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Pilepić, Laura

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Laura Pilepić

TRANSLATION OF TEXTS FROM CROATIAN INTO ENGLISH

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ABSTRACT

This B.A. thesis will tackle the issues which arise from translating texts from Croatian into English. The goal is to translate three academic texts as accurately and true to the original as possible. Each translation is followed by commentary of the workflow and genre analysis which will be conducted based on the Genre Analysis method. The commentary will offer explanations as to why certain words or phrases were used, list what the most difficult parts of translating were, and which steps were taken in order to produce an adequate translation. At the end of the thesis is a conclusion which summarizes the work.

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1. INTRODUCTION

In my thesis, I decided to focus on translating and describing the translation process of three different texts. The first text, *Što može kazalište?* by Iva Gruić, is a view on usefulness of theatre, the benefits it has on children, and the appropriate ways to educate children through theatre. The second text is entitled *Učenje učenja* and it was written by Tanja Jagarinec. It deals with effective learning and studying methods while focusing on helpful ways to teach children to learn. The final text is *Inovacije i izumi, danas i kroz povijest* by Gojko Nikolić, PhD which explains the beginnings of inventions, patents, and inventors, but also tackles issues like the effect of costly patents applications on Croatia's GDP. Each text is written by a professional in their respective fields in order to explain their views along with some methods they find interesting and progressive.

In order to analyze each text, I will be using the Genre Analysis method. This method includes an outline of 12 points: genre, source, audience, purpose of writing, authenticity, style, level of formality, layout, content, cohesion, sentence patterns, and terminology of the subject. This will help with familiarizing with the text. The translator must be familiar with these points to translate the text as accurately as possible. Along with these points, each text will be followed by a translation and description of the workflow. The workflow will describe problems which arose while translating and explanations of phrases and language used. As these texts deal with specific topics, they use terminology relevant to their respective fields.

2. SOURCE TEXT 1 – Iva Gruić: *Što može kazalište?*

ŠTO MOŽE KAZALIŠTE?[1]

Kazalište je, očigledno, učinkovitije u utvrđivanju nego u mijenjanju stavova i ponašanja

Zašto djeca idu u kazalište? Zato što ih netko odvede. Roditelji ili, češće, škola. Zašto škola vodi djecu u kazalište? Pa zato što tako piše u nastavnom programu. A zašto nastavni program, dakle društvo, misli da je kazalište dobro za njih? Kad to upitam svoje studente i studentice na učiteljskom i odgojiteljskom studiju, obično odgovore da u kazalištu djeca uče, da se zabavljaju, oplemenjuju, da ih kazalište kulturno uzdiže, razvija im kreativnost i maštovitost, vodi usvajanju takozvanih pravih vrijednosti.

Teorija relativno slično odgovara. Kazalištu za djecu se od njegovih početka, piše Nellie McCaslin, postavljaju tri cilja: da bude vrijedna i prikladna zabava, da obrazuje i odgaja, da potiče osobni i društveni rast kroz susret s dramskom umjetnošću (1997.). A kako to vrijedi i danas, autorica zaključuje: neka kazalište djeci bude *uzbudljiva avantura sa sadržajem koji napreže um i uzburkava emocije, i forma koja nudi estetsko zadovoljstvo* (390).

Kazalište donosi veselje svoj djeci i pomaže im da postanu bolji ljudi, piše Moses Goldberg (1974: 3), navodeći pet vrijednosti kazališta kako ih definira Kenneth L. Graham: kazalište je zabavno, pridonosi psihološkom rastu i razvoju, ima obrazovni efekt, razvija estetski osjećaj i služi razvoju buduće publike. Goldberg ovih pet područja sažima u tri: estetsko, psihološko i pedagoško i objašnjava da je predstava estetski vrijedna kad je emocionalno stimulativna, kad se zabava događa kroz sudjelovanje u činu stvaranja sada i ovdje. Pedagoška vrijednost skrivena je u indirektnom poučavanju. Istine su izložene na pogled i odabir gledatelja. Psihološki vrijedno kazalište prikazuje stvarne probleme s kojima se djeca susreću u odrastanju i pokazuje da ih i drugi imaju, sugerirajući moguće načine rješavanja (1974.).

Suvremeniji pogledi ne razlikuju se bitno. Opisujući razlike u položaju i shvaćanju kazališta za djecu u različitim zemljama, Paul Harman kaže kako se na kazalište za djecu može gledati kao na formu koja je važna za obrazovni, socijalni i kognitivni razvoj djece, ili kao na nezavisno umjetničko polje koje pridonosi kulturnom, emocionalnom i duhovnom razvoju djece.

(Harman, 2005.) Ali, tvrdi David Pammenter, kazalište kao umjetnički medij i kao obrazovna snaga imaju zapravo jednake ciljeve – stvaranje značenja u potrazi za promjenom, razvojem i kulturnom transformacijom (Pammenter, 2005.). Jer cilj je kazališta osnažiti mladu publiku i uputiti im pogled na socijalne, političke, vizualne, simboličke i kulturne probleme (Hutt, 2005.). Jednostavnije to formulira Matthew Reason: *Kad djeca idu u kazalište, možemo se nadati ili očekivati da će se zabaviti, da će im nešto postati jasnije, da će nešto naučiti i/li biti inspirirana* (2010:46).

Namjera ovoga teksta nije sveobuhvatno odgovoriti na pitanje što kazalište za djecu može, a što ne može, prije svega zato što je to nemoguće, dvije i pol tisuće godina teorije o kazalištu to dokazuje. Namjera mi je otvoriti diskusiju o nekim uvriježenim pretpostavkama i ponuditi komentare koje nudi teorija. Za takvo izlaganje na ovom mjestu imam dva motiva. Prvi je svijest o tome da kazališna praksa u produkcijama za djecu često ignorira teoriju, pa i empirijska istraživanja. Pišući o nedostatku utjecaja koji studije recepcije imaju na kazališnu praksu, Jeanne Klein sugerira da umjetnici vjeruju da je komunikacija između publike i predstave u svakom pojedinom slučaju toliko različita da ne vrijedi osvrtati se na studije recepcije provedene na drugim predstavama. Umjesto toga, radije se bave time da reproduciraju kazališne tradicije ili kreiraju inovativne eksperimente s onoliko rizika koliko im uvjeti tržišta dopuštaju (2012:153). Promišlja-nje komunikacije između djeteta i predstave relativno je rijetko u prvom planu.

Umjetnosti se u škole sustavno uvode već dulje od stoljeća, ali i dalje se pro-vode ozbiljna, pa i svjetska istraživanja o njihovoj korisnosti. I dalje se moraju dokazivati

Moj drugi motiv je uvjerenje da škola baš i ne zna što bi s kazalištem, premda je u većini svijeta kazalište za djecu neraskidivo povezano sa školom.[2] Povijesno gledano, škola je kazalište doživljavala kao opasnost, kao instrument učenja, instrument (pre)odgoja koji vodi i do izgradnje 'novog čovjeka', kao poticatelja društvenih promjena, itd. Od kazališta za djecu se u principu očekuje da bude podržavajuće u odnosu na prevladavajuću ideologiju.[3] Organizira se gledanje predstava, ali zašto to i čemu, nije uvijek sasvim jasno. Kako se biraju predstave? Što se s djecom radi prije i poslije? Treba li ih pripremiti? O čemu razgovarati poslije? Kakvu vrstu doživljaja i/ili iskustva svojoj djeci škola želi 'priuštiti' u kazalištu? Koliko bi se škola složilo s

mišlju Briana Waya da *gledatelj u kazalištu treba proširivati horizont iskustva, a ne ponavljati postojeća iskustva?* (Way, 1978:56)

Kazalište je zabava. – Imam dojam da škola, usprkos svim progresivnim i najnovijim pedagoškim teorijama, barem donekle ima problem s ovom tezom, premda je ona točna. Ako je učenje ozbiljna stvar, onda je zabava sumnjiva. Umjetnosti se u škole sustavno uvode već dulje od stoljeća, ali i dalje se provode ozbiljna, pa i svjetska istraživanja o njihovoj korisnosti. I dalje se moraju dokazivati. Kako se crtanje može usporediti s razumijevanjem gravitacije? Ili predstava o luckastim vješticama sa savladavanjem jednadžbi s dvije nepoznanice? I premda se način razmišljanja mijenja u 21. stoljeću (kad kreativnost postaje jedna od novih 'velikih' riječi u obrazovanju (vidi: Nicholson, 2011), školski sustav umjetnost i zabavu još uvijek doživljava uglavnom kao strano tijelo.

Kazalište želi zabaviti djecu. Čini se da to najlakše čini ako ima *dobru priču*. Često su to poznate priče, jer, barem tako tvrde kazališne propagande, takve je školama i roditeljima najlakše *prodati*, još je bolje ako su na popisu lektire. Čini se da djeca, barem ona mlađa, nemaju ništa protiv takve prakse – jer vole ponavljanja poznatog, ali se kazališnarci bune protiv ovakvog recikliranja, pa interveniraju, interpretiraju i reinterpretiraju. U najboljem slučaju dobivamo predstave koje su žive na način koji možemo razumjeti iz današnjeg vremena, u najgorem se gubi svaki razuman smisao u parodijama koje djeca slabo shvaćaju (da bismo shvatili parodiju, izvornik nam mora biti poznat do dosade). Ovo mi se čini kao važan element na koji bi pažnju trebali obratiti oni koji biraju predstave za djecu.

U novije vrijeme razvijaju se žanrovi koji se odmiču od tradicije pričanja priče na sceni i nude slobodnije strukturi-rane sadržaje. Umjetnici koji rade u kazalištu za djecu zalažu se za svoj umjetnički integritet, pozivaju na pravo na slobodno umjetničko izražavanje. Manon van de Water opisuje takvu situaciju u Nizozemskoj posljednjih desetljeća 20. stoljeća, ali trend je prisutan i u našim krajevima. Za razliku od Nizozemske, kod nas se rijetko čuje pitanje dospijeva li takvo kazalište još uvijek do ciljane publike (2012: 34-37). I to je važno pitanje za sve one koji biraju predstave za djecu.

U školi, ali i u umjetničkim krugovima često će se čuti stav da **kazalište ne smije biti samo zabava**. Zato se srednjoškolci vode na *Hamleta* s kojim ne znaju izaći na kraj, a nikad na neku *laku* komediju. Što znači samo zabava? Škola pritom obično misli na nedostatak po(r)uke i/ili klasičnog književnog predloška, a kazališnarci na estetsku manjkavost, jednosmislenost,

plitkost, kič. U zabavi nema, dakako, ničeg lošeg, ali vrijedi dodati misao da se umjetnost razlikuje od svih ostalih oblika komunikacije upravo po svojoj višesmislenosti, nesvedivosti na obrazac, neponovljivosti, jedinstvenosti, kao i po istovremenom komuniciranju kroz osjetilne, kognitivne i emocionalne kanale – jednom riječju, po svojoj složenosti. Mislim da predstava koja je plitka, pa je zato samo zabavna, nije problematična, njen jedini problem je što ne ispunjava potencijal kojim kazalište raspolaže.

Vjerujem da je važno imati na umu da predstava ne govori djeci nužno ono što autori misle da im govori, niti ono što govori nama odraslima, niti govori isto svoj djeci

Djeca doživljavaju i razumiju predstavu onako kako je to autorski tim zamislio i/ili onako kako je odrasli doživljavaju i razumiju. – Ova je pretpostavka prilično uvriježena i u kazalištu i u školi, ali nije točna. Od prvih teorija recepcije Isera i Jaussa, preko Barthesovih i Foucaultovih teza o čitatelju kao vlasniku smisla teksta, promijenio se pogled na doživljavanje i razumijevanje teksta, a onda i predstave. U kazalištu za djecu i mlade još uvijek se takav način razmišljanja uglavnom ignorira. Programske knjižice o predstavama i najave na internetskim portalima pišu što će djeca naučiti, o čemu će razmišljati, kako će doživjeti predstavu.[4] U stvarnosti to ne ide tako. Djecu vjerojatno lako možemo nasmijati, zabaviti ili rasplakati. Istraživanja, međutim, pokazuju da djeca razumiju i doživljavaju predstavu na svoj način. Matt Omasta usporedio je ideje autora i odgovor publike na primjeru jedne predstave i došao do zaključka da postoji korelacija između autorske namjere i gledateljskog doživljaja, ali skromna (Omasta, 2011.). U istraživanju koje sam nedavno provela sa studenticom Petrom Pul, istraživalo se kako su djeca razumjela priču i pouku predstave *Priča o bojama* (Mala scena, Zagreb). 30-ero djece u dobi od tri do šest godina nakon predstave je individualno intervjuirano: 70% djece nije ispričalo završetak priče onako kako bi ga ispričala odrasla osoba, a čak 79% nije formuliralo pouku ili smisao približno onako kako je zamislio kazališni tim. Ali, tijekom gledanja predstave, svi su s radošću i pažnjom pratili događanje na sceni.

Vjerujem da je važno imati na umu da predstava ne govori djeci nužno ono što autori misle da im govori, ni ono što govori nama odraslima, niti govori isto svoj djeci.[5] Posljedično, ne treba od djece očekivati, i osobito ne bismo smjeli tražiti da nađu u predstavi onaj smisao koji smo

pročitali u programskoj knjižici, ni onaj koji smo mi odrasli „pročitali" u predstavi. Ne treba tražiti točne odgovore.

