Translation from Croatian into English

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TRANSLATION FROM CROATIAN INTO ENGLISH

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ABSTRACT

This thesis deals with a translation of three texts from Croatian language into English. The first source text talks about art history and museology and it is taken from an exhibition catalogue written by a curator and the exhibition author from City Museum of Rijeka. The second text is focused on education, precisely, the impact of project-based teaching on the attitude change among students towards the teaching plan in biology. The third and the final text deals with shipbuilding and engineering and it is an excerpt from a textbook about the technology of the construction of ship hull. After every translation of the text there is a detailed analysis and a commentary introducing some difficulties and stumbling blocks that had arisen in the process of translation. The main part of the translation, workflow, is the Genre Analysis from which I used 11 points that I found most important – genre, source, audience, purpose of writing, authenticity, style, level of formality, layout, content, cohesion and the terminology of the subject. The final part of the thesis consists of a conclusion that summarizes fundamental characteristics and problems of the translation process and the knowledge that a translator has to have in order to face these challenges.

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1. INTRODUCTION

The process of translation consists of rendering a thought, feeling, command – in one word a message which was expressed in one language, into an equivalent message expressed in another language. Translation, as a form of communication, played a major role in the history of humankind and translators are the key figures who made this possible. The term 'equivalent' is, in my opinion, the most important term regarding the act of translation. The main problem of translation practice is finding equivalents in the target language. I believe that in order to achieve a successful translation, a translator should identify and solve common translation problems. These problems can range from pragmalinguistic ones (identification and interpretation of extralinguistic factors), culture-specific issues (diverse customs, norms and conventions) to linguistic problems (e.g. 'false-friends').

2. SOURCE TEXT I:

Pozdrav iz Rijeke

Namjera je izložbe i kataloga građom iz Zbirke razglednica Muzeja grada Rijeke predstaviti Zbirku i vizure Rijeke s kraja 19. i početka 20. stoljeća. U Zbirci su zastupljeni različiti motivi, ali će se na izložbi predstaviti razglednice motivom vezane uz geografsko područje Rijeke, vizure grada, ulica, trgova, grad promatran iz različitih kutova. Premda se izložbom prije svega nastojala predstaviti građa Zbirke, pokušalo se dočarati i riječki ambijent s kraja 19. i početka 20. stoljeća koji se iščitava iz prizora s razglednica. Ime *Fiume* uključuje niz asocijacija, vrijednosti i simbola povezanih u svojevrstan urbanističko-statusni pojam na čitavom području Austro-Ugarske Monarhije te kao takvo evocira minula vremena, donosi nostalgičan prizvuk Rijeke, zlatnog doba povijesti grada koje se dijelom poklapa sa zlatnim dobom razvoja razglednica. Izložba i katalog podijeljeni su na uvodni dio kojim se posjetitelje nastoji upoznati sa samom poviješću razglednice i njezinom poviješću u riječkom kontekstu te na niz cjelina koje se odnose na riječke dijelove grada, znamenite građevine, panorame, hotele i Gradski park.

Zbirka razglednica jedna je od zadnje osnovanih zbirki. Ima malo više od 1660 predmeta te su ovaj izložbeni projekt i katalog tek početak kojim će biti predstavljena. U skorašnje vrijeme nadamo se predstavljanju građe preko nekih drugih motivskih odrednica (političke razglednice, novije, nove i moderne razglednice, razglednice svjetovne tematike, razglednice kroz povijesno-umjetničke stilove, blagdanske razglednice). Kao sastavni dio urbanog života, razglednice su ujedno vrijedan slikovni izvor informacija pa se često koriste kao dokument nastanka, rasta, razvoja i preobrazbi dijelova grada – svjedoci neprestanih povijesnih mijena u izgledu Rijeke. Uz uvid u vizure grada, razglednice pokazuju komponentu svakidašnjeg života građana određenog vremena te su često i tekstovi s njihova reversa svojevrstan

dokument vremena i memorija kulturnog identiteta Rijeke. Posljednje tri godine sustavno sam inventirala građu, prijavljivala je na različite programe digitalizacije i digitalizirala Zbirku te su razglednice obrađene, opisane metapodacima u integriranom računalnom sustavu, bazi podataka M+ +. Digitalizacijom Zbirke ostvarena je preventivna zaštita građe. Vanjski korisnici Muzeja najviše proučavaju i potražuju upravo ovu zbirku pa su digitalni presnimci razglednica često ilustrativan materijal njihovih stručnih tekstova, izložaba ili turističkih publikacija.

Pojam Fiume krajem 19. i početkom 20. stoljeća

Fiume – ime grada, svojevrstan pojam, za mnoge veličanstvena riječ koja u djeliću sekunde evocira minula vremena, nostalgičan prizvuk Rijeke 19. i 20. stoljeća, zlatnog doba povijesti grada. S današnjeg stajališta teško je dokučiti što je taj pojam značio prosječnom stanovniku ili posjetitelju Rijeke krajem toga doba. Ovdje se misli na niz „neopipljivih" elemenata koji uključuju niz asocijacija, vrijednosti i simbola povezanih uz pojam grada općenito. Uz to se vezuju sve one značajke, elementi, atributi, prostorni, urbanistički, tehnološki, prirodni, povijesni i društveni koji utječu na opću percepciju nekoga grada kao kompleksne tvorevine društvenog života u nekom prostoru. Krajem 19. i početkom 20. stoljeća može se govoriti o neopipljivome markiranju grada kada je pojam *Fiume* značio svojevrstan urbanističko-statusni pojam na čitavom području Austro-Ugarske Monarhije. Upravo je pojam *Fiume,* skriven u imenu grada na talijanskom jeziku, a nerijetko se upotrebljava još i danas, nekad značio više od jedne riječi, predstavljao je europsku kulturu koja se neprekidno razvijala vezujući se na antičko nasljeđe, nastavljala u srednjem vijeku, u doba humanizma i renesanse, u baroku pa sve do modernog doba – industrijskog nasljeđa na kojem je izniknuo današnji grad – kontinuitet sklada i razvoja, uz diskontinuitet pojedinih faza burne povijesti. Najbrojnijim nacionalnim gradskim skupinama 19. i 20. stoljeća pojam *Fiume* izazivao je različite asocijacije. Mađarima je značio posebnost u kontekstu širenja imperija prema moru, što je

ujedno značilo i gospodarsko-prometni napredak na svjetskoj sceni, Talijanima baštinjenje antičke i talijanske kulture na ovim prostorima te njezino širenje u budućnosti, a Hrvatima pripadnost simbiozi mediteranske tradicije i europske kulture. Svima pak zajedno značio je industrijski, gospodarski, znanstveni, tehnološki razvitak i napredak. Danas se količina informacija sadržana u riječi *Fiume* može usporediti i opisati nizom sličica koje se u trenutku spomena tog imena nižu pred očima: luka, brodovi, jedrenjaci, parobrodi, transport, dizalice, brodogradilište, pomorstvo, povijesna pročelja, torpedo, tehnološki izumi, industrija, *Hartera, Šećerana, Rafinerija*, čokolada, multikulturalnost, jednakost, sloboda, napredak, karneval, Rječina, voda, nogomet, plavo-bijelo, znameniti Riječani, burna povijest, limes, terme, Trsat, glazba, *alterrock* scena, umjetnost, europski duh, prijestolnica. Koji su to pak pojmovi i slike bili nekad, odnosno koja je to količina informacija bila za prosječnog stanovnika zlatnog doba Rijeke ili njezina posjetitelja, može se tek nagađati proučavajući razglednice – njihovu sliku na aversu ili čitajući tekstove pošiljatelja na reversu.

U 18. stoljeću car Karlo VI. proglašava Rijeku slobodnom lukom, a ubrzo nakon toga Mađarska je, kao dio Habsburške Monarhije, počinje sagledavati u kontekstu izlaza na more, a time i u svijet, te se u 19. stoljeću Rijeka modernizira ponajviše rastom gospodarstva i novčanim priljevima. Niz povijesnih prevrata mijenja političko-povijesni položaj grada. Tako je na prijelazu iz 18. u 19. stoljeće Rijeka pod francuskom upravom, a nakon toga opet pod Austro-Ugarskom Monarhijom. Mađarizacija u Rijeci provodi se sustavno, mađarska vlada zadnjih desetljeća 19. stoljeća intenzivno ulaže u grad, a zbog idealnog geografskog položaja i dubine mora u Kvarnerskom zaljevu Rijeka se razvija u jednu od najvećih europskih luka i moćno industrijsko središte. Osim Mađara, u grad pristižu Talijani, Englezi, Nizozemci, Nijemci, Grci i dr. Doseljenici najčešće dolaze zbog posla, poslovnih prilika (intelektualni milje, gospodarstvenici, inženjeri, tehničari itd.), odnosno kao radna snaga (radnici, ugostitelji, činovnici, trgovci itd.), nerijetko i kao časnici, admirali ili vojnici te mornari koji s obitelji ostaju živjeti u Rijeci. U početku većina dolazi sama, poslije se doseljavaju i obitelji.

