



The BABILU Venture Promotion of a Universal Medium of Speech

A Master's Thesis submitted for the degree of
“Master of Business Administration”

supervised by
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Vienna, June 30th, 2010

Affidavit

I, **RAMTIN GHASEMPOUR-YAZDI**, hereby declare

1. that I am the sole author of the present Master's Thesis, "THE BABILU VENTURE - PROMOTION OF A UNIVERSAL MEDIUM OF SPEECH", 69 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

Vienna, 30.06.2010

Signature

Preface

The following Master Thesis is researching into the possible economic benefits an worldwide direct communication ability might have. The course of investigation was very exiting as well as striving to me and gave me the unique opportunity to follow a course of investigation that challenges my computer science background in combination with the business administration skills and innovation management know-how I developed through participating the jointly offered Professional MBA Program for Entrepreneurship & Innovation by the Vienna University of Technology and the Vienna University of Economics and Business, which this Master Thesis is completing.

I have a Persian as well as an Austrian cultural heritage. I have been raised bilingual from the beginning on, and I have experienced the advantages of a multicultural society. I have observed exclusions purely based on lacking language skills, but I also came across the power of communication skills as the key to understanding each other, as the key to the heart of the people as well as the key to the magical wisdom that lies in the unity within diversity. Ludwig Wittgenstein's quote, "The limits of my language are the limits of my mind. All I know is what I have words for." could be the tagline for my motivation and keynote for the mindset on this work.

Using this opportunity, I would like to thank several people who gave me fully support during the academic program and during the master thesis period.

I would like to express my sincere gratitude to Professor Franke for his supervision and guidance.

Also I would like to thank the Professors and Program Management of the WU Executive Academy and the TU Continuous Education Centre as well as my colleagues of the MBA Program in challenging me and in helping me to broaden my view and knowledge.

Lastly, I owe the deepest debt to my son, Rafael, and my wife, Juliana, for sacrificing with me as we spent time apart so that this Master Thesis could be written. I thank them for sharing my joy, being patient, and giving me encouragement as it was needed.

Abstract

The purpose of this thesis is to investigate into the economic implications of direct communication abilities and contributes to our understanding of the possible benefits a universal and global auxiliary language might have. This study examines and exposes the indication that direct communication abilities effect economic variables, and that they can positively contribute to earning, trade as well a wealth in general. These direct communication abilities can thereby be seen as a key to social and economic benefit. Further investigations show that the spread of English has also raised cultural, political and linguistic resistance and that the further adoption and spread cannot be predicted as simple and straightforward as it might seem. With the perceived positive implications as well as analyzed absence of a global “lingua franca” this study identifies the prospects of mass collaboration and the wisdom of crowds as proper strategic instruments for strengthening cooperative environments, needed for achieving better results in public good games - like the adoption of language. Finally this study suggests the establishment of a language independent, process and community driven open data foundation primary promoting the necessity of a Universal Medium of Speech as well as introduces fundamental strategies this endeavor, named Babilu Venture, should be based on.

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List of abbreviations

Auxlang or IAL	An international auxiliary language or Interlingua is a language meant for communication between people from different nations who do not share a common native language. An auxiliary language is a second language and implies that it is intended to be an additional language for the people of the world, rather than to replace their native languages.
BV	Babilu Venture
CIA	Central Intelligence Agency
CMS	Content Management System
DC	Direct Communication
EU	European Union
IT	Information Technology
ICT	Information and Communication Technology
OSS	Open Source Software
UMS	Universal Medium of Speech

Chapter 1 Introduction

As of today we have a little bit more than 6.8 Billion people¹ living on our planet who communicate or have to communicate in over 6,809 (Anderson, 2004, p. 544) distinct languages. Briefly looking at Figure 1-1: Human Language Families (Wikimedia-Commons, 2009) that visualizes the geographical spread of human language families gives us a modest impression of the prevailing language diversity. Although an important part of our cultural identity and a crucial datum for cognitive science (Evans & Levinson, 2009) language diversity also comprehends drawbacks and triggers barriers to society. Even with the rise of multilingualism (Graddol, 2006, p. 18) millions of people are still not really able to communicate directly with each other, exchange and trade goods, thoughts or emotions, and worst of all they are not really able to understand each other. Thereby this situation has a very high social as well as economical impact to our world.

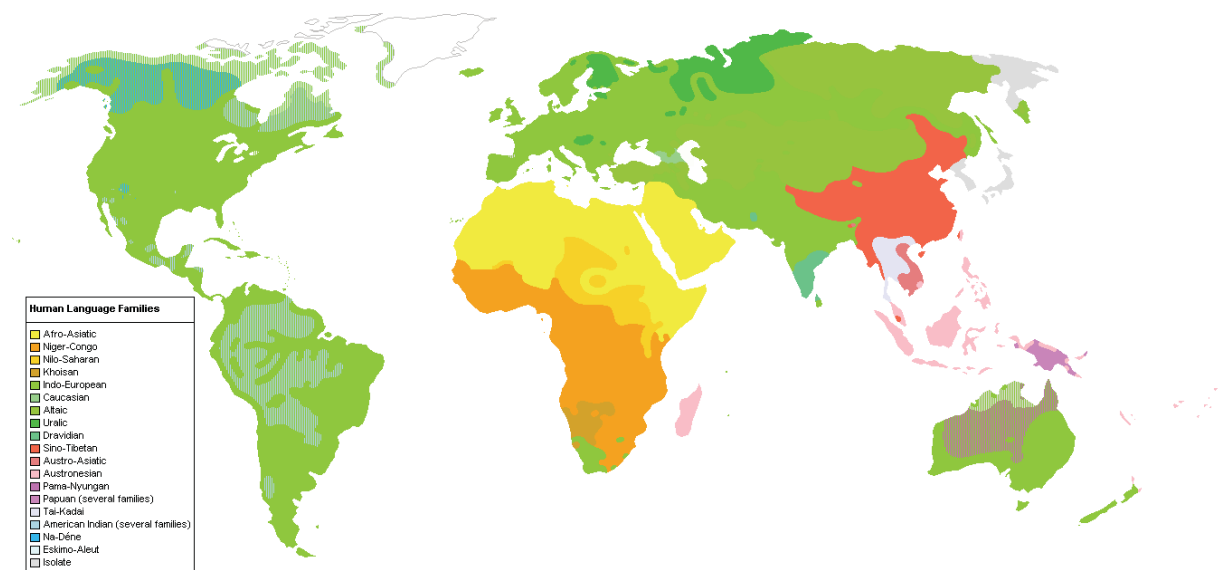


Figure 1-1: Human Language Families (Wikimedia-Commons, 2009)

Exemplarily social implications include:

¹ According to the last estimate of the United States Census Bureau, published February 2nd 2010

- Understanding on the deepest level, human to human is prevented
- Social exclusion out of language inabilities
- Prejudices resulting from lacking understanding
- Prevention of equal rights
- Limitation of the progress of our society

Looking at the entangled, numerous economical implications there are of course costs. By just considering Europe, the EU spends about 1% of their overall yearly budget (Smith, 2007), an astonishing 1 Billion Euro just on translation and interpretation of the official EU governmental multilingual material. Patent costs get inflated; people, companies and products that are not able to finance and promote multilingualism lose their competitive ability and have to content oneself with a much smaller market. And many further not yet measured and not measurable costs. But its not only about costs, its also about restrictions, barriers and not seized chances. Thereby this confusion of tongues can be stated as a repressive implication and as a limitation on the wealth, the potential and the therefore a limitation to the future of our society.

1.1 Problem formulation

The invention and fast paste rise and adoption of the Internet even magnified the effects coming from the absence of one global communication language. It fuels English to serve as a pro-forma auxiliary language for a big part of the online world and web culture. But the rise of the Internet also amplifies the disadvantages and entry barriers for people, cultures and companies who are outside the top 10 languages dominating the web community. Figure 1-2: Top 10 Languages in the Internet ("Internet World Users By Language - Top 10 Languages," 2010) shows this asymmetry.

The effects on the world should not be underestimated. Not only for minorities and not digital active people and cultures but in fact for everybody. As an example, although Chinese is the second frequent language in the web, China has become the

Nr. 1 English speaking country (Coonan, 2009) in the world. Arabic has 500 Million speakers but 20% less web users than the 100 million German ones. The statistic for published content is even more showing a shift towards the usage and adoption of „Global English“ - a term referring to the international standard for the language including the use of the language English by people with a other first language ("International English," 2010).

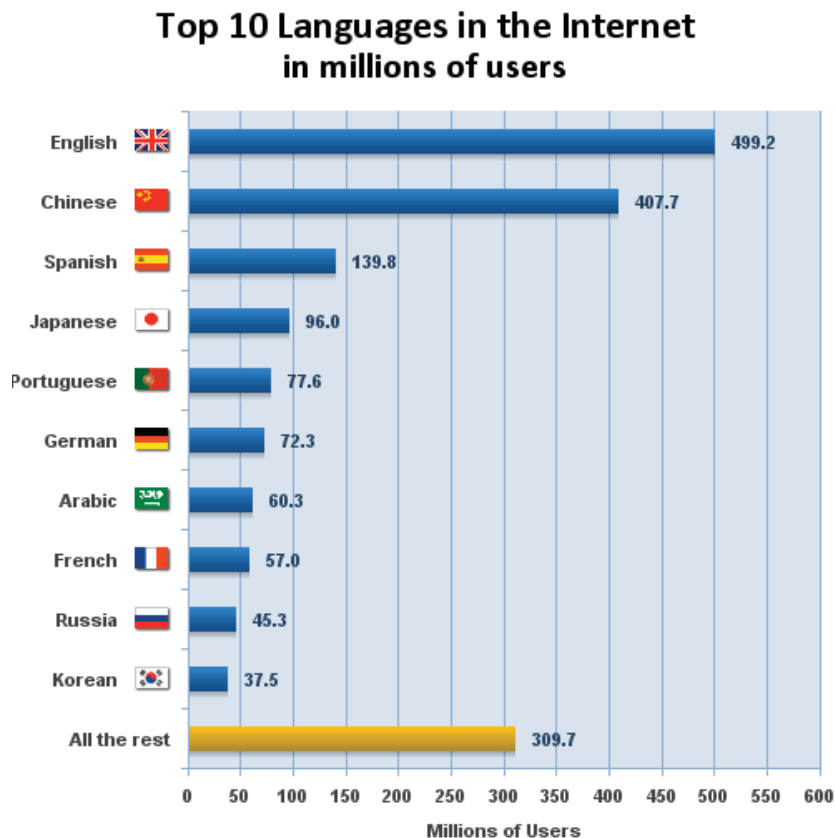


Figure 1-2: Top 10 Languages in the Internet ("Internet World Users By Language - Top 10 Languages," 2010)

The spread of Global English is inevitable but globalization and the changes to our global language system is a rather complex topic full of nuances. The empiric of S. Sonntag (2003, p. 123) concludes, that “Globalization pushes forewarned English hegemony, but by doing so it creates its own antithesis”. One of several studies and events indicating that across all nations the adoption of the English language is also perceived ambivalently.

This ambivalence is also reflected by mass media as well as academia, citing especially the work from Phillipe van Parijs (2004) and Abram De Swann (2001) and shows especially the European polarization for and against Global English, with its cause being traced back by Peter Ives (2006, p. 125) to the different traditions in the history of European political philosophy and the importance of linguistic issues to “modern” nationalism and to the emerged national consciousness. So on the one hand it is seen as a threat to linguistic diversity and to the national culture but on the other hand it is also seen as a great benefit to the world as it is rendering the possibility for a direct and freely communication.

Global English it the dominant language of our time, like Latin and French have been in the past, but it is not globally politically accepted or globally adopted yet. Does the current hegemony of English automatically imply a “full” global adoption? Maybe, but definitive a question, for the further course of investigation should address.

The idea of a common and universal auxiliary language, meant for communication between people from different cultures and nations who do not share a common native language, which can itself be a natural language or a artificial one, is almost as old as the Biblical narrative of “Building the Tower of Babel” and the resulting confusion of tongues itself. In the past Languages of dominant societies like French and Russian (“History of auxiliary languages,” 2010) and nowadays English have temporary and locally served as a de facto and implicit auxiliary language.

Realizing the implementing of an auxiliary language by using a constructed or artificial language in contra to a natural one became a suggested solution and a subject of academic study and publication already more than 100 years ago. By philosophers and authors like Couturat, Jespersen, Lorenz, Ostwald and of course by L. Zamenhof the father of Esperanto. Still there are advocates in favor of this approach, like Archibugi who argues that “democratic politics must be in Esperanto” (Archibugi, 2005, p. 544) because he concludes that “cosmopolitans would prefer an impoverished but directly understandable language to a myriad of more colorful yet non-accessible languages”.

But looking at the history² and literature of the idea of a constructed or artificial International Auxiliary Language, it can be concluded, that for the past decades there is a common and basic assumption that in general a need for an International Auxiliary Language exists and that such an intention will actively contribute to the wealth of the nations. Nevertheless the history also reveals a long list of failing und unsuccessful constructed language projects.

Summing up, that to this day the world is lacking a political accepted, committed and globally adopted universal medium of speech. Weather as first, as second, natural or constructed. Weather called International Auxiliary language, auxlang, or universal medium of speech. No such language is yet in place.

In the authors view the implications of a lacking international language for communication between all people on our planet cannot be overestimated and they are far greater than we assume. We are just used to this situation and therefore we cannot imagine the social and economical benefit, which would result from it. Just as a modest example: Would the achievements of the United States since the selection of English as primary language for legislation and commerce be possible without a common language? I really do not think so.

Therefore the first part of this thesis is the attempt of trying to express the possible need for an auxiliary language with the help of economic theory and an investigation into the economic boundaries and network externalities of our global language system. This part should give indication weather or not the world would benefit from an auxlang, and weather or not a separate endeavor makes economic sense.

