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Assessing Language Vitality: Overview of Exisiting Models

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Abstract

The article deals with the question of multidimensionality and complexity of creating a model assessing the linguistic vitality. A comparative analysis of the existing models corresponding to the sociolinguistic paradigm is presented. The problems and difficulties associated with machine data processing are considered. As a result, risks of future language losses are especially high in the tropics and in the Himalayas, as these regions harbor many small-population languages and are undergoing rapid economic growth. In conclusion, Machine data processing and machine learning are the most important stages of processing the actual base of language behavior.

Keywords: Language Vitality, Living Abilities, Indicators.

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Evaluación de la vitalidad del lenguaje: descripción general de los modelos existentes

Resumen

El artículo aborda la cuestión de la multidimensionalidad y la complejidad de crear un modelo que evalúe la vitalidad lingüística. Se presenta un análisis comparativo de los modelos existentes correspondientes al paradigma sociolingüístico. Se consideran los problemas y dificultades asociados con el procesamiento de datos de máquina. Como resultado, los riesgos de futuras pérdidas de idioma son especialmente altos en los trópicos y en el Himalaya, ya que estas regiones albergan muchos idiomas de pequeña población y están experimentando un rápido crecimiento económico. En conclusión, el procesamiento de datos de máquina y el aprendizaje automático son las etapas más importantes del procesamiento de la base real del comportamiento del lenguaje.

Palabras clave: Vitalidad del lenguaje, Habilidades para la vida, Indicadores.

1. INTRODUCTION

The language situation in the world is characterized by a steady trend towards a linguistic shift to the dominant idioms and to the displacement of functionally less potent languages. Referring to the data of «The Atlas of the vanishing languages of the world», the 2009 version, around 2500 languages in the world, and about 131 languages in Russia are interval. Linguists believe that 90% of the world's languages will disappear by the end of the 21st century. The heterogeneity of the socio-communicative system determines the polarity of the status and position of the existing languages: every

second language out of 6000 languages (the number of existing languages and their speakers is very approximate) is represented by 10 thousand native speakers, and every fourth language is native for 1000 or fewer people. 96% of all languages are spoken by only 3% of the world population, which is an average of 30 thousand people per language. A lot of researchers associate the dynamics of changes in the world language situation with globalization. The weakening of the viability of minority languages is due to the linguistic shift of the dominant languages, cultures and infrastructure on the rather densely populated and historically conditioned.

Territories of certain ethno-linguistic communities. On the other hand, the increasing migration mobility contributes to the emergence of large minority communities in the territories of previously fairly homogeneous national states in Europe, as well as in North America and Australia. To study and preserve the linguistic diversity of the world, to maintain ethnic, linguistic and demographic balance is the main task not only of linguists, but also of the national policies and ethnic entities Antipova (2003), international and national communities. Crystal, comparing languages with biological diversity, defined the language as an expression of identity, a guardian, a storehouse of history, a part of human knowledge (Crystal, 2000). Understanding the complication and complexity of living abilities and vitality, their methods of identification and social mobilization determines the need for a comprehensive approach to the study of language.

This points to the interdisciplinary nature of the phenomenon, as well as the need for a more integrated approach to its study. Since the 20th century, this phenomenon is studied not only in the framework of the internal linguistics, but also at the junction of different Sciences: sociolinguistics, ethnolinguistics, contactology, social psychology, cross-cultural and linguistic psychology, political science, culturology and other fields of Social Sciences and Humanities (Alpatov, 2013). Determining the degree of language preservation, involves not only the identification of its position in the socio - communicative system, but also the diagnosis and prediction for further possible intervention to support the language. In order to solve the above-mentioned issues in the context of sociolinguistic paradigm, there is a need to identify patterns of dynamics of the language community development with maximum consideration of factors reflecting the viability of the language. Grenoble and Whaley noted: "Assessing and understanding language vitality is a complex enterprise … yet the degree of language vitality the basic indicator used in determining the appropriate type of language revitalization program" (Grenoble and Whaley, 2006: 21). Two questions remain open:

1. How to take into account all the components when assessing the viability of a language, constructing a formal logical model of the vital activity of the language and predicting.

