

PUBLIC RELEASE DATE: 25-Jul-2014[\[Print \]](#) [\[E-mail \]](#) [+ Share](#) [\[Close Window \]](#)

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Physicists create tool to foresee language destruction impact and thus prevent it

There have been numerous cases of cultural changes throughout history. Either by imposition or assimilation, cultural traits are transmitted between neighbouring regions and often one replaces the original cultural traits of the other. Physicists Joaquim Fort, from the University of Girona (UdG), and Neus Isern, from the Universitat Autònoma de Barcelona (UAB), are experts in modelling these phenomena by adequately representing a reality, as they have demonstrated with their [previous projects](#).

In this occasion, the researchers applied their expertise to the area of language substitution, i.e. when the language of one region comes under the influence of the language of a neighbouring region considered to be at a greater social and economic advantage. The model helps to estimate the degree to which the languages are under threat and, therefore, are useful in designing actions to control or reverse language diversity destruction.

Researchers analysed the case of Welsh and its deterioration. Isern and Fort verified how, from 1961 to 1981, English took over Welsh and became the main language of communication. The researchers described the evolution in number of speakers, by reproducing the decrease over time in speakers of the native language as they substituted Welsh for the neighbouring language, English.

In this research, the physics defined parameters which allow them to estimate the speed - in kilometres per year - in which the stronger language expands geographically over the native language. Their work has also focused on observing the evolution of other languages such as Quechua and Scottish Gaelic. Neus Isern explains that "these parameters can be applied to languages spoken in countries where the governments are not concerned about their conservation, while they are more difficult to use with languages such as Catalan, which is protected under a series of linguistic policies".

In a wider context, this type of model could be applied to other examples of cultural changes in which the more favourable traits expand and abolish the predominance of a native cultural trait.

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The study conducted by Neus Isern and Joaquim Fort was published in an article in the prestigious *Journal of the Royal Society Interface*. The journal is among the top five interdisciplinary journals worldwide, according to the parameters used to calculate impact by the Institute of Scientific Information (Journal Citation Reports rankings). The researchers worked on this study under the framework of the Consolider SimulPast project, dedicated to the simulation of human history. The Consolider is made up of large research projects in which researchers from different disciplines and institutions participate.

The article Language Extinction and Linguistic Fronts can be read at:

<http://rsif.royalsocietypublishing.org/content/11/94/20140028.full>

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