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## **Acceptance of Modern Scientific Achievements in Slovene Communication Network. Example of Evolution Theory and Formation Process of Slovene Technical Terminology**

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*"Animals, whom we have made our slaves, we do not like to consider our equal."*

Charles Darwin<sup>1</sup>

*"I stand here before you with a basket full of German knowledge and only a handful of Slovene words."*

Jožef (Joseph) Stefan<sup>2</sup>

*"If we completely denounce German language, we will soon forfeit to insignificance and ultramontanism."*

Dragutin Dežman<sup>3</sup>

Previously, the declaration that the world will stay the same was quite close to the truth. In the last 250 years, the applicable science brought unimaginable achievements by merging the knowledge of natural regularities with technics and turned the previously mentioned declaration and the world upside down. Epoch-making changes brought about excitement over technics (science) in the 18<sup>th</sup>, even more so in the 19<sup>th</sup> century, which subsided at the beginning of the First World War, which brought to the surface the negative side of technical acquisitions. In the technical inventions era, engineers non-critically acquired the status of modern Prometheuses. The world exhibition in Paris in 1900 exposed the expectation for technics to improve life. In the words of Karl Popper we can say that human

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1 Quoted by: URL: [http://www.brainyquote.com/quotes/authors/c/charles\\_darwin.html](http://www.brainyquote.com/quotes/authors/c/charles_darwin.html) (25. 10. 2007).

2 Josip Stefan, "Naturopske poskušnje: II", *Slovenski glasnik*, No. 6, 1859, p. 96.

3 Vasilij Melik, *Slovinci 1848-1918* (Maribor, 2002), pp. 188-189.

spirit progressed as 2<sup>nd</sup> evolutionary stage in modernization era. The 2<sup>nd</sup> stage differs from the 1<sup>st</sup> stage of biological evolution by rapid changing, advancement, and includes a dynamic component (variability, causing uncertainty).<sup>4</sup> The key condition which enabled "intellectual evolution" is scientific and cultural progress. Max Weber thought of it as being a result of the victory of intellect over magic ("*Entzauberung der Welt*").<sup>5</sup> It has to be emphasized that the modern time researchers and scientists did not undertake their research work with a desire to change, but were motivated by searching for the truth.

Technicians as modern Prometheuses must also be seen with regard to their philosophical and national self-image. This is especially important regarding the competition between "greater" nations in the scientific field (so called *Kampf des Geistes*). Technics was an important part of national identity and self-image because of its sole meaning for everyday life and also its influence on political and military power of the state. Milan Vidmar called attention to the importance of technics for the nation by writing in his memoir that most of the technicians in Cisleithania were "*not only Germans, but also very devoted to all German ideology*".<sup>6</sup>

Modernization essentially changed the external image of existential habitat as well as the life conditions and spurred dynamic processes noticeable on all levels of society. Modernization processes were concentrated in urban centres, which allowed strengthening the position of urban environments in society.<sup>7</sup> One of the decisive measures that accelerated modernization and thus social transformation was a far-reaching secondary and higher education schools reform.<sup>8</sup> In the 19<sup>th</sup> century, Slovenia was a development region without a higher education centre and a European cultural focus. For this reason, Slovenia was dependent on the cultural transfer or complex interchanges in cultural and language heterogeneous space. The cultural transfer was successfully maintained irrespective of the strained national question in the Habsburg Monarchy till the First World War. Those responsible for the transfer were intellectuals, entrepreneurs, and students at the Austrian, German, Italian and other European universities.<sup>9</sup>

4 Heinz Dudeck, "Die Zukunft beginnt in den Köpfen: Ingenieure und die Geisteswissenschaft", *Forschung und Lehre*, No. 1, 1997, pp. 3–6.

5 Gregor Schöllgen, "Ein wilder Hazard: Max Weber Rede "Wissenschaft als Beruf"", *Forschung und Lehre*, No. 5, 1999, pp. 246–248.

6 Milan Vidmar, *Spomini: I.*, (Maribor, 1964), p. 149.

7 Monika Stromberger, *Stadt, Kultur, Wissenschaft: Urbane Identität, Universität und (geschichts) wissenschaftliche Institutionen in Graz und Ljubljana um 1900* (Köln, 2004), pp. 10–43; Monika Stromberger, "Znanost kot dejavnik kulturnega transferja: Ljubljana na začetku 20. stoletja", *Prispevki za novejšo zgodovino*, No. 2, 2007, pp. 7–11.

8 Robert A. Kann, *The multinational Empire nationalism and national reform in the Habsburg Monarchy 1848–1918: I.* (New York, 1964), pp. 4–5. Janez Bleiweis also wrote an article on the importance of reforming formal education with emphasis on national needs. In his article Bleiweis estimated the reform as the key change of era after March Revolution. J. B. (Janez Bleiweis), "Vedna Pravda", *Glasnik slovenski*, No. 5, 1864, pp. 152–154.

9 Peter Vodopivec, "Slovenski študentje in Dunaj pred prvo svetovno vojno", in Darja Mihelič



The secondary and higher education schools reform in 1848 could not be carried out undisturbed because of the Neo-Humanistic Prussian system on the one side and national demands, mostly of non-German inhabitants on the other side. Among the requirements in the field of education, the requirement for inclusion of Slovene language in secondary schools and requirement for establishment of University in Ljubljana should be mentioned. Establishment of University was proposed by the students of Lyceum in Ljubljana.<sup>10</sup> These requirements should be understood in the context of similar requirements and revolutionary enthusiasm formed by the liberalist belief in progress and legal equality. The function of these requirements was not so much changing the behavioural style (*Hochkultur*), but they represented the application of modern liberalist ideas in socially less developed environment (by proportion of townspeople, value added at economy, and number of students). The school reform in 1848 accelerated modernization processes and increased the importance of science and the importance of conducting research in schools. The important aspect of reform was enthroning universities as strongholds of civic liberalism.<sup>11</sup> This is especially noticeable in the desire to be intellectually independent from Church, which was reflected by the struggle against the Faculty of Theology.<sup>12</sup>

The main goal of Slovene cultural programs after the March Revolution was manifested in the adoption of neo-humanistic principle of universal education; Slovenes expressed the desire to be educated in their mother tongue. This desire was expressed upon the establishment of *Slovenska matica* society (1864) and also later in private letters and forewords to popular science books. This raised a question as to what kind of education Slovenes wanted. The answer to this question came from *Zgodnja Danica's* circle, which emphasized the need for education based on Christianity. An education inconsistent with tradition must be refused. Acceptable education should be permeated with traditional Christian values. This was also confirmed by the adoption of Pope's encyclical "Quanta cura" in *Slovenska matica* society. At its 1<sup>st</sup> general assembly in May 1865, a viewpoint was offered according to which it was not necessary to write an encyclical on society's regulations, since theses in the encyclical were a well-known fact.<sup>13</sup>

(ed.) *Dunaj in Slovenci* (Ljubljana, 1994), pp. 89-97; compare to Alojz Cindrič, *Študenti s Kranjskega na dunajski univerzi 1848-1918* (Ljubljana, 2009).