Can the current existing artificial auxlangs or English or Global English already be seen as the final solution to the quest for an human unifying global language? This will be the following part this thesis will investigate into. Depended on the outcome, an entrepreneurial endeavor, named Babilu Venture, is suggested to propagate the possible positive benefits the course of investigation was able to find.

It is in the authors' view, that the invention and adoption of the Internet as the first truly boundless communication system, also invented the necessary mechanisms for

² See Appendix 1 for a brief history of constructed languages

the successful promotion of the need as well as the ensuing successful adoption of an auxiliary language. This is the second part of this thesis, the business design of a venture with the mission of laying the foundations of an international auxiliary language.

1.2 Objective of the Master Thesis

Named after the Akkadian Word „Bāb-ilu“, the native word for Babylon, this endeavor is alluding to the mythological narrative “Building the Tower of Babel” and the subsequent resulting story of the language confusion. In contra to many interpretations of the past the Babilu Venture wants to stress the fact, that in the light of the new day on a globalized planet the narrative must be seen as a challenge and assignment to overcome the present language barrier, as the results could be beneficiary to mankind. So the story should not only be seen as an explanation of the situation, or as a curse, or even as an excuse for a lacking solution.

It is the objective of this master thesis to indicate:

- Whether or not an International Auxiliary Language is beneficial and needed.
- Whether or not a new approach to the implementation of such a language could be helpful.

The emphasis will be on reckoning economical considerations and analyzing existing approaches. First and foremost Global English followed by Esperanto, the most famous artificial auxiliary language.

Based upon the findings it is the further aim of this thesis to design a philanthropic venture facing the challenge of positively contributing to the economics of language and thereby positively contributing to the wealth of the world. Especially the unbelievable forces and means coming from collective intelligence of the crowd, as wonderfully summed up by J. Howe in (Howe, 2006), are of interest.

Namely the:

- Involvement and engagement of an user community for pushing this quest
- Open Innovation Strategies for Development and for Marketing activities
- Open Source development and licensing of almost all parts
- Usage of statistical methods and wiki mechanisms for information aggregation and group decision (not only discussions)

All in all resulting in a unique and contemporary approach to reduce the globally existing language caused barriers among all humans and all nations - with the help of an open and collaborative process.

1.3 Course of the investigation

The challenge of this investigation is to elaborate and then combine the involved assumptions, thinking, views and forces. Therefore the author has chosen the following approach, which will be conducted in a solution oriented way:

- Step1: Research is done for collection and identification of the current, involved mental models. These essential findings are the aim of the research. This includes the topics:
 - Language and Economics
 - Language Policy
 - Language Externalities
 - Game Theory on Language Distribution and
 - Existing auxiliary Languages
 - Open Innovation
- Step2: Combination and presentation of the identified and relevant findings.

-
- Step3: The Babilu venture will then be build and formulated based on these findings.

Mental Model will be used and understood with regards to Wikipedia's definition ("Mental model," 2010): "A mental model is an explanation of someone's thought process about how something works in the real world. Our mental models help shape our behavior and define our approach to solving problems (think personal algorithm) and carrying out tasks". Every plan has its underlying connection of mental models triggering and causing our decisions and actions. Therefore it is the aim to represent the findings of the research part of this thesis as models and to further use them as the building blocks for the Babilu Venture.

Chapter 2 Language Economics

Why

are language issues important to Economic theory? To answer with Rubinstein's (Rubinstein, 2000) words: "Economic theory is an attempt to explain regularities in human interaction and the

most fundamental nonphysical regularity in human interaction is natural language." This puts language into a perspective not often thought of in the past. This chapter investigates into the economic perspective of language. Looking into and summing up the current field of research and development the economic implications language and language choice has on human and on society will be reviewed and compiled. The findings will then represent the conceptual groundwork for further steps and decisions.

This field of investigation is generally referred to as "language economics" or "economics of language". Multiple authors cite the beginning of this discipline to an article written by Jacob Marschak (1965). It is the first publication realizing the economical implication of language and communication systems. Traditionally the economical aspect was not and to a high degree it still is not a perspective thought of as relevant to language. It is a relatively small and interdisciplinary field of focus, but an area, which gained relevance and momentum in the last 10 years. Traditionally, legal, educational and especially cultural viewpoints have been dominating the investigative perspective on language. Just consider and think of the French law ("Toubon Law," 2010) mandating the use of the French language in official government publications, in all advertisements, in all workplaces, in commercial contracts, etc.; Mandating the use almost everywhere in "official France" has and had pure cultural motives and reasons but complete disregards economical ones.

Continuing with the early work on language economics, Canadian researchers can be identified as the main drivers of the topic investigating into the English / French issue of their country followed by American scientist trying to understand the effects on earning and labor income. Thereafter the following focus was the examination and definition of language as a form of human capital, which then was the basis for

considering language in a broader economic sense. This ranges from analyzing the involved network effects to game theoretical considerations of language choice.

As the author has not found a unified economic theory perspective on language the definition of (Grin, 1996b, p. 6) “The economics of language refers to the paradigm of theoretical economics and uses the concepts and tools of economics in the study of relationships featuring linguistic variables; it focuses principally, but not exclusively, on those relationships in which economic variables play a part” is used as a fundament. Although not unified, the following findings are coupled and related and sum up the available propositions.

2.1 Language effects economic variables

It was also Grin (1994) who started the inquiry if economic and language is a match or a mismatch? And thereby he proposed “Language Economics to be defined as a field of research with its own right”.

By firstly using methodological underpinnings of economic approaches and economic tools to language issues and thereby by defining an impact model on empiric data from a broad survey he very clearly concludes that economic and language are a definite match.

He further investigated into the questions (Grin, 1996a):

- “How do language variables affect economic variables? (Like the possible effect language skills might have on earning)”
- “How do economic variables affect linguistic variables? (For example: Do the relative prices of certain goods affect patterns of language use)”
- “How do essentially economic process affect language process? (Like the effects of utility maximization on language dynamics)”

With these investigations Grin stresses the insight of language variables having a clear effect on economic variables and further that economic processes effect language dynamics. A sample would be the current second language learning

behavior reasoning the rise and dominance of English, more precisely Global English as a second language. These publications lead the author to the finding:

Finding 1: Language Effects Economic Variables and Economic Processes effects Language Dynamics.

2.2 Language effects on earning and trade

Language effects on earning is referred to being the oldest area of investigation within the field of language economics (Ricento, 2006, p. 80) and Canada having the most detailed studies as well as census data and language skill data.

Lang (1986) firstly developed a model of a two-language labor market. He assumes that all employers have the same native language and choose whether to hire workers with the same native language as their own or workers with an other native language. When direct communication is not possible these workers must be bilingual or the employer himself must be or become bilingual. By further defining, based on his empirical data, that the wages of these bilingual workers will compensate exactly for the cost of becoming bilingual, he showed and explained the existence of language caused discrimination and showed that language can be viewed as a barrier to trade and to earning.

Chiswick and Miller (1995) who used Australian Immigrant data created a model that showed to be applicable for a wide range of source countries. Their model indicated the finding “that the determinants of destination language skills among immigrants can be studied using econometric techniques, that fluency responds to incentives (economic, exposure, and efficiency), that language skills have an important effect in the labor market, and, finally, that earnings and language fluency are determined jointly.” Thereby the endogeneity between language and earnings was shown.

Though many publications from many researchers like Vaillancourt, Grin and Dustmann, to only name a few, have contributed to this field it is again the collective publication of Chiswick and Miller (2007) that analysis the economic importance of

acquiring second language skills. They brought forward the importance language plays on earnings, jobs and immigration patterns.

M. Farr (2007) reviewed the findings with “In an increasingly interconnected world, such empirical studies as these reveal the significant impact of linguistic capital on economic advancement, and they underscore how important both education and literacy are in socioeconomic mobility.”

Finding 2: Language Effects Earning; Earnings and language fluency are determined jointly

A further facet and area of investigation are the implications and effects that language has on trade. The publications of Melitz have been identified as the current most significant in this field. He (Mélitz, 2007) has created a Gravity Model that “will serve to study the impact of the linguistic influences in foreign trade. This has two basic advantages. First, the model has been the exclusive tool in similar research thus far. Second, and more significantly, the model is particularly fitting since it focuses on the barriers to trade.”

The model is used to analyze the impact of language effects on trade but can also be seen as study shedding light on the heavy existence of network externalities within natural languages. Relying on the massive effort of (Grimes & Grimes, 2000) in establishing a general quantitative index of language in economic research by providing an index of linguistic diversity and on the CIA Country Factbook Melitz proposed to construct a separate series for common language that depends on translation and a separate series that depend on direct communication.

His gravity model, developed to study the impact of the linguistic influences in foreign trade, indicate that direct communication is about three times more effective than indirect communication in promoting trade and that a common language has nearly twice the impact.

Finding 3: Language has a direct impact on trade. A common language significantly promotes trade and significantly contributes to wealth.

2.3 Language and Network Effects

A network benefit or effect is said to exist if the value of a certain product, given to a customer, is higher when a large number of others also consume the same product.

Church's and King's work (1993) analyses the equilibrium in an economy where agents can choose to learn second languages by constructing a game-theory model where agents have two languages that are perfect substitutes. Their model provides theoretical support that languages can be thought of as natural monopolies. They provide a formal model of why they are natural monopolies - because of the involved high network externalities, and determine the market allocation, and compare it with the socially optimal allocation. Further they show that the benefit of language acquisition is also increasing with the number of individuals who speak the language and also start a discussion on the welfare effect of language policy.

Continuative a further finding and analysis of (Mélitz, 2007) implicitly says that the problems of mounting and maintaining a language network are so large that, regardless of population size and number of languages, only two common languages can exist between any pair of countries. This leads to the finding:

Finding 4: The network effects of language limit the number of common languages to 2

2.4 Language Dynamics

David Graddol (2006) estimates, that in the year 2015, two billion people, a third of the world population, will be learning the English language. So English is the most widespread language in the world and is more widely spoken and written than any other language and gaining momentum every day. As of right now over 400 million

people have English as their mother and native tongue (only surpassed in numbers by the many variants of Chinese) and over 700 million are capable of speaking English or Global English as a foreign language. That makes it the „Lingua Franca“, the first choice and international language of people not having a common mother tongue.

Analyzing and explaining the decline and spread of languages is in the centre of numerous researching activities. De Swaan's analysis (2001, p. 176) the question why it is inevitable that English has already become a world lingua franca and describes the current state as "The evolution of human language is a blind process resulting from the unintended consequences of a myriad of individual decisions (and non-decisions, resignation and compliance)". This unintended, uncontrolled and distributed process of the spread of the English language is also recognized and confirmed by the work of many others, like Philippe Van Parijs (2004) who concludes, that "One of the native languages is being picked through countless uncoordinated choices, as the sole lingua franca".

However, (De Swaan, 2001, p. 177) goes way further and deeper by concluding that a single and coherent and hierarchical world language system has already emerged with English being the core and the "hypercentral"³ language. Linked to a couple of "supercentral" languages (Arabic, Chinese, English, French, German, Hindi, Japanese, Malay, Portuguese, Russian, Spanish and Swahili). Each of them again linked to several peripheral languages. The glue of this global fully connected language system: Multilingualism. He further introduced a Q-value (measuring a communication value of certain language) that introduces an indicator for the communication value of a language and explains language choice as a result of the individual gain of communication value, derived from this choice.

³ Abram de Swaan, classification of languages is based on the large scale social role for their speakers:

Central languages: widely spoken languages

Supercentral languages: very widely spoken languages that serve as connectors between speakers of central languages; according to de Swaan, there are twelve of these: Arabic, Chinese, English, French, German, Hindi, Japanese, Malay, Portuguese, Russian, Spanish and Swahili;

Hypercentral languages: connect supercentral languages; de Swaan erects English to be the sole hypercentral language;

Peripheral languages: the rest – languages that no one considers worth learning except to improve one's own communication faculties.

English, as a native language, reached its zenith about a decade ago (De Swaan, 2001, p. 185). Figure 2-1 shows this finding graphically. Now Global English is making inexorable progress as a second language and following De Swann it has therefore to be declared as a “hypercollective” good.

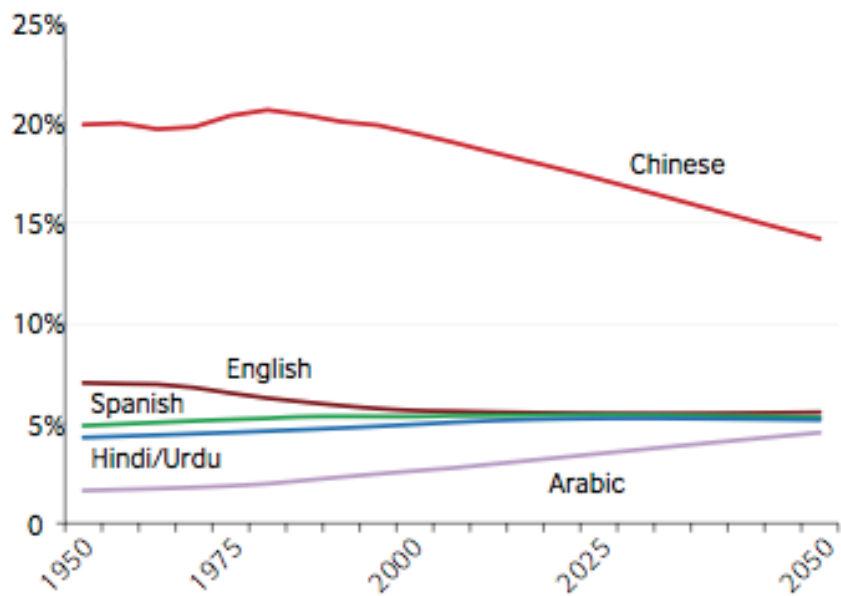


Figure 2-1: Trends in native Speakers for the worlds largest languages⁴ (Graddol, 2006, p. 60)

The result of our global language system, hypercentral English, is an almost global concern as the Internet is further fueling this domination. The following table, Table 2-1: Top Ten Web Languages ("Top Ten Languages Used in the Web," 2009) undermines the increased dominance of English, but is also shows the continues growth of other languages within the web. Mainly the growth of the identified supercentral languages.