Čini mi se da je ovo osobito važno kad je riječ o školskim posjetima kazalištu. Djeca su u školi navikla na to da moraju dati točan odgovor, pa se i razgovor nakon predstave lako može pretvoriti u ispitivanje tipa – tko je **točno** shvatio predstavu. U istraživanju dječje recepcije predstava Jeanne Klein ih je, među ostalim, pitala je li im predstava bila laka ili teška za razumijevanje. Mlađoj djeci je uglavnom bila lagana, izvješćuje nas autorica, ali u grupi starijih, od 9 do 12 godina, bilo je raznolikih odgovora. Nije problem stvarala kompleksnost predstave, već nešto što ne bismo očekivali: *kad nisu unaprijed znali priču, događaje, likove i vokabular, to je kod njih stvaralo nelagodu* (anxiety, piše Klein), a kod neočekivanih obrata ili događaja, *prirodan osjećaj iznenađenja pretvarao se u neugodan osjećaj zbunjenosti*. Nadalje, djeca postaju zbunjena kad neke motivacije likova i događaji nisu jasno prikazani i obrazloženi. Njihovo nezadovoljstvo nestaje u času kad shvate odgovornost koju imaju kao *maštoviti tumači*, kad povjeruju u vrijednost i plodonosnost vlastitog tumačenja (Klein, 2012:147). Ovo ne moramo pripisati školskom kontekstu u okviru kojeg je organizirano gledanje predstave (autorica to ne čini), međutim, budući da jasno pokazuje koliko je djeci važno povjerenje u pravo i sposobnost vlastitog razumijevanja i tumačenja, vjerujem da bi svaki učitelj i nastavnik o tome trebao voditi računa, i u skladu s time poticati razvoj samopouzdanja dječjeg unutrašnjeg *maštovitog tumača*.

Kazalište poučava. – Tradicija poučavanja kazalištem starija je od kazališta za djecu i mlade (vidi: Levy, 2005.). Nije dakle pitanje poučava li kazalište, nego kako poučava, što poučava i, dakako, zašto.

Kazalište poučava moralnosti, „vrijednostima". – Moderna istraživanja prokazuju ovu staru tezu kao neodrživu. Istražujući dječje razumijevanje predstave, Jeanne Klein je dobila sljedeće rezultate: manji dio dječje publike (u rasponu od jedne četvrtine do jedne trećine), neovisno o dobi, voljan je i spreman pokušati poopćiti temu i smisao predstave i (eventualno) ih dovesti u vezu s vlastitim iskustvom i ponašanjem, pri čemu prednost u poopćavanju imaju sadržaji i koncepti koje je dijete već usvojilo, što bi značilo da kazalište najbolje 'uči' djecu onome što oni već znaju (2005.). Matthew Reason, također na temelju opsežnog istraživanja dječjeg razumijevanja predstava, ističe značaj koji *za djecu ima gledanje njihovih vlastitih iskustava i znanja prezentiranih na sceni* jer njihovo repliciranje igra važnu ulogu u *podržavanju dječjih*

opažanja i utvrđivanju njihovih vlastitih prosudbi (2010:105). Kazalište je, očigledno, učinkovitije u utvrđivanju nego u mijenjanju stavova i ponašanja.[6]

Iz ove perspektive, čini se da je traženje da predstava bude „moralna" nepotrebno. A reakcije uzbunjene javnosti (i škola, pedagoga i učitelja) na predstave koje sadrže neki oblik provokativnosti naprosto su pretjerane. Jer već odavno se zna kako puno toga što mi odrasli vidimo u predstavama kao provokativno, djeca uopće ne primjećuju. Gotovo kao anegdota zvuči događaj iz 1937., kad je u Sjedinjenim Državama postavljena *Pobuna dabrova* (u okviru federalno financiranog Kazališta za djecu), koja je izazvala javne proteste i oštre kritičke tonove u tisku zbog – marksističke propagande. Suočeno s problemom, kazalište je naručilo ozbiljnu studiju koja je istraživala što djeca zaista vide u predstavi. Studija je pokazala da je politička poruka o klasnoj borbi, koja je tako uzbunila odrasle, kod djece prošla gotovo u potpunosti nezapaženo (Heard, 1989:112-13). Usprkos empirijskim dokazima, predrasuda o tome da prikazivanje sadržaja izvan kanona može naštetiti djeci tvrdokorna je. U Zagrebu je nedavno (2007.) s repertoara zbog pritiska javnosti skinuta predstava za starije tinejdžere *Zabranjeno za mlađe od 16 godina* prema tekstu Kriste Šagora, zbog prikaza poljupca dviju djevojaka. U Teksasu školski sustav bojkotira predstavu koja prikazuje dva pingvina koji odgajaju pile (Schroeder, 2014.). Ako kazalište ne „kvari", ali niti ne „popravlja" djecu, ne bi se trebalo dati impresionirati tematskim iskoracima u predstavi.

Kazalište potiče na kritičko promišljanje. – Ova je teza suprotna od prethodne. Predstava može htjeti isporučiti neki „paket značenja" publici sa željom da ga ona točno „pročita" i prihvati. (Koliko je uvjerljivo da će se to i dogoditi, drugo je pitanje, prisjetimo se ranijeg teksta o „vlasništvu nad smislom".) Suprotno od toga, predstava može postavljati pitanja, ukazivati na probleme u društvu, nuditi različite poglede na isti problem, različite svjetonazore. Može, dakle, postavljati važna pitanja, a ne nuditi odgovore, može prezentirati svjetonazore kao jednako vrijedne, a ne jedne favorizirati, a druge minorizirati ili osuđivati. Takvo kazalište u opisivanju tipova poučavanja u kazalištu Anthony Jackson pronalazi u dva oblika, u kazalištu koje funkcionira kao *poziv na buđenje* i u *dijaloškom kazalištu* (2007.).[7] Kazalište koje poziva na buđenje ukazuje na društvenu krizu koja traži reakciju, ali ne nudi odgovore, dakle, ono osvješćuje. Dijaloško kazalište ravnopravno prezentira različite „glasove".

Dječje igranje vlastitih dramskih priča kroz spontane igre priprema ih za iskustvo i „čitanje" kazališta

U nekim sredinama, osobito u Velikoj Britaniji, ovakva vrsta kazališta ima dugu i plodonosnu tradiciju (vidi: Nicholson, 2011.), osobito u specifičnoj formi *theatre in education* (TIE) koja se prepoznaje, uz gore navedeno, i po produljenom radu s malim skupinama djece, najčešće u školama, i pažljivo osmišljenom procesu uključivanja publike. Učinkovitost pojedinih TIE programa potvrđena je i istraživanjima.

Kazalište može potaknuti na razmišljanje, ako je problem dovoljno zanimljivo i snažno prezentiran na sceni, i ako pobuđuje dovoljno snažan emocionalni odgovor u publici. Ali tada ono mora govoriti o važnim stvarima, ne smije zaobilaziti teže teme i slikati svijet u kojem se sve lako može riješiti. Puno je tinte posljednjih godina potrošeno na ovu temu (vidi: Schneider, 2002.; Water, 2012., itd). Moja istraživanja hrvatskog kazališta za djecu i mlade pokazuju da se ono rijetko hvata ukoštac s ozbiljnijim temama na odgovoran način (2011.), kao i da se kazalište koje potiče na kritičko razmišljanje (ono koje tipološki možemo odrediti kao poziv na buđenje ili dijaloško kazalište) jedva može pronaći, čak i ako se vrlo pažljivo traži (2012.). Vjerujem da je vrijedno truda pronaći takve predstave (što neće uvijek biti jednostavan zadatak) i odvesti djecu i mlade da ih pogledaju.

Kazalište poučava o kazalištu – Svakako. – Gledanje predstava uči nas gledati predstave i to može biti sporno samo na jedan način: ako djeci učini kazalište nezanimljivim jer predstava s njima ne komunicira (zbog čega također treba pažljivo birati predstave.) U obrazovnom sustavu gledanje predstava je važno jer se smatra da se djeca (pa i odrasli) tako „kulturno uzdižu". Kazalište se i danas percipira kao takozvana „visoka kultura" (a ne popularna ili „niska"). Kulturno uzdizanje je stara prosvjetiteljska i reformatorska tema, kojoj je u novom vremenu najsličnija tema o kulturnom kapitalu, koji stječemo kroz obrazovanje i susrete s kulturom i umjetnošću.[8] Kao što se ranije govorilo da djecu treba „kulturno uzdići", danas će se reći da djeca kroz obrazovanje trebaju steći kulturni kapital. Slijedeći Bourdieaua, koji ističe da moramo znati kodove da bismo „čitali" umjetnost, Manon van de Water zaključuje kako kazalište za djecu i mlade jest, po samoj svojoj prirodi, edukativno. (2012.)

Zanimljivo je, međutim, pogledati istraživanja koja se bave dječjim „čitanjem kodova". Matthew Reason u knjizi posvećenoj istraživanju dječje percepcije kazališta (2010.) tvrdi kako djeca rane školske dobi posjeduju visoku razinu kompetentnosti u čitanju kazališta i njegovih konvencija. Nedostatak scenske iluzije, čak i radikalan, ne predstavlja im problem jer nadopunjavaju slike i kao takve ih pamte, pa onda većinom i crtaju svoje mentalne slike, a ne

materijalnu stvarnost scene. U razgovoru mogu obrazložiti svoj način razmišljanja koji pokazuje poznavanje kazališnih konvencija. To vrijedi i za djecu koja imaju vrlo skromno kazališno iskustvo. Voljni su „uložiti" svoju imaginaciju i „nadopuniti" ono što vide. I to im pruža užitak. Gdje su to naučili? Citirajući Klein (2005.), Reason se priklanja ideji da djeca, budući da već od treće godine igraju „kao da" igre, već sa šest godina razumiju koncept dramske priče i puno kazališnih konvencija, u čemu pomaže i gledanje filmova i televizije. Dječje igranje vlastitih dramskih priča kroz spontane igre priprema ih za iskustvo i „čitanje" kazališta. Zato ne iznenađuju istraživanja koja govore o tome da aktivno sudjelovanje u dramskom radu, bilo u okviru škole ili dramskog studija, pridonosi gledateljskoj kompetenciji.

Kazalište prosvjećuje emocije – U članku o obrazovnoj funkciji kazališta Jonathan Levy (2005.) definira 11 načina na koje je kazalište bilo i može biti poučno. Dva su ovdje osobito zanimljiva. U mraku gledališta ljudi postaju otvoreniji za sugestiju, piše Levy, jer im se prigušuje racionalnost, a dostupniji su za emotivnu reakciju. Nitko ih ne gleda, pa se mogu prepustiti osjećajima. Konačno, svi znamo da je lakše plakati zbog nesretne sudbine neke junakinje nego zbog vlastitog života. Ili se svađati s imaginarnim neprijateljima nego s onima u drugoj sobi. Ovaj argument vjerojatno nema toliku težinu kad su u pitanju mlađa djeca. Međutim, drugi je zanimljiviji za promišljanje o dječjoj publici: kazalište prosvjećuje (*educates*) emocije. Što se tu događa?

S jedne strane pažljivo i „bezinteresno" gledanje ljudi (likova) u različitim emotivnim stanjima uči nas „čitanju" emocija, prepoznavanju, razabiranju uzroka i posljedica, pokazuje da mogu postojati različiti emocionalni odgovori na jednake ili slične situacije, da se iste emocije mogu iskazivati na različite načine, itd. Međutim, gledatelj u predstavi obično i emocionalno sudjeluje, što je jedna od najkomentiranijih tema u raspravama o kazalištu. Ključni pojam je, dakako, Aristotelova katarza, koja se tradicionalno definira kao pročišćenje osjećaja koje se događa zbog proživljavanja onoga što se događa likovima.

Tu su djeca u drukčijem položaju od odraslih jer lakše uranjaju u imaginarni svijet prikazan na sceni. *Svijest da prisustvuje kazališnom događaju koji nije stvaran, fundamentalno određuje iskustvo gledatelja*, piše Ben-Chaim (1984:73), govoreći o estetskoj distanci kao preduvjetu za estetski doživljaj.[9] Moramo istovremeno biti dovoljno udaljeni od onoga što gledamo i dovoljno blizu da bi se naš emocionalni (i spoznajni) doživljaj mogao pretvoriti u estetski doživljaj (zato istovremeno možemo biti duboko rastuženi zbog stanja u kojem se neki lik našao i svjesni kako glumica to odlično igra, i još uživati u tome). *Kazalište nas mora na*

drukčiji način angažirati nego stvarni život, piše Shifra Shonmann (2006:65). Svi znamo da se djeci ponekad događa da zbivanja na sceni doživljavaju kao stvarnost. Zato plaču, dovikuju likovima, žele se popeti na scenu i objasniti Pinokiju da ga mačak i lija žele prevariti, viču „buuu" vještici kad glumica dođe na poklon na kraju predstave. Tada se kod njih ne može ostvariti estetsko procesuiranje viđenog, što je, dakako, problematično, ističe Schonmann.