Razglednice i dopisnice bile su u ovome povijesnom razdoblju veoma važne jer se preko njih održavala komunikacija sa širom obitelji i prijateljima. Nosile su slikovno-tekstualnu poruku, ali su bile i poziv za „bolji život“, život u gradu koji nudi posao. Upravo se u tom aspektu uočava socijalno-gospodarska komponenta koja je pridonijela promociji pojma *Fiume* – poruka/sličica o vlastitom napretku u velikom, urbanom i modernom gradu. Identificirani su ključni čimbenici i artikulirani vizualni gradski akcenti koji se mogu pratiti i na ilustracijama razglednica. Često su to najreprezentativniji gradski trgovi, najprometnije ulice, Korzo, najznačajnije crkve, najveći i najposjećeniji hoteli, najspektakularnije panorame te željeznički kolodvor ili Riva kao mjesto odlaska i dolaska, odnosno prvo i zadnje što svi budući ili bivši posjetitelji vide kada se susreću ili opraštaju s gradom. Katkad su to prikazi tvorničkih postrojenja, torpeda, tvorničkih pročelja, koji trebaju istaknuti gospodarsko bogatstvo grada ili pojedinca te „prizvati“ novu radnu snagu. Razglednica kao jeftinija inačica fotografije bila je savršeno „oružje“ za lobiranje radne snage, omogućavajući *multitasking* komuniciranja, tj. komunikaciju „2 u 1“ i vizualni prikaz sredine u kojoj se boravilo, bila je i mamac za ostale, turistički proizvod koji je reklamirao grad. Razglednica je u najširoj populaciji zadovoljavala žudnju za slikom, vizualizacijom, te je to „hranjenje“ mase vješto iskorišteno u propagandne svrhe; fotografija je bila skupa i rijetka u novinama krajem 19. stoljeća, svoju masovnu popularizaciju doživljava tek u prvim desetljećima 20. stoljeća. U zlatnom dobu razglednice, koje se preklapa s vrhuncem emigracijskog vala preko Rijeke, razglednica često služi kao komunikacijsko sredstvo u prometnom aspektu tranzitne luke. Naime, budući da je Rijeka bila emigracijska luka srednje Europe prema Sjevernoj Americi, a putnike se prevozilo isključivo brodom, u lukama i na brodovima često su se mogle kupiti i slati razglednice luka iz kojih se isplovljavalo. Budući da je rekordna godina prijevoza putnika iz riječke luke 1906., ujedno i godina masovnog tiska i distribucije tada novih razglednica s tzv. kratkom adresom, može se pretpostaviti da je položaj Rijeke na prometnom koridoru pridonio masovnom širenju popularnosti pojma *Fiume* početkom 20. stoljeća. Važnost je razglednice u prošlosti u

reklamiranju grada općenito s današnjeg stajališta neupitna, a njezino prepoznavanje i valorizacija tekli su kontinuirano zahvaljujući entuzijastima, stručnjacima, kolekcionarima. Uz to što je važna u propagandi nekog mjesta, razglednica objedinjuje masovnu (tehničku) i osobnu komunikaciju te javnu i obiteljsku povijest.

Jadranski trg

Jadranski trg zauzima prostor na početku Korza koji je u svojoj urbanističkoj regulaciji osmislio arhitekt Anton Gnamb, ujedno pokretač ideje da se na tom mjestu sagradi Guvernerova palača s ukrasnim vrtovima u dvorištu. Ta je zgrada u javnosti poznata po tome što je u njoj Antun Mihanović za svoga boravka u Rijeci napisao riječi za himnu *Lijepa naša domovino*. Nakon rušenja palače uređena je 1874. Piazza Elisabetta, današnji Jadranski trg. Trg je tijekom 19. i 20. stoljeća mijenjao nazive ovisno o političkim prilikama, ali i sam izgled. Na razglednicama se može pratiti od 1896. do novijih vremena. Najveći broj razglednica je s početka 20. stoljeća, a to je vrijeme iznimnih hortikulturalnih rješenja na samom trgu i vrijeme prije izgradnje Riječkog nebodera i modernog kompleksa zgrada na početku Barčićeve ulice. Fijumani su voljeli ovaj trg ne samo zbog položaja na kojem su se sjekli pješački i prometni koridori; privrženost ovom trgu ostala je iz vremena dok se tu nalazila Guvernerova palača te su i nakon rušenja palače posebnu pažnju posvećivali uređenju parka na trgu. Tijekom godina trg je mijenjao hortikulturalni izgled, rasvjetu, fontane i ostale dekoracije, ali i nazive: Piazza Elisabetta, Piazza Regina Elena, Trg Palmira Togliattija, Jadranski trg, što se može pratiti i na razglednicama Zbirke.

2.1. TRANSLATION OF THE SOURCE TEXT I:

Greetings from Rijeka

The purpose of the exhibition and the catalogue is to present the Collection of Postcards and the panoramic views of Rijeka from the end of the 19th and the beginning of the 20th century by using the material from the Collection owned by the City Museum of Rijeka. Although the Collection consists of various motifs, the exhibition will introduce postcards with the motifs related to the geographical location of Rijeka, city views, streets, squares – the city observed from different angles. While the exhibition primarily aims to present the Collection material, it also tries to evoke Rijeka's ambiance at the end of the 19th and the beginning of the 20th century which can be read out from the motifs on the postcards. The name *Fiume* includes a number of associations, values and symbols intertwined into a distinctly urban and status concept throughout the Austro-Hungarian Monarchy and as such evokes past times and carries a nostalgic overtone of Rijeka in the golden age of city's history which partly overlaps with the golden age of the development of postcards. The exhibition and the catalogue are divided in the introductory part, which seeks to introduce visitors to the history of the postcard and its history in the context of Rijeka, and in a number of thematic sections which refer to the quarters of the city of Rijeka, notable buildings, panoramas, hotels and the City Park.

The Collection of Postcards is the most recently established collection. It has just over 1660 items and this exhibition project and catalogue are just the beginning of its presentation. We hope to soon present the Collection material with a focus on other thematic preferences (political postcards, recent, contemporary and modern postcards, postcards of secular themes, postcards through historical and artistic styles, holiday postcards). As an integral part of urban life, postcards are also a valuable pictorial source of information, so they are often utilised as

a record of establishment, growth, development and transformations of the city quarters. Postcards are witnesses of continuous historical changes in the appearance of Rijeka. With the insight into panoramas, postcards demonstrate a component of everyday life of citizens at a certain time and the texts on their reverse are often a unique testimony of the time and a memento of Rijeka's cultural identity. During the past three years, I have systematically inscribed the Collection material in an inventory, logged them in various digitisation programs and I digitalised the Collection. The postcards are processed and described by the metadata in the integrated computer system, M+ + database. Preventive protection of the Collection material was achieved by digitalising the Collection. External Museum users mostly study and seek precisely the Collection of Postcards, so digital copies of postcards are often used as illustrations in their professional texts, exhibitions and tourist publications.

The term *Fiume* at the end of the 19th and the beginning of the 20th centuries

Fiume – the name of the city, a unique term and for many people a magnificent word that can in a split second evoke past times. It carries a nostalgic overtone of Rijeka in the 19th and 20th centuries, the golden age of city's history. From today's point of view, it is difficult to fathom what this term meant to an average resident or visitor of Rijeka at the end of that age. This means a number of “intangible” elements that include a series of associations, values and symbols linked to the notion of the city in general. Related to the term *Fiume* are characteristics, elements and spatial, urbanistic, technological, natural, historical and social attributes which affect the general perception of a certain city as complex creations of social life in a certain area. The end of the 19th and the beginning of the 20th centuries when the term *Fiume* depicted a specific urban and status concept throughout the Austro-Hungarian Monarchy, point towards an impalpable outlining of the city. In the past, the very term *Fiume*, that finds roots in the Italian name of the city and often used even today, meant more than just a word. It represented European culture which was continuously developing,

connecting itself to the ancient heritage, it proceeded in the Middle Ages, the age of humanism and the Renaissance, the Baroque and all the way to Modern times – the industrial heritage from which the current city emerged. It is the continuity of harmony and development along the discontinuity of certain periods of tumultuous history. The term *Fiume* evoked various associations to the most numerous ethnic groups of Rijeka of the 19th and the 20th centuries. To Hungarians this term meant a unique opportunity in the context of expanding the empire to the sea which also meant economic and maritime development on the international scale. To Italians it meant inheriting ancient and Italian culture in this region and its future expansion, and to Croatians *Fiume* meant an affiliation to the fusion of Mediterranean tradition and European culture. To all of them it unanimously meant industrial, economic, scientific and technological growth and development. Nowadays, the amount of information contained in the word *Fiume* can be compared and described with a series of images, as a first association when we mention this name of the city: the port, ships, sailboats, steamboats, transport, wharf cranes, shipyard, maritime affairs, historical facades, torpedo, technological inventions, industry, *Hartera* factory, sugar refinery (*Šećerana*), oil refinery (*Rafinerija*), chocolate, multiculturalism, equality, freedom, development, carnival, the river Rječina, water, football, blue-and-white, famous people of Rijeka, tumultuous history, *limes*, *thermae*, Trsat, music, alt-rock scene, art, European spirit, capital. Which terms and images were topical then, or in other words, what amount of information was known to an average resident of the Golden Age of Rijeka or its visitor, can merely be guessed while studying the postcards – observing pictures on the obverse, or by reading senders' texts on the reverse.