Top Ten Languages Used in the Web – (Number of Internet Users by Language)					
TOP TEN LANGUAGE	Users by Language	Internet Penetrati	Growth in Internet (Internet Users	World Population for

⁴ Expressed as the proportion of the global population who speak them over time.

S IN THE INTERNET		on by Languag e	2000 - 2009)	% of Total	this Language (2009 Estimate)
<u>English</u>	478,442,379	37,9 %	237,0 %	27,6 %	1,263,830,976
<u>Chinese</u>	383,650,713	27,9 %	1,088 %	22,1 %	1,373,859,774
<u>Spanish</u>	136,524,063	33,2 %	650,9 %	7,9 %	411,631,985
<u>Japanese</u>	95,979,000	75,5 %	103,9 %	5,5 %	127,078,679
<u>French</u>	78,972,116	18,6 %	547,4 %	4,6 %	425,622,855
<u>Portuguese</u>	73,052,600	29,5 %	864,3 %	4,2 %	247,223,493
<u>German</u>	64,593,535	67,0 %	133,2 %	3,7 %	96,389,702
<u>Arabic</u>	50,422,300	17,3 %	1979 %	2,9 %	291,798,743
<u>Russian</u>	45,250,000	32,3 %	13597 %	2,6 %	140,041,247
<u>Korean</u>	37,475,800	52,7 %	96,8 %	2,2 %	71,174,317
TOP 10 LANGUAGE S	1,444,362,506	32,5 %	3.635 %	83,3 %	4,448,651,771
Rest of the Languages	289,631,235	12,5 %	4.871 %	16,7 %	2,319,153,437
<u>WORLD TOTAL</u>	1,733,993,741	25,6 %	3.803 %	100,0 %	6,767,805,208

Table 2-1: Top Ten Web Languages ("Top Ten Languages Used in the Web," 2009)

Going deeper into this issue, the work of Selten and Pool (1991), that the distribution of foreign language skills can be seen and modeled as a game equilibrium, has to be cited as a fundamental and important work. Taking a brief look into that work, the aim was to predict some general features of distributions of nonnative language skills, with no limit on the number of languages and with the model allowance of languages with and without native speakers.

The game theoretic model was defined as a continuum of players of a non-cooperative normal-form game. Each player chooses what set of additional (non-native) languages to learn. Only pure strategies were considered. The Payoff was defined as:

“The players' payoffs are the net benefits they derive from learning the languages that they learn. The positive term in a payoff is the player's communicative benefit. The negative term is the player's learning cost. A person's payoff is the difference between these: the communicative benefit minus the learning cost.”

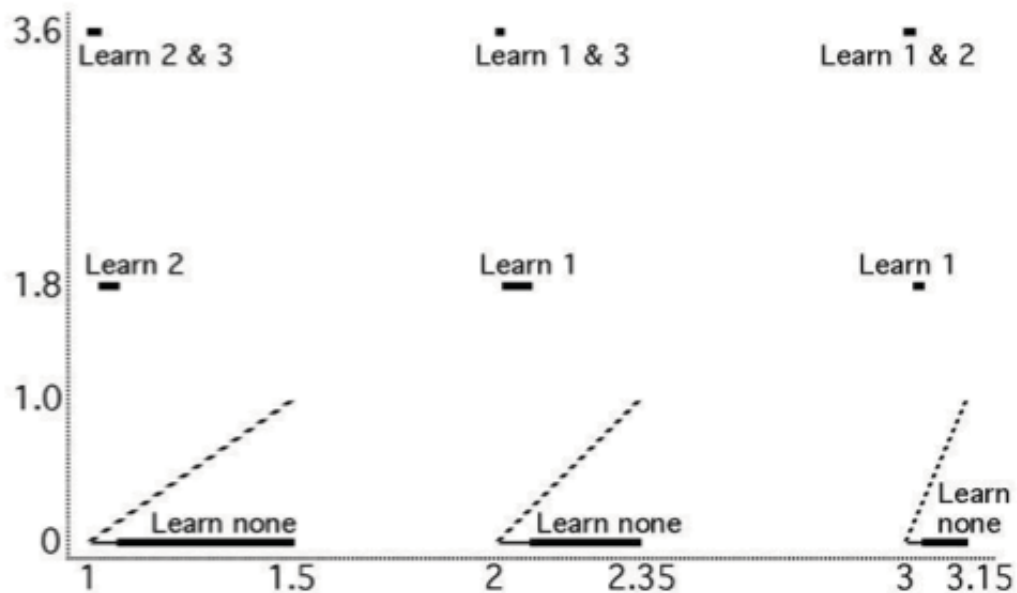


Figure 2-2: Illustrated Equilibrium – 3 community – 4 language world (Selten & Pool, 1991, p. 72)

In the equilibrium in Figure 2-2⁵ only three of the eight possible strategies in each language community are chosen. These are (1) to learn both nonnative natural languages, (2) to learn the nonnative natural language with the larger number of native speakers, or (3) to learn nothing.

The publication then concludes:

“In this example, the proportion of each community that learns two nonnative languages is largest in the smallest community and smallest in the largest community. The same is true for the proportion that learns at least one nonnative

⁵ “The players are arranged in order of increasing personal factors of learning cost, with this personal factor plotted by dashed lines. The boundaries between the adjacent sets of players are, in distance from the community's origin, 0.0292 and 0.0729 in community 1, 0.0205 and 0.0875 in community 2, and 0.0219 and 0.0448 in community 3. The sets of players choosing these strategies are plotted at heights equal to the linguistic factors of their learning costs.”

language. We also notice that no player learns the auxiliary language. These results match well-known tendencies: those who learn nonnative languages tend to choose the most widely spoken ones; members of small language communities are more likely to learn foreign languages than members of large communities; and few learn auxiliary languages, despite their relatively low learning costs. Our predictions are compatible with the possibility that a player's payoff can be an increasing function of the learning costs of the player's fellow native speakers."

Although our global language system was not designed for efficiency, as it was not designed at all, a game theory model can make the movement towards supercentral languages and towards hypercentral English better comprehensible. Basically Abraham De Swaane Q-value, a value that is very closely connected to the pure communication value of a language and the incentive to master it simplifies language choice, but can also be seen as a simplified game theory model for analysis and prediction.

These language movements are the result of benefit and cost considerations, therefore market forces of the economic of languages, and defined as a further finding:

Finding 5: Our Global Language System is a result of market forces within a language economics

2.5 Language Policy

Following Wikipedia's definition (Wikipedia, 2010) "Language Policy is what a government does either officially through legislation, court decisions or policy to determine how languages are used, cultivate language skills needed to meet national priorities or to establish the rights of individuals or groups to use and maintain language".

Although we have seen a very strong individual movement towards direct communication abilities and the benefits sprawling from this ability, the current centre of language policy is not on how to leverage this benefits, but rather on the

preservation of cultural and linguistic diversity. Why? As language embeds cultural identification, sometimes being called “collective cultural capital” it became a very important subject for national, cultural and political identity. Just remember the French Toubon Law ("Toubon Law," 2010) and the similar global discussions about the importance of linguistic issues to “modern” nationalism as cornerstone of the emerged national consciousness.

Taking the European Union and the story told by Van Parijs (2004, p. 1) as a perfect example:

A Greek girl, asked President Prodi about the EU's policy as regard to languages. « From its very beginning », Prodi replied in substance, « equality between official languages has been a fundamental principle of the European institutions, and it must remain so ». And the meeting moved on to the next pupil in the queue. The meeting was taking place in a school canteen, and hence without the interpreting boxes and other equipment that routinely facilitate multilingual exchanges in European institutions. So, how did hundreds of children from fifteen European countries and eleven distinct language sections manage to communicate with their distinguished guests. From the first to the last minute — except for a brief intervention in French by the French commissioner Michel Barnier, who had come along with Romano Prodi — exclusively in English, including to forcefully assert the principle of linguistic equality.

Undermining this example with Figure 2-3.

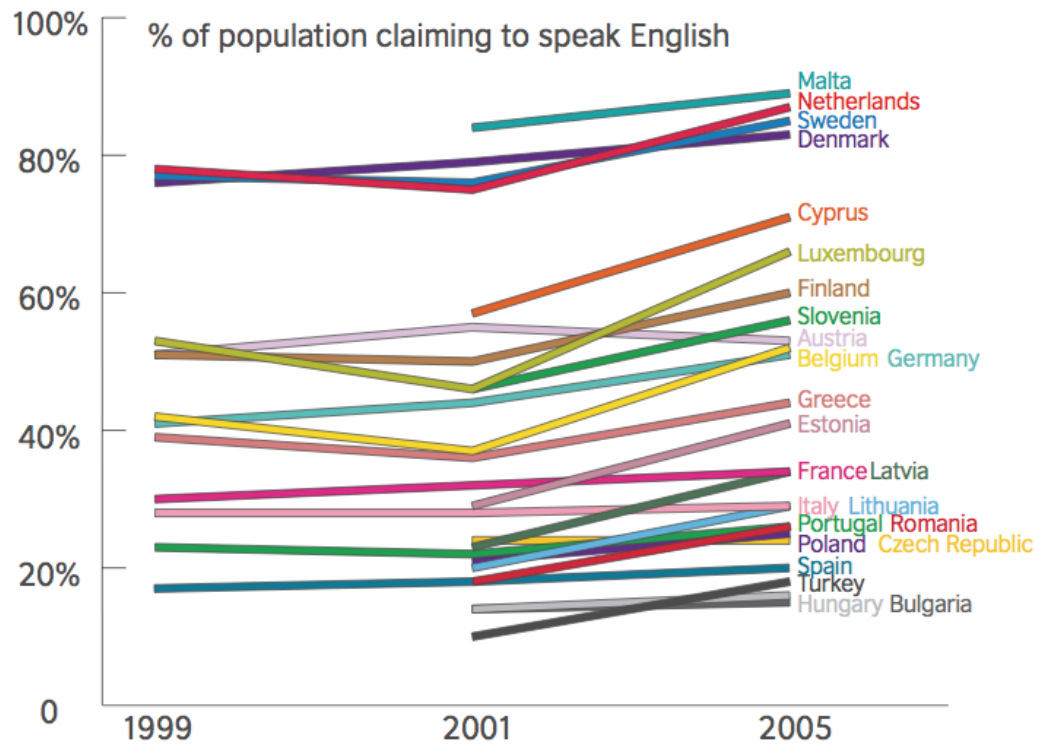


Figure 2-3: Eurobarometer: Rise of the EU populations English abilities (Graddol, 2006, p. 93)

These cultural considerations and Global English aversions are so high, that many Language Policy makers are just concerned with the spread of English and the allowedly massive political consequences of this spread. Archibugi who advocated the social advantages of DC therefore argues that “democratic politics must be in Esperanto” (Archibugi, 2005, p. 544) because he concludes that “cosmopolitans would prefer an impoverished but directly understandable language to a myriad of more colorful yet non-accessible languages” thereby clearly expressing his disfavor to Global English.

Out of the above cited and analyzed work, the following finding could therefore be distilled:

Finding 6: Maintaining cultural identity by maintaining language identity is a strong human need.

(Grin, 2006) states “Language policy is a set of choices that society makes. As such it remains an inherently political matter”. In theory and purely looking at the policy perspective and the formal political language he might be right. But as we have seen this set of choices are mostly triggered by economic and social considerations on the individual level and only influenced by the regional language policy.

Despite the different language choice, preferences, suggested solutions or national language policy as well as regardless of the involved method, model or approach almost all previous mentioned research work share one common conclusion. Direct communication abilities have higher economic benefits than involved costs and thereby an international auxiliary language would be of great benefit to the world. It is the desired, aimed, suggested, constructed, etc. solution, which is the focus and centre of discussion. The question is now on the topic of “how” and “which” and not any more on “weather” to establish a language for global direct communication between all humans. Therefore adding the following finding:

Finding 7: Direct communication ability is a key to social and economic benefit

2.6 Individual Language Choice

From Ancient Egypt to the Roman Empire, to the French Revolution and until our time “history is effected by languages and languages are a part of history” (Janson, 2003). Janson broad perspectives to language history shows languages as being a fundamental part of our history, and he shows that over time languages appeared, got widely spread, but disappeared again. One of the reasons for this evolution and fluctuation is the functional perspective of languages that Janson emphasizes. “Languages are no museum pieces. They are tools” (2003, p. 98). And as such the choice for pro and contra is made on the level of the individual and based on the possible benefits the individual is expecting from the tool.

No explicit and dedicated research has been encountered to the many facets of involved costs of acquiring a language, but many encountered language economic

model take learning costs into account. Simplified and mainly based on the distinction between linguistic factors and personal factors.

Lang's (1986) model assumed, "The wage of bilingual workers is assumed to compensate them exactly for the cost of becoming bilingual" and Selten & Pool (1991) constructed their model that "The players' payoffs are the net benefits they derive from learning the languages that they learn. The positive term in a payoff is the player's communicative benefit. The negative term is the player's learning cost. A person's payoff is the difference between these: the communicative benefit minus the learning cost". Therefore we can extract the following finding:

Finding 8: Language choice is taken on the individual level, and is determined by communication Benefits minus learning costs.

Now we should come back to the initial question triggering this course of investigation. The question whether or not an international auxiliary language and the ability for direct communication would have economic benefits and thereby contributes to the wealth of individuals and to the wealth of nations? Summing up the findings of the before supplied analysis: Strong indications have been found about the endogeneity of language and economics, as well as the potential prevailing benefits to the originating costs of an international auxiliary language.

As defined the Babilu Venture is facing the challenge of positively contributing to the economics of language. Taking the above findings as notional assumptions and guidelines for the Babilu Venture, the course of investigation has now to be turned to the question: Is a new approach to an auxlang necessary, or is there already a solution to the language confusion?