Uživljavanje ili identifikacija s likovima nije jednostavan proces. Kad gledamo predstavu (ili film ili TV seriju), događaje ne doživljavamo kao jedan od likova s kojim smo se identificirali, već ih pratimo „uz njega", priznajući njegovu perspektivu, ali ne gubeći svoj pogled na svijet i svoje razumijevanje stvari. Klein tvrdi da gledatelj, kad razumije fikcionalnost scenskog događanja, prolazi kroz tri stupnja *kognitivno-afektivne povezanosti* s likovima: osjeća zajedno s njima (empathy); osjeća za njih (sympathy); osjeća nešto prema njima (distancira se) (2005.). Ovi stupnjevi pojavljuju se naizmjenično i sva tri su nam potrebna da bismo događaj na sceni doživjeli kao estetsko iskustvo. Ali i kao posebnu vrstu emocionalnog doživljaja koji u sebe uključuje i misaoni aspekt i prorađivanje emocija na sasvim osobit način. Tako se emocije „prosvjećuju".

Jer kad plačemo, bojimo se ili strepimo zbog drugih, time se dovodimo u vezu s vlastitim emocijama, ali u sigurnom okružju, budući da smo svjesni da se radi o fikciji. Ta svijest stvara distancu koja omogućuje balans između nemira i sigurnosti (Schonmann, 2006.). Previše uživljenosti u predstavu uistinu može biti problem u kazalištu za djecu, ne samo zbog bučnog gledališta, nego i zbog pretjeranog uzbuđenja s kojim djeca ne znaju sama izaći na kraj. Prikazujući na istom mjestu svoje iscrpno istraživanje kazališnih iskustava djece iz rizičnih skupina, Schonmann pokazuje koliko je važna podrška odrasle osobe, kako za vrijeme gledanja predstave, tako i u razgovoru nakon nje. Posredovanje odraslog između djeteta i predstave pokazalo se kao ključan faktor u ostvarivanju pozitivnog učinka koji je predstava imala.

Pretjerano uzbuđenje nije jedini problem s kojim se dijete može susresti. Jedan od prepoznatih efekata u kazalištu je takozvana „kolektivna katarza" koja nastaje kad grupa zajednički doživljava napetost nekog emocionalnog stanja, kad svi dišu „kao jedan". Takvi trenutci snažno djeluju na grupnu povezanost. Dijete može doživjeti nelagodu, kako to opisuje Schonmann, kad njegova *individualna katarza ne odgovara grupnoj katarzi* (83). Tada, umjesto da zajedničko otpuštanje emocija bude blagotvorno (jer se osjećamo dijelom dobro povezane grupe, jer osjećamo da svi osjećaju isto što i mi, pri čemu se to „svi" može protegnuti i na „svi ljudi"), pojedini se gledatelj može osjećati izolirano, odbačeno.

Djeca možda bolje „čitaju" kazalište nego što bismo pretpostavili, ali da bi se adekvatno nosili s emocionalnim doživljajem, ponekad im je potrebno posredovanje brižne odrasle osobe.

Posredovanje odraslog između djeteta i predstave pokazalo se kao ključan faktor u ostvarivanju pozitivnog učinka predstave

Kazalište potpomaže osobni razvoj (pridonosi socijalnom, emocionalnom i duhovnom razvoju djece). – Na temelju svega dosad navedenog vjerujem da je više ili manje jasno da kazalište može pridonijeti osobnom razvoju djeteta u različitim aspektima. Uključuje ga u zajednicu, emocionalno i kognitivno ga angažira, uči ga gledati i razumijevati svijet, potiče ga na promatranje, traženje smisla, maštovito nadopunjavanje viđenog. Ako želimo da se dijete dobro osjeća u gledalištu, predstave moraju osobito paziti na način komunikacije sa svojom publikom, a svi oni koji biraju predstave i vode djecu u kazalište trebali bi voditi računa o tome da je jedan od važnih potencijala kazališta da govori o stvarima i problemima koji su djeci u životu važni, pritom ih emocionalno angažirajući. Važno je i da budu svjesni da će djeci ponekad trebati i njihovo posredovanje u savladavanju emocionalnog doživljaja. I konačno, ali sigurno ne najmanje važno, vjerujem da trebaju učiniti sve što je u njihovoj moći da potaknu djecu da osvijeste vrijednost i važnost njihovog unutrašnjeg *maštovitog tumača*, da ga osnaže i daju mu samopouzdanje potrebno da bi se susret s kazalištem dogodio kao radosno iskustvo.

[1] Objavljeno u zborniku radova s 5. međunarodne konferencije kazališne pedagogije Čuvstva bogatijo / Emotions Matter (15. – 16. listopada 2016); ur,: Urška Lučka Novak; Društvo ustvarjalcev Taka Tuka, Ljubljana.

[2] Tipičan razvoj odnosa kazališta i škole Goldberg opisuje gotovo kao ljubavnu priču: na početku su škole nezainteresirane, kazališta ih nagovaraju demonstrirajući korisnost zaokruženog odgojno-obrazovnog procesa. I premda su dokazi s kojima kazališta raspolažu uglavnom anegdotalni, a ne konkretni, kazališta uspijevaju i škole pokazuju interes. Zatim počinju blisko surađivati. S vremenom kazalište postaje nezadovoljno jer ima osjećaj da mu škola postavlja granice (te granice mogu biti stvarne ili zamišljene). Kazalište počinje težiti nezavisnosti o školama. (85)

[3] Matt Omasta je u istraživanju odnosa moći u kazalištu za djecu (u SAD-u) zaključio kako nekazališni faktori (poput osnivača kazališta, sponzora i tijela koja donose odluke o financiranju, škola i pedagoške javnosti) imaju više moći nego kazališta i dječja publike. Od kazališta za djecu se, tvrdi Omasta, očekuje da konstruira djetinjstvo u skladu s paradigmama dominantne klase (Omasta, 2009).

[4] Evo dva primjera iz zagrebačkog kazališta Žar ptica: Antuntun (Žar ptica) Antuntun nas uči poštivanju različitosti. Uči nas i kako je važno slijediti svoj put ma koliko to ponekad teško bilo, jer samo originalnost i mašta guraju čovjeka naprijed i vode do malih i velikih otkrića, ali i novih saznanja (predstava Antuntun). Kroz predstavu djeca će učiti kako prepoznati vlastite osjećaje i kako ih mogu kroz razgovor i igru izraziti bez straha, odnosno kako mogu njihovu energiju pretvoriti u ,,pogonsko gorivo" za maštovitost i kreativnost. Osvještavanjem povezanosti psihičkog i tjelesnog ona će skenirati uzroke tegoba zbog progutanih osjećaja te nastojati otkloniti njihove posljedice – osjećaj napuštenosti, neprihvaćanja i samoće. (predstava Ja i moji osjećaji) (http://zar-ptica.hr/)

[5] Na dječju publiku navikli smo gledati kao na homogenu publiku, za razliku od odrasle publike. Ne priznajemo razlike u preferencijama, socioekonomskom porijeklu, ranijem iskustvu. Priznajemo jedino razliku po dobi, onako kako je formulira razvojna psihologija. A kako se kazalište ,,konzumira" u zajednici, u pravilu se ne obraća pažnja na moguće razlike. Istraživanja kakva su rađena kad su, na primjer, u pitanju čitateljski interes i čitateljska preferencija djece rađena su i u kazalištu, ali nisu naišla na osobit odjek. U kazalištu očekujemo da svi reagiraju ,,kao jedan", što do neke mjere potvrđuje i teorija kazališta koja govori o homogenizaciji publike ,,u mraku gledališta". Za razliku od odrasle publike koja bira predstave prema vlastitim preferencijama, pa Hamlet vjerojatno neće privući istu publiku kao i bajkoviti mjuzikl ili ,,laka" komedija, predstave u kazalištu za djecu rađene su za svu djecu (iste dobne skupine). Oni ne biraju, njih se u kazalište ,,odvodi".

[6] Koliko god zavodljivo i privlačno bilo vjerovati da je takvo što uistinu moguće, nema, nažalost, nikakvih znanstvenih do-kaza da nas gledanje kazališnih predstava na bilo koji način čini „boljima". Ozbiljna znanstvena istraživanja nikada nisu dokazala da ljudskim bićima način zabave neposredno uvjetuje određene oblike njihova ponašanja. Unatoč opće proširenoj zabludi, kad je u pitanju konzumiranje medijskih sadržaja, istraživanja nisu pokazala izravnu, uzročnu povezanost između izloženosti nasilju prikazanom u medijima i stvarnog nasilničkog ponašanja pojedinaca i skupina. Jednako kao što ne mogu izravno potaknuti negativne obra-

sce ponašanja, izvedbe ne mogu, nažalost, izravno potaknuti ni pozitivne oblike ponašanja (Lukić, 2013:313).

[7] Ostali tipovi koje navodi su: kazalište kao propaganda, didaktičko kazalište, kazalište intervencije (ono koje želi promijeniti način razmišljanja publike) i kazalište igre (koje se oslanja na zabavu, pri čemu se često potvrđuju zajedničke, dakle dominantne društvene vrijednosti) (2007:157)

[8] kulturni kapital, osobni ili društveni kapital izražen kao kulturna vrijednost. Termin nije ekonomski precizan, ali naglašava teško mjerljivu, no svakako veoma značajnu ekonomsku vrijednost upotrebe kulturnih resursa; rabi se pretežno u smislu prednosti pojedinca (kultura, znanost, obrazovanje), ili društva (kulturne institucije, kulturna baština, duhovna i materijalna kultura). Proleksis enciklopedija http://proleksis.lzmk.hr/57845/

[9] Distanca u kazalištu može biti manja ili veća, a dobar dio kazališnih eksperimenata 20. st. bavi se upravo udaljavanjem ili približavanjem publike. U nastavku teksta govorit ću o takozvanom klasičnom psihološkom kazalištu koje traži „optimalnu distancu".

2.1. TRANSLATION OF SOURCE TEXT 1

What can theatre do? [1]

Theatre is, apparently, more efficient in determining than changing attitudes and behavior

Why do children go to the theatre? Because someone takes them there. Their parents or, more often, their school. Why do schools take children to the theatre? Well, because it says so in the curriculum. And why does the curriculum, therefore the society, think that theatre is good for them? When I propose that question to my students of teacher and preschool education studies, they usually say theatre is a place for children to learn, have fun, be enriched and advance culturally. Theatre develops their creativity and imagination and leads to the so-called real values. Literature has relatively similar responses. Since its beginnings, three aims have been set for children's theatre: to be valuable and appropriate entertainment, to educate and raise, to encourage personal and social growth through encounters with entertainment arts (1997). As that also goes today, the author says: make theatre for children *an exciting adventure with mind stimulating, emotionally stirring content and a form that offers aesthetic pleasure* (390).

Theatre brings *joy to all children and helps them become better people*, says Moses Goldberg (1974:3), stating five values of theatre as defined by Kenneth L. Graham: theatre is entertaining, it benefits psychological growth and development, it has an educational effect, it develops a feeling for the aesthetic and serves for the development of a future audience. Goldberg sums up these five areas into three: aesthetic, psychological and pedagogic. He explains that a play has aesthetic value when it is emotionally stimulant and when the entertainment happens through participating in an act of creation here and now. The pedagogical value is hidden in indirect teaching. Truths are exposed at the perspective and choice of the viewer. Psychologically valuable theatre displays actual problems which children face while growing up and shows others have them, suggesting possible ways to solve them.

Modern perspectives do not differ much. Describing differences in positions and understanding children's theatre in various countries. Paul Harman says that children's theatre can be perceived as a form important for children's education, social and cognitive growth or as an independent art field which benefits children's cultural, emotional and spiritual growth. (Harman, 2005). But according to David Pammenter, theatre as an art medium and as an

educational force have basically the same goals – creating meaning in search for change, development and cultural transformation (Pammenter, 2005). Because the goal of theatre is to empower young audiences and focus their perspective on social, political, visual, symbolic and cultural problems (Hutt, 2005). Matthew Reason formulates it simpler: *When children go to the theatre, we can hope or expect that they have fun, see things more clearly, learn something and/or get inspired. (2010:46)*

The intention of this text is not to give a comprehensive answer to the question what children's theatre can do and what it cannot do, primarily because it is impossible, two and a half thousand years of theatre theory prove that. My intention is to open a discussion about some ingrained assumptions and offer comments provided by literature. I have two motives for such exposition here. The first is being aware that theatre practice in children's productions often ignores literature as well as empirical research. When writing about the lack of influence reception studies have on theatre practice, Jeanne Klein suggests that artist believe the communication between the audience and the play is in each given case so different that it is not worth even looking back on reception studies conducted on other plays. They instead *reproduce theatre traditions or create innovative experiments with as much risk as the market conditions allow* (2012:153). Thinking about the communication between the child and the play is rarely the focus.