10 Janko Polec - Bogumil Senekovič, *Vseučiliški zbornik* (Ljubljana, 1902), pp. 21-35.

11 Hans Lentze, *Die Universitätsreform des Ministers Graf Leo Thun-Hohenstein* (Wien, 1962), pp. 276-277. The indicator of liberal citizenry power was visible at the establishment of Austrian Academy of Sciences and Arts (1847), and was understood as Metternich's concession.

12 This state was confirmed by record of scientific freedom and freedom of learning-teaching as essential liberal privilege written in December constitution. Susanne Preglau Hämmerle, *Die politische und soziale Funktion der österreichischen Universität: Von Anfängen bis zur Gegenwart* (Innsbruck, 1986), pp. 108-110.

13 Archives of the Republic Slovenia (ARS), AS 621 Slovenska matica, box 1. It should be noted that at that time, a half of founding members were priests, as well as one quarter of committee's

Forming of terminology of a language community is an indicator of its spiritual and cultural or scientific conquering of the world; moreover, following of common cultural-scientific currents demonstrates an inclusion into a wider European context in the field of researches, ideas, concepts, and methodologies of scientific research work and knowing of sources and literature. The fact that Slovenes used scientific terminology was a sign of deepened perception. One should show some restraint for the use of individual invention or the term can only indicate personal knowledge and not a common situation.<sup>14</sup> With the adoption of inventions, appropriate terminology is formed. Slovene terminology was formed simultaneously with acceptance.

The secondary schools reform represents an important incentive to the formation of Slovene terminology. Thus, Slovene language gained importance and became an obligatory subject for students whose mother tongue was Slovene. The curriculum included two to three hours of Slovene per week. The sole inclusion of Slovene as a subject of the secondary school curriculum did not start on the language hierarchy and behavioural style connected to it. Slovene as a school subject helped young intellectuals to better express themselves in Slovene than those intellectuals who attended secondary school before the March Revolution. The cultural societies in Slovenia still more often used German language.<sup>15</sup> Language hierarchy was natural. Therefore one should not be surprised by the

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members. The society was organizing local networks with the help of church's network, especially in Carniola, which basically means that priests raised annual membership dues and distributed published books. The importance of priests is visible in the fact that 44 out of 62 literary writers had theological education in the period from 1825 to 1848. Melik Vasilij, "Problemi v razvoju slovenske narodne identitete (1941)", in Dušan Nečak (ed.), *Austria, Yugoslavia, Slovenia: Slovenska narodna identiteta skozi čas* (Ljubljana, 1997), p. 44; Olga A. Valkova, "Konflikte unter russischen Naturwissenschaftler in der Mitte des 19. Jahrhunderts", in Ralph Jessen and Jakob Vogel (eds.) *Wissenschaft und Nation in der europäischen Geschichte* (Frankfurt an der Main - New York, 2002), pp. 59–79.

14 Erich Prunč, "Prispevek k poznavanju virov za Gutsmanov slovar", in Boris Paternu (ed.), *Obdobje razsvetljenstva v slovenskem jeziku, književnosti in kulturi* (Ljubljana, 1980), pp. 209–211.

15 Henrik Schreiner, physics professor in Bolzan, called attention to the communication problem among Slovene intellectuals in his letter to Slovenska matica committee on the 19<sup>th</sup> of June in 1890. For better understanding I quote a part of the letter: "Slovene papers are not satisfying the scientific needs of Slovene intellectuals, the fact that cannot be held against them, for there is no Slovene paper with the main or the only goal to cultivate science /.../ and we complain that our intellectuals do not always interact in Slovene language. How could they, when we do not have sufficient scientific vocabulary? Do we not all take knowledge from foreign sources in foreign form? Give us Slovene spiritual food and Slovene word will flourish." ARS, AS 621 Slovenska matica, box 13. Very condensed description of inferiority and the feeling of incapability to live a quality and independent life was given in the survey of Veda paper in 1913 by Fran Milčinski: "Our home is tight, tight as a family coffin! The most natural solution to depressing shackles is merging with Croatians. /.../ Popular and applicative science in schools is somewhat developed, but real science cannot thrive, /.../ for there are not enough people interested in special branches of science to fill the table." Miličinski Fran. In: *Veda*, 1913, p. 226.



harsh rejection of Toman's proposition in the Carniolan regional assembly in 1861 that Slovene should become a debate language.<sup>16</sup>

The establishment of *Slovenska matica* was a turning point for publishing of Slovene scientific and school books. The regulations of *Slovenska matica* society were confirmed on 4 February 1864. The purpose of the society was defined as publishing of "scientific as well as generally beneficial books in Slovene language or support issuing of the latter".<sup>17</sup> The society was active in addressing the pressing cultural problems (standardization of Slovene language, forming of Slovene scientific terminology, striving for Slovene secondary schools and establishment of a Slovene university, etc.).<sup>18</sup>

The first integrated natural scientific terminology execution plan by J. G. Verdelski was published in the paper *Glasnik slovenski*. In his article, Verdelski paid attention to the most pressing problems that oppressed the young Slovene culture in all fields of human society. Verdelski emphasized underdeveloped natural science (written in Slovene) as the most pressing problem. He ascertained analytically that this resulted from cultural underdevelopment and the lack of normative measures in technical terminology.<sup>19</sup> Verdelski also considered problematic any non-critical adoption of foreign expressions and every writer's ambition to form his own expressions. He suggested using Kopitar's approach when searching for new expressions, which means that appropriate expressions should be sought in a spoken language. Verdelski and Jožef Stefan were opposed to violent "Slovenisation" of the already established foreign expressions.<sup>20</sup> Verdelski suggested that "every newly introduced word is to be defined and its meaning explained, and these steps should be taken with all technical terms."<sup>21</sup>