Chapter 3 Unity of Language

Has

English, or better, Global English already satisfied the need for an universal international auxiliary language? Or has Esperanto or any other constructed and artificial language already satisfied the need but has not been globally adopted yet? Before answering these questions, the scope of investigation as well as the criteria for investigation has to be defined firstly.

From the investigated economic perspective, what has been identified as beneficial is the ability to directly communicate. This ability resolves barriers and lowers exclusion. And it is regardless of the actually used language itself. Whether an existing natural or artificial language is the medium of communication and regardless of whether this language is a first, second or third language to the speaker. As we have seen, these attributes are the current field of discussion in language policy (Ives, 2006). Although they will really matter for diffusion and will therefore be crucially for a possible global adoption, from the pure beneficiary standpoint they are only secondary. Meaning, it is better to have a "sub optimal" language with DC abilities than to have an indirect communication mechanism with an "optimal" language.

On a meta level the Babilu Venture is therefore aiming for a global and universal direct communication ability, regardless of how this is implemented.

The name auxlang or International Auxiliary Language, although differently used and differently defined in Wikipedia ("History of auxiliary languages," 2010) is often tied to the specific solution of introducing an constructed and artificial language. The name has historically arisen together with Esperanto, the biggest known artificial language and although not correct it often implies Esperanto as the suggested solution.

That is why the author wants to introduce an adopted terminology for such a global and universal language to distinguish from the legacy and to put the emphasis on the global ability to directly communicate regardless of the solution. Within this thesis and for the Babilu Venture this will now be called: An Universal Medium of Speech

(UMS). The very rough criteria have been compiled in Table 3-1: Meta Level Criteria for a Universal Medium of Speech and will be looked for in the following.

Who should be able to learn and use the UMS?	Everybody on our Planet. All People from all cultures and all nations.
Who should adopt it or at least try to adopt it?	Everybody
Can the language be an already available natural language?	Yes
Can the language be an artificial language?	Yes
Can the language be second to the native tongue?	Yes
Can the language be the first and only language for people?	Yes

Table 3-1: Meta Level Criteria for a Universal Medium of Speech

“Democratic politics must be in Esperanto” (Archibugi, 2005, p. 544), is a quote from the Esperanto favoring, Global English opposing Italian language policy maker Archibugi. But what is the state of Esperanto?

3.1 Existing, artificial Auxiliary Languages

Several projects and aims have tried to explain and fulfill the need for an auxiliary language, namely the to date created artificial languages ones. The following table, a summary of the Wikipedia Article ("List of constructed languages," 2010) shows constructed and artificial languages that have generated significant followings, or which have been of significance in the history of auxiliary language.

Name	Year	Creator	Comments
<u>Volapük</u>	1879– 1880	<u>Johann</u> <u>Martin</u>	First to generate international interest in <u>International auxiliary languages</u> (IALs)

		<u>Schleyer</u>	
<u>Esperanto</u>	1887	<u>L. L. Zamenhof</u>	Fluent speakers: between 30,000 and 300,000[1]; Casual users: est. 100,000 to 2 million; <u>native</u> : 200 to 2000 (1996, est.)[2].
<u>Idiom Neutral</u>	1902	<u>Waldemar Rosenberger</u>	A naturalistic IAL by a former advocate of Volapük
<u>Latino sine Flexione</u>	1903	<u>Giuseppe Peano</u>	"Latin without inflections," it replaced Idiom Neutral in 1908
<u>Ido</u>	1907	A group of reformist Esperanto speakers	The most successful offspring of Esperanto
<u>Occidental</u>	1922	<u>Edgar de Wahl</u>	A sophisticated naturalistic IAL (Interlingue)
<u>Novial</u>	1928	<u>Otto Jespersen</u>	Another sophisticated naturalistic IAL
<u>Glosa</u>	1943	<u>Lancelot Hogben</u> , et al.	Originally called <i>Interglossa</i> , has a strong Greco-Latin vocabulary
<u>Interlingua</u>	1951	<u>Intrnationl Auxiliary Language Association</u>	A Language to create common Romance vocabulary

Table 3-2: List of Constructed Languages

Looking at Esperanto as most known, most widely spread auxlang and representative for all other similar artificial language projects it can be said that their often century long aim has not lead to an significant adoption of the language.

Although Esperanto is listed to have a literacy rate of about two million speaker (2009, ISO 639-3: epo) it could not attract enough people and commitment for adoption since its introduction more than a hundred years ago. In fact Esperanto had a higher literacy rate in the past and is now loosing momentum ("Esperanto," 2010).

There are several criticism⁶ and explanations for this situation and the apparent failure. The most important critical arguments probably causing the lacking acceptance are:

- The language being artificial
- A lack of neutrality
- The language is counteracting linguistic diversity
- The language is missing a cultural component

These critiques can hold true also for all other constructed auxlangs of the past and are obstacles, but the author has identified another problem as most significant barrier to the diffusion. Namely the eristic behavior and discussion lead by auxlang advocates that accompany the promotion of auxiliary languages and especially the one of Esperanto. Captiously compressed and summarized from numerous letters and discussions by the former auxiliary language protagonist R. Harrison (1997) he shows that the predominant arguments of his fellow auxlang followers is lead by the intrinsic motivation of being right and defending the own position in contra to perusing a common goal. Eristic, defined in Wikipedia ("Eristic,") with "...from the ancient Greek word Eris meaning wrangle or strife, often refers to a type of dialogue or argument where the participants do not have any reasonable goal. The aim is to win the argument, not to potentially discover a true or probable answer to any specific question or topic. Eristic dialogue is arguing for the sake of conflict as opposed to the seeking of truth".

John Naisbitt (2006, p. 55 Mindset #4) derives multiple reasons for resistance to innovation and multiple inefficiencies and waste of efforts on the fact that people tend to peruse being right, instead of following the quest of the best solution. Naisbitt calls it the "the power of not having to be right". In the author's opinion this is in fact applicable to the auxlang discussion and probably a reason of failure for all current and past artificial auxiliary language projects.

⁶ Summerized within the Wikipedia Article ("Criticism of Esperanto," 2010)

When people and groups of people aim to be right as opposed to follow a common goal, it becomes very likely that the individual goals will not be reached and without having and defining a group goal this cannot be achieved either. The missing goal is a consequence of a lacking process of getting there, a lacking process that is managed, controlled and lead. This is also a key finding on the state of current constructed auxiliary languages. The lacking global adoption and commitment is reasoned on a lacking goal oriented process and not because of language abilities or disabilities. Essentially, there are too many possible solutions adverting for the demand of one universal auxlang, and to some extent thereby preventing one.

Finding 9: A goal-oriented process with the goal of establishing a Universal Medium of Speech must be the top priority of such an endeavourer – and not the language itself.

Concluding this chapter with: No current constructed auxlang fulfills the set criteria of being or becoming the Universal Medium of Speech without major changes to the approach of diffusion. Therefore the analysis continues and looks into the state of Global English.

3.2 Global English as the lingua franca – as the auxlang

There are thousands of available publications dealing with the increased importance and the emerging dominance of the English language. Especially since the invention of the Internet, the first truly global communication technology strongly increased the worldwide literacy rate of English as a second language. In Chapter 2.4 we have already discussed the ambivalent perception Global English is facing. On the one hand it is the Lingua Franca, the first choice and international language of people not speaking a common mother tongue. The best example is Europe. On the other hand many policy makers are currently more focused on protecting and maintaining their native tongue as language is deeply tied with cultural and political identities. Again the best example is Europe. Studying Ives work on Global English (Ives, 2006) a

high level of polarization between the supporter and opponents of Global English can be identified.

Philippe Van Parijs argues (2004, p. 118) that English should be adopted as the lingua franca for Europe, and then for the world, because

“[...] we do not want Europeanisation, and beyond it globalisation, to be the exclusive preserve of the wealthy and the powerful who can afford quality interpretation. If we want all sorts of workers’, women’s, young people’s, old people’s, poor people’s associations to organise on the every higher scale required for effective action, we must equip them with the means of talking to one another without the need for interpreting boxes and the highly skilled and paid professionals who go in them. One way of putting this is by saying that we need to meet the linguistic preconditions for turning Europe, and ultimately the world, into one demos, without this needing to mean that Europe, or the world, is thereby turned into a single ethnos: a forum can be shared thanks to a common language [...]”

For Van Parijs, the spread of Global English is inevitable and he tries to demonstrate it in his work. Although different in details De Swaan (2001) follows the same argument. But as P. Ives (2006, p. 126) analyzed in his study, both, Parijs and De Swaan “treat language primary as a communication vehicle”, thereby neglecting that “the communicative function of language is inextricable from the cultural question” (Ives, 2006, p. 135). He is further vetoing a complete inevitable und unstoppable spread of Global English, and concludes that “the spread of Global English is rife with politics and power relationships” and that these political, cultural and philosophical mechanisms must inherently be addressed prior to an actual global adoption. Citing and very often referring to the influential work of Gramsci (Gramsci, 1995) he also concludes that he is “recuperating the basic notion of the progressive potentials of a truly common language”.

Salma Sonntag, who is a further committed follower of Gramsci’s theoretical developments also concludes in her interdisciplinary Global English and local

politics studies (Sonntag, 2003, p. 123) that “Globalization pushes forward global English hegemony, but by doing so it creates its own antithesis: Globalization politicizes the language issue and hence “potentializes” a reaction. The burden is to ensure that the potential of this reaction is linguistically democratic”. She further suggests, “This should point us in new directions of thinking, research and dialogue... as linguistic globalization is complex and full of nuances”.

The following Figure 3-1: Use of English on Internet: % web pages in English (Graddol, 2006, p. 45) visualizes the hegemony of English within the Internet, but it also shows that relatively speaking it is right now strongly declining.

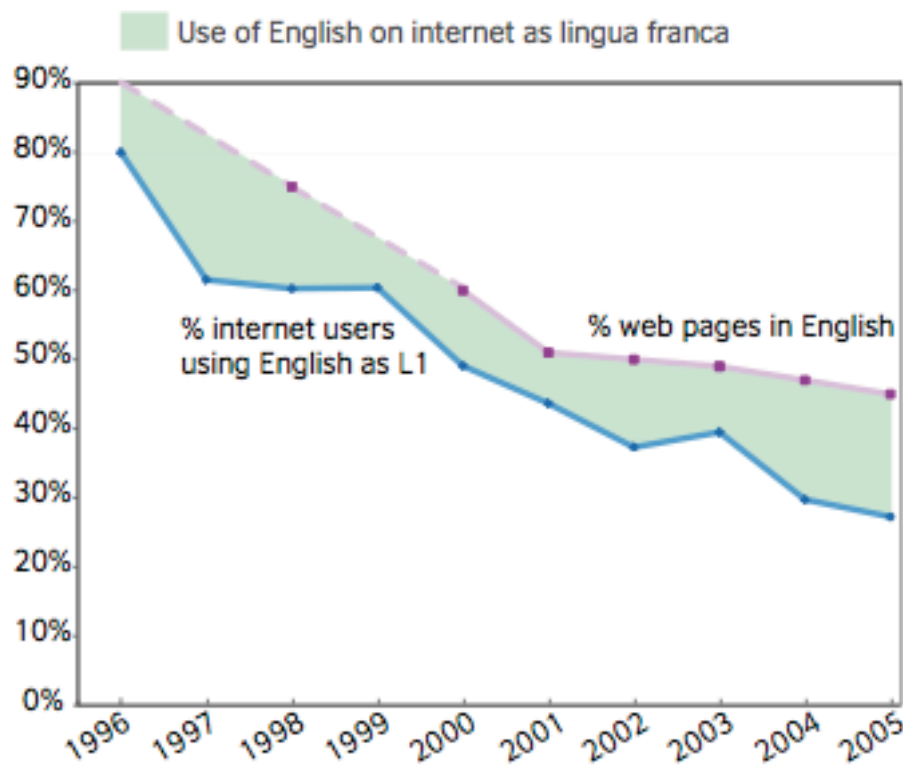


Figure 3-1: Use of English on Internet: % web pages in English (Graddol, 2006, p. 45)

A further facet is the language adoption of Global English, as well as the influence the massive amount of non-native speakers will have on the language. “About 80 per cent of the English speakers in the world are nonnative speakers. They will have a great impact on the English language. The so-called center countries e.g., the United Kingdom and the United States will no longer be able to set the trends.” (Jenkins, 2007). Graddol (2006, p. 114) calls it “The native Speaker Problem”, an emerging

situation where the “cultural baggage” of native speakers and their lacking multilingual abilities hinders their communication with Global English speakers. The native and cultural depended view of English is no longer the learning aim and “gold standard”. Putting the native speaker into a position where his native approach and dialect of English become communication hurdles to him. According to (Phillipson, 2003) “In many international fora, competent speakers of English as a second language are more comprehensible than native speakers, because they can be better at adjusting their language for people from different cultural and linguistic backgrounds”. So learning and adopting to Global English would also be a duty for people with English as a first language. Consequently constructing the following finding (based on the words of Graddol):

Finding 10: The future development of English as a global language might be less straightforward than had been commonly assumed and monolingual English speakers are also faced with challenges and duties.

3.3 Thought Experiment on Global English

De Swaan (2001) defined language as a “hypercollective good”. And as such I want to apply very simplified game theoretical considerations trying to indicate the further adoption of Global English.

Let us assume every state or country with its own natural language is a player in the global language system. And within such a system every action of a state, when isolated viewed, is taken in favor of its own interest. With this basic assumption, a possible action or strategy of a certain player on a certain topic can to some degree be predicted with the means of game theory.