2. How to create a practical-applied model for assessing the language situation and the viability of languages, using the available data and empirical experience through machine data processing and machine learning, not only as the most effective

tool for testing various hypotheses about the structure of the investigated relationships, but also for modeling language behavior in the social and communicative system and launching appropriate language policy campaigns.

The review of the existing methods of diagnosis and prediction and the empirical conditioning of the viability of languages and the living abilities of language situations, proposed in this article, aims to determine the accumulated experience and scientific potential for further activation in the diagnosis and protection of the world's linguistic diversity. In this article, we do not claim to cover all possible models and programs that describe and evaluate the vital functions of the language and the language situation. Only those that mostly fit into the framework of the sociolinguistic paradigm are proposed for discussion.

2. METHODOLOGY

The factors determining the degree of ethno-linguistic stability and security are evaluated within what continuum of threats and risks a particular language is found, analyzed within the framework of methodological concepts of the sociolinguistic paradigm. We carried out a critical review of the models of life and maintenance and revitalization of languages using the following methods and approaches: theoretical analysis, quantitative and qualitative comparison, induction and deduction, generalization and description. The methods of studying literature on the research and theoretical analysis were used to understand the theoretical

postulates and models developed since the mid-20th and early 21st centuries in the scientific works of socio-ethno linguistic nature.

3. RESULTS AND DISCUSSION

Linguists and scientists in the context of their research, and as experts in international organizations of different levels are engaged in research related to the accumulation of various factual data on the languages and peoples of the world. Over the last 30 years, the topic of linguistic diversity and the vitality of languages has become one of the most discussed topics in the world of linguistics. According to Google Scholar, articles mentioning the vitality of languages tend to increase 8-10 times since 1995. There are quite a few categories to describe the viability of languages. For example, the typologies of Edwards (1992). The following is a summary table of the most widely used models for assessing language vitality. (Table 1.)

Table 1. Summary table of models for assessing the language vitality

UNESCO	The Graded Intergenerational Disruption Scale. (GIDS)		Ethnologies		The EGIDS levels as presented by Lewis.	
level\ label	level\ label	description	level\ label	description	level\ label	description
1 - Safe	1	The language is used in education, work, mass media, and government at the nationwide level.	Living	Languages with high functional power, to a large extent for speakers are the first languages (first language speakers).	0 - International	The language is used internationally for a broad range of functions.
					1 -National	The language is used in education, work, mass media, and government at the nationwide level.
	2	The language is used for local and regional mass media and governmental services				
	3	The language is used for local and regional work by both insiders and outsiders.				

	4.	Literacy in the language is transmitted through education.			2. Regional	The language is used for local and regional mass media and governmental services.
					3.Trade	The language is used for local and regional work by both insiders and outsiders.
	5.	The language is used orally by all generations and is effectively used in written form throughout the community.			4. Educational	Literacy in the language is being transmitted through a system of public education.
					5. Written	The language is used orally by all generations and is effectively used in written form in parts of the community.
					6 a. Vigorous	The language is used orally by all generations and is being learned by children as their first language.
Vulnerable	6.	The language is used orally by all generations and is being learned by children as their first language.	2. Second Language Only	It is mainly a second language.	6b. Threatened	The language is used orally by all generations but only some of the child-bearing generation are transmitting it to their children.
Definitely Endangered	7.	The child-bearing generation knows the language well enough to use it with their elders but is not transmitting it to their children.			7. Shifting	The child-bearing generation knows the language well enough to use it among themselves but none are transmitting it to their children
Severely Endangered			3. Nearly Extinct	Languages represented by less than 50 speakers.	8a. Moribund	The only remaining active speakers of the language are members of the grandparent generation.
Critically Endangered			4. Dormant	They do not speak a language, the ethnic group does not associate itself with this language.	8b. Nearly Extinct	The only remaining speakers of the language are members of the grandparent generation or older who have little opportunity to use the language.
Extinct	8.	The only remaining speakers of the language are members of the grandparent generation.	5. Extinct	The language is not spoken and the language is not represented by ethnicity.	9. Dormant	The language serves as a reminder of heritage identity for an ethnic community. No one has more than symbolic proficiency.
					10. Extinct	No one retains a sense of ethnic identity associated with the language, even for symbolic purposes.