Verdelski and also other writers of natural scientific papers of Slovenski glasnik expressed Illyrian tendencies.<sup>22</sup> Verdelski's, Jožef Stefan's and Ferdo Kočevar's "natural scientific" contributions are interesting for the formation of terminology. They were publishing plans and suggestions for the formation of Slovene culture, which reflected their romantic belief in the newly commenced Slovene nation's project in the field of culture. They were striving for an increased activity in the field of natural science in Slovene language. Jožef Stefan's statement was of some significance: "I stand here before you with a basket full of German

16 Joka Žigon, *Veliko pismo slovenske duhovne združitve: Ustanovitev Slovenske matice* (Ljubljana, 1935), pp. 73–75.

17 ARS, AS 621 Slovenska matica, box 2.

18 ARS, AS 621 Slovenska matica, boxes 7–16.

19 J. G. Verdelski, "Potrebe Slovincov glede prirodnih ved", *Glasnik slovenski*, No. 2, 1858, pp. 52–56.

20 "Terms of European science that can be told in Slovene language and are already acclimatized and used by Slovenes should be kept." J. G. Verdelski, "Potrebe Slovincov glede prirodnih ved", *Glasnik slovenski*, 1858, No. 2, p. 52–56.

21 "Glasnik literarni: Odgovor sostavku "Potrebe Slovincov glede prirodnih ved"", *Glasnik slovenski*, 1858, No. 3, pp. 87–90.

22 J. G. Verdelski, "Potrebe Slovincov glede prirodnih ved", *Glasnik slovenski*, No. 2, 1858, pp. 52–56.

knowledge and only a handful of Slovene words. It would be easy to take from the basket, not so much to find in a curtailed fist. And they cannot be sent into the Slovene world naked. For Slovenes are modest, and language deficiencies are thorns in their sides. They are disgusted with all words that are not spoken by a Slovene farmer from morn till dawn."<sup>23</sup>

The natural science terminology obtained more defined and systematic contours with publishing of the first Slovene school books for secondary schools. At about the same time, there was an incentive for publishing Slovene scientific terminology in the publishing house *Slovenska matica* at the end of the 60s. Thus, scientific terminology became the primary item of German opposition to secondary schools utraquisation in Carniola, and to a lesser extent, in Styria and Carinthia.<sup>24</sup>

Formation of terminology triggered severe personal and ideal-conceptual conflicts. The first victim of those conflicts was Matej Cigale. In his letter to the committee in December 1869, he complained over a severe aggression of "Narodovci" (a circle around the newspaper *Slovenski narod*) making jokes at his expense.<sup>25</sup> Cigale understood criticism at his own expense as a personal attack and as being negative for Slovene language development. In his opinion, this kind of behaviour led to a ruin of Slovenehood. Fractions also started in *Slovenska matica* project of translating Schödl's *Buch der Natur* to Slovene. The key protagonists of language-terminology conflict were Ivan Tušek, Viljem Ogrinec, Janez Zajec, and Fran Erjavec. The first book that was published was Physics, translated by Tušek. Tušek demanded his work Physics to be a normative framework for Slovene natural scientific terminology. Tušek's demand and friendly correspondence assured committee's support. After evaluation of Astronomy, the committee requested Ogrinec to "change terminology in accordance to Physics." Ogrinec disagreed and was prepared to only "fine-tune his work grammatically." Ogrinec also rejected Tušek's reproach over too frequent use and citing of German literature, instead of his own articles published in the newspaper Novice. Ogrinec was especially dismayed by the reproach over the use of Germanisms. The committee empowered Tušek to rewrite Astronomy in an appropriate manner. Josip Pajek, who precisely analysed Tušek's Physics in *Slovenski narod*, was disturbed by this. Pajek published his analysis in an article where he determined inclusion of many

23 Jožef Stefan, "Naturopske poskušnje", *Glasnik slovenski*, No. 6, 1859, pp. 96-98. On the basis of Gutsman's dictionary vocabulary analysis Prunč warned that Slovene abstract vocabulary heavily depends on German. The most words taken possession of are those from the field of higher culture or dominating cultural educational practice; Erich Prunč: "Prispevek k poznavanju virov za Gutsmanov slovar", in *Obdobje razsvetljenstva v slovenskem jeziku, književnosti in kulturi* (Obdobja, 1980), pp. 209-211.

24 Compare to Željko Oset: "Vpliv modernizacije na oblikovanje slovenskega naravoslovno-tehničnega besedišča", in Žarko Lazarevič, Aleksander Lorenčič (eds.), *Podobe modernizacije* (Ljubljana, 2009), pp. 350-373.

25 "In Slovenski narod a real adder has bred that is poisoning the heart of Slovene nation. Is there not a single intelligent man in Styria anymore, who would see this kind of treatment as ruin of Slovenehood?!" ARS, AS 621 Slovenska matica, box 3.



Croatisms.<sup>26</sup> Pajek was disturbed by the committee's use of Physics as an example, due to which the characteristics and needs of Slovene language were forgotten and led to a narrow "Slovene orientation". Tušek refused Pajek's reproaches in his letter to the committee and determined the existence of national mavericks – "Zvekanovci" in Slovene nation.<sup>27</sup> Thus, the inability of protagonists to reach a compromise led to a disunited vocabulary, which was in Maksimiljan Pleteršnik's opinion less damaging than the compulsory language standardization, which would (has) discourage(d) many writers. For this reason, Pleteršnik later refused Cigalet's suggestion for language standardization. As a result of the discussion on scientific terms writing and scientific apparatus standards, the committee adopted a decision that the key criterion for acceptance is quality writing. The responsibility for writing and style lied with the writers. The committee assumed the responsibility for review implementation. This passage was also a victim to conflicts. Due to the conflicts the committee approved a principle according to which the authors would not be allowed an insight into critics' opinions.<sup>28</sup> It is necessary to emphasize that *Slovenska matica* gave fee for translation, which was intended for original authorial works.<sup>29</sup>

Publishing a scientific dictionary was a significant step towards standardization of natural scientific terminology. The idea for publishing first appeared in 1867. The society would publish a professional dictionary as planned. Due to the lack of interest and vast expenses, the idea was not realized. The interest to read scientific contents in Slovene is indicated in a survey on the subscription to a paper *Slovenska matica*. 73 *Slovenska matica* members showed interest in subscription.<sup>30</sup> 9 years later, the president of *Slovenska matica* Janez Bleiweis tabled a motion for the issue of "*Naučni slovník*", intended for a wider circle of subscribers. Dictionary would thus comprise words, "*which are today common in scientific, political, technical, commercial, and other domains, which cannot be transferred from other languages to Slovene language, and are also not used in the original form in other languages; and every person who is at least a little educated, notwithstanding the class they come from, must understand that a book or a paper is not incomprehensible.*"<sup>31</sup> The motion gained support despite the tense ideal-political conditions governing *Slovenska matica* committee.

