

Quantification of the Variables of the Information Model for the Use of School Terminology from 1884 to 2014 in Dalmatia

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Abstract—Prior to quantifying the variables of the information model for using school terminology in Croatia's region of Dalmatia from 1884 to 2014, the most relevant model variables had to be determined: historical circumstances, standard of living, education system, linguistic situation, and media. The research findings show that there was no significant transfer of the 1884 school terms into 1949 usage; likewise, the 1949 school terms were not widely used in 2014. On the other hand, the research revealed that the meaning of school terms changed over the decades. The quantification of the variables will serve as the groundwork for creating an information model for using school terminology in Dalmatia from 1884 to 2014 and for defining direct growth rates in further research.

Keywords—Education system, historical circumstances, linguistic situation, media, school terminology, standard of living.

I. INTRODUCTION

THE goal of this research has been to quantify the variables of the information model for using school terminology in Dalmatia, a region in the present-day Republic of Croatia, from 1884 to 2014. The model is based on the linguistic and historical circumstances prevailing in the years of 1884 and 1949. Haugen's language planning model implies four stages of language development in taking crucial steps from a "dialect" to a "language." The four sequential steps are norm selection, codification, implementation and elaboration.

In Croatian language, the first three stages – norm selection, codification and implementation – took place in 19th century. The last stage of Haugen's model – elaboration – implies certain "cultural superstructure", i.e. the development of terminology that each "modern" language should have. A study of all aspects of the Croatian language terminology is a demanding task that extends way beyond the limits of this research. The authors of this paper focus on just one aspect of the terminology – the terminology related to schooling in the above defined periods.

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II. USAGE OF SCHOOL TERMINOLOGY

Terminology is an interdisciplinary area that includes, i.e. implies various fields of linguistics: solid knowledge of normativity, language in contact, morphology, syntax, lexicology, functional stylistics... [1]. Language planning strives for this "modernisation" of language which is implemented through creation of terms and development of morphology [2]. According to E. Haugen, language planning is "the activity of preparing a normative orthography, grammar, and dictionary for the guidance of writers and speakers of a non-homogenous speech community" [3].

The goal of this paper has been to quantify the selected variables for the year 2014, on the basis of mental-verbal assumptions related to the selected variables of the information model for the years 1884 and 1949. The selected variables of the information model include: historical circumstances, standard of living, education system, linguistic situation, and media.

The journal *Zora* (1884–1889), a didactic-pedagogical paper intended for teachers, dealing with schooling and education issues, was taken as the source of school terms, specifically the terms referring to school subjects. The examples taken from the journal are marked with "Z" and are compared with the terms listed in the *Dictionary of Croatian Language*, published by Croatian linguist and lexicographer Vladimir Anić in 1991 (followed by expanded and revised editions in 1994 and 1998), in order to find out whether the lexemes make part of the lexicon of the standard Croatian language. The terms from the *Dictionary* are marked with "A".

A number of scientific methods have been used in this research: analysis and synthesis, induction and deduction, methods of proving and refuting, descriptive, comparative, growth matrix, and compilation methods.

A. Historical Circumstances

1889

In the second half of the 19th century Croatia was not united and was not defined by today's borders. It consisted of the Kingdom of Dalmatia, Banska Hrvatska (Croatia under the jurisdiction of the *ban*, i.e. appointed Croatian governor) and Slavonia. The Austro-Hungarian Compromise of 1867 established the dual monarchy of Austria-Hungary. Dalmatia was annexed by the Austrian Empire, whereas Banska Hrvatska and Slavonia were annexed by the Kingdom of Hungary. These events further increased the cultural,

linguistic, sociological and political gaps among Croatian provinces.

1949

After World War II Dalmatia and the rest of Croatia became parts of Yugoslavia, the federation ruled by Communist Party headed by Josip Broz Tito (1892–1980). The communist ideology geared the country towards socialism and self-management, i.e. a specific pronounced participation of the employees in the corporate management.

2014

On 25 June 1991 the Croatian Parliament declared independence from Yugoslavia. After the War of Independence (1990–1995) the government started to encourage democratic processes and market economy. Following the ratification of the Treaty of Accession in 2011, Croatia became the 28th member state of the European Union on 1 July 2013.

B. Standard of Living

1884

By the end of 19th century Croatia was a predominantly peasant country, with frequent conflicts breaking out between industrial and bourgeois classes. Croatia was at Europe's periphery, lagging behind "progressive" Western Europe. Due to lack of liberal market, the development of industry and civil society was delayed for several decades [4]. In Dalmatia, trade and shipping were gaining impetus.