Arts have been systematically introduced to schools over the course of more than a century, but serious, even worldwide research on their usefulness is still being conducted. They still have to prove themselves

My other motivation for writing this article is the opinion that schools do not really know what to do with theatre, although the world's majority feels theatre is inextricably connected to school.[2] Schools have historically seen theatre as a danger, as a learning instrument, an instrument of (re)education which leads to building a 'new man', as an instigator of social change etc. Children's theatre is basically expected to be supportive relating to the prevailing ideology.[3] Play viewings are organized, but why and for what reason is not always clear. How do you choose plays? What do you do with the children before and after? Should you prepare them? What do you talk about afterwards? What sort of experience does the school want to 'put the children through' in the theatre? How many schools would agree with Brian Way's opinion that *the theatre audience should broaden their experience horizons, not repeat existing experiences*? (Way, 1978:56)

Theatre is entertainment. – I am under the impression that despite all these progressive and newest pedagogic theories, schools still have, to an extent, a hard time with this thesis, even though it is accurate. If learning is a serious thing, then entertainment is suspicious. Arts have been systematically introduced to schools over the course of more than a century, but serious, even worldwide research on their usefulness is still being conducted. They still have to prove themselves. How can drawing be compared to understanding gravity? Or a play about silly witches with mastering equations with two unknown variables? And although the mentality is changing in the 21st century (when creativity is becoming one of the new 'big' words in education [see: Nicholson, 2011]), the school system still sees art and entertainment mostly as a foreign body.

Theatre wants to entertain children. It seems the easiest way to do it is to have a *good story*. They're often well-known stories because, according to theatre propaganda, those are the easiest for schools and parents to *sell*; it's even better if they're on the mandatory reading list. It seems that children, at least younger children, have nothing against that sort of practice – because they love repeating what they already know, but theatre enthusiasts rebel against this sort of recycling, so they intervene, interpret and reinterpret. Best case scenario, we get plays that are alive in a way we can understand from today's time, worst case is we lose every understandable meaning in parodies which children hardly understand (to understand a parody, we have to know the original back to front). This strikes me as an important element which those who choose children's plays should pay attention to.

More recently, genres that move away from traditional on-scene story telling have been developing, genres that offer more freely structured content. Artists who work in children's theatre advocate their artistic integrity, call for the right to free artistic expression. Manon van de Water describes that sort of situation in the Netherlands during the past few decades of the 20th century, but the trend is also present in this region. Unlike the Netherlands, we rarely hear the question whether that type of theatre still reaches its targeted audience (2012:34-37). That is also an important question for all those who choose plays for children.

In schools, but in artistic circles as well, you will often hear that theatre should not be just entertainment. So high schoolers are taken to see *Hamlet*, which they cannot handle, and never taken to see an *easy* comedy. What does *just entertainment* mean? Schools usually imply a lack of message or lesson and/or classic literary template, while theatre enthusiasts imply aesthetic flaws, unambiguity, shallowness, kitsch. Of course, there is nothing wrong with entertainment,

but it is worth noting that art differs from other forms of communication precisely due to its ambiguity, inability to be reduced to a pattern, uniqueness, as well as simultaneously communicating through sensory, cognitive and emotional channels – in a word, due to its complexity. I think that a shallow play which is *just entertaining* is not problematic, its only problem is that is does not fulfill the theatre's potential.

Children experience and understand a play the way the author team intended it and/or the way adults experience and understand it. – This assumption is fairly established both in theater and in schools, but it is incorrect. From the first reception theories of Iser and Jauss, through Barthes' and Foucault's theses about the reader as the owner of the meaning of a text, the view on experiencing and understanding a text, as well as a play, has changed. That kind of mindset is mostly ignored in children's and youth theatre. Program booklets about plays and online portal announcements talk about what the children will learn, what they will think about, how they will experience the play.[4] In reality, that is not how it goes. We can probably easily entertain children, make them laugh or cry. However, research show that children understand and experience plays their own way. Matt Omasta compared the author's ideas to the audience response based on one play and concluded there is a correlation between the author's intention and the viewer's experience, but a modest one (Omasta, 2011). In research I recently conducted with my student, Petra Pul, we studied how children understood the story and the lesson of a play called *The story of colors* (Mala scena, Zagreb). 30 children ages three to six were individually interviewed after the play: 70% of children did not recount the ending of the story the way an adult would, while 79% did not formulate the lesson or meaning anywhere close to what the author team had in mind. But while watching the play, everyone joyfully and attentively followed what was happening on-scene.

I believe it is important to keep in mind that a play does not necessarily tell the children what the author thinks it is telling. It does not tell them the same thing it tells us adults, nor does it tell the same thing to all children.[5] Consequently, we should not expect or ask that children find the meaning in a play that we read in a program booklet or the one us adults "read" from the play. We should not be looking for right answers.

It seems to me that this is especially important when it comes to school visits to theatre. Children are used to having to give the right answer in school so it could easily happen that talking about the play afterwards can turn into a sort of an examination – who understood the play **correctly**. While researching children's reception of plays, Jeanne Klein asked them,

among other things, whether the play was easy or hard for them to understand. The author reports that it was mostly easy for younger children, but in the older group of children, from 9 to 12 years old, there were mixed answers. The complexity of the play was not what was causing the problem, it was something that we would not expect: *when they had no prior knowledge of the story, events, characters and vocabulary, they would feel anxious (anxiety,* says Klein), while with unexpected twists or events, *the natural feeling of surprise would turn into an uncomfortable feeling of confusion*. Furthermore, children become confused when certain character motivations and events are not clearly shown or explained. Their discontent disappears the moment they realize their responsibility as *imaginative interpreters*, when they believe in the value and fruitfulness of their own interpretation (Klein, 2012:147). We do not have to attribute this to the school context around which the play viewing is organized (the author does not). However, given that it clearly shows how important it is to children to have confidence in their right and ability to understand and interpret on their own, I believe every teacher should take into account and, in accordance with that, encourage confidence development of a child's inner *imaginative interpreter*.

Theatre teaches. – The tradition of teaching via theatre is even older than children's and youth theatre (see: Levy, 2005). It is not a question whether theatre teaches, but rather how it teaches, what it teaches and, of course, why.

Theatre teaches morality, "values". – Modern research exposed this old thesis as unsustainable. While researching children's understanding of plays, Jeanne Klein got the following results: a smaller part of children in the audience (spanning from one-fourth to one-third), regardless of age, is willing and ready to try and generalize the topic and meaning of the play (eventually) connecting them to their own experience and behavior. The child gives advantage to generalizing contents and concepts they are already familiar with which would mean that theatre best 'teaches' children what they already know (2005). Also based on extensive research on children's understanding of plays, Matthew Reason stresses the significance *watching their own experiences and knowledge presented on-scene has for children* because their replication plays an important role in supporting *children's observations and establishing their own judgement* (2010:105). Theatre is, obviously, more efficient in establishing than at changing views and behaviors. [6]

From this perspective it seems requesting a play to be "moral" is unnecessary. And reactions of the alarmed public (and schools, pedagogues and teachers) to plays that contain some form

of provocative act are simply excessive. Because it has been known for a long time that a lot of things us adults see in plays as provocative, the children do not even notice. An event from 1937 sounds almost anecdotally when a production of *Revolt of the Beavers* (within the US Federal Theater Project) caused public protests and sharp criticism in the press for – Marxist propaganda. Facing a problem, the theatre requested a serious study which conducted research about what children really saw in the play. Studies showed that the political message about class struggle, which alarmed the adults so much, went almost completely unnoticed with the children (Heard, 1989:112-13). Despite empirical evidence, the prejudice that showing content outside of canon can be harmful to children is persistent. Recently (2007), due to public pressure, a play based on Kristo Šagor's text *Zabranjeno za mlađe od 16 godina* (Prohibited for persons under the age of 16) was closed in Zagreb due to public pressure because it showed two girls kissing. The Texas school system is boycotting a play depicting two penguins raising a chicken together (Schroeder, 2014). If theatre neither "corrupts" nor "fixes" children, it should not be impressed by thematic progress in plays.

Theatre encourages critical thinking. – This thesis opposes the previous. A play may want to deliver a "package of meaning" to the audience wanting for them to accurately "read" and accept it. (How likely that is to happen is another question when keeping in mind the previous text about "owning meaning".) Contrary to that, a play can ask questions, point out problems in society, offer different perspectives on the same problem, different worldviews. So it can ask important questions without offering answers, it can present worldviews as equally valuable and not favor one, undermine or judge another. Anthony Jackson find that kind of theatre in describing types of theatre teaching in two forms, theatre that works as a *wake-up call* and in *dialogue theatre* (2007).[7] Wake-up call theatre points out social crises and looks for a reaction without offering answers, it makes you aware. Dialogue theatre equally presents different "voices".

Children acting out their own dramatic stories spontaneously while playing prepares them for the experience and "reading" theatre.

In some places, particularly Great Britain, this type of theatre has a long and fruitful tradition (see: Nicholson, 2011), especially in a specific form called *theatre in education* (TIE) which is, along the formerly mentioned, recognized by extensive work with small groups of children, most often in schools, and by a carefully thought-out process of including the audience. The efficiency of certain TIE programs has been confirmed through research.

Theatre can make you think if the problem is interesting enough, portrayed well on-scene and if it stimulates a fairly strong emotional response from the audience. But it then has to deal with important things, it must not avoid harder subjects and paint a world where everything can be solved easily. A lot of ink was spent in the last few years dealing with this topic (see: Schneider, 2002, Water, 2012, etc.). My research on children's and youth theatre in Croatia shows that it rarely tackles important topics responsibly (2011). It also shows that theatre which encourages critical thinking (the kind we can typologically determine as wake-up call or dialogue theatre) can barely be found, even if we look for it very carefully (2012). I believe finding these types of plays (which will not always be an easy task) and taking children and youth to see them is worth the effort.

Theatre teaches about theatre. – Of course. – Watching plays teaches us to watch plays and that can only be an issue in one way: if it makes theatre uninteresting for children by not having the play communicate with them (which is another reason we should carefully select plays.) Watching plays is important in the education system because it is considered to be "culturally uplifting" for children (and adults). Even today, theatre is perceived as so-called "high-culture" (not popular or "low"). Cultural uplifting is an old topic from the Enlightenment and Reform period, today it is mostly similar to cultural capital which we accumulate through education and encounters with culture and art.[8] Just as it used to be said that children should be culturally uplifted, today it is said children should acquire cultural capital. Following Bourdieau, who says we should know codes to "read" art, Manon van de Water concludes that children's and youth theatre is, in its nature, educational (2012).

However, it is interesting to look at research regarding children's "code reading". In his book about researching children's perception of theatre (2010), Matthew Reason claims that children of a younger school age possess a high level of competence in reading theatre and its conventions. Lack of scene illusion, even a radical one, does not pose a problem for them because they complete images and remember them as such so they mostly draw their mental images, not the material reality of the scene. While talking, they can elaborate on their way of thinking which shows understanding theatre conventions. The same goes for children who have a modest theatre experience. They are willing to "invest" their imagination and "fill in" what they see. And that gives them pleasure. Where did they learn that? Quoting Klein (2005), Reason sides with the idea that children by the age of six, given they play "as if" games from the age of three, understand the concept of a dramatic story and many theatre conventions, and watching television and movies helps with that. Playing their own dramatic stories through

spontaneous games prepares children for the experience and "reading" theatre. That is why research claiming actively participating in drama work, whether in school or drama studies, contributes to viewer competence comes to no surprise.

Theatre educates emotion. – In an article about the educational function of theatre, Jonathan Levy (2005) defines 11 ways on which theatre was and can be educational. Two of them are especially interesting for this research. People become more open to suggestion in the dark of the auditorium, says Levy, because their rationality is suppressed and they are more available for an emotional reaction. No one can see them so they can give into their feelings. Finally, we all know it is easier to cry over an unfortunate fate of some hero than over our own lives. Or argue with imaginary enemies than those in the other room. This argument probably has less weight when it comes to younger children. However, the second one is more interesting to think about when it comes to child audiences: theatre educates emotion. What happens here?

On one hand, watching people in various emotional states attentively and "disinterested" teaches us "to read" emotion, recognize and discern cause and consequence. It shows that there can be different emotional responses to equal or similar situations, that emotions can be shown in different ways etc. However, spectators usually participate in plays emotionally which is one of the most commented topics in theatre discussions. The key term is, certainly, Aristotle's catharsis, which is traditionally defined as purification of emotions caused by experiencing what is happening to the characters.

Children are in a different position than adults here because they get immersed in the on-scene imaginary world more easily. *The consciousness to attend a theatre event that is not real fundamentally defines a spectator's experience,* says Ben-Chaim (1984:73) when talking about aesthetic distance as a prerequisite for an aesthetic experience.[9] We must simultaneously be far enough from what we are watching and close enough that our emotional (and cognitive) experience can turn into an aesthetic experience (that is why we can simultaneously be deeply saddened by some character's state and aware that the actor is doing a great job, while still enjoying it). *Theatre should engage us differently than real life does,* says Shifra Schonmann (2006:65). We all know children sometimes see on-scene events as real life. So they cry, shout thing to characters, want to climb on stage and explain to Pinocchio that the cat and fox want to trick him, yell "booo" to the witch when the actress comes to take a bow at the end of the play. Then they cannot aesthetically process what they watched which is, of course, problematic, says Schonmann.

Immersion or identification with characters is not an easy process. When we watch a play (or movie or TV series), we do not view the events as one of the characters we have identified ourselves with but we follow them "alongside them", acknowledging their perspective while keeping our worldview and understanding of things. Klein claims that when a spectator who understands the fictionality of on-scene happenings goes through three stages of *cognitive-affective connection* with the characters: empathy, sympathy, and distance (2005). These stages alternate and we need all three to for the on-scene event to be an aesthetic experience. But also as a special kind of emotional experience which includes a thinking aspect and processing emotion in a special way. That is how emotion is "educated".