26 ARS, AS 621 Slovenska matica, box 4.

27 ARS, AS 621 Slovenska matica, box 4.

28 ARS, AS 621 Slovenska matica, box 6.

29 ARS, AS 621 Slovenska matica, box 4-6.

30 ARS, AS 621 Slovenska matica, box 4.

31 ARS, AS 621 Slovenska matica, box 7. The number of members decreased from 1595 in year 1872 to 980 in year 1880. The most members withdrew from the society in the years between 1872-1874, due to political conflict between members of Staroslovenci ("Old Slovenes") and Mladoslavenci ("Young Slovenes"). Even after the settlement of disagreement, the number of members was dropping, especially because of debtors cancellation. The number of members started to increase after the death of Slovenska matica president Janez Bleiweis (1881). ARS, AS 621 Slovenska matica, box 7-9.

Matej Cigale was chosen scientific terminology editor.<sup>32</sup> The editor addressed the project in accordance with Bleiweis's guidelines. He used two scientific dictionaries, Czech and Croatian, as a basic template, considering hitherto generally accepted terminology. Cigale used Russian dictionaries and Miklošič's old Slovene dictionary, albeit to a lesser extent. Cigale labelled his work as "*searching for a middle ground between classicism and purism*". Composing technical terminology presented an especially pressing problem. He decided to make use of modern internationally accepted and established technical and scientific terms. In the foreword, he emphasized the necessity for "*forming homogeneous international terminology for strictly scientific matters and products of higher education*".<sup>33</sup> In a private letter to Janez Bleiweis, Cigale lamented that while composing the book, he realized "*how awkward, inflexible and modest our language is*." A monograph was an indicator of cultural development and showed, to paraphrase Verdelski from the beginning of 1860's, happier times for Slovenes. Publishing of the monograph resulted in popularization of science, especially among young people, for whom the book was intended. The book was well accepted, especially by students in Graz and Vienna. It, therefore, represented the first stage of Slovene terminology development; later it was developing simultaneously with science. With the dictionary *Znanstvena terminologija*, the connection to German cultural space in the field of terminology was finally reinstated; it lasted till the 1950s.<sup>34</sup> Successful realization indicates freedom, political, economic, and ideal, all the necessary conditions for science.<sup>35</sup>

Even after publishing of *Znanstvena terminologija*, problems with forming terms did not become any smaller. Fran Hauptmann complained over the troubles with forming terms understandable to scholars. He had the most problems with clear conceptual definition of terms, which is the reason for his being uninclined to violent Slovenisation of technical terms, the products of modern era.<sup>36</sup>

Ivan Šubic had a similar opinion of Slovenisation of terms; he claimed that technics "*is today a common property of all cultural languages on the Earth, it is vain and causes unnecessary pains for a writer and a reader; it is a waste which even greater nations do not afford*." Ivan Šubic is the author of the first technical monograph in Slovene, and thus a very important example of forming technical terminology. In the foreword to his work *Elektrika* (Electricity), he wrote that he

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32 Matej Cigale was an editor for Slovene part of Reicsgesetzblatt entitled Občni državni zakonik in vladni list Avstrijskega cesarstva in years 1849-1852. Janez Kranjc, "Prispevek Frana Miklošiča k oblikovanju slovenske pravne terminologije v prvem letniku dvojezičnega izhajanja državnega zakonika in vladnega lista avstrijskega cesarstva", in Jože Toporišič, Tine Logar and Franc Jakopin (eds.), *Miklošičev zbornik* (Ljubljana, 1992), pp. 117-122.

33 Matej Cigale, *Znanstvena terminologija s posebnim ozirom na srednja učilišča* (Ljubljana, 1880), pp. VI-VIII.

34 Milan Vidmar, *Spomini: I* (Maribor, 1964), pp. 192-194, pp. 238-239.

35 Josip Pajk, "Svobodne misli o našej izobrazbi", *Kres, Poučen in znanstven list*, No. 9, 1881, pp. 510-520.

36 Fran Hauptmann, "Neprodinost, v fiziki nepotreben izraz", *Kres, podučen in znanstven list*, No. 1, 1885, pp. 45-53.



used expressions with “cosmopolitan right”. In the foreword to the monograph, Šubic complained that “*he had to break a lot of new ground*”. Despite all his efforts, he was gladdened by the fact that natural science and technics were not so exposed to internal cultural struggle (“*occupation with electro-technical science is a real comfort and consolation*”)<sup>37</sup> and were also less involved in direct national struggle; as such, they maintained international cooperation in the era of national competition which escalated to “*Kampf des Geistes*” due to French-German rivalry.

Slovene technical terminology developed further. Ivan Šubic made an ambitious suggestion about publishing a Slovene technical dictionary in March 1904 in *Slovenska matica*. Šubic drew attention to the activities of the Prague society *Ilirija* and the societies of Slovene and Croatian technicians in Vienna, who collected useful technical terms. On his proposal, the committee of *Slovenska matica* established a steering subcommittee for publishing a Slovene technical dictionary. Despite good intentions, this project phase of collecting the terms was not carried out. Publishing a great technical dictionary was a huge financial undertaking; according to an engineer Gustinčič from the Association of Engineers in Ljubljana, there were between 100 and 200 potential subscribers.<sup>38</sup> The establishment of the University in Ljubljana represented a major turning point. Lecturers prepared lectures in Slovene language. The study program was based on German books, as none of the publishers dared to publish the scripts of Milan Vidmar. Professors were publishing their research mainly in a German professional periodical publication and at German publishers.<sup>39</sup>

The extension of the Engineering Faculty after the Second World War and the establishment of Terminological Commission of the Slovene Academy of Sciences & Arts was a turning point for technical and engineering terminology. With systematic work, the engineering section of the Commission published the first general technical dictionary in the years from 1962 to 1964.<sup>40</sup> The dictionary was published in collaboration between researchers and engineers in the work process.<sup>41</sup> This was the end of an era of testing and creation of a coherent scientific and technical terminology.<sup>42</sup>