From a game theory terminology, the above global language situation can be described and is in literature referred to a non-cooperative environment within a normal game. The Nash-Equilibrium, named after John F. Nash, describes a strategic equilibrium in non-cooperative Games, where no single Player can increase his result

by unilaterally changing his strategy. Often used for prediction it describes fundamental solutions to non-cooperative games. It represents the result “Best non-cooperative solution”. Thereby, and if possible to calculate (in our case De Swaans q-value would be a measure to start with) this Nash equilibrium represents the best possible decision and outcome to our game. The adoption and maximal possible literacy rate of Global English can then be reasoned on this estimation. This also implies that the movements of our global language system towards English hegemony will continue until this equilibrium is reached, but then flatten out. The question is on which literacy rate the adoption curve will flatten out, but not whether it will stop or not. Graddols (2006) estimates the potential of English Speakers in the next decade to reach roughly one third of the world's population. Summing up to about two billion speakers⁷. That is a lot, but in that event still the majority of our planet will not be able to speak this language.

I want to further extend this excursion into game theory and investigate into the possibilities for increasing the result and achievements of a game.

(Holler & Illing, 2003, p. 270) define pareto efficient situations as those in which it is impossible to make one person better off without making someone else (at least one) worse off. Sometimes referred to as the social optimum. It can be defined as the best solution if all involved parties are seen as a unity. Named after the Italian economist V. Pareto, it is an important criterion for evaluation. If any system is not pareto efficient, simply speaking there is a potential room for improvement.

In the authors view this is also the case in our system of global languages. From its own, in a non cooperative environment, the best outcome will be in the line with the Nash Equilibrium of the game, but the result will not be pareto efficient.

For better understanding the following figure has been generated out of a Mathematica demonstration project (Chandler, 2009) and illustrates the possible overall loss (green zone) from a game where two players are playing non-cooperatively instead of cooperatively. The green surface thereby represents the

⁷ See Appendix 2 for Graddols estimation on growth and comparison with the adoption of innovation

possible benefits and improvement to the game if a cooperative strategy would be enforceable, and can be huge as shown in the given example.

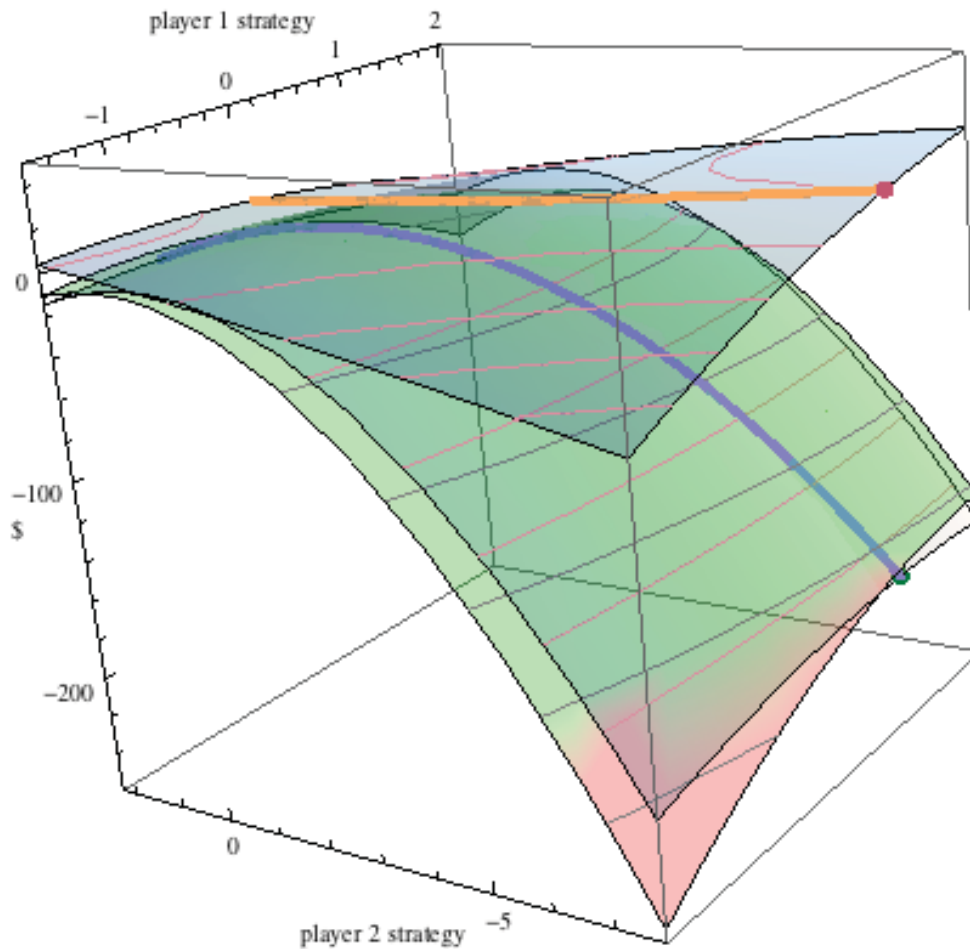


Figure 3-2: Illustrated Nash Equilibrium compared with the Pareto optimum

Further description of the model: “The surfaces are visualized in three dimensions. The model calculates “best response” curves for each of the players, shown in orange and blue, respectively, and projects the Nash equilibrium point (red dot) onto each best response curve. The total payoff surface is colored green for those strategy combinations that would improve total wealth relative to that achieved at the Nash equilibrium. The “green zone” thus represents the strategy combinations that, if wealth were transferrable between the players through enforceable contracts, would be Pareto superior to the Nash equilibrium.”

Browsing the literature and searching for analogies to this situation one will encounter the so-called public good games. De Swann called language a hypercollective good. (Ledyard, 1995) has carried out some initial and important experiments, especially with the focus on the Free-Rider problem as well as the general cooperative behavior of human. Concluding, that the choice on either being selfishness or cooperative is conditional and the decision towards acting to the benefit of the whole group can be positively influenced.

Based on the example of (Diekmann, 2009, p. 121) the following public good game has been constructed to further demonstrate and analyze the situation .

Every Player gets an amount of initial investment and can choose to invest into a collective Fund (the public good; investment in learning a language, etc.). Investments into the fund get doubled in value and equally returned to all players. Regardless of the amount they invested themselves and regardless whether or not they even invested. Thereby the game allows free riding and for our first examination in an non-cooperative game free riding is also the dominant Strategy and Nash Equilibrium. It can also be termed as a general version of a N-person prisoner's dilemma.

The following table shows a game where each player gets an initial amount of 5 and where the fund doubles the total investment.

	<i>Player 1</i>	<i>Player 2</i>	<i>Player 3</i>
Investment into the collective fond	0	1	5
Return from the fund	4	4	4
Private return	5	4	0
Sum of the Player	9	8	4

Table 3-3: Public-Goods Game – Variant 1

Of course, free riders will get the highest result (Player 1) and full cooperative players the worst (Player 3). The Nash Equilibrium would be not to invest for all members and thereby resulting into and result of only 5 – but for all members.

	<i>Player</i>	<i>Player</i>	<i>Player 3</i>
--	---------------	---------------	-----------------

	<i>1</i>	<i>2</i>	
Investment into the collective fond	0	0	0
Return from the fund	0	0	0
Private return	5	5	5
Sum of the Player	5	5	5

Table 3-4: Public-Goods Game – Variant 2

And looking at the scenario where full cooperation from everybody is achieved we get 10 as a result for everybody. Shown below;

	<i>Player 1</i>	<i>Player 2</i>	<i>Player 3</i>
Investment into the collective fond	5	5	5
Return from the fund	10	10	10
Private return	0	0	0
Sum of the Player	10	10	10

Table 3-5: Public-Goods Game – Variant 2

This scenario and result represents also the best possible outcome of the game and the pareto optimum of this game.

Within all public good games and against the strategic assumptions in economics, human do not always follow the rational reasoning (of not cooperating) and thereby the collective gains from this behavior. Theoretically, the reasons for this behavior is not fully understood but it is very likely caused by reward, punishment and reputation as analyzed by (Sigmund, Hauert, & Nowak, 2001).

If the best possible outcome for all members of the game were aimed, the solution would be to target a pareto efficient solution. Not as an absolute target, but every pareto inefficient results shows the theoretical room for improvement.

In the above cases establishing a cooperative environment can do this. Establishing a cooperative environment could therefore theoretically also increase the adoption of Global English. This makes each single player, in our case every country with its own native language, the wrong entity for perusing global language policy as every individual country on its own is rather perusing its own interest than achieving the best outcome for the whole system. Selma Sonntag showed the empirical evidence for this situation. Once Global English and globalization affect a country, local

policy makers start acting against. The examples brought earlier, like the French Toubon law and the advocated equality of the 11 languages of the European Union further undermine this finding.

Finding 11: Our global language system can be seen as a game theoretical public good game. Establishing a cooperative environment can increase the overall and individual outcome of the game and approximate the theoretical pareto optimum.

The political responsibility would be to extent its language activity from “protecting the national heritage” to adding the aim of introducing a universal and global auxiliary language.

3.4 Summing up on Global English

De Swaan declared the current changes to our global language system as a “blind process” (De Swaan, 2001, p. 176), and the “unintended consequences of a myriad of individual decisions (and non-decisions, resignation and compliance)” which selected Global English as the currently dominating language.

The importance and significance is undoubted, but the adoption of Global English is not

- an explicit one and
- not accompanied within an committed process and
- not within an goal oriented process and
- not within an cooperative environment and
- not continuously self-expanding

It is based on the current dominance and significance of English and on individual and unintended choices and is predicted to only have a potential of reaching a certain global literacy rate.

Gramsci, Ives, Sonntag, De Swaan and Van Parjis though being in favor of Global English and still advocating different solutions, have one common core conclusion and assumption: Their explicit expression of the need for a common or single lingua franca - basically the need for a Universal Medium of Speech.

Therefore concluding this section with the findings that English or better Global English might right now be a temporary and partially lingua franca but is not a Universal Medium of Speech now and will not become a Universal Medium of Speech just by itself. The English language, like so many researchers suggest, might be a good candidate for a Universal Medium of Speech but the author concludes, that it would take the establishment of an cooperative environment (where all countries committing themselves to English) and an goal-oriented process to really become the Universal Medium of Speech as defined.

Finding 12: English is the current dominant candidate for an Universal Medium of Speech but without a cooperative environment and goal-oriented process English will not be globally adopted.

3.5 Concluding on Language Unity

We have started with the finding that direct commutation abilities are economically beneficial and then defined simple criteria for a Universal Medium of Speech and investigated into wheatear an existing auxlang or English already conforms to being a Universal Medium of Speech.

What have been found are further indications on the global need of an Universal Medium of Speech but no current language can fulfill the stated criteria of being a Universal Medium of Speech.

In accordance with the aim of the Babilu Venture the author therefore suggests a language and country independent, diversified venture with the chief aim of promoting such a Universal Medium of Speech, by adding the following identified findings.

Finding 13: The chief aim of the Babilu Venture is the promotion of a Universal Medium of Speech.

Finding 14: The Babilu Venture must clearly separate the process of promoting a Universal Medium of Speech to the process of identification and definition of the medium itself.

Chapter 4 Strategies for the Babilu Venture

Modern

Information Technology and
Information Communication
Technology (IT, ICT) have
opened vast new approaches

and methods for implementing an endeavourer or reaching a certain goal. Most of them were absent or not feasible before the rise of the Internet and were therefore also not accessible for prior auxiliary language projects. As the author is convinced that they will be key to a possible successful implementation of the Babilu Venture the most promising organizational measure and strategies for actually enabling a Universal Medium of Speech have been compiled in the following.

The following chapter of this thesis centers on these strategic measures of the philanthropic organization. Based on the findings as well as caused by the findings captured within the analysis of the previous chapters and identified during the course of investigation, the following strategies should round-out these findings. It is the suggestion that the Babilu Venture will act as the conceptual and organizational framework, as the entrepreneurial entity for veering towards such an undertaking.

4.1 Defining the Venture

Identified within Finding 11 the foundation of the Babilu Venture is the establishment of a cooperative environment conveying a Universal Medium of Speech, and as analyzed with Finding 13 it must have the chief aim of promoting a Universal Medium of Speech. These two findings also represent the mission as well as the vision of the Babilu Venture.

The author has been inspired by numerous Open Innovation projects and scholar works whereas the term Open Innovation is used as coined and defined by (Chesbrough, 2003). As well as influenced by numerous Open Source projects like the Linux Kernel Project or the Apache Web Server development Project with the high variety of involved license models, team composition and collaboration process as defined and promoted by the ("Open Source Initiative (OSI),"). And the author is

further impressed with the results being delivered out from collaborative open content communities like the Project Gutenberg ("Projekt Gutenberg,") and the most known Encyclopedia Wikipedia ("Wikipedia - The Free Encyclopedia,"). It is the author's view, that leveraging exactly this collective intelligence, the Internet has unleashed within the past 15 years, is a good strategy to base on and good resource pool to count on, for the Babilu Venture. In consequence the following strategic constituent parts, as illustrated by Figure 4-1, have been developed for working towards the Mission and Vision of the Babilu Venture.