In the 18th century, emperor Charles VI declared Rijeka a free port and soon after Hungary, as a part of the Habsburg Monarchy, started to perceive Rijeka as the access to the sea and thereby the access to the world. In the 19th century Rijeka was modernising mostly by economic growth and cash inflow. A number of historical upheavals changed the political and

historical position of the city. Thus, at the turn of the 18th and the 19th centuries Rijeka was under the French rule and afterwards again under the Austro-Hungarian Monarchy. Magyarisation has been gradually implemented in Rijeka. In the last decades of the 19th century, the Hungarian government invested intently in the city. Rijeka was developing into one of the biggest European ports and into a powerful industrial centre due to the ideal geographical location and the sea depth in the Kvarner Gulf. Apart from Hungarians – Italians, the British, the Dutch, Germans, Greeks and others arrived to the city. Immigrants usually arrived because of vacancies and business opportunities (intellectual milieu, businessmen, engineers, technicians, etc.), i.e. as a workforce (labourers, caterers, office workers, tradesmen, etc.), but often also as officers, admirals or soldiers and sailors who remained to reside in Rijeka with their families. In the beginning, the majority had come alone and later their families settled, too. In this historical period, postcards and postal cards were very significant because by sending them the communication with the extended family and friends was maintained. They carried a visual and textual message, but they were also an invitation to better life, a life in a job-offering city. It is precisely in this aspect that the social and economic component is perceived which contributed to the promotion of the term *Fiume* – a message/image about a self-improvement in a large, urban and modern city. Key factors are identified and visual focal points of the city are articulated, both of which can be traced in the postcard illustrations. These are often the most representative city squares, the busiest streets, Korzo, the most significant churches, the grandest and most visited hotels, the most spectacular panoramas, and the railway station or the Riva as places of departure and arrival, in other words, the first and the last thing all future or past visitors see when they encounter or leave this city. Sometimes postcards also depict factory facilities, torpedoes, factory facades which should highlight the economic richness of the city or an individual and lure new workforce. Postcards, as a cheaper version of photograph, were a perfect weapon for

promoting the workforce, enabling multitasking communication, i.e. communication 2 in 1 and visual perception of the sojourning area. As a tourist product that advertised the city, it was also a teaser for tourists. To the widest public, postcards satisfied the need for visual, the visualisation, and this "feeding" of the mass was skilfully utilised for promotion purposes; a photograph was expensive and rare in the newspapers at the end of the 19th century and experienced its massive popularisation only in the first decades of the 20th century. In the golden age of postcards which overlaps with the peak of the emigration wave through Rijeka, postcards often served as a means of communication in the transportation aspect of a transit port. Since Rijeka was the emigration port of Central Europe to North America and passengers were transported exclusively by sea, in ports and on ships there was often a possibility to buy and send postcards of ports from which the ship had sailed out. Since the record year of transportation of passengers from the port of Rijeka was 1906, also the year of the mass printing and distribution of that time new postcards with so-called short-address, it can be assumed that the location of Rijeka at the traffic corridor brought mass expansion of popularity to the term *Fiume* at the beginning of the 20th century. From today's point of view, postcards' importance in the past in the advertising of the city in general is unquestionable and its recognition and valorisation have progressed continuously on account of enthusiasts, experts and collectors. Apart from its importance in the promotion of a certain place, postcards combine mass (technical) and personal communication with public and family history.

The Adriatic Square

The Adriatic square, designed by the architect Anton Gnamb during his urban regulation, occupies the space at the beginning of Korzo. He was also the initiator of the idea to construct the Governor's Palace in this square with ornamental gardens in the courtyard. The building is known to the public for being the place where Antun Mihanović, during his stay in Rijeka,

had written the lyrics for the hymn *Lijepa naša domovino* (*Our Beautiful Homeland*). After the demolition of the Palace, in 1874 Piazza Elisabetta, the present Adriatic Square was regulated. During the 19th and 20th centuries the square changed names and even appearance depending on political circumstances. This can be observed on the postcards from 1896 to more recent times. The highest number of postcards is from the beginning of the 20th century – the time of the exceptional horticultural solutions on the Square and the time before the erection of the Rijeka Skyscraper and the modern building complex at the beginning of Barčić Street. Fiumans loved this Square not only because of the location where pedestrian and railway corridor were intersecting; the inclination towards this Square remained from the time of the Governor's Palace, so even after the demolition of the Palace, the Fiumans paid special attention to landscaping the park on the Square. Over the years the Square changed the horticultural appearance, lighting, fountains and other decorations, but also names: Piazza Elisabetta, Piazza Regina Elena, Palmiro Togliatti Square and The Adriatic Square, which can be traced on the postcards of the Collection.

2.2. COMMENTARY AND ANALYSIS

TEXT I: *Pozdrav iz Rijeke*

1. genre: art exhibition catalogue

2. source: excerpts from the book entitled *Pozdrav iz Rijeke/Un saluto da Fiume* (Marija Lazanja Dušević, Rijeka, Muzej grada Rijeke i Zajednica Talijana Rijeka, 2018)

3. audience: general, exhibition visitors

4. purpose of writing: to present the Collection of postcards held by the City Museum of Rijeka and to introduce postcards with the motifs related to the geographical location of Rijeka, its city views, streets and squares from the end of the 19th and the beginning of the 20th centuries

5. authenticity: original text

6. style: informative

7. level of formality: semi-formal

8. layout: The text is split into 5 paragraphs. Title and subtitles are written in bold so as to maintain the comprehensibility of the text.

9. content: The first two paragraphs serve as an introductory part where the author informs the readers about the Collection of postcards and proceeds to presents various motifs that can be seen on the postcards. The third and fourth paragraphs discuss the term *Fiume* at the end of the 19th and the beginning of the 20th centuries and what it meant to an average resident or visitor of Rijeka at the end of that age. The last paragraph gives a short history of the regulation of the Adriatic Square in Rijeka.

10. cohesion: Lexical cohesion is created by the repetition of the key words such as *collection, postcards, Rijeka, Fiume, the 19th and the 20th centuries, city views, city, Korzo, the Adriatic Sqaure.*

11. terminology of the subject: most of the terms are understandable to general public

The source text is full of Croatian expressions, syntactic traps and cultural concepts, so during the course of translation several issues had to be resolved. For example, *„...odnose se na riječke dijelove grada..."* literally translates to *"...refer to the parts of the city of Rijeka..."*. However, the meaning of *parts* is far too general, so instead it is better to use the word *quarters* to clarify that the author means specifically the neighbourhoods that divide the city of Rijeka. Furthermore, the sentence *„U skorašnje vrijeme nadamo se predstavljanju građe preko nekih drugih motivskih odrednica..."* has a typical Croatian phrase that starts with a word *preko* and this cannot be translated as *through* or *across* because the meaning is metaphorical and it would be clumsy to use this word. Instead, the translation of this sentence should be *"We soon hope to present the Collection material with a focus on other thematic preferences..."*, so we camouflaged the word *preko* with the use of the phrase *with a focus on.* One more example of metaphorical usage of the Croatian word *preko* is seen in the sentence: *„Razglednice i dopisnice bile su u ovome povijesnom razdoblju veoma važne jer se preko njih održavala komunikacija sa širom obitelji i prijateljima."*. We can understand this sentence as postcards being a means of maintaining communication, so the translation is: *"In this historical period, postcards and postal cards were very significant because by sending them the communication with the extended family and friends was maintained."*.

Another issue that arose while translating this text was finding the suitable equivalent for the phrase *„...novije, nove i moderne razglednice..."*. *"Newer, new and modern postcards"*

would not suffice because it would not make sense, so to avoid confusion, "sense-for-sense" translation should be used. I opted for translating this phrase as *"...recent, contemporary and modern postcards..."* Moreover, I came across the issue of these two phrases: *dokument vremena* and *memorija kulturnog identiteta*. The first phrase has nothing to do with an actual document, but rather a proof or evidence of something, in this case of time, so I translated it as *testimony of the time*. The second phrase does not consist of a literal *memory of cultural identity*, which can be regarded as a "false friend" of the Croatian word *memorija*. The author is talking about the postcards, so they are objects that are kept as a reminder or a souvenir, therefore, a better translation would be a *memento of cultural identity*.

Furthermore, the sentence *„Mađarima je značio posebnost u kontekstu širenja imperija prema moru"*... contains the word *posebnost.* If we translated it as "distinctiveness", it would not render the exact sense of the sentence in Croatian. I looked at the context and decided to translate it as *unique opportunity* since to Hungarians Rijeka really was an opportunity to expand their empire to the sea. In addition, in the fragment of the sentence *„...a Hrvatima pripadnost simbiozi mediteranske tradicije i europske kulture."* I noticed the word *simbioza* which can be literally translated as *symbiosis*, but it reminded me too much of biological connotation, so I opted for this solution: *"...and to Croatians Fiume meant an affiliation to the fusion of Mediterranean tradition and European culture."* Another example of a sentence where we cannot translate it literally is *„Danas se količina informacija sadržana u riječi Fiume može usporediti i opisati nizom sličica koje se u trenutku spomena tog imena nižu pred očima..."*. The last part of this sentence is a typical Croatian phrase that would lose meaning if we translated it literally. My translation of this sentence is the following: *"Nowadays, the amount of information contained in the word Fiume can be compared and described with a series of images, as a first association when we mention this name of the city..."*.