Table 1 is a comparative analysis of relatives on the principle of assessing the viability of the language. The models have a level approach, the evaluation criteria correspond to the state of living

ability of the language, although they have some individual features. Fishman (1991) [Table1] offers the Graded Intergenerational Disruption Scale. (GIDS) - A model for assessing the viability of the language, consisting of 8 levels. The transition from 1 to 8 level involves the revitalization of the language. Empirical studies have shown that none of the 8 stages can accurately characterize the real language situation. But, according to the researchers, the GIDS model served as the basis for assessing the viability of languages for almost two decades (Lewis, 2005). Ethnologue [Table1] offers a language vitality assessment system consisting of a 5-level scale (Gordon, 2005). This scaling does not provide a complete picture for assessing the living ability of languages, and is more suitable for the classification of threats. The experts of the UNESCO Expert Meeting on safety Endangered Languages proposed their own criteria for assessing the viability of languages [Table1]. Each factor is estimated at 5 points, the amount of which determines the degree of threat to the existence of languages. Linguists have recognized this evaluation system as a sound methodology for empirical studies of the viability of languages. But it has been suggested that some factors are quite difficult for detection and interpretation. They argue thast factors 2 and 3 do not allow to determine the absolute number of native speakers and their distribution on speakers of the first and second languages. Regarding factor 4 …the synchronic descriptions are indicative of language endangerment if the core domains (home, friends, neighbourhood) are no longer associated with the language in question, however the fact that languages are assigned different functions does

not necessarily indicate that language shift is underway (Lewis, 2005: 26).

Despite the above mentioned the model proposed by UNESCO helps to understand which sociocultural variables are critical and require intervention on the way to the revitalization of the language. Of great interest is the 13-level model [Table1], which is developed by Lewis (2005) - Ethnologue's Expanded Graded Intergenerational disruption Scale (EGIDS). The EGIDS is basically an expanded version of Fishman's GIDS model. The only difference is that its fine-grained levels have been made to correspond to UNESCO's evaluative system, taking care to cover Ethnologue's categories as much as possible. From the scale, a language can be evaluated by answering 5 key questions regarding its identity function, vehicularity, state of intergenerational language transmission, literacy acquisition status, and a societal profile of its generational use.

1. What is the current identity function of the language?

2. What is the level of official use?

3. Are all parents transmitting the language to their children?

4. What is the literacy status?

5. What is the youngest generation of proficient speakers?

However, according to some scientists Obiero (2010) the model is yet to be tried out, the levels are still inherently static, if inevitably so either safe or unsafe (see the turning point at 6b). Secondly, the possibility of heavy overlaps among the categories identified across the labels is also astounding. According to this grid, an erroneous insinuation is made that a language is unsafe if it does not fit in the functional domains described between 0 and 6a. In the concepts proposed in the framework of ethno-linguistic vitality, the works related to language settings are of interest (Dube-Simard 1983), as well as language selection McNamara (1987) and language revitalization (Yagmur and Kroon, 2003). A number of studies Abrams et al. (2009) are related to the works that make up the empirical base for the socio-psychological characteristics of ethno-linguistic realities. The fundamental assumption of the theory of ethno-linguistic vitality is that there are two-way relations between social identity and linguistic behavior of the ethnic group. There are sociostructural variables in a given society, and these variables interact in modeling ethno-linguistic vitality. Studies by Saint-Blancat (1985) show how directly related social and structural variables affect the viability of a minority and sociological factors not only directly affect a language's survival but also, and just as importantly, shape individuals' sociopsychological and interactional climates'.