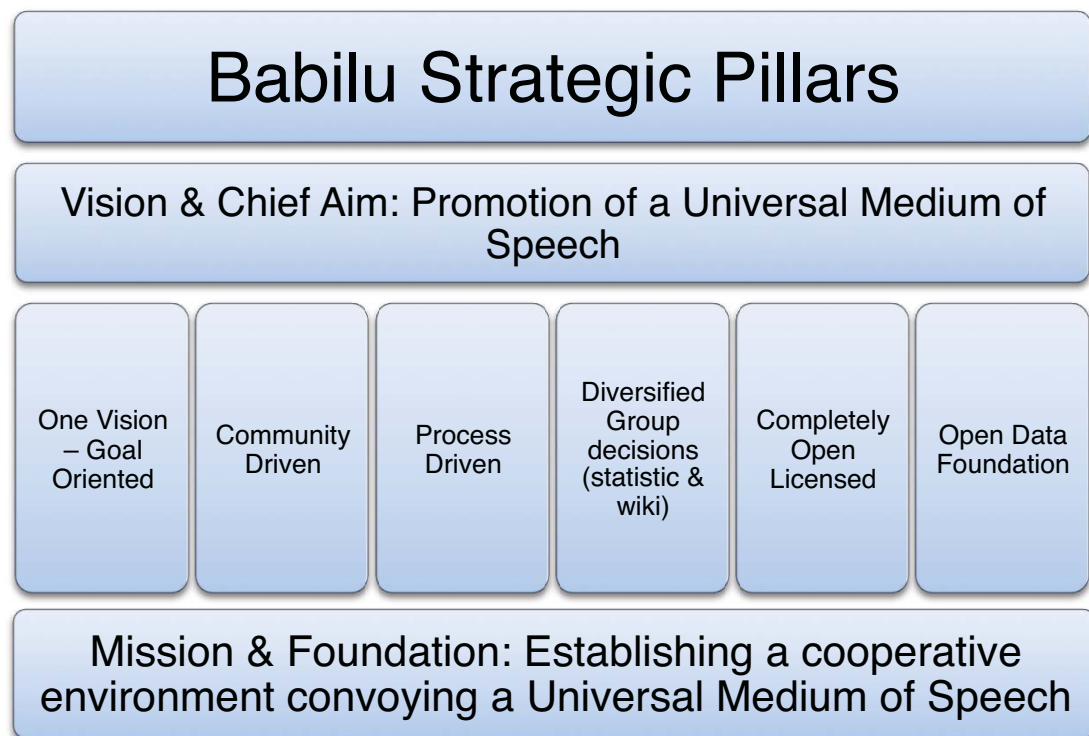


Figure 4-1: Babilu Strategic Pillars

4.2 One Vision - Goal Oriented Approach

Identified within Finding 9 the Babilu Venture must have a clear goal oriented approach: The promotion and the subsequent establishment of a Universal Medium of Speech . Regardless of the Medium itself. It is the duty of the Babilu Venture to first and mainly promote the need of an Universal Medium of Speech and to develop

a separate process with its own mechanism and algorithm, yet to be developed by and with the community, to than identify the Universal Medium.

John Naisbitt (2006, p. 55 Mindset #4) derived multiple reasons for inefficiencies and waste of efforts on the fact that people tend to peruse being right, instead of following one common goal or a quest for the best solution. This should be avoided by any means. Following a common goal is therefore stated as a strategic pillar of the Babilu Venture.

4.3 Process Driven

The scope of this initial venture definition is bound to Phase 1 illustrated in the following figure. The recognition and promotion of the need of a Universal Medium of Speech will therefore be the suggested goal and focus the operation should start on. Not until all achievements of Phase 1 have been fully accomplished, the possible Phase 2, the actual evaluation of and selection of a Medium of Speech can be started. From today's point of view, Phase 2 is again a subsequent and separate process and precursor of a possible diffusion of a Universal Medium of Speech.

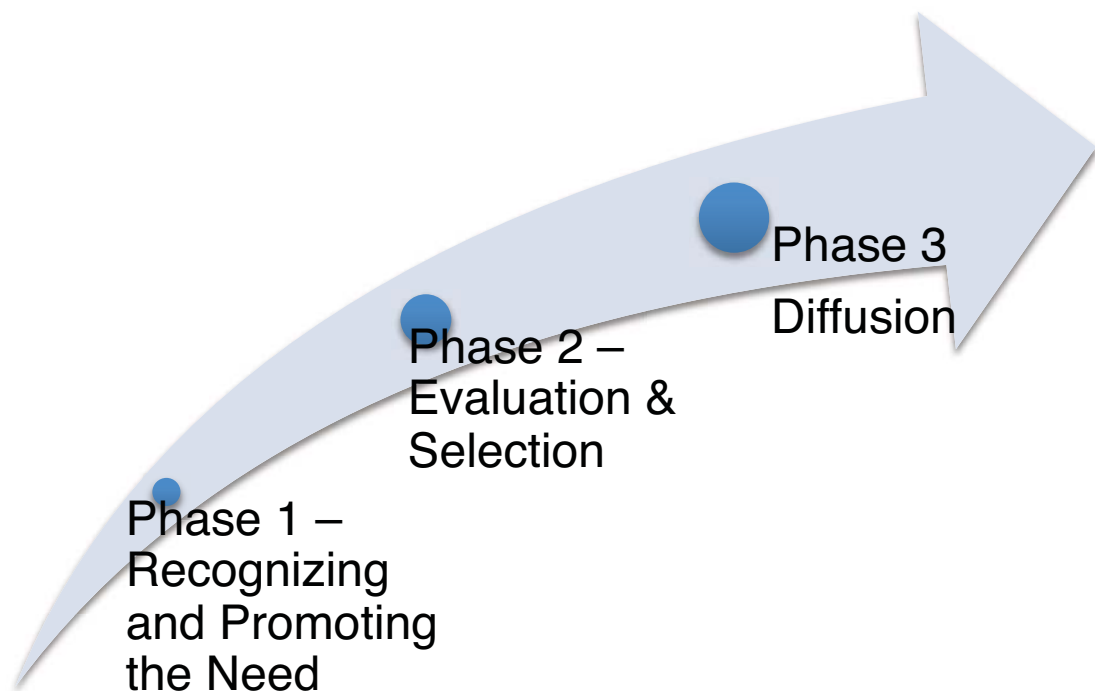


Figure 4-2: Babilu – Phases of Operation

It will be one of the first operative duties of the Babilu Venture to develop a detailed development process for the venture that engages all strategic pillars.

4.4 Community Driven

Eric Von Hippel defines (2006, p. 165) information communities as “communities or networks of individuals and/or organizations that rendezvous around an information commons, a collection of information that is open to all on equal terms”. His research further concludes that these communities will form under the condition that “(1) Some have information that it not generally known. (2) Some are willing to freely reveal what they know. (3) Some beyond the information source have use for what is reveled”. If we verify the state of these three conditions within the field of establishing an Universal Medium of Speech we find:

- The distribution of language skills and information about language is not spread evenly at all. In the contrary. As seen within Chapter 2 the information is highly distributed and many have information not generally known.
- Interpreting the numerous auxiliary language projects as precedence, although not successful in their aim, they demonstrate a high potential of people freely revealing their knowledge and contributing to a possible Universal Medium of Speech project.
- Finding 3 and Finding 7, both indicate the potentially high-involved benefit of direct communication abilities. Making everybody in the world a benefiter to a Universal Medium of Speech contribution.

Summarizing, that there is a strong indication that the above conditions apply, and therefore it will be likely that an information community can and will be formed. Taking and looking at the case of the Wikipedia Community, which is doing enormous⁸ progress in its efforts to aggregate lexically information, can give us a

⁸ See Appendix 3

clue on the tremendous achievements a user community can reach by collaborating together.

Also considering the rationale for sharing (Franke & Shah, 2003) and the assistance given to the diffusion makes the development of the Babilu Venture a candidate for a community driven effort.

The suggestion is therefore to establish and position the Babilu Venture as a “fully” community driven effort, defined by carrying out the following measures:

- This theses, especially the Venture Definition Part should be taken as the basis for the first version of the venture development material
- All material should be open licensed and published on an Internet Portal
- An invitation to participate must be elaborated and a user community developing the venture, the organizational documents and further strategy as well as the marketing campaigns and financing activities should be build up. This community will in the following be refereed to as the BV Development Community.
- Like the development of source code in the case of Linux or Apache, this community should focus on developing the whole venture in an open an collaborative process. Not “just” the source code, or just technology, but the whole venture. From Marketing to Sales to Information Technology.
- Although all material should be structured and published in an Wikipedia like Content Management System (CMS) the process of working on and modifying an single page, campaign or content item should be model more after a open source software development, where different filters apply to who is able to change the content and where every content item has an owner with rights of final decision.
- A second and larger user community, not actively working on the venture should be engaged to be able to constantly provide feedback on the work as well as actively help in the crucial element of venture

diffusion. This group of people will further be referred to as the BV User Community.

The diffusion of any innovation is of vast importance. (Franke & Shah, 2003) showed the abilities and motivation of communities to assist and social networks models and analysis reveals the enormous effectiveness of social network based diffusion. One of the models is the “small world effect” encountered and described by (Milgram, 1967) that involved the passing of letters between apparently distant people. He found that the typical chain from acquaintance to acquaintance only had a length of about six persons, now referred to as the “Six Degrees of Separation”. When 40 years later Microsoft did an study (Leskovec & Horvitz, 2007) on anonymized, global data of 240 Million MSN user and 30 Billion conversations it could confirm the six degrees of separations and precise the average path length among their Messenger users to 6.6. Meaning, that anybody can be reached with six steps, but possibly also meaning, that if a message is so sticky 6 people in a row communicate this message to their social network, it has the potential of reaching the whole world.

Therefore a fully community based approach is a strategic pillar of the Babilu Venture. The only sole activity conducted by the core team of the Babilu Venture will be the legal parts as well as the Intellectual Property rights, where a formal mandate is required all other activities should be elaborated with and by the Babilu Venture Development as well as the BV User Community.

4.5 Diversified Group Decisions

In the authors view it is often underestimated, but there is a very high importance of choosing the right method for group decisions. Summarized by Sunstein (Sunstein, 2008) there are multiple known and proven methods on how groups find and come to a decision, respectively how information which is spread over the members of a group can be aggregated. The most frequently used method is the so-called deliberation process. The answer is found and the decision is taken by directly discussing the topic and then committing, or not, to a decision or solution.

As shown by Sunstein and distilled from many different cognitive studies from Copper, Armstrong, Krech, et. al, deliberation as a mean for decision-making can have major flaws and finally fail and lead to a wrong or inferior decision. This is especially true for cases when:

- social influences are high, or
- when information asymmetry is high or
- when the group is too big and the communication overhead is too big to achieve an outcome

These cognitive and empiric studies explain the weakness of deliberation and show in which cases other methods for information aggregation should be considered. It is the declared duty of Babilu Venture not only to be aware of this situation and to choose the best and situation depended proper mechanism for group choice but to have an own and separate strategic focus on this issue.

With Figure 4-3 the developed, suggested and initial decision architecture applying to the Babilu Venture is illustrated and described in the following.

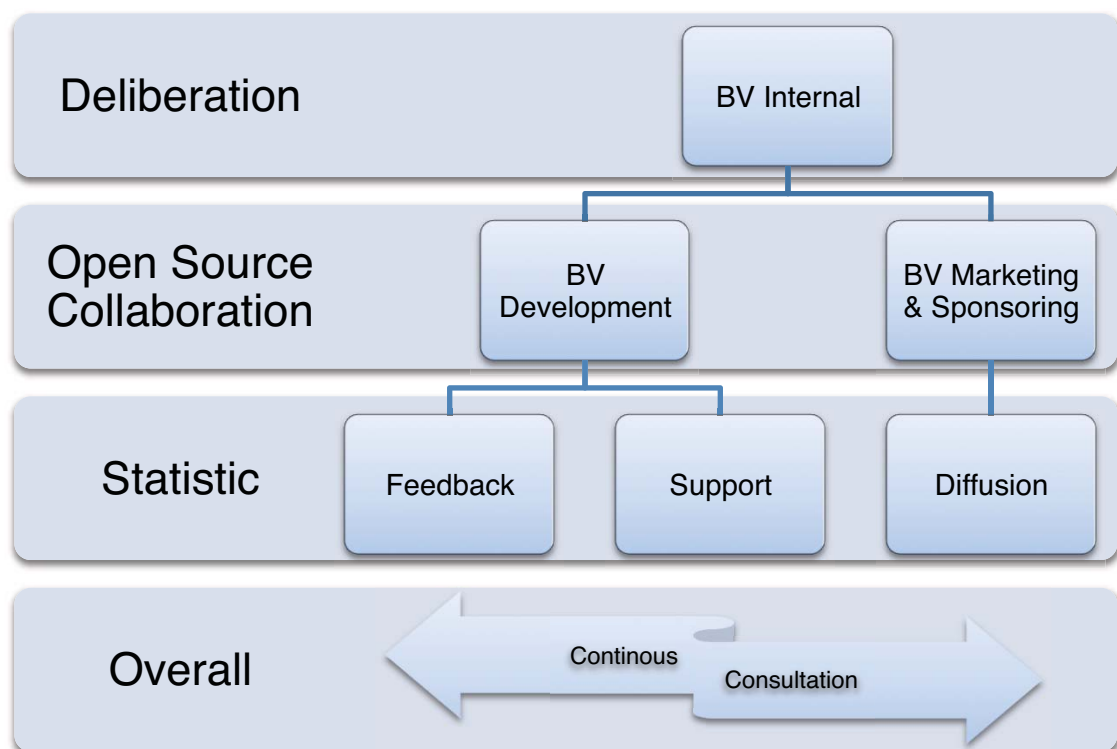


Figure 4-3: Babilu – Decision Architecture

The idea is to have four distinct methods. Internally, meaning within the Babilu Venture core team decisions should be discussed and then taken with regard to a deliberation process. Nevertheless the groups should consider and take measures for reducing information and reputation cascades in order to increase the quality of the taken decisions.

The BV Development Community, and all involved decisions should be taken with regard to an Open Source Collaboration Process. Sunstein (2008, p. 197) identifies and declares the involved mechanism with regard to its openness, its distribution and the used governance process of collectively aggregating information not only as a own and separate method, but concluding his work with the Open Source Method being the one with the highest future prospect. He also distinguishes between the Open Source and the Wikipedia Wiki approach and outlines the absence of a clear governance process, where the last editor has the power to change all, within the Wiki method. The author agrees to this conclusion and therefore suggests, that within the Babilu Venture, although Wiki Systems might be used from an Information Technology perspective, the suggested method for group decision must be based on the Open Source collaboration process.