In this source text there are a lot of compound words with hyphens that do not exist in English, so the hyphens should be omitted and instead conjunction “and” should be used (e.g. „urbanističko-statusni pojam” — *urban and status notion*). Lastly, there are a lot of examples of sentences where the word „razglednica” is used in a singular form, for example: *„Uz to što je važna u propagandi nekog mjesta, razglednica objedinjuje masovnu (tehničku) i osobnu komunikaciju te javnu i obiteljsku povijest.”*. This is a Croatian construction and needs to be avoided in English by using plural form: *“Apart from its importance in the promotion of a certain place, postcards combine mass (technical) and personal communication with public and family history.”*.

3. SOURCE TEXT II:

Utjecaj projektne nastave na promjenu stava kod učenika prema nastavnim sadržajima iz biologije

Zugaj Brankica

UVOD

Projektno učenje zahtijevao je već Johann Heinrich Pestalozzi (1746.-1827.), tako da cjelovito učenje nije otkriće 3. tisućljeća. Prije svega Amerikanci John Dewey (1859.-1952.), profesor filozofije i pedagogije te njegov učenik W.H. Kilpatrick (1871.-1936), zastupali su mišljenje da se djelotvorno učenje najbolje ostvaruje stvarnim djelovanjem i istraživanjem.

60-tih i 70-tih godina prošlog stoljeća došlo je do općeg pokretanja najrazličitijih snaga ljudi koji vode obrazovnu politiku i planiranje, socijalnih pedagoga, alternativnih mislilaca, školskih pedagoga i psihologa, koji su težili inovaciji obrazovnog sustava. Kod svih se u ovom ili onom obliku pojavila misao o projektnoj nastavi. Ona je davala nadu da će se krutost u institucijama i strogo određeni nastavni sadržaji uspjeti omekšati i pomoći proboju cjelovitog obrazovanja osobnosti u školskom sustavu. Od projektne se nastave očekivalo ponovno ujedinjenje psihičkog i fizičkog rada, nadilaženje otuđenja djelatnošću, te ulazak svakodnevnog života u obrazovnu situaciju.

U toj ranoj fazi projektna nastava nije bila uvijek i svugdje rado viđena. Postojali su nastavnici i institucije koje su izričito odbijale jer je bila pod sumnjom da proizvodi iritacije i nevolje te da odvlači od „ stvarnog učenja“ odnosno štrebanja i učenja napamet.

Tek 1976. godine je u Saveznoj Republici Njemačkoj projektna nastava prvi put ozakonjena nastavnim planom kao treći stup uz nastavu obveznih i izbornih predmeta (u jednoj

hamburškoj osnovnoj školi) i to tako da je sedmina ukupne nastavne satnice bila predviđena za provedbu projektne nastave (oko 6 tjedana).

Novi učenik trebao je biti kreativan, komunikativan, sposoban za timski rad, okretan i kritičan, a prije svega sposoban za samostalan i odgovoran rad. Dotadašnja nastava, koja je u pravilu poticala razvoj kognitivnih sposobnosti i koja je služila čistom gomilanju znanja, te osim toga razvijala podanički mentalitet i pasivno ponašanje, za to više nije bila prikladna.

Odgovarajućom organizacijom nastave, posebnim metodama učenja i rada kao što su projektna nastava treba poboljšati sposobnosti učenika za zajednički rad, komunikaciju, rješavanje problema i sukoba.

Specifični ciljevi projektne nastave su da učenici sami odlučuju ili suodlučuju o nastavnim sadržajima, oblicima rada i organizacije i o vrednovanju zajedničkog rada. Ukoliko je potrebno može doći do odstupanja od planirane organizacije nastave po predmetima u svrhu interdisciplinarnog rada.

Evaluacijska istraživanja prema američkim autorima (Johnson Johnson 1985., Slavina 1987.) pokazuju da su suradničke metode učenja uspješnije od tradicionalnih, a donose i poboljšanje socijalnih komponenti jače samopouzdanje, bolji odnosi među djecom, lakše prihvaćanje djece različitih nacionalnosti ili djece s poteškoćama u razvoju.

Koncept metodike učenja proizlazi iz temeljitih razmišljanja o projektnoj nastavi. Projektna nastava je nastala da bi se proširile i poboljšale pedagoške radne mogućnosti. Pružat će rasterećenje i kooperativne pedagoške radne situacije. Dat će odgovor na probleme u učenju u našem školstvu koji rastu, biti izvrsna mogućnost za ciljano poticanje pojedinih učenika. Šansa za većom samostalnošću i neovisnošću nastave koju vodi nastavnik. Fleksibilniji i otvoreniji vremenski koncept prema satu koji traje 45-minuta, te mogućnost za nastavu izvan učionice i njoj prilagođene oblike učenja.

Istraživanja i radovi o tome koliko se projektna nastava primjenjuje u nastavnoj praksi u Hrvatskoj, te kakvi su njeni učinci ne postoje. No na izobrazbu nastavnika za projektno učenje nije se dovoljno rano mislilo, tako da mnogi nastavnici osjećaju preopterećenje. Neki nastavnici još uvijek s rezervom gledaju na tu metodu učenja, i smatraju kako učenici na taj način ne stječu dovoljno znanja. Tako je i danas na seminarima za usavršavanje nastavnika projektna nastava vrlo tražena tema. Istraživanjem treba pridonijeti boljem sagledavanju mogućnosti primjene projektne nastave u nastavi biologije.

Važno obilježje projektne nastave je orijentacija prema interesima sudionika. Prepustiti samim učenicima izbor teme projekta značilo bi potpuno ih prepustiti njihovom društveno uvjetovanom obzoru, a to nije baš obrazovni zadatak. Jednako tako ne bi bilo pedagoški nametnuti im određenu temu. Učenici pod pritiskom ne bi zainteresirano i motivirano radili i ne bi se trudili postići valjane rezultate. Iz iskustva je poznato da učenike nije teško zainteresirati za neku aktualnu temu, uz uvjet da nastavnik svoje oduševljenje područjem koje treba istražiti uspije prenijeti i na učenike. U svakom je slučaju važno na demokratski način izabrati temu. Vrlo je značajna samostalna organizacija i vlastita odgovornost.

Empirijsko istraživanje u gimnaziji

Kao osnovni problem istraživanja postavljeno je pitanje utječe li metoda projektne nastave kod svih učenika na stavove. Na osnovu toga cilj istraživanja je ispitivanje učinkovitosti projektne nastave u nastavi biologije s obzirom na stavove među učenicima i u odnosu na tradicionalnu nastavu.

Hipoteze:

- veće zadovoljstvo kod učenika budi interes za rad što u konačnici utječe na stavove učenika

- dobrom organizacijom projektne nastave stav učenika i odnos prema radu mogu se mijenjati

- najveći pomak očekujemo kod prosječnih i slabijih učenika koji imaju niže sposobnosti i lošije radne navike

- učinkovitost projektne nastave u razvijanju pozitivnih stavova bit će podjednaka kod obaju spolova

MATERIJALI I METODE

Istraživanje je empirijsko jer se metodološki zasniva na provedbi pedagoškog eksperimenta i prikupljanju podataka iz neposrednog odgojno obrazovnog rada. Možemo ga svrstati i u razvojno istraživanje jer se bavi konkretnim problemom razvijanja stava kod učenika u nastavi biologije primjenom različitih modela nastave. Obzirom na sudjelovanje autora u pripremi i realizaciji istraživanja može se nazvati i akcijskim istraživanjem (Mužić, 1999.).

Istraživanje je provedeno na malom hotimičnom uzorku učenika 2. razreda opće i prirodoslovno- matematičke gimnazije u Velikoj Gorici. Uzorak učenika u kontrolnoj i eksperimentalnoj skupini usklađen je izjednačavanjem u parovima po nezavisnim varijablama (dob, spol, predznanje, osim eksperimentalne) kako bi pouzdanije mogao kontrolirati utjecaj eksperimentalnih faktora na zavisne varijable koje pratimo. Ukupno je istraživanjem obuhvaćeno 108 učenika drugih razreda od čega je 59 učenika u eksperimentalnoj skupini i 49 učenika u kontrolnoj skupini.

Faze istraživanja:

Faza: priprema istraživanja i formiranje uzorka

- anketno istraživanje (anketiranje učenika o njihovim stavovima i očekivanjima od projektne nastave prije i poslije samog rada, poslije se ne provodi u kontrolnoj skupini)

Faza: eksperiment s usporednim skupinama

- izrada projekta na temu „Raznolikost kritosjemenjača“ u botaničkom vrtu u Zagrebu (u eksperimentalnoj skupini) i tradicionalna nastava (u kontrolnoj skupini)
- analiza prikupljenih podataka (statistička obrada podataka, kvalitativna, kvantitativna)

Istraživanje je započelo nakon izrade svih instrumenata. Krajem ožujaka provedena je 1. faza istraživanja. 2. faza istraživanja ili eksperimentalni rad za skupinu učenika drugih razreda provedena je u svibnju, odlaskom u Botanički vrt u Zagrebu, u isto vrijeme i sa kontrolnom skupinom ali u obliku tradicionalne nastave u učionici. Nakon toga je slijedilo finalno ispitivanje i analiza stavova kod učenika. Kao zavisne varijable definiran je uspjeh, razumijevanje i zadovoljstvo učenika, a kao nezavisne ili djelujuće varijable dob, spol, prethodni uspjeh učenika (u predmetu) i predznanje, a eksperimentalna varijabla je nastavni postupak (F1-projektna nastava i F2-tradicionalna nastava).

