

## The Impact of Linguistic Technology on Natural Languages

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Let us imagine that we are speaking Greek on the telephone and the party in Berlin we are conversing with hears German. This person responds in German and the automatic digital language processor which is built into the telephone allows us to hear the response in Greek.

Science fiction? Not quite. The foundations for multilingual digital processing have already been laid. Some products, such as the hand-held automatic translators are already available on the market. The road is long and the institutional and technological hurdles are many. They all, however, boil down to the same thing: money.

Advancement in technology and the generation of knowledge in particular countries (mainly Anglo-Saxon) bring about deep-rooted changes in “regional languages”. “Our scientists only speak Greek when they go to the super-market”, the chairman of the Academy of Athens, Michael. Sakellariou (Koutsiaras, 1993), stated. This is only a matter of course. The new meanings and the new products which are produced daily in the developed nations, do not have linguistic counterparts in every country. Consequently, those who would like to ponder modern problems have no other recourse but to read English (mainly), write in English and finally think in English. The social position of scientists also lends prestige to their actions, resulting in lingua francas being commonplace amongst the lower intellectual echelons.

The mechanism which erodes language at an academic level was explained by the researcher of the Greek Centre of European Studies, N. Koutsiaras (Koutsiaras, 1993) Mr. Koutsiaras spoke of the (non-existent) use of Greek in economic science: “There are Greek economists, they say, who have not written even one passage in their mother tongue... The absence of economic science discourse in Greece (journals, associations etc) compels Greek economists – those who are not based abroad, that is – to work exclusively in English. If one considers that elections to a certain position in the university require scientific publications, which can only be made in foreign language journals – there are no such Greek journals – we can imagine what the future holds for the use of the Greek language.”

The history of language has certain landmarks (Danzin, 1992):

- The invention of articulated language.
- The invention of iconographic and symbolic representation.
- The invention of writing on a hard surface (rock, shells).
- The invention of writing on a soft surface (parchment, papyrus, paper).

- The invention of printing.
- The application of information technologies (electronics, technologies, information science).

At each stage some languages were favoured, while others were reduced to dialect. Historic examples: while Berber was the language most spoken along the Arab peninsula, when Arab was printed it became the prevalent language and Berber simply remained a dialect (Achab, 2001)

The change brought about by information technologies is one of the most significant in terms of depth, intensity, speed and extent.”

Professor Danzin (1992) adds, “We are making the transition from the culture of the written word to that of the screen.”

The transition is arduous, with many victims, mainly words, then meanings and finally whole languages. The market forces would prefer the existence of only a few languages – if possible, one. That is what economies of scale are about. But what is wrong with the whole world is speaking English? Professor Danzin (Danzin 1992), despite the fact that he is a champion of linguistic diversity, points out that “the nationalist tendencies are directly connected to language identification which sets boundaries for peoples’ way of thinking which are far more deep-rooted than political borders”. Language is the most deep-rooted cultural feature of peoples. It is not simply a way for describing the world, but a means for the perception of the world. The different way of “reading reality” also allows for different solutions to the problems which reality gives rise to. A homogenous global culture without external influences is a stagnant culture, a dead culture. Diversity is a prerequisite for progress. Survival itself needs complex structures. Thus, saving languages (and of course other cultural features) is not simply a “vice of the literate”, but a necessary element in the evolution of the human species.

Until quite recently, few in the developed world cared much about the cultural holocaust of the 20<sup>th</sup> century. The prevailing attitude has been that Western science, with its powerful analytical tools, has little to learn from the culture of less developed areas. The developed world's disastrous mismanagement of the environment has somewhat humbled this arrogance, however, and some scientists are beginning to recognize that the world is losing an enormous amount of basic research as indigenous peoples lose their culture and traditions. Scientists may someday be struggling to reconstruct this body of wisdom to secure the developed world's future (Linden, 1991).

The unification of Europe brings this challenge to the forefront. Of course, the united Old Continent has nothing to do with primitive cultures, but with languages the histories of which span thousands of years. The dangers emanating from the unification and the advancement of technology are clearly obvious. And so are the opportunities. Danzin posed an important question: “Will all the official working languages of the European Community equally benefit from technological change or are we simply headed for a Europe with many linguistic gears (some “modernised languages” – or perhaps only one language – and many “archaic languages”)?” (Danzin, 1992).

The answer can be found in a report compiled by the Professor and a European Communities working group. “The Europe of Maastricht must take the necessary measures in order to solve this problem, if it wishes to maintain its diversity and succeed at an economic and social level. It is not only about overcoming hurdles in terms of communication between citizens of the same Union. It is about everyone having a mother tongue, adapting to the needs of the 21<sup>st</sup> century.

One solution is to allow time to settle the problem. The response given by the discussion group is that development will not be unconstrained and balanced. The natural outcome is for very few languages to benefit – if not only one – and the rest to fall into decline. If we truly wish to avoid the imbalances in the development of the mother tongues in the Europe of 12 and the social pressures, which are inherent in such a situation, we must implement a voluntary policy, the core of which will be the combination of languages and information technology. The means necessary to implement this policy is “linguistic technology”, the aim of which is to promote the so-called language industries.

All those technical and economic activities which are related to creating these new language tools, can be defined as the industries of language: fundamental linguistic sources, means of converting from the spoken word to the written, semantic and syntactic processing, the transition from one language to another, text analyses and the analysis of personal expression, as well as any other technological intervention in the use of natural languages. In more general terms, we are referring to anything which modifies the written and spoken word through the use of new technologies.”

The committee came to the conclusion that the market is not an effective regulating force: “the development of private initiative will be very unequal and will monitor the rate of use of each language.” This is why community intervention is imperative. Research and development in the following sectors must be funded:

- Fundamental linguistics.
- Phonetics.
- Computational linguistics.
- Artificial intelligence, applied to language processing.

This all leads to the birth of “linguistic mechanics”. The term may sound strange, as we normally think of language as being something which is very natural and is not open to external intervention, or at least established intervention. However, the speed at which technology is advancing and the world is coming together in a “global village,” creates an issue similar to the ecological problem. Natural languages do not have time to adapt to the new developments, resulting in their gradually dwindling until they finally disappear.

Therefore, linguistic mechanics may play a role in “green technology” at the level of natural languages. At the same time, linguistic resources must be created. Electronic dictionaries, nomenclatures, terminologies, fundamental typology and development tools, the creation of a new integrated information science environment for word processing. To conclude, the language industries must grow; these industries which specialise in developing and supplying tools for unilingual and multilingual processing.

This whole effort mainly requires political will, money and time. It is estimated that the effort will take about 15 – 25 years. The ten languages of the Community, however, are a priceless asset which must never be lost.

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