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The process of acceptance of the evolution theory was something completely different. Firstly, it is worth stressing that Darwin's theory was not oriented

37 Ivan Šubic, *Elektrika, nje proizvodjanje in uporaba* (Ljubljana, 1897).

38 ARS, AS 621 Slovenska matica, Box 26.

39 Milan Vidmar, *Spomini: I.* (Maribor, 1964), pp. 238-239.

40 Archives of SAZU, 2 Presidency of SAZU, the Presidency Meetings 1953-1963, folder 9.

41 Archives of SAZU, 2 Presidency of SAZU, the Presidency Meetings 1953-1963, folder 1.

42 *General technical dictionary* (Ljubljana, 1962-1964).

anti-religiously. As Darwin pointed out in his letter to a Cambridge professor Adam Sedgwick, he only published the results of his work, in which he put all his best efforts. Completely different views on the evolution theory developed on the continent, notably in Germany. The main advocate of the theory Ernst Haeckel set the theory against religion. Therefore, Darwinism was a part of a cultural battle scheme. The Slovene area is a typical example of an area where the theory was not accepted because the mentality was saturated with Christian beliefs. Nevertheless, Slovene intellectuals were familiar with it since its coming out, or in particular since the German translation of *Origin of Species* in 1860, which proves that they were integrated into the European scientific transfer. This was mainly thanks to the students, as some of them (privately) accepted the evolution theory.<sup>43</sup> This raises a question of freedom as a necessary condition for scientific activity. The question of freedom was one of the criticisms as to why not establish University in Ljubljana. Despite everything, the evolution theory was enforced gradually, ultimately after the Second World War.<sup>44</sup> Hence, everything not based on this theory was rejected. Within this frame, we need to understand the newspaper controversy with German press, which was criticized by Slovene public for deteriorating Christian mentality and for being linked with Judaism and Freemasons.<sup>45</sup> The evolution theory was integrated into Slovene-German antagonism (the advancement as apotheosis of Germanhood, traditional regression as basic characteristic of Slovenehood). Journalists frequently criticized religion for inhibiting the progress. A similar criticism was addressed to national programs which exposed religion as one of the key components, therefore national programs were an obstacle to progress. In the constitutional period, these criticisms were often launched to Slovene national leaders by German politicians and publicists.<sup>46</sup> The state of mind at the beginning of the constitutional era can be illustrated by a rhetorical question put by a Slovene correspondent in Vienna: *"Can't we exist without that mighty education? Can't we just live without following the same educated ideas? /.../ empty and in vain, which is written in journalistic workshops, is sinful not only to nations, but even more against the most sacred, against religion."* The acceptance of the theory by a few professors and students at the Austrian universities has not gone unnoticed in the Slovene press. It was underlined in Slovene journals that German universities teach new knowledge, *"the wisdom that fills geography, nature science, history and religions of all scholarliness with its errors, and wants to discourage readers from religion, from God, peace and from salvation."*<sup>47</sup>

43 Željko Oset, "Recepcija evolucijske teorije in enciklike Quanta cura", *Prispevki za novejšo zgodovino*, No. 2, 2009, pp. 7-20.

44 Jovan Hadži, "Darwin in njegovo delo", in Charles Darwin, *O nastanku vrst* (Ljubljana, 1954), pp. 5-19.

45 *Zgodnja danica*, 17. 1. 1861, p. 15; *Zgodnja danica*, 11. 4. 1861, pp. 60-61.

46 "Živi, živi duh slovenski", *Slovenec*, 5. 2. 1867, No. 15, p. 64; Vasilij Melik, *Slovenci 1848-1918* (Maribor, 2002), pp. 188-189.

47 "Ein Schurke, der sein Vaterland nicht liebt", *Zgodnja danica*, 25. 11. 1858, p. 187; *Zgodnja danica*, 28. 3. 1861, p. 51.



Slovene newspapers insisted that Darwinism was accepted mainly by German students. A report from the banquet of a German politician and poet Arndt, which was organized in Prague by a German student association *Germanija*, is an example. It stated: "Some scientists teach that human is brother to a monkey [...]/ we heartless Slavs shall not accept this!"<sup>48</sup> Another example of this period which alarmed the Slovene public was the speech of Oskar Schmidt upon taking up the position of a chancellor at Karel-Franc University in Graz in October 1865. A correspondent from Graz wrote for *Slovenec* that "chancellor is one of those *Forschern* who only acknowledge Stoff as their God, each divinity is nonsense." The chancellor emphasized that religion cannot set bounds to "free knowledge". Knowledge is namely "absolutely" free and has nothing to do neither with religion nor with enactments or self-willed laws of church authority. The correspondent of *Slovenec* circulated a rumour in his report saying that the chancellor is a member of the Masonic lodge. He specifically emphasized the demonstration by theology students and the German students' (*Burschen*) vote of confidence. The said motion of confidence introduced to the chancellor was signed by 232 out of 620 students of the Graz University. The author pointed out that the letter was signed by only a few Slovene students.<sup>49</sup> The fear of Slovene students in Austrian schools of losing their Slovene (read Christian) spirit is clear from the aforementioned letter. This theme was present in Slovene journals till the First World War.<sup>50</sup> This fear was one of the reasons for establishing a Slovene university in Ljubljana. Josip Puntar wrote a few years before the First World War that the planned Slovene university would not be "a shelter and a fireside of freethinking propaganda". According to Puntar, "decisive factors" would oppose that kind of university. It is necessary to mention that Puntar did not exclude the possibility of accepting science based on non-Christianity. This might become a reality after the past "rather cultural crises".<sup>51</sup>

An unpublished detailed theological report entitled "Moses hexameron and Darwin's theory" is the most comprehensive review of the evolution theory and its critical analysis in Slovene language. An unknown writer domiciled at Šent Pavl in Savinjska dolina prepared it before 1889. In the report, he summed up a chronology of different views on the creation of man and discussions on this topic. All who have publicly questioned the biblical story of the creation of life

48 "Košek slepe culture", *Zgodnja danica*, 20. 3. 1862, p. 72.

49 "Chancellor's speech", "Živi, živi duh slovenski", *Slovenec*, 6. 12. 1865, No. 94, p. 378. Due to the views of laic faculties on theology, in the early 1860's Cardinal Rauscher was thinking of establishing a Catholic University. In *Zgodnja danica*, No. 8, 14. 4. 1859, p. 64; *Zgodnja danica*, 24. 11. 1859, No. 25, pp. 190-191; Compare to Hans Lentze, *Die Universitätsreform des Ministers Graf Leo Thun-Hohenstein* (Vienna, 1962), pp. 36-49.