Because when we cry, fear or dread things for other people, we get in touch with our own emotions, but in a safe environment because we know it is just fiction. That consciousness creates distance which allows balance between restlessness and security (Schonmann, 2006). Too much immersion in a play can be a problem in children's theatre, not just because the auditorium gets too noisy, but also the overexcitement which children cannot handle on their own. Showing her extensive research on theatre experience in children from risk groups in the same place, Schonmann demonstrates how important an adult's support is both while watching the play and talking about it afterwards. An adult acting as a mediator between a child and a play illustrated itself as a key factor in establishing a positive effect the play had.

Overexcitement is not the only problem a child can face. One of the recognized effects in theatre is the so-called "collective catharsis" which occurs when a group collectively experiences tension of an emotional state, when everyone breathes "as one". Those types of moments have a strong effect on group connection. A child can become anxious when their *individual catharsis does not match the group catharsis* (83), describes Schonmann. Then instead of a beneficial effect of a common emotion release (because we feel a part of a well-connected group, because we feel everyone feels what we do, and "everyone" can be linked to "every human"), certain spectators can feel isolated, rejected.

Children might "read" theatre better than we would assume, but to be able to handle their emotional experience adequately, they sometimes need mediation from a caring adult.

Theatre helps personal growth [contributes to the social, emotional and spiritual growth of children.] – Based on everything listed so far, I believe it is more or less clear that theatre can contribute to the personal growth of a child in various aspects. It includes the child in the community, engages the child emotionally and cognitively teaches to view and understand the

world, encourages the child to observe, seek meaning, fill what is seen with imagination. If we want the child to feel good in an auditorium, the plays must be especially careful about how they communicate with the audience. Those who choose plays and take their children to see them should take into account that one of theatre's most important potentials is telling the children about things and problems that matter in their lives, engaging them emotionally in the process. It is also important they be aware that children will sometimes need their mediation in overcoming and emotional experience. Last, but not least, I believe they should do everything in their power to encourage children to awaken the value and importance of their inner *imaginative interpreter*, empower it and give it the confidence needed for the theatre experience to be a joyful one.

[1] Published in the collection of papers from the 5th international conference of theatre pedagogy Čuvstva bogatijo / Emotions Matter (15th – 16th October 2016); ed. Urška Lučka Novak; Društvo ustvarjalcev Taka Tuka, Ljubljana

[2] Goldberg describes the typical development of a relationship between a theatre and a school almost like a love story: at first the school is uninterested; the theatre tries to convince it by demonstrating how useful a well-rounded educational process is. And although the evidence the theatre has is mostly anecdotal rather than concrete, the theatre succeeds and the school shows interest. Then they start working together closely. With time, the theatre becomes dissatisfied because it feels limited by the school (those limits can be real or imaginary). The theatre starts striving for independence from schools. (85)

[3] In his research on the relation of power in children's theatre (in the U.S.), Matt Omasta concluded that non-theatre factors (like theatre founders, sponsors and bodies that make funding decisions, schools and the pedagogic public) have more power than theatres and the child audience. Omasta claims that children's theatres are expected to construct a childhood within the paradigms of the dominant class (Omasta, 2009)

[4] Here are two examples from the Zagreb theatre Žar ptica: Antuntun (Žar ptica) Antuntun teaches us to respect diversity. It also teaches us how important it is to follow our own way no matter how hard it might be sometimes because only originality and imagination push people forward, lead to big and small discoveries, as well as new findings (the play Antuntun). Through the play, children will learn how to recognize their own feelings and how they can express them without fear through conversation and games, or how they can use their energy

as “fuel” for imagination and creativity. By being aware of the connection between the psychological and the physical, they will scan the causes of aches of swallowing their feelings and try to remove the consequences – the feeling of abandonment, unacceptance and loneliness. (the play Me and my feelings) (http://zar-ptica.hr/)

[5] We are used to seeing children audiences as a homogenous group, unlike adult audiences. We disregard difference in preferences, socio-economic background, former experience. We only acknowledge difference in age as formulated by developmental psychology. And as theatre is “consumed” in a community, as a rule we do not pay attention to possible differences. The type of research conducted on, for example, reader’s interests and preferences was also conducted in theatre, but was not met with much response. We expect of everyone in the theatre to react “as one” which theatre theory supports to an extent when talking about audience homogenization “in the darkness of the auditorium”. Unlike the adult audience, which chooses plays based on personal preference; Hamlet will likely not attract the same type of audience as a fantastic musical of an “easy” comedy, plays in children’s theatre are made for all children (in the same age group). They do not choose, they “are taken” to the theatre.

[6] As seductive and attractive it might be to believe such a thing is possible, there is unfortunately no scientific evidence that watching plays makes us “better” in any way. Serious scientific research never proved that a form of entertainment directly conditions behavior forms in human beings. When it comes to consuming media content, despite the common misconception, research showed no direct causality between exposure to violence in media and real violent behavior of individuals and groups. Just as they cannot directly prompt negative behavior patterns, they also cannot, unfortunately directly prompt positive behavior patterns. (Lukić, 2013:313)

[7] The other types he lists are: theatre as propaganda, didactic theatre, intervention theatre (the kind that wants to change the audience’s way of thinking) and play theatre (which relies on fun, often confirming mutual and therefore dominant social values) (2007:157)

[8] Culture capital, personal or social capital expressed as cultural value. The term is not economically precise, but it emphasizes a, hard to measure but very significant, economic value of using cultural resources; it is used mostly in the sense of individual (culture, science, education) or social (cultural institutions, cultural heritage, spiritual and material culture) advantage. Proleksis encyclopedia http://proleksis.lzmk.hr/57845

[9] The distance in theatre can be smaller or larger and a good portion of theatre experiments of the 20th century deal exactly with audience distancing or approximation. I will be talking about the so-called classic psychological theatre which requests an "optimal distance" in the text further.

2.2 COMMENTARY AND ANALYSIS

Text 1: *What can theatre do?*

1. genre: article, scientific, informative

2. source: article in the journal *Kazalište: časopis za kazališnu umjetnost*

3. audience: pedagogy/theatre students and professors, parents, theatre enthusiasts

4. purpose of writing: informing and educating on the benefits of theatre, teaching parents how to introduce their children to theatre, offering solutions for incorporating theatre into the school system

5. authenticity: original article, includes extensive bibliography

6. style: informative, clear, simple language

7. level of formality: formal

8. layout: the text is split into 26 paragraphs, no titles, bibliography and references at the bottom

9. content: the text begins with the author explaining how theatre is seen in society, what it represents and what function it serves. It goes on saying how it can be improved, what its flaws and benefits are, how children react to it based on age groups, controversies that arose, how adults can influence children's theatre experience and the author's views

10. cohesion: the author creates lexical cohesion by using topic-appropriate language and terminology

11. sentence patterns: the text is written in a mixture of tenses, long and complex sentences, asking rhetorical questions

12. terminology of the subject: terms such as *children's and youth theatre, scene, play, author team, theatre conventions*

This text uses straightforward language and phrases, so translating it terms of language was fairly simple. However, several problems still arose in instances regarding synonyms. For example, when the author wrote "doživljaja i/ili iskustva", I tried finding appropriate

synonyms, but each one I found deviated from the meaning slightly. I chose to use just "experience" because it was the closest in meaning to the original.

A problem also occurred with translating "oplemenjuju" as it carries a very specific meaning. "Plemenit" usually translates to "noble", but it does not fit the context. I chose to use the phrase "be enriched" as it describes the intended meaning and carries the message across.

My main problem was sentence length. The author uses very long and complex sentences, often containing multiple objects and clauses. It works well in Croatian, but English does not tolerate sentences that long. Sometimes I was able to make it more concise while keeping the intended meaning, but in several instances, I had to split them into two as to keep it legible and to the point. This can be seen when the author talks about the child's "inner imaginative interpreter" in paragraph 11. Also, I could not find an equivalent for "maštoviti tumač" even after searching for the original works mentioned in the bibliography, so I used "imaginative interpreter".

As the school terminology is in English, and the English/American school systems in general, differ substantially from Croatian. As the author uses Croatia-specific terms, I first had to research what the English equivalent is for each term she used ("učiteljski i odgojiteljski studij", "učitelji i nastavnici", "osnovna/srednja škola"). This meant researching school systems which led me to the conclusion that English does not have the "učitelj/nastavnik" difference. I used the word "teacher" to signify both, as English only differentiates "teacher" from "professor".

The author also used two terms for which I could not find official translations: "kazališ̌tarci" (which struck me as a form of slang) and "kulturno uzdizanje". I chose to use "theatre enhusiasts" because it sums up the meaning of the former, and "culturally uplifting" for the latter as it is a literal translation and therefore close to the original.

3. SOURCE TEXT 2 – Tanja Jagarinec: *Učenje učenja*

Sažetak

Definicija učenja se s vremenom promijenila. Primarni model prijenosa znanja je smatrao studenta pasivnim primateljem. Novi model uveo je koncept učenja na temelju razlike između očekivanog i uspostavljenog. Suvremeni koncept učenja uvodi svjesno učenje s naglaskom na metakogniciju. Učenje učenja povezano je s metakognicijom, a možemo ga nazvati i meta-učenje. To uključuje znanje i sposobnost korištenja odgovarajućih strategija učenja i strategije rješavanja problema, poznavanje prednosti i nedostataka vlastitog znanja, točnu samoprocjenu vlastitih postignuća, kritičko razmišljanje o svrsi i ciljevima učenja, dobro upravljanje vremenom i informiranje, sposobnost samo-motiviranja i razvijanje pozitivnog stava prema učenju. Kada učimo fiziku, moramo uzeti u obzir i epistemološki plan.

Ključne riječi: meta-učenje, fizika, epistemologija

1. Uvod

Kada razmišljamo o učenju prvo pomislimo na školu, udžbenike, učenje "napamet". Međutim, i van škole također neprestano učimo - kuhati nove obroke, koristiti nove elektroničke uređaje, voziti bicikl ili govoriti novi jezik. Primjeri učenja uključuju širok spektar naših aktivnosti, fokusirajući se na psihološki aspekt učenja. Brz tehnološki i informacijski razvoj potiče pojedince na samostalno stjecanje novih znanja - zapravo, učimo cijeli život - zato je ključna kompetencija modernog vremena učenje učenja. Učenici bi stoga trebali naučiti kako učiti - neovisno o bilješkama, knjigama, webu i drugim izvorima. Učenje je njihov rad, sposobnost samostalnog učenja jednako je važna kao i stečeno znanje u pojedinom predmetu - to znanje već može biti zastarjelo na kraju školovanja. Stoga je ključno da pojedinac može steći nova znanja i nakon završetka škole. [3,8]

2 Učenje

2.1 Definicija učenja

Jean Piaget, prirodoslovac koji se kasnije okrenuo psihologiji, uveo je pojam učenja. Prije je bio na snazi model prijenosa znanja, gdje je učenik djelovao samo kao primatelj. Novi model se temeljio na načelu povratne informacije - to jest učiti iz razlike između očekivanog i utvrđenog. Stoga se znanje povećava s postupnom izgradnjom logičkih struktura ili, se zamjenjuje jačim logičkim jedinicama. [8]

Istraživanje učenja možemo razlikovati na dva načina. Prvi način je promatrati stvarne situacije učenja kao što su učenje matematike, stranog jezika ili bilo koje druge vještine, a u tim pojedinačnim slučajevima stvaramo sliku, u kojim okolnostima i kojim metodama ljudi najbolje poznaju ove predmete. Drugi način je pronaći principe koji se primjenjuju na učenje općenito, zainteresirani smo za sam proces učenja, što se događa kada ljudi uče. Pokušavamo izvesti definiciju koja bi nam pomogla uspostaviti jednostavne i kontrolirane situacije za dokazivanje osnovnih pravila učenja. [4]

2.2 Metakognicija

Spoznaja znači stjecanje, obradu i prihvaćanje novih znanja i vještina. Metakognicija je proces razmišljanja višeg reda, svjesni smo procesa učenja i svjesni smo svojih potreba. Metakognicija nam omogućava planiranje i praćenje vlastitih mentalnih aktivnosti, organizaciju vlastitog učenja, učinkovito upravljanje vremenom i informacijama. Strukturirana je iz metakognitivne spoznaje, metakognitivnih iskustava, metakognitivnog znanja, metakognitivne kontrole, metakognitivnog planiranja, metakognitivnog praćenja i samoregulacije. Učenje učenja je inherentno metakogniciji. Možemo ga nazvati i meta-učenje, tj. praćenje i reguliranje vlastitog procesa učenja. [2]

3 Učenje učenja

3.1 Korištenje odgovarajućih strategija učenja i strategije rješavanja problema

Strategije učenja su ciljane aktivnosti učenja koje pojedinac koristi i prilagođava situaciji učenja. Razlikujemo kognitivne (memorija) i materijalne (bilješke) strategije učenja. Također se razlikuju prema svrsi, dobi učenika i predmetnom području. S tog gledišta, podjela na primarne i sekundarne strategije učenja također imaju smisla. Prikladne strategije učenja su one koje utječu na obradu informacija, pamćenje i razumijevanje stvari tijekom učenja

(mnemotehnika, sažetci, misaoni obrasci). Strategije sekundarnog ili potpornog učenja kontroliraju proces obrade informacija i utječu na pažnju i motivaciju (plan učenja, nastavni plan i program), usko su povezani sa strategijama upravljanja emocionalnim procesima. Ako je biheviorizam naglašavao važnost potpornog učenja, onda je kognitivizam svoju pozornost usmjerio na sekundarno učenje - uspješna strategija učenja mora naravno uzeti u obzir i jedno i drugo. [7]

Široko korištena klasifikacija strategija učenja podjeljena je u pet točaka.