Instrumenti:

- anketa prije provedbe (ocjena nastavnih metoda, zadovoljstvo učenika pojedinom metodom rada i ukupno)
- anketa poslije provedbe eksperimenta.

Sve instrumente bilo je potrebno izraditi za ovo istraživanje.

RASPRAVA

Iz rezultata istraživanja o stavovima učenika nakon eksperimentalnog rada, uočeno je povećano zadovoljstvo. Učenici koji imaju pozitivniji stav prema botanici pokazuju u prosjeku i bolje znanje iz ovog područja.

Pozitivne povezanosti srednje veličine utvrđene su između prve i druge mjere stava prema botanici. Značajne pozitivne, ali niske povezanosti zabilježene su između sljedećih varijabli: prosječne ocjene iz biologije i stavova prema botanici. Zabilježena je i značajna pozitivna povezanost između učinka u testu znanja i stava prema botanici. Učenici koji imaju pozitivniji stav prema botanici pokazuju u prosjeku i bolje znanje iz ovog područja. Zanimljivo je da opći školski uspjeh nije povezan sa stavom prema botanici. To znači da prosječno bolji učenici ne pokazuju tendenciju pozitivnijeg stava prema usvajanju ovih specifičnih školskih sadržaja i obrnuto, učenici slabijeg školskog uspjeha ne pokazuju negativniji stav prema učenju botanike u odnosu na one boljeg uspjeha.

Prednost projekta je i kontinuitet učenja između različitih nastavnih predmeta. Učenici se osjećaju korisni zbog uključenosti u nastavni proces kao i zbog uvažavanja njihovih ideja i stavova. Omogućena je i suradnja između škole i roditelja. Učenici će spoznati koliko sposobnosti i vještina posjeduju te kako ih korisno mogu usmjeriti. Danas poslodavci očekuju stručnjake koji samostalno rade, koriste različite metode i postupke za ostvarivanje ciljeva.

3.1. TRANSLATION OF THE SOURCE TEXT II:

The impact of project-based teaching on the attitude change among students towards the teaching plan in biology

Zugaj Brankica

INTRODUCTION

Project-based learning was already insisted on by Johann Heinrich Pestalozzi (1746 – 1827), therefore integral learning is not a discovery of the 3rd millennium. To begin with, Americans John Dewey (1859 – 1952), a professor of philosophy and pedagogy, and his student W. H. Kilpatrick (1871 – 1936) held the view that the effective learning is best achieved through practice and research.

In the 60s and 70s of the last century, there was a general mobilisation of the most diverse forces of people who lead educational policy and planning – social pedagogues, alternative thinkers, school pedagogues and psychologists, seeking to innovate the educational system. Common to all of them was a thought of some form of project-based teaching. It gave hope that inflexibility in the institutions and strictly defined teaching plan would attenuate and contribute to the breakthrough in the integral personality education in the school system. Project-based teaching was expected to reunite mental and physical work, surpass the alienation of the activity and to include every-day life in the educational situation.

In this early stage, project-based teaching was not unanimously and consistently welcome. Some teachers and institutions explicitly refused its implementation, citing suspicions that it causes irritation and distress and that it is distracting from ‘real studying’, i.e., studying mechanically and by rote memorisation.

It was not until 1976 that the project-based teaching was legalised in the Federal Republic of Germany for the first time in the curriculum as the third keystone along the teaching of required and elective subjects (in one elementary school in Hamburg) in the way that one-seventh of the full-time schedule was dedicated to the implementation of the project-based teaching (about 6 weeks).

The new type of students should have been creative, communicative, capable of the teamwork, dexterous and critical, but above all, capable of independent and responsible work. Earlier teaching process, which typically encouraged the development of cognitive abilities, served as a pure accumulation of knowledge and besides that developed submissive mentality and passive behaviour, was no longer suitable.

Students' abilities for teamwork, communication and resolving problems and conflicts should improve with the appropriate organisation of teaching and specific methods of learning and work such as project-based teaching.

Specific goals of project-based teaching are that students decide or take part in decisions on their own about teaching plan, forms of work and organisation and about the evaluation of teamwork. Should it be necessary, there may be deviations from the planned organisation of subject teaching for interdisciplinary work.

Evaluation researches by American authors (Johnson Johnson 1985, Slavina 1987) show that collaborative learning methods are more successful than traditional ones and they also bring about improvement in the social components: greater self-confidence, better relationships between children, easier acceptance of children of different nationalities or children with developmental difficulties.

The concept of learning methodology derives from thorough reflections on project-based teaching. This type of teaching has emerged to expand and improve pedagogical

work opportunities. It provides relief and cooperative pedagogic working environment. It responds to growing learning problems in our education and it is an excellent opportunity for targeted encouragement of particular students and a chance for greater individual independence and self-reliance of teaching conducted by teachers. Project-based teaching has a more flexible and open-ended 45-minute time concept, the possibility for outdoor teaching, and its customised learning forms.

Researches and papers on how much project-based teaching is applied in teaching practice in Croatia and what are its effects do not exist. However, the training of teachers for project-based learning has not been thought about early enough, so many teachers feel overloaded. Some teachers are still taking this learning method with a grain of salt and consider that students do not gain enough knowledge in this way. Thus, even nowadays on the seminars for teacher training, project-based teaching is a highly sought after topic. Research should contribute to a better understanding of the possibility of applying project-based teaching in biology classes.

An important feature of project-based teaching is the orientation towards the participants' interests. To let the students choose the topic of the project on their own would mean to completely leave them to their socially conditioned horizon, which is not really an educational task. Likewise, it would not be pedagogical to impose on them a particular topic. Under pressure, students would not be interested and motivated to work and would not try to achieve valid results. It is known from the experience that it is not difficult to make students interested in some current topic, provided the teachers succeed to pass onto students their enthusiasm for the area which needs to be explored. In any case, it is important to choose the topic democratically. Independent organization and self-responsibility are very significant.

Empirical research in a grammar school

The question of whether the method of project-based teaching affects the attitudes of all students was addressed as the fundamental problem of research. Based on this, the goal of the research is to examine the efficiency of project-based teaching in biology classes in terms of attitudes among students and in relation to traditional teaching.

Hypotheses:

- greater satisfaction among students awakens an interest in class participation which ultimately affects students' attitudes

- with effective organisation of project-based teaching, students' attitude and relation to class participation may change

- we expect the greatest progress among average and low-achieving students with lower abilities and worse work habits

- the efficiency of the project-based teaching in developing positive attitudes will be the same among both sexes

MATERIALS AND METHODS

The research is empirical because it is methodologically based on the implementation of a pedagogical experiment and collecting data from immediate educational work. We can also categorise it as the development research because it deals with the specific problem of developing attitudes among students in biology classes using different models of teaching. Due to the participation of the author in the preparation and realisation of the research, it can also be called action research (Mužić, 1999).

The research was conducted on a small intentional group of the 2nd grade students of general and science and mathematics program grammar school in Velika Gorica. A group of students in control and in experimental group is coordinated by abolishing distinctions among pairs by independent variables (age, sex, foreknowledge, except the experimental group) to make it more reliable to control the influence of experimental factors on the dependent variables we follow. A total of 108 2nd grade students were involved in the research, of whom 59 were in the experimental group and 49 in the control group.

Phases of research:

Phase: Preparation of research and group formation

- Survey research (taking a survey among students about their attitudes and expectations from the project-based teaching before and after the work itself and in control group only before the work)

Phase: Experiment with comparative groups

- designing a project on "Variety of Flowering Plants" in the Botanical garden in Zagreb (in the experimental group) and traditional teaching (in the control group)

- analysis of the collected data (statistical data analysis, qualitative, quantitative)

The research started after all the instruments had been made. By the end of March, the 1st phase of research was conducted. The 2nd phase of research or the experimental work for the 2nd grade students' group was conducted in May by visiting the Botanical garden in Zagreb while the control group conducted the research in the form of traditional teaching in the classroom. After that followed the final examination and analysis of attitudes among the students. Success, understanding and satisfaction of students were defined as dependent

variables. Age, sex, previous achievement of students (in the subject) and foreknowledge were defined as independent or affective variables and the experimental variable was a teaching process (P1-project-based teaching and P2-traditional teaching).

Research instruments:

- a survey before the implementation (assessment of teaching methods, student satisfaction with each work method and overall teaching)
- survey after the experiment implementation.

All these instruments needed to be made for the research.

DISCUSSION

Increased satisfaction was implied by the results of the research on students' attitudes after the experimental work. Students who have a more positive attitude towards botany show on average a better knowledge from this field.