50 Vasilij Melik - Peter Vodopivec, "Slovenski izobraženci in avstrijske visoke 1848-1918", *Zgodovinski časopis*, No. 3, 1986, pp. 275-281; Josip Puntar, "Na poti do vseučilišča: I.", *Dom in svet*, 1909, pp. 319-325.

51 Josip Puntar, "Na poti do vseučilišča: II.", *Dom in svet*, 1909, p. 355.

are briefly presented. In the text, the author referred to the Bible, to Lavoslav Gregorc (*Mala apologetika* or *Prijazni zagovori sv. katoliške vere*) and to J. M. S. (*Lesefrüchte, Christlichen Freunden der Natur gewidmet*), Martin Konrad (*Lehrbuch des katholischen Glaubens und Sittenlehre*), Leopold Libermann (*Institutiones theologicae*) and to the newspaper Rad of the Yugoslav Academy of Sciences (volume 30).<sup>52</sup> The point of the article is the rejection of Darwinism. The author uses a neotomistic view. Namely, he emphasizes that the adoption of the evolution theory would cause a demolition of the existing Christian civilization.

According to author, the first opponents of the biblical dogma of the creation of life were “pagan Gnostics and Manicheans” from the second and third century. The French Encyclopaedists were the next opponents, especially Voltaire and Rousseau. In fact, the Encyclopaedists “kept the creation from nothing secret”. They are accredited the key role in the development of materialism and pantheism. In the 19<sup>th</sup> century, the creation from nothing was opposed by “so called modern philosophers, great and small nature scientists - naturforschers and especially geologists.” The question of the beginning was a question of a biblical dogma of direct creation of man. A Calvinist Izak Peyere, a doctor from Bordeaux in the 17<sup>th</sup> century, was the first who publicly opposed this. The Encyclopaedists also expressed concerns about the creation of man. Among others, Voltaire opposed the dogma of a common origin of mankind from the relationship of Adam and Eve. Considering various identifiable characteristics, humanity must have come from a number of relationships. The author of study indicates that Voltaire was followed by nature scientists who formed a theory of the creation of man through the evolution from less developed living species. Darwin was stated as the main agent (“of this theory - not so much an inventor, but rather an interpreter”), and Ernst Haeckel as the main advocate. Hereby we have to stress that Darwin’s theory was opposed by renowned nature scientists like Aleksander Humboldt, Rudolf Virchow, H. Burmeister, Augustus Quenstedt and Charles Lyell. As a basic slogan, the author stated: “a human is nothing but an animal, though the most developed”. He criticized Darwin for not substantiating the theory by evidences, “which with their logical consistency would force us to confirm them”. Therefore, he described the theory as “fantasy at best”. The author pointed out some thoughts he found particularly controversial: beside their instincts, animals have got a mind (an example of ownership), the ability to speak, an aesthetic sense of beauty, and even some kind of a sense of religious devotion. The writer of the mentioned

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52 In Croatia, the public debate on Darwin’s doctrine was held since 1870 onwards. In this discussion participated Dr. A. Kržan, a Slovene from Bizeljsko. In years from 1874-1877 he published a series of articles in *Katolički list*. A key supporter of the evolution theory professor Spiro Brusina honored Kržan for his sober and learned approach. We should stress that Jovan Hadži (a Zoology professor after the establishment of University of Ljubljana) published several articles on the evolution theory in Croatian newspapers. ARS, AS 621 Slovenska matica, box 36; Miroslav Zei, “Darwinizem pri Slovencih”, in Marcel Prenant et al., *Knjiga o Darwinu* (Ljubljana, 1959), pp. 265-269.



detailed report was especially disturbed by the fact that Darwin mentioned that evolution of man happened naturally, in his fight for survival. Hereby he made a cynical remark: "*Then why didn't a human inherit all the characteristics that would facilitate his survival.*"<sup>53</sup>

The article discusses the relationship between Darwinism and Christianity. The author is convinced that the adoption of the evolution theory would put humanity back to savagery, consequently, the civilization achievements would be lost ("*this would be followed by a period of selfishness and profanity, moral delinquency and anarchy, cultural people would become savages and the world would withdraw into the darkness of the toughest moral night*"). The author describes Darwinism as "*atheism in the worst hopeless manner*", but he believes that its purpose is to prepare a man for religion, that "*God has nothing to do with or is not interested in human affairs.*" Therefore, the author believes that the evolution theory cannot be consistent with the Bible, especially not with the story from the first Book of Moses, nor with fundamental thoughts of revelation (with the fall from Eden or with the original sin and salvation of a man). He pointed out that Darwin mentions God, but not as a creator. This is characterized as a deliberate deception. He rejected the thought of freedom as a "*natural inevitability*". He mentioned the linguistic diversity, which casted first doubts on the veracity of the biblical story on the creation of a man. The author cautioned that contemporary comparative linguistics defines lesser language diversity. This should be a proof for greater affinity between language groups as it was the case hitherto.<sup>54</sup>

In the context of the acceptance of the evolution theory, Pajek's experiment in the 1880's on the compatibility of the evolution theory and the biblical story on creation is interesting. Pajek highlighted the significance of education and freedom for scientific activity.<sup>55</sup> The failure is a result of strengthening of differentiation of ideas and principles, which is why opponents were becoming more and more sensitive to changes. Pajek's attempt was not successful. Darwinism was still a theory based on non-Christian background. Nevertheless, some premises of the evolution theory were adopted, notably the contemplation on the survival of a stronger offspring.<sup>56</sup> Meanwhile, different standards were shaped in literature, which can be seen from a harsh response of the reviewers of Štrekelj's project of Slovene folk songs. Reviewers evaluated the syntagm "*poor animal*" as an example of Darwinism and materialism. In a letter of 2 June 1896 to the committee of *Slovenska matica*, Karel Štrekelj rejected the allegations as unfounded and emphasized that the critics were using "*Mahnič's methods*".<sup>57</sup> These tensions between the reviewers and Štrekelj represented the first in a series of misunderstandings which caused the ideological-

53 ARS, AS 621 Slovenska matica, box 36.

54 ARS, AS 621 Slovenska matica, box 36.

55 Janko Pajk, "Svobodne misli o našej izobrazbi", *Kres*, No. 9, 1881, pp. 512-516.

56 Gvidon Sajovic, "Predgovor" in Fran Erjavec, *V naravi: Izbrani naravoslovni spisi Frana Erjavca* (Ljubljana, 1909), p. 3.