1. Model mentalnog učenja određuje kako učenik tumači situaciju učenja - ako se usredotočite na pamćenje, on će poduzeti drugačiju strategiju, kao da se usredotočuje na dublje razumijevanje.
2. Strategije obrade materije
   Mentalne strategije uključuju uspostavljanje veza, strukturiranje, analiziranje, konkretiziranje i mnemonizaciju informacija. Materijalne strategije usredotočene su na vanjske procese (izrada bilješki, ekstrakti, misaoni obrasci)
3. Metakognitivne strategije odražavaju se u praćenju i reguliranju procesa podučavanja.
4. Ovladavanje emocionalno-motivacijskim stanjima podrazumijeva samoprocjenu, koncentraciju, svijest da uspjeh u učenju nije slučajnost, već posljedica napora i dobrih strategija, visoka procjena određenih ciljeva i, posljedično, spremnost na ulaganje u postizanje tih ciljeva, upravljanje negativnim emocijama vezanim za učenje i upravljanje stresom.
5. Tumačenje uvjeta učenja i zahtjeva uključuje zahtjeve i očekivanja, uzima u obzir metodu procjene itd. [7]

Najvažnije strategije učenja uključuju uspješne strategije čitanja. Učenje iz udžbenika i drugih izvora još je jedna važna strategija. Kada se uči iz udžbenika, važno je da se to prilagodi učeniku, odnosno njegovoj razvojnoj razini i razini razumijevanja i iskustva. Tradicionalni udžbenici nisu se pokazali dovoljno uspješnima da bi doveli u pitanje naivna epistemološka uvjerenja učenika. Također je važno da učenici mogu kombinirati podatke iz udžbenika s onima iz drugih izvora. Ovdje treba naglasiti važnost knjižnica i knjižničnog obrazovanja i informacijske pismenosti. Tu je i sve više i više elektronskih medija u kojima su potrebni odabir i kritičnost. [6, 7]

Najčešće korištena metoda učenja je metoda interpretacije, stoga je važna strategija učenja učenja kroz slušanje. Učenici mogu slušati učitelja u razredu ili gledati online predavanje. Za

učenje slušanjem potrebne su učinkovite strategije slušanja, kao što su pažnja na strukturiranje materije, aktivno samoispitivanje I odgovaranje na pitanja (što također očekujemo od dobrog predavanja) i selektivno transparentno post-tumačenje. [7]

Ne susrećemo se često sa strategijama rješavanja problema, najvjerojatnije zato što se razlikuju prema predmetu učenja. Možemo se držati stabiliziranog uzorka. Prvo dobro čitamo zadatak i možemo opetovano razumjeti tekst. Potom pokušavamo razumjeti pojavu odnosno fenomen i napraviti tablicu u kojoj razlikujemo poznate i nepoznate količine. Također nacrtamo skicu i unosimo podatke. Rastavimo fenomen kako bismo saznali koju izjavu ili zakon možemo koristiti za spremanje i zapisivanje. Ovaj problem stavljamo u jednadžbu. Idite lijevo od jednadžbe za prijenos nepoznate količine, prvo pokušajte jednadžbu s jedinicama - ako se ne podudaraju, nešto nije u redu. Također, podudaranja jedinica ne znači da je jednadžba ispravna. Razmotrimo značenje ovisnosti u jednadžbi, možemo je i potvrditi ostavljajući jednu ili drugu količinu da raste preko svih granica ili se postavi na nulu. Tek tada unosimo numeričke podatke u jednadžbu i izračunavamo rezultat. Također bismo trebali pitati je li rezultat smislen ako je njegova veličina u skladu s veličinom linije podataka. Konačno, ponovno provjerite račun. [8]

3.2 Prednosti i nedostaci vlastitog znanja

Poznavanje prednosti i nedostataka vlastitog znanja, njegovih jakih i slabih područja odnosi se na meta-učenje. Povratne informacije su važne, uključujući i oblik brojčanih ocjena, a još više od učitelja i kolega u razredu, i samorefleksije. Učenici su na istoj razini razvoja, tako da drugi učenici mogu oponašati metakognitivno funkcioniranje više vještih kolega. Važno je da nastavnik daje kognitivne i metakognitivne procese pri rješavanju zadatka (ne objašnjava postupke bez misaonih procesa), već neko vrijeme reflektira i refleksiju učenika. Učitelji ne bi trebali dati samo svoj kognitivni model, već bi i učenici trebali predstaviti svoje metakognitivne procese. Stoga, učitelj može pomoći učeniku da upozna karakteristike učenika ili, stvaranje kognitivnog samopoštovanja. Učenik mora biti sposoban prosuditi što zna, što ne razumije, koja su njegova jaka područja i koja nisu, te slabijim područjima posvetiti više vremena i truda. Kroz komunikaciju i procjenu se razvijaju kompetencije učenja učenja. [3]

3.3 Samoprocjena vlastitih postignuća

Moramo dopustiti učenicima samoprocjenu vlastitih postignuća, tako da će ova procjena biti točnija. Nastavnik treba pomoći učenicima da shvate svrhu zadataka kako bi razumjeli kriterije ocjenjivanja, uključili učenike u osmišljavanje kriterija ocjenjivanja i pronašli načine za poboljšanje tih kriterija, kako bi učenici dobili mogućnost barem djelomičnog nadzora nad svojim učenjem, pomažući učenicima da vide učenje kao srodan proces tražit će veze s prethodnim i budućim učenjem, povećati motivaciju i podržati razvoj samopouzdanja i omogućiti samoprocjenu. [3]

3.4 Kritičko razmišljanje o svrsi i ciljevima učenja

Za napredek u učenju, ciljevi koje pokušavamo postići su vrlo važni. Oni nas motiviraju da budemo svjesni razlika između sadašnjeg trenutka i mjesta gdje želimo biti. Učitelj pomaže učenicima da postave realne ciljeve, zajedno s njima prati napredak i pomaže im postići i ocijeniti ciljeve. [1]

3.5 Upravljanje vremenom i informacijama

Važna vještina koja prati učenje je samoregulacija vremena. To je povezano s upravljanjem informacijama i koliko vremena trošimo na određenu aktivnost. Također je važno kontrolirati raspodjelu aktivnosti i obveza prema njihovoj važnosti. [1]

3.6 Sposobnost samo-motiviranja, ustrajnost u učenju

Za ovu sposobnost, ključni razlozi zašto uopće učimo je odluka o ulaganju u vrijeme i učenje, te inzistiranje na učenju kako bi aktivnost ostala potpuna. Interna motivacija temeljena na znatiželji nije dovoljna za uspješno učenje. [3,7]

3.7 Razvijanje pozitivnog stava prema učenju

Pozitivan stav prema učenju povezan je s emocionalnim iskustvom učenja u ranim razdobljima obrazovanja. Stoga je potrebno stvoriti pozitivnu klimu i pozitivan stav prema učenju, budući da ta rana iskustva imaju značajan utjecaj na kasnije uspješno učenje i napredak tijekom cijelog

života. Važno je vjerovati u vlastitu sposobnost uspješnog učenja i prevladavanja prepreka i shvatiti da su pogreške dio života i procesa učenja. [3]

3.8 Učenje i epistemologija

Epistemologija je kratka teorija znanja ili teorija znanja kognitivnih teorija (o spoznaji utemeljenoj na iskustvu). Ne možemo razumjeti fiziku bez teorije fizike, a ne možemo razumjeti obrazovanje bez teorije obrazovanja. Epistemologija je povezana sa sumnjom - pita nas kako znamo što znamo. [5

Epistemološka uvjerenja učenika - njihovi pogledi na prirodu znanja i učenja - utječu na njihov pristup obrascima fizike, ali i na njihov pogled na svijet, na metakognitivne prakse i na okruženje za učenje. Čak i najbolje reforme kurikuluma nisu bile najuspješnije u oblikovanju sofisticiranih epistemoloških uvjerenja učenika. Novi hrvatski kurikulum za fiziku je izvrstan, ali uspjeh meta-učenja i formiranje epistemoloških uvjerenja kroz obrazovanje ovisi o učenicima i nastavnicima. Istraživanja su pokazala da učenici mogu produktivno učiti koncepte bez razmišljanja o naučenom i bez značajnih promjena u svojim epistemološkim uvjerenjima. Stoga, svaki učitelj mora sam odlučiti hoće li pokriti manje koncepata ili tehnika rješavanja problema zbog epistemološke agende. [6]

4. Zaključak

Učenje učenja je daleko više od pukog razvoja strategija za sposobnost pohranjivanja podataka. To je višeslojni proces i samokontrola nad tim procesom - meta-učenje. To je učenje razmišljanja, traženja uzročno povezanih odnosa između stvari. Radi se o planiranju i praćenju procesa rješavanja problema - i matematičkih i životnih. Učimo samo-motivaciju i ustrajnost, učimo kako sami učiti i o suradnji. Osim učenja, bavimo se i pitanjem zašto vjerujemo u ono u što vjerujemo, zašto kažemo da je nešto istinito i kako opravdavamo činjenicu da je nešto istinito.

3.1. TRANSLATION OF SOURCE TEXT 2

Learning to Learn

Summary

The definition of learning has changed over time. The primary model of knowledge transfer considered the student a passive receiver. The new model introduced the concept of learning based on the difference between the expected and the established. The modern concept of learning introduces conscious learning with emphasis on metacognition. Learning to learn is connected with metacognition and we can also call it meta-learning. This includes the knowledge and ability to use appropriate learning and problem-solving strategies, knowing the strengths and weaknesses of one's own knowledge, an accurate self-assessment of one's own accomplishments, critical thinking about the purpose and goals of learning, good time management and informing, the ability to self-motivate and develop a positive attitude towards learning. When learning physics, we have to take the epistemology plan into account.

Key words: meta-learning, physics, epistemology

1 Introduction

When we think about learning, the first thing that comes to mind is school, textbook, studying "by heart". However, we also constantly learn outside of school – to cook new meals, use new electronic devices, ride a bicycle or speak a new language. Examples of learning include a wide spectrum of our activities, focusing on the psychological aspect of learning. The fast technologic and information development encourages individuals to acquire new knowledge on their own – actually, we learn our lives – which is why the key competence in modern times is learning to learn. Thus, students should learn how to learn, study – regardless of notes, books, the web and other sources. Learning is their work, the ability to learn on their own is just as important as knowledge accumulated about a certain subject – that knowledge can already be outdated once they finish their education. So, it is crucial for an individual to be able to accumulate new knowledge after finishing school. [3,8]

2 Learning

2.1 The definition of learning

Jean Piaget, a natural scientist who later turned to psychology, introduced the concept of learning. The model of knowledge transfer used to be in force, a model where a student acted only as a receiver. The new model was based on the principle of feedback – which is to say learning from the difference between the expected and the established. Then knowledge increases with gradually building logical structures or it is replaced by stronger logical units. [8]

Learning research can be differentiated in two ways. The first is to observe real life learning situations such as studying mathematics, a foreign language or any other skill and those individual cases make a full image about under which circumstances and methods people know these subjects best. The second way is finding principles applicable to learning in general; we are interested in the process of learning in itself, what happens when people learn. We are trying to derive a definition which would help us establish simple and controlled situations for proving the basic rules of learning. [4]

2.2 Metacognition

Cognition means accumulating, processing and accepting new knowledge and skills. Metacognition is the process of a higher order of thinking, we are aware of learning processes and aware of our needs. Metacognition allows us to plan and track our own mental activities, organize our own learning, efficiently manage time and information. It is structured from metacognitive realization, metacognitive experiences, metacognitive knowledge, metacognitive control, metacognitive planning, metacognitive tracking and self-regulating. Learning to learn is inherent to metacognition. We can call it meta-learning, that is to say tracking and regulating our own learning process. [2]

3 Learning to learn

3.1 Using the appropriate learning and problem-solving strategies

Learning strategies are targeted learning activities which an individual uses and adjusts to the learning situation. There is the cognitive kind (memory) and material kind (notes) of learning strategy. They also differ in purpose, student age and subject area. From that point of view, the

division into primary and secondary learning strategies also make sense. Appropriate learning strategies are those that affect information processing, memorizing and understanding things during studying (mnemonics, summaries, thought patterns). Strategies of secondary or support learning control the process of information processing and affect attention and motivation (learning plan, curriculum), they are closely connected to emotional process control strategies. If behaviorism emphasized the importance of support learning then cognitivism focused its attention on secondary learning – a successful learning strategy should, of course, take both into account. [7]

A widely used learning strategy classification is divided into five points.