The next degree of participation is the BV User Community. With regard to the number of involved people the BV internal team will be a very small team. Between one and maybe sometimes a hundred. The BV Development Community team might start off with ten and eventually reach thousands. But the BV User Community will eventually reach millions. Therefore the suggested method for taking group decisions and aggregating information within this group is the so-called statistical method. Decision will be identified and taken by poll and by calculating the answer with statistical methods. With massive electronic surveys considering pro as well as contra votes. Our current democratic voting system is based on this method and its effectiveness is explained by the Condorcet-Jury theorem (Urken, 2008). Identified, named after and firstly arithmetically shown by Marquis de Condorcet in the 18th century it demonstrates that with the increasing size of a group the likeliness of the group to take the right⁹ (when given choices) decision also increases, and with group

⁹ Assuming, that right and wrong exist.

sizes going towards infinity the likeliness of the group taking the right decision is approximating 100%. It is suggested to follow this method when interacting with the BV User Community.

The exact mechanisms must yet be developed, because this approach has also a very dark side (Berend & Paroush, 1998). In the case that more than half of the group is not right the probability of the group taking the right decision will than approximate 0%. Therefore statistical group decision should have control mechanisms or filters trying to identify when groups tend to be wrong and they should be based on polls - polls with contribution of the masses.

The forth and distinct method of information aggregation of groups is what has been called a process of continues consultation. It is the idea of working iteratively and incrementally and to constantly get feedback and consulate others on the achievements. Overlapping all involved groups. In that way deliberated decisions get reviewed with the Open Source Method and these get statistically challenged. The aim behind this is a constant and incremental improvement of the work as well as constant review of the quality and maturity of the established work.

4.6 Open License

A system immanent part of Open Source is the licensing of the work material under an open license as defined by the Open Source Initiative (OSI). Current research of the effects and implications an involved license has, are scare. But the empirical study (Gruber & Henkel, 2006) shows that relying on OSS can lower entry barriers as well as have an significant impact of lowering the involved transaction costs (Soares, 2004) and these findings are effected by the involved and open license.

Therefore another cornerstones and strategy of the Babilu Venture is to license all involved material with an open license. Details still remain to be crafted but from the current point of view all involved text, images and multi media material should be created with the use of the creative commons ("Creative Commons,") attributed by license ("Creative Commons Attribution BY License V3,") that states the terms as: "This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most

accommodating of licenses offered, in terms of what others can do with your works licensed under Attribution.”

Though the inquiry for the appropriate license revealed multiple choices the great efforts and suggestions of the non-profit organization Creative Commons seem to be the current best available approach. Wikipedia also switched to creative commons (Walsh, 2009) in May 2009.

Regarding all eventual established and developed source code a OSI certified, and if possible GPL (OSI) license should be considered.

4.7 Open Data Foundation

The core duty of the Babilu Venture will be the definition of the legal organizational structure as well as the legal and formal definition of the involved intellectual property rights. Itself being a mission oriented non-profit endeavor, the inquiry yielded some strong indication of forming a public trust – a not for profit foundation with the public being the benefiter. There are limitations to this legal structure, but the advantages should out weight these. It is not only a good choice for lowering tax duties and thereby decreasing the organizational costs and for collecting grants but this legal form is also a good entry point and precondition for a low or zero cost access to commercial services like the Google Grants Program ("Google Grants," 2010) where public trusts get the ability to use Google Adwords for no fee.

During the course of investigation the author experienced that data, figures and statistic on Language distribution, skills and mutation are very scare, old and sometimes inaccurate but always proprietary and that almost no data exists on the acceptance, preference and advocacy of a possible universal auxiliary language aka Universal Medium of Speech.

It is thereby the suggestions to establish a Open Data Language Database as defined: ("Open science data," 2010) “Open Data is a philosophy and practice requiring that certain data are freely available to everyone, without restrictions from copyright, patents or other mechanisms of control.“. Like the implementation of Gapminder

("Gapminder - unveiling the beauty of statistics ", 2010) and with the help of their IT tools Language Statistics for better decision making should be collectively unveiled.

Resulting in the Babilu Venture being strategically positioned as an Open Data Foundation.

Chapter 5 Conclusion & Future Prospects

In the first Chapter of this thesis a series of questions have been posed. Does a universal and global auxiliary language positively contribute to economic wealth? Can English already be contemplated as the incontrovertible world language? Is a philanthropic venture able to positively contribute to language economics? The following chapters then exposed indications that direct communication abilities indeed effect economic variables, and that they can positively contribute to earning, trade and wealth and that they can thereby be seen as a key to social and economic benefit. And the course of investigation also shed light to the supposition that the spread of Global English also raises cultural and political issues as well as resistance, not just linguistic and economic ones, and that Global English is a complex topic full of nuances where no straightforward prediction can be applied.

But the findings in the previous chapters also indicate the possible benefits and the perceived need for the establishment of a Universal Medium of Speech as well as the possible benefits of the establishment of a process and community driven open data foundation accompanying the promotion and consequent introduction of such a Universal Medium of Speech.

Immanuel Kant stated, “Thinking is speaking to one self”. Thereby a monologue conducted in a certain language and also constrained by the language abilities - in its broadest sense. Consequently the smallest unit for language considerations and direct communication skills is the individual itself.

Now, arriving at the end of this thesis the author wants to acknowledge, that “Language is a part of our organism and no less complicated than it” (Wittgenstein, 2001) but also to acknowledge that the findings have been encouraging for contemplating the Babilu Venture as suggested, and leveraging the above findings as starting point for the promotion of an Universal Medium of Speech.

This thesis ended with the definition of strategic pillars the Babilu Venture should be based on and therefore indicates the constituent parts such an endeavor is in the need

for. Although well grounded, these strategies can only be seen as the starting point for the definition of a detailed and well-crafted business plan advancing an actual formation of the foundation.

As defined, it is the idea to publish this work under an open content license and to continue the work within a collaborative process. During this investigation, the following areas have been identified as the ones most needing further detailed research and attention.

Further deepening and modeling on language economics would be useful. Maybe the introduction of a more dynamic model trying to also calculate and project monetary benefits and transaction costs to direct communication, as well as estimate costs (like translation costs) of a lacking direct communication ability.

A further extension would be to examine the suggested Open Source and community driven policy as a possible solution to public good games. Can it enable the establishment of a game theoretical cooperative environment and thereby bringing further evidence or counter evidence on the implementation strategy? Can it be applied to the area of other public good problems?

It would also be good to deepen the insights into the dynamics of group decisions. In the author's view, they are at the heart of the Open Source success and need further investigation. Like: Which Governance Policy increases the outcome? How do wiki collaboration and Open Source Collaboration compare to predicting market mechanisms?

Finally, it would be interesting to craft a detailed business plan including a financial plan to clarify the vesting requirements the Babilu Ventrue might have for the first three years.

Bibliography

- Anderson, S. R. (2004). How Many Languages Are There in the World? Retrieved from http://www.lsadc.org/info/pdf_files/howmany.pdf
- apache.org. The Apache Software Foundation Retrieved 9.6.2010, from <http://www.apache.org/>
- Archibugi, D. (2005). The Language of Democracy: Vernacular or Esperanto? A Comparison between the Multiculturalist and Cosmopolitan Perspectives. *Political Studies*, 53(3), 537-555.
- Berend, D., & Paroush, J. (1998). When is Condorcet's Jury Theorem valid? [Article]. *Social Choice & Welfare*, 15(4), 481.
- Chandler, S. j. (Producer). (2009). Nash Equilibria with Continuous Strategies. Retrieved from <http://demonstrations.wolfram.com/NashEquilibriaWithContinuousStrategies/>
- Chesbrough, H. (2003). *Open innovation: the new imperative for creating and profiting from technology*: Harvard Business Press.
- Chiswick, B., & Miller, P. (1995). The endogeneity between language and earnings: International analyses. *Journal of Labor Economics*, 13(2), 246-288.
- Chiswick, B. R., & Miller, P. W. (2007). *The Economics of Language - International Analyses*: Routledge.
- Church, J., & King, I. (1993). Bilingualism and network externalities. *Canadian Journal of Economics*, 337-345.
- Coonan, C. (2009). The largest English-speaking country? China, of course, *irishtimes.com*. Retrieved from <http://www.irishtimes.com/newspaper/weekend/2009/0620/1224249169396.html>
- Creative Commons. Retrieved 11.6.2010, from Creative Commons <http://creativecommons.org/>
- Creative Commons Attribution BY License V3. Retrieved 11.6.2010, from Creative Commons <http://creativecommons.org/licenses/by/3.0/>
- Criticism of Esperanto. (2010). *Wikipedia*. Retrieved from http://en.wikipedia.org/wiki/Criticism_of_Esperanto
- De Swaan, A. (2001). *Words of the world: The global language system*: Polity Pr.
- Diekmann, A. (2009). *Spieltheorie: Einführung, Beispiele, Experimente (enzyklopädie)*: rororo.
- Eristic. (2010). Retrieved 27.5.2010, from Wikipedia <http://en.wikipedia.org/wiki/Eristic>

- Esperanto. (2010). Retrieved 27.5.2010, from Wikipedia
<http://en.wikipedia.org/wiki/Esperanto>
- Evans, N., & Levinson, S. C. (2009). The myth of language universals: Language diversity and its importance for cognitive science. *Behavioral and Brain Sciences*, 32(05), 429-448. doi: doi:10.1017/S0140525X0999094X
- Farr, M. (2007). Reviews of: The Economics of Language International Analyses Retrieved 21.5.2010, from
<http://www.routledge.com/books/details/9780415771818/>
- Franke, N., & Shah, S. (2003). How communities support innovative activities: an exploration of assistance and sharing among end-users. [Article]. *Research Policy*, 32(1), 157.
- Gapminder - unveiling the beauty of statistics (2010, 11.6.2010). Retrieved from
<http://www.gapminder.org/>
- Google Grants. (2010, 11.6.2010). Retrieved from
<http://www.google.com/grants/index.html>
- Graddol, D. (2006). English next. *London: British Council*.
- Gramsci, A. (1995). *Further selections from the prison notebooks*: Univ of Minnesota Pr.
- Grimes, B., & Grimes, J. (2000). Ethnologue, Volume 1: Languages of the World. *Dallas, Texas: SIL International*.
- Grin, F. (1994). The economics of language: match or mismatch? *International Political Science Review/ Revue internationale de science politique*, 15(1), 25.
- Grin, F. (1996a). Economic approaches to language and language planning: an introduction. [doi: 10.1515/ijsl.1996.121.1]. *International Journal of the Sociology of Language*, 1996(121), 1-16. doi: 10.1515/ijsl.1996.121.1
- Grin, F. (1996b). The economics of language: survey, assessment, and prospects. *International Journal of the Sociology of Language*, 121(1), 17-44.
- Grin, F. (2006). Economic considerations in language policy. *An introduction to language policy: Theory and method*, 77-94.
- Gruber, M., & Henkel, J. (2006). New ventures based on open innovation—an empirical analysis of start-up firms in embedded Linux. *International Journal of Technology Management*, 33(4), 356-372.
- Harrison, R. (1997). Farewell to auxiliary languages Retrieved 3.2.2010, from
<http://www.rickharrison.com/language/farewell.html>
- Hippel, E. V. (2006). *Democratizing Innovation*: The MIT Press.

- History of auxiliary languages. (2010). Retrieved 20.4.2010, from Wikipedia
http://en.wikipedia.org/wiki/International_auxiliary_language#History_of_auxiliary_languages
- Holler, M. J., & Illing, G. (2003). *Einführung in die Spieltheorie* (5., überarb. Aufl. ed.). Berlin u.a.: Springer.
- Howe, J. (2006). The Rise of Crowdsourcing *Wired Magazin*, 14(06). Retrieved from
http://www.wired.com/wired/archive/14.06/crowds.html?pg=4&topic=crowds&topic_set=
- International English. (2010). Retrieved 20.5.2010, from Wikipedia
http://en.wikipedia.org/wiki/International_English
- Internet World Users By Language - Top 10 Languages. (2010). from Internet World Stats
<http://www.internetworldstats.com/stats7.htm>
- Ives, P. (2006). 'Global English': Linguistic Imperialism or Practical Lingua Franca? *studies in language & capitalism*, 1, 121-141.
- Janson, T. (2003). *Speak: a short history of languages*: Oxford University Press, USA.
- Jenkins, J. (2007). *English as a lingua franca*: Oxford Univ. Press.
- kernel.org. The Linux Kernel Archives Retrieved 9.6.2010, from <http://www.kernel.org/>
- Lang, K. (1986). A language theory of discrimination. *The Quarterly Journal of Economics*, 101(2), 363-382.
- Ledyard, J. (1995). Public goods. *Handbook of experimental economics*, 111—194.
- Leskovec, J., & Horvitz, E. (2007). Worldwide Buzz: Planetary-Scale Views on an Instant-Messaging Network.
<http://research.microsoft.com/apps/pubs/default.aspx?id=70389>
- Lewis, M. P. (Ed.). (2009). *Ethnologue: Languages of the World* (Sixteenth edition ed.). Dallas, Texas: SIL International.
- List of constructed languages. (2010). Retrieved 31.3.2010, from Wikipedia
http://en.wikipedia.org/wiki/List_of_constructed_languages#Auxiliary_languages
- Marschak, J. (1965). Economics of language. *Behavioral Science*, 10, 135-140.
- Méltiz, J. (2007). Language and foreign trade. *CEPR discussion papers ; 3590 : International macroeconomics and International trade*, 52, 36 S.
- Mental model. (2010). *Wikipedia*. Retrieved from
http://en.wikipedia.org/wiki/Mental_model
- Milgram, S. (1967). The small world problem. *Psychology today*.
- Modelling Wikipedia's growth. Retrieved 10.6.2010, from Wikipedia
http://en.wikipedia.org/wiki/Wikipedia:Modelling_Wikipedia's_growth

- Naisbitt, J. (2006). *Mind set!: Reset your thinking and see the future*: Collins.
- Open science data. (2010). Retrieved 11.6.2010, from Wikipedia
http://en.wikipedia.org/wiki/Open_science_data
- Open Source Initiative (OSI). Retrieved 9.6.2010 <http://www.opensource.org/>
- OSI. GNU General Public License version 3 Retrieved 11.6.2010, from
<http://www.opensource.org/licenses/gpl-3.0.html>
- OSI. Open Source Definition Retrieved 11.6.2010, from
<http://www.opensource.org/docs/osd>
- Phillipson, R. (2003). *English-only Europe?: challenging language policy*: Routledge.
- Projekt Gutenberg. Retrieved 1.6.2010, from Projekt Gutenberg
<http://gutenberg.spiegel.de/>
- Ricento, T. (2006). *An introduction to language policy: Theory and method*: Wiley-Blackwell.
- Rubinstein, A. (2000). *Economics of Language - Five Essays*: Cambridge University Press.
- Selten, R., & Pool, J. (1991). *The Distribution of Foreign Language Skills as a Game Equilibrium*. Heidelberg: Springer-Verlag Berlin.
- Sigmund, K., Hauert, C., & Nowak, M. (2001). Reward and punishment. *Proceedings of the National Academy of Sciences of the United States of America*, 98(19), 10757.
- Smith, N. (2007). Cost in Translation. *e!sharp*, (january-february 2007), 55-57. Retrieved from http://ec.europa.eu/commission_barroso/orban/news/docs/55-57_multilingualism.pdf
- Soares, M. (2004). Reducing transaction costs in information infrastructures using FLOSS. *First Monday*, 9(11-1).
- Sonntag, S. (2003). *The local politics of global English: Case studies in linguistic globalization*: Lexington Books.
- Sunstein, C. R. (2008). *Infotopia: How Many Minds Produce Knowledge*: Oxford University Press, USA.
- Top Ten Languages Used in the Web. (2009). from Internet World Stats
<http://www.internetworldstats.com/stats7.htm>
- Toubon Law. (2010). Retrieved 27.04.2010, from Wikipedia
http://en.wikipedia.org/wiki/Toubon_Law
- Urken, A. (2008). Grokking Condorcet's 1785 Essai. *Electronic Journal for History of Probability and Statistic*, 4(1).
- Van Parijs, P. (2004). Europe's linguistic challenge. *European Journal of Sociology*, 45(01), 113-154.