57 ARS, AS 621 Slovenska matica, box 33.

conceptual tensions in *Slovenska matica*.<sup>58</sup> In the era of ideological-conceptual differentiation in the early 20<sup>th</sup> century, Darwinism gained a passionate advocate Gvidon Sajovic. He published a series of articles entitled “O človeškem pokolenju” (On Human Generation) in *Naši zapiski* (Our Notes) in the years from 1904 till 1905. Pavel Grošelj was another defender besides Sajovic in the early 20<sup>th</sup> century. He popularized the evolution theory and shared his cognitions at numerous public lectures.<sup>59</sup>

We should recognize that both the defenders and the opponents of the evolution theory were avoiding public controversy. However, the controversy developed in 1904 when Boris Zarnik published an article on Ernest Hückel in the newspaper *Slovenski narod* on the occasion of his 70<sup>th</sup> anniversary.<sup>60</sup>

Before parliamentary elections in 1907, a more substantial public controversy flared up. Liberals organized a lecture of professor Dr. Gorjanović Kramberger at the Ljubljana Union hall. The theme of lecture was “*Diluvial man and his relationship with a modern man*”. As the invitation promised an interesting lecture, they expected great participation.<sup>61</sup> Two days after the invitation had been published, the newspaper *Slovenec* reported on the discussions of Erich Wasmann (“*an educated and famous catholic nature scientist*”) and Ernst Hückel. In addition, *Slovenec* published a series of Wasmann’s extensive monograph summaries “*Die moderne Biologie und die Entwicklungstheorie*”. The newspaper *Slovenski narod* reacted with a series of criticisms on Wasmann’s monograph.<sup>62</sup>

*Slovenec* described the lecture organization as an inability of the liberal party to collect sufficient number of voters. Therefore, the liberal party election program was described with the following words: “*to recognize free-thinking false doctrines, lies and tricks.*” They also commented on the evolution theory that “*scholars gave Darwin’s theory ad acta*”. The liberals’ views were described as conservative, since the theory would take human mentality back to the age of the Krapina man. Eventually, a new species “*homo priigenius liberalis*” might develop, they added at the end of the article.<sup>63</sup>

Both newspapers, *Slovenec* and *Slovenski narod* published a lecture report. After the lecture, a newspaper controversy arose as to whether Kramberger marked morphological similarity with Krapina man as analogies or homologies.

58 Željko Oset, “Idejnopolični spori v Slovenski matici od konca 19. stoletja do prve svetovne vojne”, *Prispevki za novejšo zgodovino*, No. 1, 2009, pp. 93-108.

59 Miroslav Zei, “Darwinizem pri Slovencih”, in Marcel Prenant et al., *Knjiga o Darwinu* (Ljubljana, 1959), pp. 265-269.

60 Marko Aljančič, “Boris Zarnik v slovenskem kulturnem življenju”, in Ivanka Brglez, Velimir Vulikić, Zora Konjajev (eds.), *Zbornik skrajšanih referatov: II* (Ljubljana, 1985), pp. 45-46.

61 “Akademija”, *Slovenski narod*, No. 37, 14. 2. 1907, p. 2.

62 “Slovenec in Wasmann”, *Slovenski narod*, No. 39, 16. 2. 1907, p. 3. Author of the review was Boris Zarnik, a doctor of nature sciences who managed to habilitate at University in Würzburg at Zoology in 1910. Boris Zarnik, “Curriculum vitae”, in Ivanka Brglez, Velimir Vulikić, Zora Konjajev (eds.), *Zbornik skrajšanih referatov: II* (Ljubljana, 1985), pp. 35-38.

63 “Homo primigenius”, *Slovenec*, No. 40, 18. 2. 1907, p. 1.



*Slovenec* emphasized that the lecturer talked about analogies, while he abstained from defining of “*tendentiously fictional hypotheses*”. At the end of the report, *Slovenec* added views of eminent scientists who expressed methodical doubt on the evolution theory.<sup>64</sup> Despite this, the report of the lecture represents a substantial progress in the adoption of the evolution theory. Namely, *Slovenec* expressed its position on man and ape being the top of a food chain of two completely different developmental species, but they do meet in a hypothetical phylum.<sup>65</sup>

Pavel Grošelj, correspondent of *Slovenski narod*, wrote in the report that Kramberger in a private conversation expressed his view that man and human ape were two parallel lines from one common origin.<sup>66</sup> A correspondent of *Slovenec* found the use of a private conversation an abuse. He stressed that years ago Grošelj had publicly lectured the ape theory.<sup>67</sup>

In this period, the views on the evolution theory converged to a considerable extent. Celebrating the centenary of the birth of Charles Darwin, the editorial of *Slovenec* published Boris Zarnik's article entitled “Darwin and the World Opinion” accompanied with a longer explanation.<sup>68</sup> This gesture of the *Slovenec* editorial was unique as it gave an opportunity to the most articulated advocate of the evolution theory. At this point we should emphasize that since the cultural issues had been exposed, communication became more difficult. A symptomatic case was the organization of celebration of the 400th anniversary of Primož Trubar's birth, which jagged relations within *Slovenska matica*.<sup>69</sup>

Speaking of acceptance, we have to mention the attitude of Slovene opinion makers towards eugenics. The first records of this appeared in 1912, namely within the context of a nation hygiene. The Catholic Church was against the abortion and sterilization as those were the basic methods for achieving objectives of eugenics; consequently the church opposed the ideas of eugenics. The anthropological section of the Hygienic Institute in Ljubljana was responsible for spreading of eugenic ideas in the 1930's. Among them we have to mention dr. Božo Škerlj<sup>70</sup>, dr. Franc Derganc<sup>71</sup>, dr. Ivan Jureček and dr. Nik Župančič.<sup>72</sup>

64 To intellectual authority referred also Grošelj, who stated a part of Darwin's letter to Hückel from 1879: “Virchows conduct is shameful, and I hope he will someday feel ashamed.”; “Homo primigenius in homo sapiens recens”, *Slovenec*, No. 40, 18. 2. 1907, pp. 2, 4.

