

Languages Everywhere!

Engineering the Tower of Babel through Cartography and Software Linguistics

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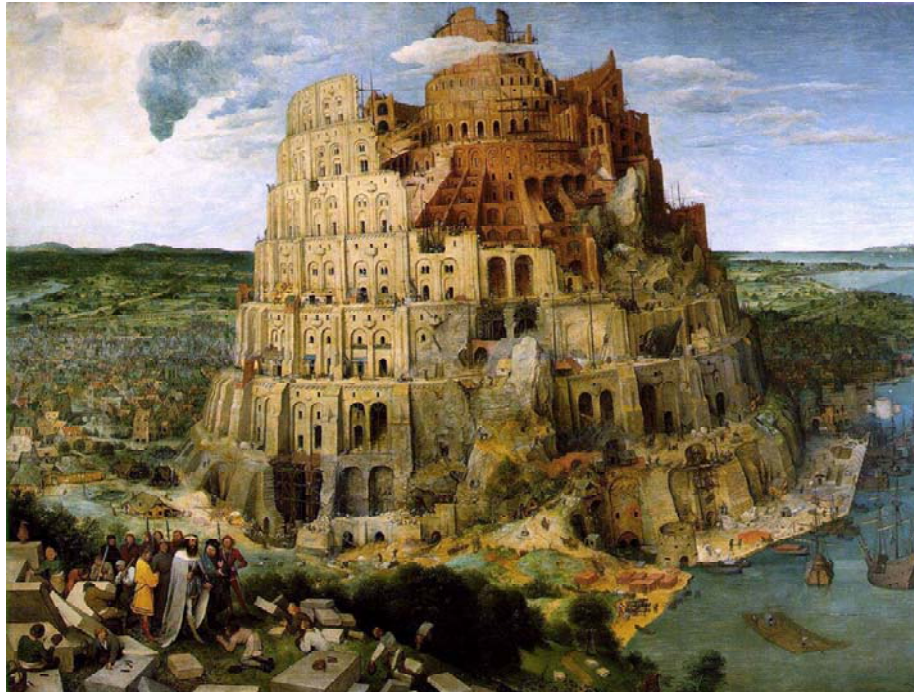
<http://www.model-transformation.org/TOWERS2007/>

Abstract. Languages are ubiquitous in our world. This truism, largely neglected so far, is going to be key in the future of informatics. This paper advocates that the Tower of Babel is a fact, while the Universal Language is a myth. Ubiquitous computing, ultra-large scale systems and globalization lead to unprecedented demands on communication and connectivity between actors, either human actors or machines. Whatever the kind of actors considered, all kinds of communication are based on languages, whether formal or not. It is time to recognize that languages are indeed at the very centre of informatics and that a more scientific approach is both necessary and possible. Based on various elements from the history of mankind and from the history of computing, we forecast the emergence of two new fields in informatics: Software Linguistics, that is the scientific study of Software Languages, and Software Language Engineering, the corresponding engineering discipline. This vision, if realized, could have a significant impact in the next decades, but this will be only the case if concrete actions are taken now. This paper advocates that it is time 1) to consider the study of all kind of software languages from a scientific point of view, 2) to recognize that language descriptions, in all their diversity, should be treated as first class object, just like integers or strings, 3) to consider their production as an explicit engineering discipline, not just a craft 4) to establish a worldwide cartography of existing software languages describing not only bridges between them, but also all kind of relations on which the Tower of Babel is based. Finally a brief research agenda is sketched and proposals to the international community are made along with the presentation of concrete means to establish cartography of our software world. The Tower of Babel is not a myth. The future of Informatics relies on it, so let's engineer it, and realize the Power of Babel.



This paper is part of the series "From Ancient Egypt to Software Language Engineering".

It will be available after the workshop at <http://planetmde.org/fae2sle>



The Tower of Babel

Pieter Bruegel the Elder, 1563, Oil on oak panel, 114 x 155 cm, Kunsthistorisches Museum, Vienna

The painting of Bruegel is a testimony to fears that accompany modernization at that time. The town depicted in the surroundings of the tower of Babel is Antwerp. It was in the 16th century one of the largest cities of Europe with a constant inflow of people. This leads to a boom within a short period of time. This explosion in the size is linked to the reorientation of world trade due to the discovery of America and new sea routes to Asia.

Antwerp became one of the centre of trade in Western Europe,. Many languages were spoken by traders and sailors. Many people speaking so many languages were arriving, and this certainly led to many fears within inhabitants, and confusion in the city.

Experience has shown that dealing with multiple languages is not only necessary; this is a very powerful mean to extend our body of knowledge and we should cope with the difficulties that arise with multiple languages.

**Let us face our fears of the Tower of Babel
and realize the true Power of Babel.**

This talk is partly based on the notion of “Towers of Models” as developed by Robin Milner in his keynote, and in the following documents :

[1] R. Milner, “Ubiquitous Computing: Shall We understand it?”

[2] R. Milner, “Ubiquitous computing, models and the informatic future”

About the author

Jean-Marie Favre is a Software Explorer and a Language Archaeologist. He serves as an Assistant Professor at the University of Grenoble. His research work aims at 1) understanding phenomenon that arises during the long term evolution of very large scale software products, and 2) to improve engineering techniques accordingly. His experience in language (reverse) engineering and evolution comes both from academia and collaborations with very large software companies. He is co-founder of various international events and workshops, in particular the ATEM series dedicated to Software Language Engineering (SLE). He is co-author of a book in French “Beyond MDA: Model Driven Engineering”. His next book might be called “Beyond Model Driven Engineering: Software Language Engineering”.