Medium-sized positive correlations were identified between the first and the second measure of attitude towards botany. Highly positive, but low correlations were recorded between the following variables: average biology grades and attitudes towards botany. There was also a highly positive correlation between the effect of the exams and attitude towards botany. Students who show a more positive attitude towards botany on average show a better knowledge from this field. It is interesting that general educational achievement is not related to the attitude towards botany. This means that average better students do not show a tendency for a more positive attitude towards adopting these specific school contents and vice versa, students with lower educational achievement do not show a more negative attitude toward botany learning than those with higher achievement.

Studying continuity between different subjects is also the project's advantage. Students feel useful because of their involvement in the teaching process as well as taking into consideration their ideas and attitudes. Collaboration between the school and parents is also made possible. Students realise how much competence and skill they have and how to usefully steer them in the right direction. Nowadays, employers expect experts who work independently, use different methods and techniques to achieve goals.

3.2. COMMENTARY AND ANALYSIS

TEXT II: ***Utjecaj projektne nastave na promjenu stava kod učenika prema nastavnim sadržajima iz biologije***

1. genre: authentic scientific research paper

2. source: article from portal of scientific journals of Croatia „Hrčak“, 2014

3. audience: students of pedagogy, biology teachers, audience interested in the field of education and its research

4. purpose of writing: to provide the reader with scientific findings in research on the impact of project-based teaching on the attitude change among students towards the teaching plan in biology

5. authenticity: research paper written by the author in Croatian language

6. style: scientific, informative

7. level of formality: formal

8. layout: The text is split into 3 major parts — an introduction, materials and methods and discussion. The sources are quoted in brackets.

9. content: The introductory part of the text gives information about the history of project-based teaching and the goals of its implementation in teaching practice in Croatia. After that follows an empirical research in a grammar school in Velika Gorica and hypotheses are laid down. The second part of the text mentions materials and methods that are used in the

research with noted phases of the experiment. The last part of the text is a discussion in which the author presents the results of the research.

10. cohesion: Cohesion is created by the repetition of the key words such as *project-based teaching, education, school, students, teachers, research, biology, attitudes*.

11. terminology of the subject: Specialist terms in the text are related to pedagogy and sociology.

The source text contains a few Croatian sentence patterns that cannot be translated literally. For example: *„U toj ranoj fazi projektna nastava nije bila uvijek i svugdje rado viđena."* I think the phrase *rado viđena* would best be translated as *welcome*, and the suitable translation of the whole sentence would be: *"In this early stage, project-based teaching was not unanimously and consistently welcome."* Furthermore, the text mentions the Croatian word *štrebanje* which is a part of informal language and since it does not have a one-word equivalent in English, I decided to translate it as *studying mechanically.* Additionally, the sentence: *„Neki nastavnici još uvijek s rezervom gledaju na tu metodu učenja..."* contains a phrase *s rezervom* which if we translated it as *with reserve* it would not mean anything in English. I tried to find an English idiom that would best suit this phrase. I opted for this solution: *"Some teachers are still taking this learning method with a grain of salt..."*

Moreover, the author mentions *podanički mentalitet* which can literally be related to vassals in Medieval Europe, but in this sense I understood it as being obedient or passive, so I translated it as *submissive mentality*.

Also a few changes in tenses needed to be made. When translating the sentence: *„Projektna nastava je nastala da bi se proširile i poboljšale pedagoške radne mogućnosti."* I used Present Perfect to express a state that happened in the recent past, but is still true or important now (*"Project-based teaching has emerged to expand and improve pedagogical work opportunities."*). What follows after in the source text is a sentence in future tense: *„Pružat će rasterećenje i kooperativne pedagoške radne situacije."* The future tense in English would not be suitable, so I used Present Simple: *"It provides relief and cooperative pedagogic working situations."*

The last issue I wanted to point out is in the sentence: *„Iz iskustva je poznato da učenike nije teško zainteresirati za neku aktualnu temu, uz uvjet da nastavnik svoje oduševljenje područjem koje treba istražiti uspije prenijeti i na učenike."* The word *svoje* (which refers to the word *nastavnik — teacher)* can be translated as *his* or *her*, but since we do not know the teacher's gender, in other words, teacher is mentioned as a notion, rather than a certain person, so to maintain the gender-neutral sentence, I decided to use the word *teacher* in plural form and translate *svoje* as *their* (*"It is known from the experience that it is not difficult to make students interested in some current topic, provided the teachers succeed to pass onto students their enthusiasm for the area which needs to be explored."*).

4. SOURCE TEXT III:

Tehnologija gradnje brodskog trupa

1. UVOD

Brod je plovno sredstvo, osposobljeno da, i svojom veličinom, i oblikom, i uređajima, sigurno plovi u željenom smjeru radi prijevoza ljudi i dobara, ili u neke druge svrhe.

Uzevši u obzir složenost strukture broda i njegova izloženost velikim opterećenjima, raznovrsnost materijala i opreme ugrađene u brod, može se zaključiti da se gradnja broda sastoji od niza aktivnosti, od izrade projekta do primopredaje broda i superkolaudacijskih radova. Skup svih tih aktivnosti zove se tehnološki proces gradnje broda.

Dakle, pod tehnološkim procesom gradnje broda razumijevamo dio proizvodnog procesa koji se odnosi na promjene dimenzija, oblika i svojstava materijala od kojeg se prave pojedini dijelovi trupa, strojeva, uređaja i opreme, koji se utvrđenim redoslijedom spoje u cjeline određene veličine, čije pak međusobno spajanje daje brod.

Glavni tehnološki problemi pri gradnji broda rješavaju se mnogo prije nego što počne obrada materijala. Osnovna tehnološka koncepcija gradnje broda rješava se već u fazi projekta, a ovisi o trupu broda, dimenzijama, konstrukciji, tehničkim i tehnološkim mogućnostima brodogradilišta.

1.1. RAZVOJ GRADNJE BRODA

Povijest gradnje broda počinje takoreći s poviješću ljudskog roda. U počecima su se gradile primitivne splavi, zatim čamci od izdubljenog drveta, pa brodovi od primitivno tesanih greda i dasaka, međusobno vezanih konopom ili spojenih drvenim, a kasnije metalnim čavlima. S razvojem društva usavršavao se i način gradnje broda. Grčki historičar Herodot piše da su

Egipćani, Babilonci i Feničani imali mnogo trgovačkih i ratnih brodova. Neka najnovija istraživanja pokazuju da su Egipćani u XX. stoljeću prije nove ere imali 400 brodova. U novije vrijeme nađena su u dolini Nila dva potpuno očuvana broda, dugačka 20 m, za koje se tvrdi da su stari više od 5000 godina.

Brodovi su se gradili prema iskustvima stečenima na prije izgrađenim brodovima i prema spretnosti brodograditelja. Nisu postojali nacrti ni proračuni. Za gradnju se upotrebljavao materijal koji je bio najdostupniji i najlakše se nabavlja, pa su se sirovine mogle lako i jeftino transportirati (na ušćima rijeka).

Već u srednjem vijeku Venecijanci su gradili brodove onako kako se i danas grade drveni brodovi. Dubrovčani su gradili brodove po uzoru na Venecijance, u vlastitim brodogradilištima ili na Korčuli. Na sjeveru Europe prevladavao je vikinški način gradnje brodova. (Brodovi su bili od hrastovine, bez palube, preklopne građe i s poprečnim rebrima.) Iskustva konstruiranja brodova prenosila su se s oca na sina. Tek potkraj XVII. stoljeća u Francuskoj se osnivaju prve brodograđevne škole, te se problem konstruiranja i gradnje broda počinje obrađivati na naučnoj osnovi.

Usvajanjem proizvodnje čeličnih limova i profila odgovarajućih mehaničkih svojstava bio je riješen problem izgradnje velikih brodova, jer je drvena konstrukcija, zbog nedovoljne čvrstoće i relativno velike težine, ograničavala veličinu brodova. Godine 1852. Englezi grade veliki putnički parobrod „Great Eastern“, čija je dužina bila 207 m, istisnina 27000 t, a snaga parnog stroja 5900 Kw. S usavršavanjem parne turbine brzina broda se znatno povećavala, što se odrazilo i na formu i način konstrukcije trupa broda.

Primjena čelika bila je prva velika revolucija u tehnologiji gradnje broda. Za tu preorijentaciju bila su potrebna velika materijalna sredstva. U to vrijeme naša brodogradilišta na Jadranu zaostaju jer nemaju za sobom razvijenu industriju čelika.

Gradnja čeličnih brodova zahtijevala je i razvijenu tehnologiju obrade čelika i odgovarajuću organizaciju proizvodnje. Za velike brodove trebalo je izgraditi velike radionice i navoze, a obale za opremanje morale su biti duboke i opskrbljene teškim dizalicama veće nosivosti.