65 Ibid., pp. 2, 4.

66 “Diluvijalni človek in njegovo razmerje do modernega človeka: Nekoliko misli k predavanju prof. dr. Gorjanovič Krambergerja”, *Slovenski narod*, No. 43, 21. 2. 1907, p. 2.

67 “Iz Savla Pavel”, *Slovenski narod*, No. 44, 22. 2. 1907, p. 2.

68 Marko Aljančič, “Boris Zarnik v slovenskem kulturnem življenju”, in Ivanka Brglez, Velimir Vulikič, Zora Konjajev (eds.), *Zbornik skrajšanih: II* (Ljubljana, 1985), pp. 45-46.

69 Compare to Željko Oset, “Idejnopolitični spori v Slovenski matici od konca 19. stoletja do prve svetovne vojne”, *Prispevki za novejšo zgodovino*, No. 1, 2009, pp. 93-108.

70 Škerlj was carrying out “eugenic investigations” on “less talented” children and prostitutes. He was also the editor of “*Evgenika*”, the enclosure of “*Zdravniški vestnik*”, issuing from 1935 till 1938.

71 He was engaged in natural selection at Sokol's gymnasts. Franc Derganc, “Poglavje o telovadcih in duhotelovadcih”, *Sokolski glasnik*, 1920, pp. 159-165.

72 Andrej Studen, *Pijane zverine: O moralni in patološki zgodovini alkoholizma na Slovenskem v dobi meščanstva* (Celje, 2009), pp. 152-160.

As a private lecturer at the University in Ljubljana, Božo Škerlj wrote in the script that Yugoslavia was among a few countries where anthropology was not given a suitable space in higher education. Namely, anthropology was taught as optional and special subject at all three Yugoslav universities. In the aforementioned script, he caught the essence of the problem of the evolution theory adoption - unimaginable kinship of man and ape. The kinship can be proven only with precipitin reaction, which was successfully carried out already in 1900.<sup>73</sup>

The evolution theory was incorporated in other levels of formal education after the Second World War in a changed social-economic system.<sup>74</sup> As early as in 1929, the evolution theory was incorporated indirectly, when *Sokol* of the Kingdom of Yugoslavia took over physical education by the new school regulation.<sup>75</sup> All this triggered a lively debate and a more intense cultural struggle. At the end of 1929, Pope Pius XI released an encyclical "*Divini illius magistri*". With it, he wanted to stress the primary role of the church in youth education.<sup>76</sup> Following this guideline, we should mention the debates of the bishop from island Krk Jožef Srebrnič, who analysed Tyrš's spirit as basics of *Sokol* ideology for this purpose. He paid particular attention to the evolution theory (struggle for survival), ideas of French revolution, Greek ideals of harmony, commitment to terrestrial life and a relativity theory. Srebrnič estimated that philosophy of *Sokol* is in contrast to the Christian religion. He stressed that Tyrš's philosophy is being hidden from the members.<sup>77</sup> Srebrnič made a correct estimation, as in the gazettes of *Sokol*, the evolution theory was in the background compared to the professional matters (exercise methods).<sup>78</sup>

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73 Božo Škerlj, *Človek: Izbrana poglavja iz prirodoslovja človeka* (Ljubljana, 1934).

74 Jovan Hadži wrote in the accompanying study to the Slovene translation of *Origin of Species* that translation is necessary because of the knowledge of the turning point in the original. As he pointed out, the theory of evolution is available in Slovene, which is in logical connection to dialectical and historical materialism. The need for translation was greater because of the fact that materialism represented an assumption of Marxism. Jovan Hadži, "Darwin in njegovo delo", in Charles Darwin, *O nastanku vrst* (Ljubljana, 1954), p. 5, pp. 18-19.

75 Ervin Dolenc, *Kulturni boj: Slovenska kulturna politika v Kraljevini Jugoslaviji 1918-1929* (Ljubljana, 1996), pp. 273-277.

76 Tomaž Pavlin, *Razvoj sokolstva v Sloveniji med leti 1929-1941* (Ljubljana, 2000), pp. 152-153.

77 Jožef Srebrnič, *Tyršev duh* (Domžale, 1931); Compare to Josip Srebrnič, *Fiat Lux* (Zagreb, 1931).

78 Compare to Viktor Murnik, *Ob sedemdesetletnici Ljubljanskega Sokola* (Ljubljana, 1934). The answer to this is provided in the speech of the Sokol president dr. Vladimir Ravnihar at the general assembly of Sokol on November 20th 1925. He pointed out sociability and integration of Slovene enthusiasts as being the main purpose of Slovene associations since the beginning of the constitutional period. Vladimir Ravnihar, "Narodni dom", institution of arts and sciences", *Slovenec*, No. 266, 22. 11. 1925, p. 4.



## Conclusion

Since 1848 a gradual strengthening of scientific cognitions and neo-humanist ethos is noticeable in Slovene journalism. Successfulness and notably acceptance dynamics depended on the compatibility with Christian tradition. The key argument against the novelties or modernization is the thesis on denouncing the fundamental characteristics of Slovenehood (Christian religion). Accelerated modernization of Slovene mentality was influenced by a successful establishment of Slovene secondary schools, strengthening the scientific and class societies, and later by foundation of a university. The aforementioned institutional achievements resulted in a greatly enlarged circle of users. At the beginning of 1870s, there were only 73 potential Slovene scientific newspaper subscribers.

This paper presents the acceptance of modern scientific achievements in Slovene language after the March Revolution in 1848. The acceptance is presented by the problem of technical invention and evolution theory. The intellectuals from Slovene area were thus included in common, complex cultural exchanges. Problem with inventions was creating Slovene terminology. The natural science terminology obtained more defined and systematic contours when first Slovene learning books for Slovene secondary schools were published in the 1870's, 1880's and 1890's. An important step toward a comprehensive terminology was a dictionary "*Znanstvena terminologija*", which was published by *Slovenska matica* in 1880. Slovenes had to "wait" for 82 years to get the first general technical dictionary. The dictionary was published by collaboration of researchers and engineers. This was the end of an era of testing and creating of a coherent scientific and technical terminology. The process of acceptance of the evolution theory was something completely different. Slovene intellectuals were acquainted with the theory. Because of the strong opposition from the Church, broader acceptance was limited. We should emphasize that the evolution theory was an object of cultural and national struggle. Broader acceptance started in the 20<sup>th</sup> century with a series of public lectures. The evolution theory was incorporated in other levels of formal education after the Second World War in a changed social-economic system.