties.

An interlingua would not be developed from a *tabula rasa*. Interlingua-like construction has taken place for centuries, producing philosophical languages (Maat 1999), artificial auxiliary languages (Blanke 1989), knowledge-representation languages (Russell & Norvig 2003: 320–344), machine-translation interlinguas (Trujillo 1999: 167–201), controlled natural languages (Pool 2006), and ontologies (Noy & McGuinness 2001). Some of these products result from world-scale standardization efforts, inspired by the Semantic Web Initiative (Berners-Lee 2001). Results of that work would be available to inform any new effort at interlingua design. What would be new in a panlingual-transparency interlingua would be its panlingual basis, including the participation of representatives of the world's languages in its definition. One sees hints of this idea in some existing projects (e.g., Leith 2004, Mitamura and others 2004), but no serious effort at panlingually participatory interlingua construction has taken place.

Feasibility

There are at least five major obstacles to the implementation of a regime of panlingual transparency:
– agreement on an interlingua
– expressivity of an interlingua
– design of global language varieties
– fluency in global language varieties
– coexistence of global and literary language varieties.

The design of an interlingua affects the interests of those using it. The conflicts over its design could be intense enough to prevent an agreement on any single interlingua. It could also be impossible to reach a consensus on the identification of the parties whose agreement is required. One property of an interlingua affecting users' interests is its similarity to their native languages. Misalignments in content words, such as *river* and *stream* in English versus *fleuve* and *rivière* in French (Sowa 2000: 409–412), or *like* and *love* in English versus *beğenmek* and *sevmek* in Turkish, are among the many potential bases for disagreements on interlingua properties.

One approach to achieving consensus on an interlingua is to avoid semantic distinctions that are not articulated by the speakers of some languages, but following this principle could make an interlingua inadequately expressive for the purposes of some users. An example might be the use of a single construction to represent all kinds of the present tense: momentary, continual, habitual, etc. Aspectual phased translation could then be considered inferior, between some language pairs (i.e. between languages that share more granular tense features), to traditional translation.

If an interlingua were adopted, the design of satisfactory global varieties of languages could be difficult. The requirement that each of them be semantically and pragmatically equivalent to the interlingua could interfere with the attempt to make them resemble their corresponding literary standard varieties in lexicon, morphology, and syntax. Lexemes would not all have identical denotations in the two varieties, or else designers might avoid semantic divergence by infusing global varieties with unique lexemes, thus impairing their learnability.

A regime of panlingual transparency would be most efficient if large fractions of all speech communities were diglossic. But fluency in a global variety could be difficult to achieve, both because of its deviations from the corresponding colloquial and literary varieties and because of its formality. Some attempts to make people fluent in formally defined varieties of natural languages have been described as spectacular successes (e.g., Bernstein, Kaufmann, Fuchs & von Bonin 2004: 5), but others have revealed cognitive limitations interfering with mastery (e.g., Clark and others 2005: 5–6). Among these are difficulty articulating relations that are normally tacit (as in "walk three miles," "walk three hours," and "walk three dogs") and difficulty in "canonicalization," i.e. using only the single valid expression of a particular meaning when the colloquial and literary varieties permit several synonymous expressions (e.g., "meet with" instead of "hold a meeting with"). In the judgment of some knowledge engineers, mastery of formal codes for the representation of knowledge, no matter how well supported or how much they may resemble natural languages, is beyond the practical reach of the mass public (Marshall 2003).

If mass fluency in global varieties were achieved, this fluency might jeopardize literary varieties by making them redundant. If the global varieties drove the literary varieties into extinction, the semantic and pragmatic aspects of linguistic diversity would survive only in colloquial varieties and thus not in written literature. The result could be the loss of one of the main assets justifying a regime of panlingual transparency.

Before presuming that one or more of these obstacles would necessarily make panlingual transparency impractical, we should observe the results of some projects that currently aim at versions or underpinnings of panlingual transparency. These projects support Web sites and other resources where a person can access information in whichever language the person prefers (if the information has been translated into that language). Among the most multilingual are projects to translate the Universal Declaration of Human Rights, currently with 365 languages (UNHCHR 2010); to compile a panlingual encyclopedia, currently with 272 languages (Wikimedia 2010); to compile a panlingual dictionary, currently with about 172 languages (Wiktionary 2010); and to translate the interface of the Google search engine, currently with 318 languages (Google 2010). Other notable projects with panlingual aims are translating subject descriptors (Open 2004, OCLC 2006, Dublin 2006a, Dublin 2006b), translating user interfaces (Plone 2006, LiveJournal 2006), providing multilingual image retrieval (Colowick 2008), and constructing and coordinating lexical databases (Global 2006b). Some of these projects seek to produce panlingual semantic systems that could be bases for an interlingua. For example, the Global WordNet Association's aims include "the standardization of the Inter-Lingual-Index for inter-linking the wordnets of different languages, as a universal index of meaning" (Global 2006a).

As a next step in pursuing the idea of panlingual transparency, the suspected obstacles could be evaluated in small-scale experiments and in the analysis of data from existing projects. The most problematic obstacles could be selected for earliest evaluation. For example, if it were surmised that an agreement on an interlingua's taxonomy of emotional states would be difficult to reach, experiments involving negotiations on such a taxonomy could be conducted, and results of work on the Global WordNet Association's "universal index of meaning" and on the Wiktionary project could be examined with respect to the translingual coordination of words describing emotional states.

Conclusion

Various individuals and organizations strive to maintain linguistic diversity and to promote translingual integration on a world scale, though rarely both at the same

time. The efforts for each of these goals may be interfering with one another. But some organizations have developed systems of multilingual--and potentially pan-lingual--interaction. Until now, systems that have tried to make it possible for people to express arbitrary thoughts and feelings in arbitrary languages and have those expressions rendered intelligible to the speakers of arbitrary other languages have relied on human translation and have provided their services at costs and with transaction times that make language barriers impenetrable under most conditions. No existing projects for multilingual interaction appear to be scalable to thousands of languages with billions of daily communications. A scenario of pan-lingual transparency, relying on a negotiated interlingual semantic standard, aspectual phased translation, and mass biculturality with diglossia, might have the scalability that current strategies lack, but several obstacles to its realization merit evaluation before it would deserve advocacy or real-world trials.

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