1.2. ORGANIZACIJA I PROCES GRADNJE BRODA

Osnovno načelo organizacije brodogradilišta jest jeftina izgradnja brodskog trupa, povoljna nabava opreme i minimalni troškovi ugradnje opreme u trup. Pri tome se sve aktivnosti moraju odvijati u točno određenim rokovima, a najvažnije je da se svaki dio ili sklop nađe u pravo vrijeme na određenom mjestu, u skladu s tehnološkim procesom ugradnje. Tehnološki proces propisuje radni postupak za izradu pojedinih elemenata i sklopova, odnosno za njihovu ugradnju u brodski trup. Brodski trup je tehnološki zaokružena cjelina, a izrađuje se u nizu radionica raspoređenih tako da se proizvodnja odvija neprekinuto. Pri tome materijal, elementi, sekcije i dijelovi opreme moraju kroz proizvodni proces proći najkraćim putem i bez ukrštavanja transportnih putova.

Proces gradnje broda dijeli se na:

- pripremne radove
- obradu elemenata trupa i opreme broda
- predmontažu trupa i opreme broda
- sastavljanje trupa (montažu) na navozu ili doku
- porinuće broda
- opremanje broda u opremnom bazenu
- primopredajna ispitivanja i primopredaju

2. MATERIJAL ZA GRADNJU BRODSKOG TRUPA

Za gradnju i opremanje broda upotrebljava se mnogo širi asortiman najrazličitijeg materijala nego za bilo koji drugi proizvod. Osnovni su materijali čelik, aluminij, drvo i plastične mase.

2.1. ČELIK

Čelik je legura željeza s ugljikom i velikim brojem drugih elemenata. Brodski trup je izrađen od limova i profila. Materijal za izradu trupa mora biti dovoljno čvrst, žilav, zatim da se da lako oblikovati u hladnom i toplom stanju, da ima veliku udarnu žilavost i da se dobro električki zavaruje bez posebne termičke pripreme.

Svojstva materijala moraju odgovarati propisima klasifikacijskih društava. Tim je propisima jednoznačno određen način ispitivanja prilikom preuzimanja čelika u željezari, odnosno valjaonici. Ispituju se čvrstoća, rastezljivost i kemijski sastav mikrostrukture. Čelik ispituju i preuzimaju predstavnici klasifikacijskog društva, koji nakon ispitivanja izdaju posebnu svjedodžbi (atest) o kvaliteti materijala i svaki pojedini komad označe žigom društva.

Brodograđevni čelik se u trup broda ugrađuje u obliku limova ili različitih profila. Čelik dobiven u peći valja se, dok je užaren, na ravnim (limovi) ili kalibriranim valjcima (profili).

2.2 ALUMINIJSKE LEGURE

Valjani aluminij upotrebljava se u brodogradnji za manje opterećene dijelove broda. Međutim, mnogo se više u brodogradnji upotrebljavaju aluminijske legure, kojih ima različitih sastava. Najčešće se u brodogradnji upotrebljavaju legure sa 93% aluminija i 3-5% magnezija (a ostalo su primjese silicija, mangana, kroma, titana, cinka, željeza i bakra). Prednost je tih legura:

- mala gustoća u usporedbi s čelikom

- otpornost na utjecaj morske vode
- lako se obrađuje
- nisu magnetične.

Zbog tih svojstava upotrebljavaju se za izradu nadgrađa broda te raznih dijelova opreme, kao što su stubišta, ograde, brodski prozori, nestrukturni tankovi, ventilacijski vodovi, namještaj.

2.3. DRVO

Upotreba drva za gradnju brodova vrlo je stara. Do druge polovice XIX. stoljeća drvo je bilo jedini materijal za gradnju, a tada ga je počeo istiskivati čelik. Međutim, ni danas drvo nije posve istisnuto kao materijal za gradnju. Na čeličnim brodovima drvo služi za oblaganje paluba, za unutarnje pregrade nastambi, namještaj i sl., a od drva se još grade čamci, jahte, ribarski brodovi, neki ratni brodovi (minolovci, minopolagači) itd. Kao materijal za gradnju drvo ima i prednosti i nedostataka prema drugim vrstama materijala.

Prednosti su drva:

- mala gustoća
- lako se obrađuje i jednostavnim alatom
- velika otpornost prema korozivnom djelovanju pojedinih kemijskih sastojaka atmosfere
- odličan je toplinski izolator
- drvene palube nisu klizave kao čelične.

Nedostaci su drva:

- relativno mala čvrstoća, zbog slabe čvrstoće spojeva
- -čvrstoća je različita u uzdužnom i poprečnom smjeru
- ograničena trajnost u moru

- napadaju ga različiti insekti i gljivice
- lako je zapaljiv
- higroskopan je, pa se naizmjenično skuplja i bubri.

2.4. PLASTIČNE MASE

Zbog niza dobrih svojstava plastične mase se sve više primjenjuju u brodogradnji, uz već klasične vrste brodograđevnog materijala, čelik i drvo.

Osim za izradu brodskog trupa, plastične mase sve se češće upotrebljavaju i za izradu dijelova brodske opreme. Poliester se kao građevinski materijal u brodogradnji počeo upotrebljavati zbog nekih njegovih boljih kvaliteta u odnosu prema drvu i aluminiju, i to: manje težine, velike otpornosti prema biološkim utjecajima, mogućnost izrade vrlo kompliciranih forma, određene otpornosti na vatru i laganog održavanja i popravaka.

2.5. CEMENT

Plutajući objekti koji nisu izloženi velikim opterećenjima na valovima, odnosno oni koji ne plove otvorenim morima, mogu se izraditi i od cementa i željeza (ferocement). U tu vrstu plutajućih objekata možemo ubrojiti brodove-radionice, brodove-skladišta i plutajuće dokove. Prednosti su takve konstrukcije niža cijena, niži troškovi održavanja i duži vijek trajanja, a nedostaci su veća težina i neelastičnost konstrukcije.

4.1. TRANSLATION OF THE SOURCE TEXT III:

Technology of ship hull construction

1. INTRODUCTION

A vessel is a floating device which, with its size, shape, and equipment, is capable of sailing safely in a desired direction in order to transport people and goods or for some other purposes.

Taking into account the complexity of vessel structure, its exposure to heavy loads and the variety of materials and equipment built into the vessel, it can be concluded that the shipbuilding consists of a series of activities, ranging from carrying out a project to the delivery of a vessel and final pre-acceptance testing. The totality of all these activities is called the technological process of shipbuilding.

Thus, by the technological process of shipbuilding, we grasp a part of the manufacturing process relating to the changes in dimensions, shapes and properties of the materials from which some parts of the hull, machines, devices and equipment are made. These are combined into units of certain sizes, the fusion of which makes a vessel.

The main technological problems in shipbuilding are resolved long before the material processing starts. The basic technological concept of shipbuilding is already being defined in the project phase, depending on the vessel hull, dimensions, construction and technical and technological possibilities of the shipyard.

1.1. DEVELOPMENT OF SHIPBUILDING

The history of shipbuilding begins, so to say, with the history of the human race. In the beginnings, primitive rafts were built, then boats of hollowed-out wood and vessels built of primitively trimmed timbers and planks, interconnected with ropes or held together by

wooden and later metal nails. With the development of civilisation, the method of shipbuilding also improved. Greek historian Herodotus wrote that the Egyptians, Babylonians and Phoenicians had many merchant ships and warships. Some most recent researches show that the Egyptians had 400 vessels in the 20th century B.C. More recently, in the Nile Valley, two fully preserved 20 m long ships were found which are claimed to be more than 5000 years old.

Vessels were built according to the experience gained on previously built vessels and according to shipbuilders' skill. There were no drafts or calculations. The most accessible and the easiest to obtain material was used for the construction, so raw materials could be easily and cheaply transported (in the estuaries).

Already in the Middle Ages, the Venetians built vessels in a way wooden ships are built today. The people of Dubrovnik built vessels modelled on the Venetian example, in Dubrovnik shipyards or in Korčula. In Northern Europe, Viking shipbuilding method prevailed. (The vessels were made of oak, with no decks, clinker-built and with transverse ribs.) The knowledge of shipbuilding was passed down from father to son. Only at the end of the 17th century in France, first shipbuilding schools had been established, and the problem of constructing and building ships began to be resolved on a scientific level.

Because of the wooden structure and due to insufficient strength and relatively heavy weight limited the size of the ships, by adopting the production of steel sheets and profiles of the corresponding mechanical properties, the problem of the construction of large ships was solved. In 1852, the British made a large "Great Eastern" passenger steamship, the length of which was 207 m, displacement of 27,000 t and the power of the steam engine of 5900 kW. With the improvement of the steam turbine, the speed of the ship increased considerably effecting on the form and manner of the construction of the ship hull.

The application of steel was the first major revolution in shipbuilding technology. For this improvement, large material resources were needed. At that time shipyards in the Adriatic were falling behind because they did not have a developed steel industry.

The construction of steel ships also required a developed steel processing technology and an appropriate production organization. Large workshops and slipways had to be built for large ships and the coasts for fitting out had to be deep and equipped with heavy and higher carrying capacity cranes.

1.2. ORGANIZATION AND PROCESS OF SHIPBUILDING

The basic principle of shipyard organization is the inexpensive construction of a ship hull, a favourable procurement of equipment, and minimal costs of installing equipment in the hull. Thereby, all these activities must be carried out within determined deadlines and, most importantly, each part or assembly happens at the right time at a specific place, in accordance with the technological installation process. The technological process prescribes a working procedure for the production of individual elements and assemblies, i.e. for their installation in the ship hull. The hull is a technologically integral unit, and it is made in a series of workshops arranged so that the production takes place uninterruptedly. Thereby, the material, elements, sections and parts of the equipment must pass through the production process in the shortest way and without crossing the transport routes.