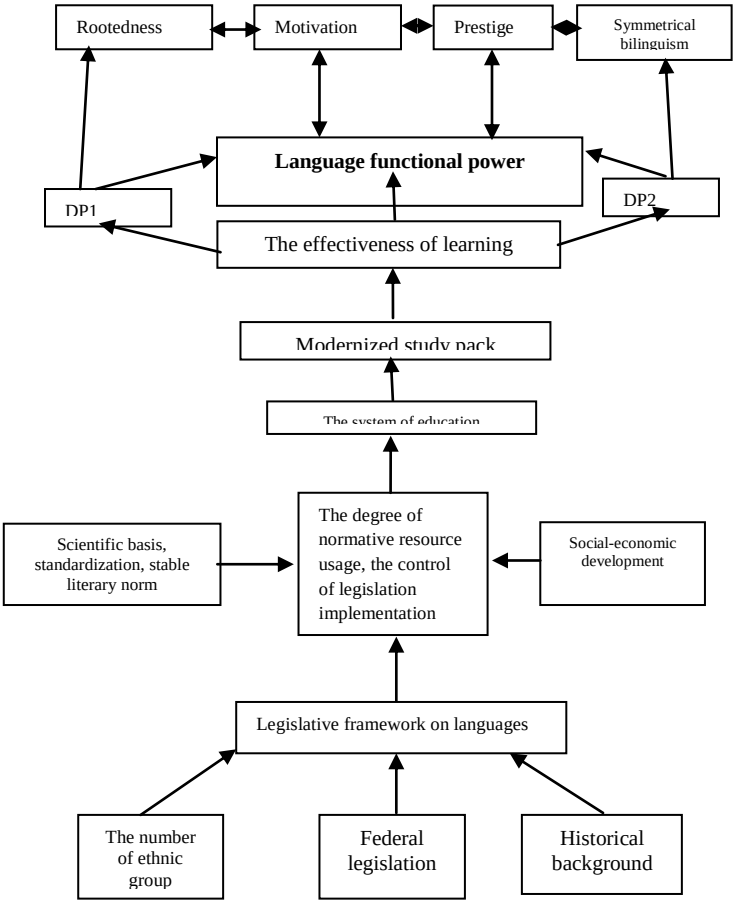
According to the theory of language vitality, the level of language loyalty can lead either to language assimilation or to the support and development of the language of the titular ethnic group. Nevertheless, in some linguistic situations, despite the low ethno-

linguistic vitality, minorities can find an adequate strategy of survival, provided that the members of the ethno-linguistic group are highly motivated to preserve the language. However, the strategy of the dominant ethno-linguistic groups is decisive for the condition of the policy or weakening of support to ethno-linguistic minority groups (through mass media and education, and other tools of the language policy) (Bourhis 1984). On the other hand, Sachdev et al. (1987) suggest that despite the control of the dominant ethno-linguistic groups, under favorable historical and political conditions, the viability of minority languages may be minimized or enhanced. It depends on the degree of self-identification, social interaction within the ethno-linguistic group, positive interethnic relations and language loyalty of future generations at a particular historical moment.

However, there is another view on the theory of ethno-linguistic vitality. Some researchers Haarmann (1986) are critical of assessing ethno-linguistic viability only taking into account ethno-linguistic criteria (ethnic identity, language loyalty, prestige, the degree of language dominance, etc.), without considering interrelation with social indicators such as social class, age, sex, subculture. The dominant - oriented character of ethno-linguistic groups' living activity is questioned. Tollefson does not support the view that it is always possible to talk about high ethno - linguistic vitality, if the ethnos has a higher status institutional support, high ethno-demographic indicators without taking into account key historical and structural variables that explain the rage of choice available and the constraints operating on individuals that determine the meanings of their choices. Yagmur and

Kroon (2003) during the study of these regional languages of the Russian Federation and the European Union Mustafina (2009) developed [Figure1.] Language functional power model.