-
- Walsh, J. (2009). Wikimedia Foundation announces important licensing change for Wikipedia and its sister projects. Retrieved from http://wikimediafoundation.org/wiki/Press_releases/Dual_license_vote_May_2009
- Wikimedia-Commons (Producer). (2009, 1 December 2009). Human Language Families (wikicolors). Retrieved from [http://en.wikipedia.org/wiki/File:Human_Language_Families_\(wikicolors\).png](http://en.wikipedia.org/wiki/File:Human_Language_Families_(wikicolors).png)
- Wikipedia. (2010). Language policy. Retrieved 25.5.2010, from Wikipedia http://en.wikipedia.org/wiki/Language_policy
- Wikipedia - The Free Encyclopedia. <http://www.wikipedia.org/>
- Wittgenstein, L. (2001). *Tractatus logico-philosophicus*. Berlin: Akademie Verlag.

Appendices

Appendix 1 History of constructed languages

The history of the most notable constructed auxiliary languages is summarized in the following table. The information is a summary from the Wikipedia article ("History of auxiliary languages," 2010)

Language name	Year	Creator	Comments
<u>Solresol</u>	1827	<u>François Sudre</u>	The famous "musical language"
<u>Communications-sprache</u>	1839	<u>Joseph Schipfer</u>	Based on French vocabulary
<u>Universalglot</u>	1868	<u>Jean Pirro</u>	Arguably the first fully developed IAL
<u>Volapük</u>	1879– 1880	<u>Johann Martin Schleyer</u>	First to acquire a sizable international speaker community
<u>Esperanto</u>	1887	<u>L. L. Zamenhof</u>	By far the most popular constructed language.
<u>Spokil</u>	1887 or 1890	<u>Adolph Nicolas</u>	An a priori language by a former Volapük advocate
<u>Mundolinco</u>	1888	<u>J. Braakman</u>	The first <u>esperantido</u>
<u>Idiom Neutral</u>	1902	<u>Waldemar Rosenberger</u>	A naturalistic IAL by a former advocate of Volapük
<u>Latino sine Flexione</u>	1903	<u>Giuseppe Peano</u>	"Latin without inflections," it replaced Idiom Neutral in 1908
<u>Ido</u>	1907	<u>Delegation for the Adoption of an International Auxiliary Language</u>	The most successful offspring of Esperanto

<u>Adjuvilo</u>	1908	<u>Claudius Colas</u>	An esperantido created to cause dissent among Idists
<u>Occidental</u> (aka Interlingue)	1922	<u>Edgar de Wahl</u>	A sophisticated naturalistic IAL
<u>Novial</u>	1928	<u>Otto Jespersen</u>	Another sophisticated naturalistic IAL
<u>Sona</u>	1935	<u>Kenneth Searight</u>	Best known attempt at an unbiased vocabulary
<u>Esperanto II</u>	1937	<u>René de Saussure</u>	Last of the classical <u>esperantidos</u>
<u>Mondial</u>	1940s	<u>Helge Heimer</u>	A naturalistic European language
<u>Glosa</u>	1943	<u>Lancelot Hogben</u> , et al.	Originally called <i>Interglossa</i> , Glosa has a strong Greco-Latin vocabulary
<u>Interlingua</u>	1951	<u>International Auxiliary Language Association</u>	A large project to discover common European vocabulary
<u>Frater</u>	1957	<u>Pham Xuan Thai</u>	Innovative blend of Greco-Latin roots and non-western grammar
<u>Afrihili</u>	1970	<u>K. A. Kumi Attobrah</u>	a pan-African language
<u>Kotava</u>	1978	<u>Staren Fetcey</u>	A sophisticated a priori IAL
<u>Lingua Franca Nova</u>	1998	<u>C. George Boeree</u> et al.	A Romance vocabulary with a creole-like grammar

Table 5-1: History of Constructed Languages

Appendix 2 Global English as Innovation

The following figure is (Graddol, 2006, p. 108) prediction curve about the adoption rate of Global English, as well as the coming decline. He compared the adoption of Global English as language to the adoption curve of innovation.

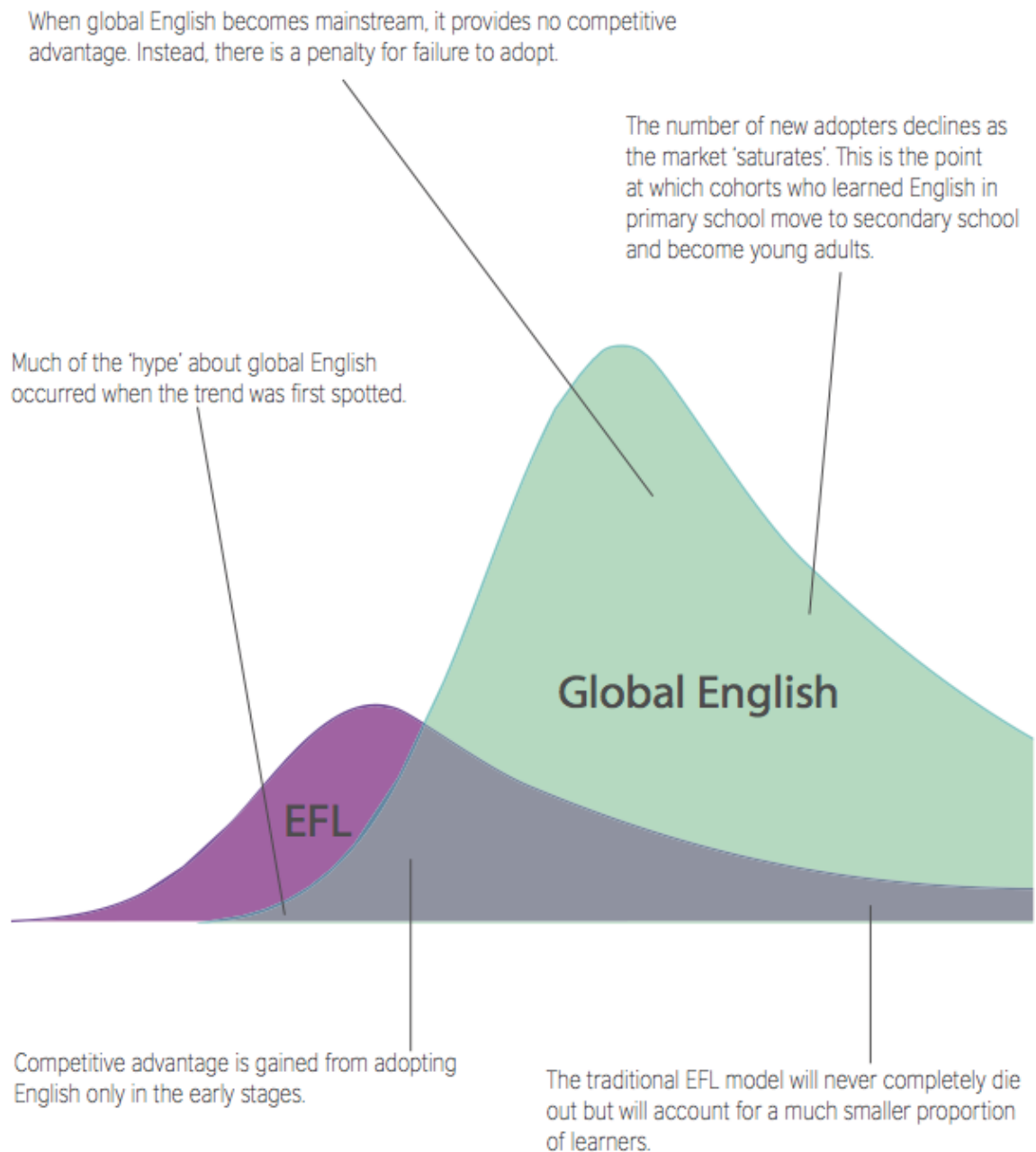


Figure 5-1: English as an Innovation

Appendix 3 Wikipedia's Growth

Described and published within the Wikipedia Statistic Project ("Modelling Wikipedia's growth,") the following graphs illustrate the enormous growth the Wikipedia Project has achieved in the last years.

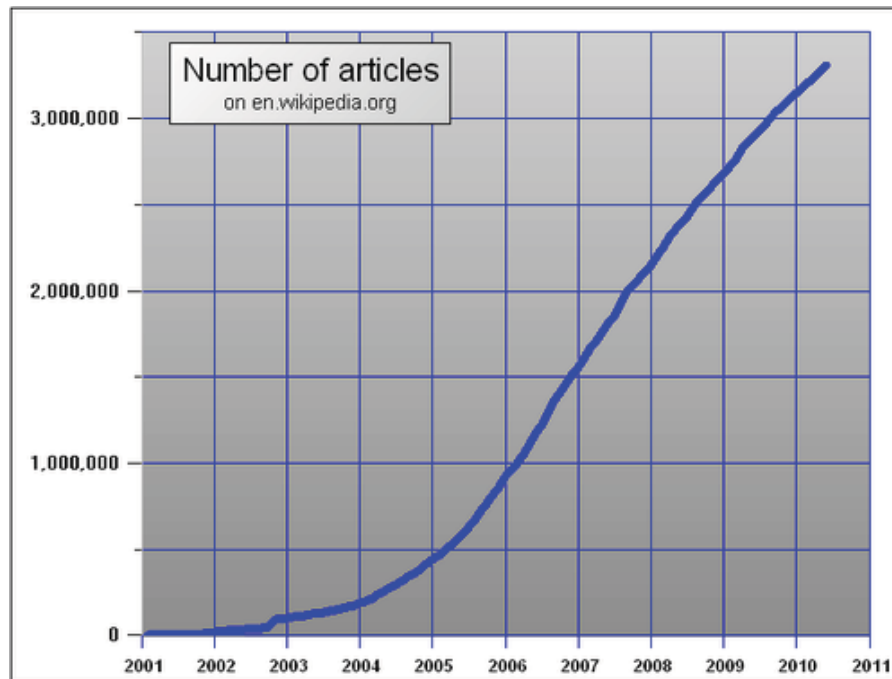


Figure 5-2: Number of Wikipedia articles

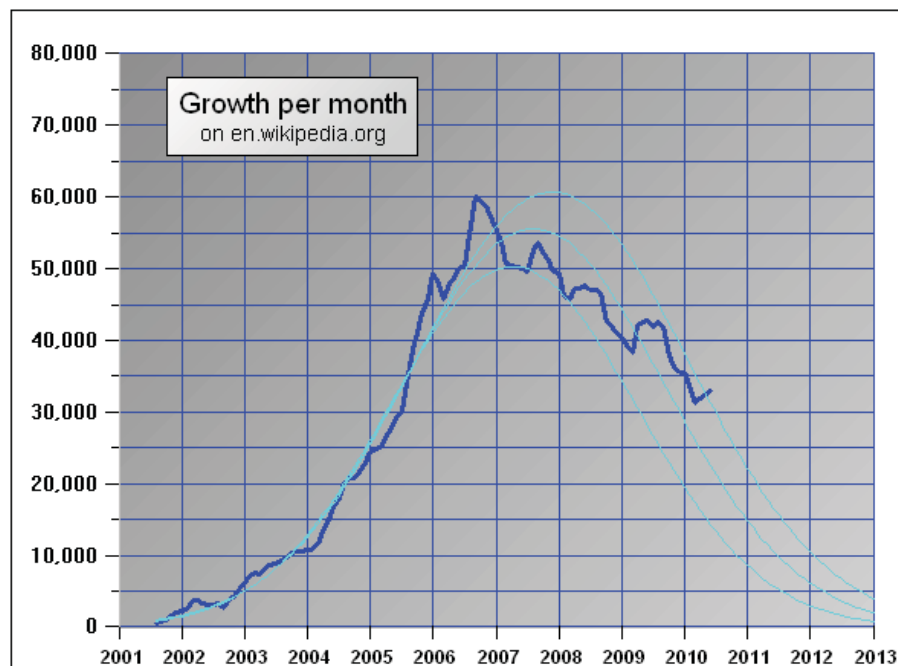


Figure 5-3: Wikipedia monthly growth rate