The shipbuilding process is divided into:

- preparatory works
- processing of the hull elements and equipment of the ship
- prefabrication of the hull and equipment of the ship
- assembling the hull (mounting) on the slipway or dock
- ship launch

- equipment of the ship in the construction basin
- acceptance tests and delivery

2. MATERIALS USED IN SHIP HULL CONSTRUCTION

For the construction and equipment of a ship a much wider range of materials are used than for any other product. The basic materials used are steel, aluminium, wood and plastics.

2.1. STEEL

Steel is an alloy of iron and carbon, and a large number of other elements. Ship hull is made of sheets and profiles. The material for building a hull must be sufficiently solid and tough, easily shaped in a cold and warm state, it must have high impact resistency and it must be electrically well-welded without special thermal preparation.

Material properties must comply with the regulations of the classification societies. By these regulations, the testing method during collecting steel in ironworks, i.e. rolling mills, is clearly determined. The solidity, elasticity and the chemical composition of the microstructure are tested. Steel is tested and taken over by representatives of the classification society, which, after the testing, issue a special certificate (attest) on the quality of the material and mark each piece with Society's seal.

Shipbuilding steel is embedded in the hull of a ship in the form of sheets or different profiles. The steel obtained in the furnace is rolled, while it is incandescent, on flat (sheets) or calibrated rollers (profiles).

2.2. ALUMINIUM ALLOYS

Rolled aluminium is used in shipbuilding for less loaded parts of the ship. However, aluminium alloys are much more used in shipbuilding and they are of different compositions. The most commonly used in the shipbuilding are alloys with 93% of aluminium and 3-5% of magnesium (and the rest are admixtures of silicium, manganese, chromium, titanium, zinc, iron and copper). The advantages of these alloys are:

- small density compared to steel
- resistance to the impact of seawater
- easy to handle
- they are not magnetic.

Due to these properties, they are used for building a ship's superstructure and various parts of equipment, such as staircases, fences, ship windows, non-structural tanks, ventilation ducts, and furniture.

2.3. WOOD

Using wood in shipbuilding is a very old practice. By the second half of the 19th century, wood was the only building material and then it began to be displaced by steel. However, even nowadays wood is not completely supplanted as a building material. On steel boats, wood is used for deck sheathing, internal partitions, furniture, etc. Boats, yachts, fishing boats, some warships (minesweepers, minelayers), etc. are still made of wood. As a building material, wood also has both advantages and disadvantages compared to other types of materials.

The advantages of wood are:

- small density
- easy to handle using simple tools
- great resistance to the corrosive action of certain chemical constituents of the atmosphere
- great thermal insulator
- wooden decks are not as slippery as ones made from steel.

The drawbacks of wood are:

- relatively small solidity due to the poor sturdiness of the compounds
- the solidity is different in the longitudinal and transverse direction
- limited duration in the sea
- attacked by various insects and fungi
- highly flammable
- it is hygroscopic, so it alternately shrinks and swells.

2.4. PLASTICS

Due to numerous benefactory qualities, plastics are increasingly applied in ship construction along with steel and wood which are standard types of shipbuilding materials.

Except in the hull construction, plastics are also increasingly used for the production of parts of ship equipment. Polyester, as a construction material in shipbuilding, started to be used due to some of its advantages compared to wood and aluminium and these are: less weight, high resistance to biological influences, the possibility of making very complicated forms, sufficient fire resistance and easy maintenance and repairs.

2.5. CEMENT

Floating vessels that are not exposed to heavy loads on waves, i.e. those which do not sail open seas, can also be made of cement and iron (ferrocement). This type of floating vessels includes work ships, ship-warehouses and floating docks. The advantages of such construction are a lower price, lower maintenance costs and longer lifespan, while the disadvantages are a greater weight and the limited elasticity of the construction.

4.2. COMMENTARY AND ANALYSIS

TEXT III: ***Tehnologija gradnje brodskog trupa***

1. genre: scientific, informative

2. source: chapters from the textbook entitled "Tehnologija gradnje brodskog trupa" (Zvonko Furlan – Nedjeljko Lučin – Ante Pavelić, Zagreb, Školska knjiga, 1986)

3. audience: students and professors of Mechanical Engineering and Naval Architecture

4. purpose of writing: Since the text is taken from a high school textbook, its main purpose is to give information about the technology of the construction of ship hull to the students of Mechanical Engineering and Naval Architecture

5. authenticity: with all of the relevant sources cited, the text can be considered authentic

6. style: informative, clear

7. level of formality: formal

8. layout: The text is split into two chapters and nine paragraphs in total. The chapter titles are written in bold.

9. content: The first chapter begins with an introduction containing general information about vessels and shipbuilding. It proceeds to describe the development of the shipbuilding and its organisation and process. The second chapter consists of naming basic materials for the construction of ship hull and providing the reader with advantages and drawbacks of using these materials.

10. cohesion: Cohesion is created by the repetition of the key words such as *shipbuilding, vessel, ship, construction, hull, sheets, profiles, steel, aluminium, wood, plastics*.

11. terminology of the subject: Specialist terms used in this text refer to shipbuilding and engineering, e.g. *hull*, *clinker-built*, *steel profiles*, *displacement*, *slipways*, *prefabrication*, *rolling mills*, etc.

Before I started to translate this text, I had to determine the usage of English terms *vessel, ship* and *boat*. In the source text, Croatian term *brod* is frequently used and when it is mentioned in the general sense I decided to translate it as a *vessel* (*plovilo*). *Boat* is the smallest *vessel* and a *vessel* that is large enough to carry a *boat* is a *ship*.

There were a lot of misleading words that would not sound right if translated literally. To illustrate this point, the sentence *„Iskustva konstruiranja brodova prenosila su se s oca na sina."* consists of a word *iskustvo* and it would be weird to say that the experience was passed down, so I translated it as *knowledge* which better suits the rest of the sentence. Moreover, the literal translation of the sentence *„Za tu preorijentaciju bila su potrebna velika materijalna sredstva."* would be the following: *"For this reorientation, large material resources were needed."*. However, the word *reorientation* does not fit well with the rest of the sentence. Taking into consideration the context, we see that this "reorientation" is the application of steel in shipbuilding technology and since this was very beneficial, I opted for translating it as *improvement*. Additionally, one sentence contains the phrase *određena otpornost na vatru*. In this example, the word *određena* is not used in a sense of 'certain', but in a sense of being 'adequate', so I translated it as *sufficient fire resistance*. One more similar example is the phrase *neelastičnost konstrukcije*. This is not in a sense that the construction is not at all elastic, but in a sense that it is not elastic enough or is elastic to a certain extent. This is why I opted for translating it as *limited elasticity of the construction*.

The text is also comprised of typical Croatian constructions that needed to be rearranged during translation process to fit in with English sentence structures. For example: *„Zbog niza dobrih svojstava plastične mase se sve više primjenjuju u brodogradnji, uz već klasične vrste brodograđevnog materijala, čelik i drvo."* needs an inversion to sound better — *"Due to numerous benefactory qualities, plastics are increasingly applied in ship construction along with steel and wood which are already classic types of shipbuilding materials."*. Interesting example is also in this sentence: *„Upotreba drva za gradnju brodova vrlo je stara."*. Here we need to add words to adjust this sentence to English language, so I translated it as *"Using wood in shipbuilding is a very old practice."*.

Furthermore, I would like to point out the issue of when to use *ship's hull* with an apostrophe "'s" as in a possessive noun and when to use just *ship hull*. In majority of the text this collocation is used as a general term, so I translated it as *ship hull*. When the text mentions a hull of a certain ship then the possessive noun *ship's hull* is used.

Finally, the text is abundant with vocabulary from the field of naval architecture and engineering, so close attention needed to be paid when translating this terminology. Some examples of these words are: *superkolaudacijski radovi* (*final pre-acceptance testing*), *preklopne građe* (*clinker-built*), *istisnina* (*displacement*), *navozi* (*slipways*), *porinuće broda* (*ship launch*), *opremni bazen* (*construction basin*), *ljevaonice* (*rolling mills*), *kalibrirani valjci* (*calibrated rollers*), *oblaganje palube* (*deck sheathing*), *minolovci i minopolagači* (*minesweepers and minelayers*), etc.

5. CONCLUSION

Being a translator is not an easy task. Translating can be very time-consuming if we want to produce a valuable and accurate translation. To be a competent translator one must possess vast knowledge of both the source and target languages. Translator should not simply translate word-for-word, but rather render the sense of a text in a given language. In order to successfully translate meaning from one language to another, one must be aware of the similarities and differences between cultures. Special attention should be paid to topics that can be felt as sensitive, such as human and civil rights, sexual orientation, gender, etc. Translation requires a lot of effort, research and practice, but also patience and dedication.

What I personally love the most about translating is the fact that it is never the same, repetitive job. There are an infinite number of topics which can be translated and by doing so, one learns something new while reading and researching a specific matter.

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