1949

In the post-war era, modernisation affected all aspects of life: traffic, transport infrastructure, health care, education. The development of food, chemical, construction and other industries resulted in mass employment and improvement of the standard of living. In Dalmatia, the industrialisation of Split, Šibenik, and other towns, put an end to hunger, encouraged collectivism, and led to urbanisation and environmental degradation.

2014

Upon accession to the European Union, Croatia became part of the European community. Dalmatia and the rest of the country were hit by recession, i.e. stagnation of all economic activities. Tremendous unemployment and low salaries resulted in mass migrations. The standard of living, as a whole, was worse than the average standard of living across the EU member states.

C. Education System

1884

Elementary schools were split in two stages: *pučka škola* (literally "folk school" or "public school") provided the first five years of primary education; *građanska škola* (literally "town school" or "civil school") provided three more years of education [5]. In addition to these institutions, there were also private schools established by the Italian minority. However, the process of elementary education was very slow as the

actual system, i.e. the available schools and teachers, could not cope with the population that needed schooling.

1949

Illiteracy remained a major issue in the aftermath of World War II and was addressed by opening a large number of general ("people's") schools offering at least a four-year primary education to most people. Secondary education was performed at grammar, vocational and civil (*građanske*) schools. There has been a long tradition of higher school education in Croatia, particularly in Dalmatia. The first university was founded in Zadar in 1396.

2014

Education starts in state-run or private kindergartens, which are not compulsory. Some of them are integrated with primary schools. Elementary education consists of eight years and it is compulsory. Children begin schools at the age of 6 or 7. Secondary education is currently optional although most political parties now advocate the stance that it should also become compulsory. According to their curricula, secondary schools are subdivided into grammar schools (with a curriculum that may be centred around math and science, foreign languages, classics, or general subjects), vocational schools (technical, industrial, crafts) and art schools (music, dance, fine arts). Higher education institutions perform university and professional studies. They are subdivided into polytechnics, faculties and art academies. Since 2005 all curricula have been harmonised with the principles of the Bologna Declaration and the European higher education system.

D. Linguistic Situation

1884

During the 19th century Croatian language was not yet standardised and was still in the process of language planning [3], i.e. in the process of transformation into a standardised and codified official language. The linguistic unity could not be achieved for several reasons. Conflicts between different language concepts could not produce a joint vision aimed at shaping and standardising the language. On the other hand, any attempt of linguistic or any other unification was discouraged and blocked by the Austro-Hungarian Empire, as strengthening of Croatian provinces did not suit the political interests of the Monarchy.

1949

More than half a century later, in 1940s, Croatian language was codified and standardised. In this post-war era, certain linguistic circumstances affected its status. Namely, when Socialist Federative Republic of Yugoslavia was born, there were considerable efforts to establish communication across all federal units. There was a decree to publish and announce all ordinances and declarations in four languages – Serbian, Croatian, Slovenian and Macedonian – as these languages were in equal use throughout the Federation. Thus, from the legal viewpoint, "Croatian language was granted its own name" [6].

2014

Upon joining the European Union in 2013, the globalisation processes intensified in Croatia at all levels. Croatian language, spoken by 5.5 million people, continues to gradually lose its identity under the influence of English language. Changes at lexical level do not represent a serious threat, but there is a growing concern about the impact of English language at the levels of morphology, word formation, and syntax that penetrates deep in the very structure of Croatian language [7].

E. Media

1884

The most common, and almost the only, type of media was the print, i.e. the graphic media that included various newspapers, magazines and books. This was the starting point for the development of other media emerging through the process of industrialisation and affecting the people of Croatia. The new media included placards and posters addressing the new generation of consumers.

1949

During this period the graphic media (books, newspapers, magazines, posters...) remained dominant. However, the radio as the only audio electronic media gradually became available and popular with the broader population. Broadcasted programs most frequently included short news, concerts, live reporting on sports events, and radio plays.

2014

Graphic media remained popular (books, newspapers, magazines, posters...). Compared to the previous period, the radio technology developed tremendously, enabling broadcasting from a large number of national and regional stations. However, modern electronic media – television and the internet – are considered as the most influential media.

III. NAME OF THE SCHOOL SUBJECTS

Given the fact that the analysed corpus contained a large number of examples, practical reasons have led to selecting a sample containing a small part of the corpus. As the research perceived that Anić's *Dictionary* did not define certain terms as school subjects, it is here specified whether these terms refer to school subjects in some of today's education institutions. School subjects are marked with the abbreviation NP (*nastavni predmet*), primary schools with OŠ (*osnovna škola*), secondary schools with SŠ (*srednja škola*), while higher education institutions are marked with VŠ (*visoka škola*).