1. The mental learning model determines how a student interprets a learning situation – if you focus on memory, it will use a different strategy, as if it focuses on deeper understanding.
2. Matter processing strategies
   Mental strategies include making connections, structuring, analyzing, giving concrete expression and mnemonization of information. Material strategies focus on outside processes (making notes, extracts, thought patterns)
3. Metacognitive strategies are reflected in tracking and regulating teaching processes.
4. Mastering emotional-motivational states implies self-assessment, concentration, being aware that successfully learning something is no coincidence but rather a consequence of hard work and good strategies, high assessment of set goals and, consequentially, being ready to invest in reaching those goals, managing negative emotions related to learning and managing stress
5. Interpreting studying terms and demands includes demands and expectations, considers the assessment method etc. [7]

The most important learning strategies include successful reading strategies. Studying from textbooks and other sources is another important strategy. When it comes to learning from textbooks, it is important to adjust it according to the student, which is to say their development level as well as their understanding level and experience. Traditional textbooks have not been proven successful enough to question the students' naïve epistemological beliefs. It is also important that students be able to combine information from textbooks with information from other sources. The emphasis here should be put on the importance of libraries and library

education and information literacy. There is also more and more electronic media that require choice and criticality. [6,7]

The learning method used most often is the interpretation method, so an important learning strategy is learning through listening. Students can listen to their teacher in class or watch an online lecture. It takes more efficient listening strategies for learning through listening such as being attentive to structuring matter, active self-examination and answering questions (which we also expect from a good lecture) as well as selective transparent post-interpretation. [7]

We do not often encounter problem-solving strategies, most likely because they differ based on the learning subject. We can stick to the stabilized pattern. First, we read through the assignment well and we can understand the text repeatedly. Then we try to understand the occurrence or phenomenon and make a chart differentiating from the known and unknown quantities. We also draw a sketch and enter data. We break the phenomenon apart to find out which statement or law we can use for storing and logging. We put this problem into the equation. Go left from the unknown quantity transfer equation, try the unit equation first – if they do not match, something is wrong. Also, just because units match does not mean the equation is correct. Let's consider the meaning of dependence in the equation, we can even confirm it by leaving one or another quantity do grow beyond all limits or set itself to zero. Only then do we input numeric data into the equation and calculate the result. We should also ask whether the result makes sense if its size matches s line data size. Finally, check the calculation again. [8]

3.2 Strengths and weaknesses of one's own knowledge

Knowing the strengths and weaknesses of one's own knowledge, its strong and weak areas relates to meta-learning. Feedback is important, including the form of numbered grades, even more so from teachers and schoolmates as well as self-reflection. Students are on the same development level so other students can imitate metacognitive functioning of a more skilled classmate. It is important the teacher give cognitive and metacognitive processes when solving a task (not explaining actions without thought processes) but reflect the students' reflection for a while. Teachers should not just give their own cognitive model; the students should introduce their own metacognitive processes. Thus, the teacher can help a student get acquainted with the other students' characteristics or create cognitive self-respect. A student must be capable of realizing what he/she knows, does not understand, which areas are his/her strong suits are

and which are not, as well as knowing to put more time and effort into the weaker ones. The competence of learning to learn develops through communication and assessment. [3]

3.3 Self-assessment of one's accomplishments

We must allow students to assess their own accomplishments so the estimate will be more correct. A teacher should help the students understand the purpose of a task so they could understand grading criteria, they should be involved in devising grading criteria and find ways to improve them so they could get the option to at least partially control their learning. It would help students see learning as a related process, connecting it to past and future learning, increase their motivation and support confidence development while enabling self-assessment. [3]

3.4 Critical thinking about the purpose and goals of learning

To advance learning, the goals we try to set are very important. They motivate us to be conscious of differences between the present moment and the place we want to be. A teacher helps the students set realistic goals, follows their progress alongside them and helps them reach and assess goals. [1]

3.5 Time and information management

An important skill following learning and self-regulating time. It is linked to information management and how much time we spend on a certain activity. It is also important to control activity distribution and committing to their importance. [1]

3.6 The ability to self-motivate, persistence in learning

The key reasons why we even learn is, for this ability, the decision to invest in time and learning as well as insisting on learning so the activity would remain complete. Internal motivation based on curiosity is not enough to learn successfully. [3,7]

3.7 Developing a positive attitude towards learning

A positive attitude towards learning is connected to an emotional learning experience in the early stages of education. Given the fact those early experiences have a strong effect on learning successfully later on, as well as continuing progress throughout life, it is necessary to create a positive atmosphere and attitude towards learning. It is important to believe in one's own ability to learn successfully and overcome obstacles while also realizing mistakes are a part of life and the learning process.

3.8. Learning and epistemology

Epistemology is a short knowledge theory or theory of cognitive theory knowledge (about cognition based on experience). We cannot understand physics without physics theory so we cannot understand education without education theory. Epistemology is connected with doubt – it asks how we know what we know. [5]

Students epistemology beliefs – their views on the nature of knowledge and learning – affect their approach to physics patterns, but also on their worldview, on metacognitive practices and learning environment. Even the best curricular reforms were not too successful in shaping students' sophisticated epistemological beliefs. The new Croatian physics curriculum is outstanding, but the success of meta-learning and the forming of epistemological beliefs through education depends on students and teachers. Research showed that students can productively learn concepts without thinking about what they've learned and without substantial changes in their epistemological beliefs. So each teacher should decide on their own if they should cover less concepts or techniques of problem solving due to the epistemological agenda. [6]

4 Conclusion

Learning to learn is far more than just mere development of strategies for data storing ability. It is a multilayered process and self-control over that process – meta-learning. It is learning to think, to seek causality between things. It is about planning and tracking problem solving processes - both mathematical and life. We learn self-motivation and perseverance, we learn how to learn on our own as well as learning about cooperation. Besides learning, we deal with the question why we believe what we believe, why we say something is true and how we justify the fact that something is true.

3.2. Commentary and analysis

Text 2: *Learning to learn*

1. genre: scientific, professional paper

2. source: article published in journal entitled *Varaždinski učitelj – digitalni stručni časopis za odgoj i obrazovanje*

3. audience: teachers and professors, general audience interested in metacognition

4. purpose of writing: introducing a new knowledge transfer model and familiarizing the public with it, introducing the concept of metacognition, describing methods and environments for more efficient learning, explaining to teachers how to help their students learn better

5. authenticity: original article

6. style: informative, scientific

7. level of formality: formal

8. layout: five sections; summary, introduction, section two divided into two sub-sections, section three into eight sub-sections, conclusion

9. content: after the summary, the introduction clarifies what it means to learn and how humans actually do it. Section two tackles the definition of learning, how learning is researched, what metacognition is, how it is structured, what it allows us to do. It goes on explaining learning strategies – what they are, how they work, how they are classified. Problem solving strategies are also described. Section three focuses on how teachers should approach metacognition and learning strategies, how to communicate them to their students, how to help students learn. It also focuses on critical thinking, time and information management, self-motivation, learning and epistemology. The conclusion summarizes all points of research and offers the author's thoughts on the subject.

10. cohesion: lexical cohesion is achieved by repetition (and explanation) of terms

11. sentence patterns: mostly concise and short sentences, sometimes listing terms. A number of longer, more complex sentences

12. terminology of the subject: metacognition, learning strategies, self-assessment, epistemology, time and information management, critical thinking, learning model, self-regulating

This text was slightly more challenging to translate due to its terminology. The first thing I had to do was research the terms used and find equivalents for those that did not yet have a place in the Croatian language. Fortunately, I managed to find most, if not all, terms in Croatian after reading through several scientific papers by Croatian scientists.

I was not fully familiar with terms such as "metacognition" and "learning strategy" so before I started translating, I had to find out what they refer to exactly.

One of the main issues in translating this text was the fact that Croatian offers only the word "učenje" for both learning and studying. I had to think within the context because using the wrong one would change the sentence meaning completely. For example, in the sentence "Učenje iz udžbenika i drugih izvora još je jedna važna strategija.", "učenje" refers to studying. In the sentence "Definicija učenja se s vremenom promijenila.", "učenje" refers to learning. As the word is frequently used, I had to make sure my translation fit in right with the surrounding context.

Other than this terminology, I should mention translating "prirodoslovac" and "spoznaja" as opposed to "kognicija". "Prirodoslovlje", or natural science, is a branch of science concerned with the description, prediction, and understanding of natural phenomena. After checking dictionaries, I had the choice to translate "prirodoslovac" as "naturalist" but found that it could be used as a name for a person who wrote works in the naturalist period of literature. I opted for "natural scientist" because it clarifies the meaning. "Spoznaja" and "kognicija" can be considered synonyms so I had some trouble when translating "metakognitivna spoznaja". I could not translate it as "metacognitive cognition" because it is circular and points to itself, stripping the phrase of its meaning, so I chose to use "metacognitive realization" to stay as true to the original as possible.

I encountered another problem in section three, 3.1 to be specific. The last paragraph of the section deals with putting problem solving strategies in equations, calculating them, listing values into tables, all of which I found to be very abstract as there is no previous mention of them. I researched what the author could be referring to and found terminology that fits into

the context. This paragraph uses terms such as “skica”, “fenomen”, “jednadžba za prijenos nepoznate količine” to which I found the following equivalents: “sketch”, “phenomenon”, “unknown quantity transfer equation”.

A few sentences were somewhat longer so I had to use several dependent clauses to get the meaning across, but others were generally short and to the point.

4. SOURCE TEXT 3 – Gojko Nikolić, PhD: *Inovacije i izumi, danas I kroz povijest*

1. Uvod

Razvitak ljudske vrste i civilizacije treba zahvaliti inovacijama i mnogim izumima. Već od prvih ručnih alata i oruđa do oružja njihov utjecaj je mijenjao ponašanje ljudi osiguravao im sposobnost jednostavnijeg opstanka. Novorazvijeni tehnički izumi omogućavali su rast gospodarstva kao i znanosti, što je utjecalo na društvo, društvene i socijalne odnose. Te promjene su poticale daljnje razvijanje novih tehničkih rješenja, a ona na društvo i ta se spirala stalno uspinje. Neki od izuma u industriji bili su povod industrijskim revolucijama, poput izuma parnog stroja, struje, industrijskog računala PLC-a (*engl. Programmable Logic Controller*), računala, robota. U medicini revoluciju u liječenju napravila su npr. cjepiva, antibiotici ali i niz uređaja od rendgena do magnetske rezonance, a uskoro to će biti medicinski roboti i računala za dijagnostiku.

Danas se smatra da su inovacije i izumi glavni pokretač gospodarstva, te se prati taj podatak kao indikator razvijenosti gospodarstva i društva jedne zemlje.

Mnogo je pojmova i zaključaka vezano za inovativne postupke koji se isprepliću, dio njih se uzima kao ključne čimbenike bez kritičkog pristupa, a dio ignorira.

Izumi i izumitelji posebno oni značajniji zaslužuju posebnu pozornost i zahvalnost. Nažalost kroz povijest, kao i danas mnogi izumitelji su ostali zakinuti za priznanja izuma, a preuzeli su ih drugi, što je nepravda koju bi trebalo ispraviti.

2. Razjašnjenje pojmova

Često se u svakodnevnom govoru, člancima, izlaganjima, neprecizno ili netočno koriste izrazi kao što su kreativnost, inovativnost, inovacije, izumi, patenti, inovatori i izumitelji. Radi jasnoće dati će se razjašnjenje ovih pojmova.

Kreativnost označava mentalni proces koji uključuje stvaranje novih ideja, pojmova i rješenja problema [1, 2]. Smatra se da kreativne osobe imaju slobodan um bez predrasuda, bez ograničenja, stvaraju vlastita pravila, ambiciozni su i borbeni. Prihvaćaju izazov prema nepoznatom ili neriješenom. Njihova karakteristika je osobnost, originalnost i nesputanost [3]. Istraživanja pokazuju da su kreativni ljudi inteligentni, ali da svi inteligentni ljudi nisu i

kreativni [2,3]. Kreativnost nije samo karakteristika i neophodnost za umjetnike, ona je nužna u svim procesima stvaranja, istraživanja, rješavanja problema bez obzira koje vrste oni bili. Jednako je nužna za znanstvenike, za gospodarstvenike, stručnjake u svim djelatnostima te za administrativno osoblje. Kreativnost stvara nove ideje, a **inovativnost** je proces preobrazbe tih ideja uz korištenje znanja za nove proizvode i usluge, za novi tehnološki proces te organizaciju. Ideje provodi u život. To je stvaralački proces bez kojeg nema uspješnosti u poslovanju i društvu. Kreativnost je pokretač napretka. „*Znanost je pretvorba novca u znanje, a inovacija je pre-tvorba znanja u novac*“ izjavila je Maryann P. Feldman (University of Toronto) [4].

Iako se može smatrati da se **inovacije** događaju neovisno o nekim vanjskim utjecajima, to nije sasvim točno, bitna je društvena klima koja potiče istraživanje i podržava rješenje problema. Za nastanak inovacije i njenu implementaciju sigurno je nužan i inovacijski sustav, bilo formalan ili neformalan [4].

Osoba koja realizira novu ideju kroz njeno praktično rješenje je **inovator**. Danas su ta rješenja sve više polidisciplinarna te je oko neke inovacije najčešće angažirano više inovatora. Pokretač inovacije ima zadatak pro-vođenja inovacije ili vođenje tima za njenu implementaciju. Često se daju savjeti i sugestije mladim inovatorima da inovacija bude jednostavna jer sve uspješne inovacije iznenađujuće su jednostavne [4].