Figure1. Language functional power model



The language policy is presented in this scheme by the following parameters: the Federal legislative base, regional language legislation, the degree of implementation of the legislative resource. The language situation includes the demographic power of the language (DP1 – the demographic power of the language within the titular ethnos, DP2 – the demographic power of the language among the non-titular population of the region), the number of ethnic groups, the historical background of the language situation and the region as a whole. The linguistic parameter itself is the level of standardization of the language, a stable literary norm. Extra linguistic indicators are presented by social and economic development of the region. The education system is a key component of this system of interdependence of sociolinguistic parameters and affects the functional aspect of the language through a modernized and modernizing the communicative requirements of the study pack, which, in turn, increases the effectiveness of the study of regional languages and learning them. Language policy, which is formed in accordance with political, social and sociolinguistic parameters, affects the functional power of language through the education system and eventually forms such phenomena as rootedness, motivation, prestige of the language and symmetrical bilingualism. The advantage of this model is the development the interdependence and interrelation of the main parameters of language policy, language situation and education system, which determines the possibility not only to assess the state and prospects of the level of functional power of languages, but also offers a program of action to improve the viability of the language.

Up to date, this model is a methodological justification for a number of empirical studies Mustafina (2009), Empirical studies that identify factors that critically affect the viability of languages are of particular interest. The team of researchers from the United States, Denmark and the United Kingdom assessed the risks of language disappearance as a small range of criteria: the ratio of the population and the number of speakers, the dynamics of the growth of the number of speakers in this language, are identified as the main risk factors: environmental and socio-economic. They have empirically shown that the risk of reducing the number of minority language speakers with economic growth is higher. However, risks of future language losses are especially high in the tropics and in the Himalayas, as these regions harbor many small-population languages and are undergoing rapid economic growth.

4. SUMMARY

A lot of typologies that describe and assess language situations and the viability of languages rely to some extent on parameters that are:

1. Objective indicators of language living ability: socio-political, socio-demographic, interlinguistic, socio - functional, national-cultural criteria. These linguistic and social factors are necessary to accurately describe language contact situations, and to determine the role of sociostructural variables in inter-group

relations, intercultural communication, learning a second language, maintaining a native language and language shift and language loss.

2. Subjective variables of language living ability and individual perceptions of social conditions affect self-identification and determine the multidimensional relationship between sociological (collective) and psycholinguistic (individual) preferences in the choice of language and ethnolinguistic strategies in the social and communicative environment.

3. We need a model that formalizes integrated knowledge of the language, including such aspects as:

* Legal status of languages;

* Interrelation between culture, language and language policy;

* The relation between globalization, nationalism, ethnicity, identity and language policy;

* Linguistic ecology – the relationship between language and society that uses language as one of its codes;

* Socio-economic policy;

* Historical framework of language situation and policy;

* Language in cyberspace;

* Language in education;

* Intercultural and international communication, inter-ethnic relations;

* Languages of wider communication, including international languages;

* Multilingualism as a problem or resource;

* language minority and threat;

* ethnic demographics.

4. Up to date, the existing models are not fully empirically determined and can be considered ast universal models of the functioning of languages and language situations. The multidimensional nature of language as a reality implies the need for a set of technologies, methods and approaches intended for processing large amounts of diverse data, which as a result can reveal trends and patterns of functional development of languages and language situations with the possibility of its forecasting and modeling.

5. A step-by-step analysis of the data is needed:

1. Transformation of dark data into more structured and generalized data, i.e. pre-processing (data mining).

2. Final analysis, diagnosis, interpretation.

3. Definition of risks and forecast.

Classification of data according to objectives:

1) Numerical data in the form of parameters of mathematical models. Indicators that are recorded with a certain frequency-it is a huge amount of data that cannot just be applied in as the input of the mathematical model from the first principles, therefore a statistical approach is needed;

2) Unstructured data (more often in the form of natural language texts). This kind of data is the most complex and voluminous for processing.

5. CONCLUSION

The vitality of languages is not just a question of survival of minority and endangered languages of the indigenous population, but majority languages. Therefore, the integration of knowledge about the language and its forms of functioning, regularities of existence and development with the consequent possibility of predicting is the most

important stage in the establishment of practice-application model of language situation and language vitality assessment. Machine data processing and machine learning are the most important stages of processing the actual base of language behavior in the socio-communicative system of its interpretation and proposals corresponding to the language policy campaigns. This requires a comprehensive solution to the representation of knowledge about languages and interaction mechanisms of knowledge bases. The solution to this problem is possible only in the implementation of interdisciplinary projects to create a complex hierarchical system, with a full description of the objects and properties of the language phenomenon.

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