From the perspective of methodology, it is important to point out that the corpus (Z) did not indicate which subjects were used in primary, secondary or higher education. Having in mind that this paper discusses only the terminology, i.e. its affiliation with the Croatian lexicon in the 19th century, 20th century, and today, this information is not so relevant.

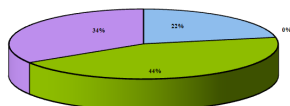
These are the findings produced by the research: (religious education) Z: *bogoštovje*; A: *bogoštovje*; arch. religious

education; NP: *vjeronauk* (OŠ, SŠ); (reading) Z: *čitanje*; A: *čitanje*; recognition of letters and signs, understand written text; NP: /; (anthropology) Z: *čovjekoslovlje*; A: /; NP: /; (ethics) Z: *čudoredje*; A: /; NP: *etika*; (didactics) Z: *didaktika*; A: *didaktika*; a branch of pedagogy, which deals with the general purpose of education and exploring the teaching methods; NP: *didaktika* (VŠ); (physics) Z: *fizika*; A: *fizika*; the science that deals with properties and structure of matter, and measurable natural phenomena; NP: *fizika* (OŠ, SŠ); (hygiene) Z: *higijena*; A: /; NP: /; (book-keeping) Z: *knjigovodstvo*; A: *knjigovodstvo*; records of receipts and expenditures, determination of business performance; NP: *knjigovodstvo* (SŠ); (penmanship) Z: *krasopis*; A: *krasopis*; *hist.* school subject; *calligraphy; NP: /; (logics) Z: *logika*; A: *logika*; the use and study of valid reasoning; NP: *logika* (SŠ); (chemistry) Z: *lučba*; A: *kemija*; the study of the composition of the existing substances, their application, and ways of forming new substances; NP: *kemija* (OŠ, SŠ); (mathematics) Z: *matematika*; A: *matematika*; exploring the relations among abstract notions and the structures determined by them; NP: *matematika* (OŠ, SŠ); (methodics) Z: *metodika*; A: *metodika*; the science on teaching methods; NP: *metodika* (VŠ); (geometry) Z: *mjerstvo*; A: /; NP: /; (technical drawing) Z: *mjerstveno risanje*; A: / NP: /; (music) Z: *muzika*; A: /; NP: /; (language in classroom use) Z: *nastavni jezik*; A: /; NP: /; (pedagogy) Z: *pedagogija*; A: *pedagogija*; the science of teaching; NP: *pedagogija* (VŠ); (writing and reading) Z: *pisočitanje*; A: /; NP: /; (singing) Z: *pjevanje*; A: *pjevanje*; a school subject, today's music education; NP: *glazbeni odgoj* (OŠ, SŠ); (agriculture) Z: *poljodjelstvo*; A: /; NP: /; (history) Z: *povijest*; A: *povijest*; a school subject; NP: *povijest* (OŠ, SŠ); (science) Z: *prirodopis*; A: *prirodopis*; a school subject dealing with nature and natural phenomena; NP: *priroda i društvo/biologija*** (nature and society / biology**); (hand drawing) Z: *prostoručno risanje*; A: /; NP: /; (psychology) Z: *psihologija*; A: *psihologija*; the study of mind, spiritual life and processes; NP: *psihologija* (VŠ); (computing) Z: *računstvo*; A: /; NP: /; (drawing) Z: *risanje*; A: *risanje*; arch. drawing; NP: *likovni odgoj*** (art); (somatology) Z: *somatologija*; A: /; NP: /; (physical education) Z: *tjelovježba*; A: *tjelovježba*; gymnastics; NP: *tjelesni odgoj* (OŠ, SŠ); (geography) Z: *zemljopis*; A: *zemljopis*; a school subject dealing with the distribution and interrelationship of natural phenomena and human activity on the surface of the Earth; NP: *zemljopis* (OŠ, SŠ); (women's handicraft) Z: *ženske ručne radnje*; A: /; NP: /.

IV. RESEARCH FINDINGS

The research focuses on the names of the school subjects found in the magazine *Zora*. Fig. 1 presents:

- 1) Terms that changed the form in A, but retained the meaning;
- 2) Terms that changed the meaning in A, but retained the form;
- 3) Terms not listed in A;
- 4) Terms with the identical meaning and form in Z and A.



- Terms that changed the form in A, but retained the meaning
- Terms that changed the meaning in A, but retained the form
- Terms not listed in A
- Terms with the identical meaning and form in Z and A

Fig. 1 Results of the Research: Name of the School Subjects

The results of the research show that most of the terms (44%) are not present in the modern standard language and curricula. The terms such as *ženske ručne radnje* [women's handicraft], *prostoručno risanje* [hand drawing], *mjerstveno oblikoslovje* [geometry] and other terms have disappeared due to extra-linguistic reasons. However, 34% of the terms encountered in *Zora* are still in use today and make part of the modern standard language, e.g. *zemljopis* [geography], *matematika* [mathematics], *fizika* [physics], *pedagogija* [pedagogy], *psihologija* [psychology] etc. There are a small number of school subjects (22%) that have different names today, as is the case with chemistry (today's *kemija* vs. *lučba* in Z). The research has not detected any terms that would have changed their meaning in modern standard language, while retaining the 19th century form (0%).

V. QUANTIFICATION OF THE VARIABLES OF THE INFORMATION MODEL

In order to carry out the quantification of the selected variables of the information model for the usage of school terminology in Croatia's region of Dalmatia for the year 2014, it has been necessary to determine the value of these variables for the years 1884 and 1949. The values of these variables depend on the matrix consisted of four components: norm selection, codification, implementation and elaboration [3]. The research reveals that elaboration has had the most significant impact on the usage of school terminology.

The quantification of the model's variables has been performed on the index scale from zero to 100. It has been assumed that the value of the variables is zero in the non-developed countries, whereas their value amounts to 100 in the most developed countries in the world [7]. Here is the quantification of the variables of the information model for using the school terminology in Dalmatia for the years 1884, 1949 and 2014, resulting from the mental-verbal deliberation set forth in the previous sections of this paper.

TABLE I

QUANTIFICATION OF THE VARIABLES OF THE INFORMATION MODEL FOR THE USAGE OF SCHOOL TERMINOLOGY IN DALMATIA FOR THE YEARS 1884, 1949 AND 2014

Values of the variables	Inputs			
	1884	1949	2014	1884/2014
1. Historical circumstances	10	35	80	70
2. Standard of living	12	20	60	48
3. Education system	15	40	80	65
4. Linguistic situation	8	40	75	67
5. Media	5	50	85	80

The quantification of the model's variables shows that the variables Media, Historical circumstances and Education system would reach highest values in 2014. Also, the quantification has produced the variables having the lowest values: Standard of living and Linguistic situation. The variables Media and Historical circumstances had the highest growth rate from 1884 to 2014.

VI. CONCLUSION

The literacy in Dalmatia, the region which makes part of the present-day Republic of Croatia, was very low by the end of 19th century, although elementary schooling was compulsory, according to the effective regulations. During World War II, the authorities of the Independent State of Croatia advocated the re-introduction of the old etymologic orthography that would also apply to school terminology. After World War II, there were disputes and disagreements among the South-Slav nations merged in the newly formed federation of Yugoslavia, with regard to creation and standardisation of the orthography and grammar. The joint language of different peoples living together in one state inevitably required certain linguistic deviations and compromises from every individual nation. This resulted in discontent among Croats and the situation was also reflected in school terminology. In modern Croatia the Croatian language is detached from the influence of politics, cultures and languages of the peoples that used to live in former Yugoslavia. However, the identity and authenticity of the lexicon and the school terminology are now threatened by foreign languages of the Euro-Atlantic area.

This research has not detected a broader transfer of school terms from 1884 to 1949; however, in many cases, there were changes of meaning. Likewise, the analysis has not revealed a broader use of the 1884 school terms in the 2014 terminology in Croatia's region of Dalmatia. On the other hand, it has been confirmed that a number of school terms changed over the decades.

The goal of this research has been achieved through the quantification of the selected variables, on the basis of mental-verbal insights, as follows: Historical circumstances - 10 (1884), 35 (1949), 80 (2014), 70 (1884/2014); Standard of living - 12 (1884), 20 (1949), 60 (2014), 48 (1884/2014); Education system - 15 (1884), 40 (1949), 80 (2014), 65 (1884/2014); Linguistic situation - 8 (1884), 40 (1949), 75 (2014), 67 (1884/2014); Media - 5 (1884), 50 (1949), 85 (2014), 80 (1884/2014).

The performed quantification of this model's variables will

serve as the groundwork for calculating direct growth rates of the information model for the usage of school terminology in Croatia's region of Dalmatia for the years 1884, 1949 and 2014 in further research.

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