U tekstovima i običnom govoru često se poistovjećuje inovacija i **izum**. Inovacija nije izum, ali svaki izum je inovacija. Izum je novo rješenje nekog, najčešće, tehničkog problema koji ranije nije postojalo. Put do izuma zahtijeva istraživanje, eksperimentiranje, često izradu niza prototipova, njihovo ispitivanje i korekciju rješenja.

Izum se može prijaviti državnoj instituciji za zaštitu intelektualnog vlasništva, te ako bude, nakon ispitivanja priznat, zaštićuje se **patentom**. Dobri izumi bez dobre komercijalne podrške, često nikada ne dožive plasman [5]. Osoba koja je osmislila izum je **izumitelj**. Naziva ga se i **inovatorom**, što on jeste, ali obrnuto ne vrijedi. Izumitelj ili izumitelji su osobe koje su prve izumile i zaštitile svoj izum. Važno je da izum bude zaštićen. Svi koji su kasnije dorađivali izum, osuvremenjivali ga ili tehnički unapređivali, nisu izumitelji osim u slučaju ako su bitno promijenili mogućnosti izuma te svojim novim mogućnostima predstavlja novi proizvod (stvar).

Izum se priznaje patentnom ispravom s kojom se i štiti. Da bi se neki izum priznao kao patent postoje niz pravila koja se moraju zadovoljiti. Mora biti nov, odnosno prije podnošenja patentne prijave ne smije nigdje biti prikazan u javnosti, mora biti inventivan i ne smije

očigledno proizlaziti iz stanja tehnike. Treba biti primjenjiv ili se predviđa njegova primjena. [6]

Ovlašteno državno tijelo na temelju ispitivanja prijavljenog izuma, na zakonom propisanom načinu, odlučuje da li se izum može prihvatiti kao patent, te mu izdaje patentnu ispravu. Patent pripada u skupinu tzv. intelektualnog vlasništva, što je širi pojam jer obuhvaća i druge produkte ljudskog uma i talenta, te se zaštićuje u Državnom zavodu za intelektualno vlasništvo ili u Svjetskoj organizaciji za intelektualno vlasništvo, WIPO, odnosno sličnim asocijacijama [6]. Patentom se ne mogu zaštiti ideje, otkrića, znanstvene teorije i matematičke metode, softver, estetske tvorevine, životinjski i biološki postupci, medicinski postupci i sl. Nacionalni postupak i patentna prava su propisana zakonom i nalaze se na stranicama Državnog zavoda za intelektualno vlasništvo RH [7, 8].

Patent je vlasništvo (izumitelja ili druge osobe, odnosno institucije) i Patentnom ispravom je osigurano pravo vlasniku na izradu i iskorištenje patenta tijekom ograničenog vremena trajanja u zemlji ili zemljama u kojima vrijedi zaštita patenta. Maksimalno trajanje zaštite patenta je do 20 godina, kada postaje javno dostupan svim zainteresiranim.

3. Iz povijesti

Zaštite izuma posebno je bila izražena u renesansi. Slobodom duha i procvatom znanosti stvarale su se nove ideje, nova tehnička rješenja. Izumitelji, najugledniji ljudi toga doba, bili su svjesni da objavljivanjem njihovih izuma oni postaju dostupni široj publici koja ih može koristiti. Neki su malim izmjenama tuđe izume prikazivali kao svoje. To je plagiranje bilo često u renesansi [9].

Istraživači Marcus Popplow (sredinom 1990 -tih), Danko Zelić (sredinom 2015.) i Ivica Martinović (krajem 2017.) proučili su dokumente po kojima je Faust Vrančić (sa pseudonimom Felice Vero) zatražio i dobio povlasticu od dužda Pasqualea Cicogne 28. 10. 1590. za izum „....novih strojeva....“ u trajanju od 25 godina. Istraživači su dosta detaljno objavili način i uvjete dodjele tih povlastica. Ukazali su da su u Mletačkoj Republici postojala pisana pravila (zakon) koja su se morala poštovati kao i uvjeti koje moraju izumi zadovoljiti da bi im se dodijelile privilegije ili povlastice.

Ovo pitanje je potrebno istaknuti jer se kao prvi zakon o patentima netočno smatra Statut engleske kraljice Anne (1665.-1714.), koji je stupio na snagu 1710. godine. Navodi se kao izvornik patentnoga i autorskog prava, odnosno intelektualnog vlasništva [10].

U razdoblju renesanse vladari u Veneciji, Milanu i Firenci su dodjeljivali privilegije ili povlastice za izume s preciznim uvjetima trajanja, zaštite i kazne prekršiteljima. U Mletačkoj Republici donesen je 1474. god. prvi i najstariji poznati zakon o patentima skoro tristo godina prije Anninog Statuta. Koliko je bilo zahtjeva za zaštitom izuma govori podatak da je od 15. pa do kraja 18. stoljeća iz-dano oko 1900 povlastica (za patente) [11].

Davanje povlastica bilo je točno razrađeno. Postupak je započinjao slanjem molbe državnom poglavaru tj. duždu. Razmatranje te molbe bilo je u nadležnost Providura Komune. Na temelju mišljenja trojice stručnjaka javnih službenika o dodjeli povlastica odlučivao bi Senat većinom glasova. Senatska odluka imala je snagu Zakona, a isprava je bila u obliku svečanog duždevog pisma (dukala) s visećim pečatom [11].

U odluci o dodjeljivanju povlastice stajalo je nekoliko obvezatnih dijelova teksta:

1. komu se izdaje povlastica, (nije se tražila provjera identiteta podnosioca molbe)
2. gdje povlastica vrijedi (na teritoriju Mletačke Republike)
3. za koje razdoblje povlastica vrijedi,
4. na koje se izume povlastica odnosi,
5. određuje se kazna za prekršitelje povlastice,
6. izriču se uvjeti pod kojima se povlastica izdaje molitelju:
   - da je izum njegov i da ga drugi nisu već prijavili,
   - da molitelj mora objaviti izum u određenom razdoblju (navodi se broj mjeseci),
7. ako nisu ispunjeni uvjeti pod točkom 6, povlastica je ništavna i ni od kakve valjanosti, kao da nije ni izdana[12].

Ako se pogledaju današnji uvjeti iz-davanja Patentne isprave vidi se da su oni vrlo slični, a ključna razlika je u temeljnim zahtjevima iz točke 6 koji su uvjeti za predaju zahtjeva za priznavanje izuma. Točka 5 danas je sastavni dio Zakona o autorskim pravima i predmet suda u slučaju spora. Postojale su očito razlike u uvjetima izdavanja privilegija ili povlastica, odnosno priznavanje patenta i patentnih prava između tadašnjih država. Kako je u prethodnom tekstu rečeno uvjet za priznavanje izuma i davanje povlastica je originalnost izuma i da ih netko drugi nije već prijavio. Poznato je da je Faust Vrančić u svojoj knjizi *Machinae Novae* jasno iznosio gdje je vidio neko rješenje, da li mu je to netko rekao, kao i za one koje je izrijekom

napisao da su to njegovi izumi. Prema analizi autora ovog članka u knjizi *Život i izumi Fausta Vrančića* [14], od ukupno prikazanih 57 crteža u njegovoj knjizi, njegovih originalnih izu-ma je samo 16, a zajedno sa značajnim tehničkim inovacijama koji se mogu ubrojiti u nova tehnička rješenja ima ih ukupno 29, odnosno 51 %. Za svoju knjigu Faust je zatražio privilegije od francuskog kralja Louisa XIII. Pravednog, koje je dobio 6. 1614., te od velikog vojvode Cosima II. Medicija, koje je dobio 28. 6. 1615. Postoji vjerojatnost da su među prikazanim novim strojevima bili i oni za koje je dobio povlasticu od dužda Pasqualea Cicogne, 10. 1590. Izgleda da kriterij *da je izum njegov i da ga drugi nisu već prijavili* u ovom slučaju nije provjeravan.

Razlike postoje i u odobravanju trajanja zaštite, kao i o kaznama ako se neko ogriješi o povlasticama. Dužd P. Cicogne je 1590. naveo u svojoj povlastici 25 godina zaštite, a privi-legije koje je Faust dobio od vladara Louisa XIII i Cosima II. Medicija bile su na 30 godina. Zaštitu koju je dobio Filippo Brunelleschi 1421. od strane grada Firence za svoj izum „*sredstvo dovođenja robe na rijeci Arno"* vrijedila je tri godine, u kom vremenu se dalo pravo autoru da komercijalizira izum, a nakon toga u cilju razvoja društva izum postaje dostupan svim zainteresiranima. [4, 13] Isto tako zanimljiv je podatak kojeg navodi dr. Danko Zelić za Faustovog suvremenika arhitektu i slikara Firentinca Bernarda Buontalentija koji je 1578. nakon što je dobio povlastice za tri svoja patenta od vladara Franciska I. Medicija uputio zahtjev za priznavanje tih patenata vladarima 42 europske zemlje. Na njegov zahtjev pozitivno mu je odgovorilo 9 država među kojima i Dubrovačka Republika [11]. To govori da su i druge države odobravale povlastice i time priznavale izume.

U renesansi postojalo je i trgovanje patentima, kao i danas. Kao primjer može poslužiti ugovor od 5. 5. 1588. napisan u Grazu po kojem barun Johannes/Hans Friedrich Hofmann ustupa Faustu Vrančiću i Paolu Gandiniju iz Luce (Paolo Gandiny da Lucca) prava na njegove izume u „zemljama Dalmacije, Krfu i Senju" uz naknadu polovice dobiti od godišnje prodaje [11]. Odatle i procjena da je Faustova ostavština od 52060 srebrenih milanskih libri, za koji uz ostali dio opravdanja navodi da ju je *priskrbio vlastitim poštenim tru-dom i marljivošću.."* je stekao četvrtstoljetnim bavljenjem poduzetništvom zasnovanim na tuđim i svojim izumima [11, 14],

Znanstvenici Paolo Galluzzi, Bertrand Gille, Franko Pragera, Claudio Sgarbia i Ladislao Reti istražuju renesanse inženjere izumitelje i dolaze do mnogih iznenađenja i konstatiraju da su se veličine poput genija Leonarda da Vincija, ali i neki drugi (Francesco di Giorgio Martini) koristili tuđim idejama i zamislima. Crteže svojih prethodnika su precrtavali, dorađivali i

prikazivali kao svoje. Većina istraživača ističe Mariana di Jacopa Taccolu kao početnog i najznačajnijeg izumitelja. Postoje teorije da je i on dio svojih inovacija vidio u kineskoj knjizi o poljoprivredi *Hong Shu* (*Nong Shu*) koju je napisao Wang Zhen 1313. godine, kada je 1434. kineska delegacija posjetila Italiju [15, 16]. Uskoro bi se trebalo promijeniti navođenje krivih izumitelja za koje se pogrešno misli da su pred više stotina godina pokrenuli korisne ideje koje se i danas koriste u suvremenom obliku. Trebalo bi ispraviti pogrešku i zahvaliti za ta dostignuća onima kojima su zapravo zaslužni za izvorne izume. Čak i genije Leonardo da Vinci po novim spoznajama nije izvorni izumitelj helikoptera, podvodnog odijela, višecijevnih topova, padobrana i niz dugih izuma [9]. Osim nekorektnog i nepoštenog pristupa pojedinaca, često je kriva javnost koja to prihvaća i dalje širi pogrešnu informaciju sve do današnjih dana.

Dobro je prisjetiti se nekih iz nedavne prošlosti. Poznato je da je „zračni brod“ dirižabl izumio, patentirao i izradio Zagrepčanin David Schwarz, ali je iznenada umro dva dana prije svečanog polijetanja izrađenog zračnog broda pred njemačkim carom Wilhelmom i vojnom komisijom 15. siječnja 1897. u Berlinu. Bogati njemački grof Ferdinand von Zeppelin, otkupio je crteže i proračune od njegove udovice, neznatno izmijenio crteže i prijavo kao svoj patent. Od tada se dirižabl naziva cepelinom. Poznat je spor Guglielmoa Marconija i Nikole Tesle o izumu radija koji je okončan odlukom Vrhovnog suda SAD 1943. u korist Tesle, makar se i danas u udžbenicima navodi da je izumitelj radija Marconi [9]. To su samo dva široj javnosti poznata slučaja, koja ni povjesničari ni tehničari ni enciklopedisti pa time ni javnost ne mijenja. Takvih primjera ima više i danas, što se može pažljivim čitanjem intervjua o važnim izumima vidjeti, kako se izvorni izumitelji vremenom pomalo izostavljaju, a isključive zasluge preuzimaju drugi koji su ga tehnički dorađivali.

4. Utjecaj izuma na rast BDP

Nobelovac Robert Solow je svojim istraživanjima uvjerio većinu ekonomista da tehnološke inovacije moraju biti glavna snaga u rastu proizvodnje, stvaranju novih vrijednosti i zapošljavanju u visoko industrijaliziranim gospodarstvima [17]. Zbog sve agresivnijeg tržišta nužno je stalno uvođenje inovacija u proizvode, proizvodnju i marketing. To mogu ostvariti samo kreativni i inovativni ljude s motivacijom, sa svježim pristupima novim idejama i njihovoj implementaciji [18].

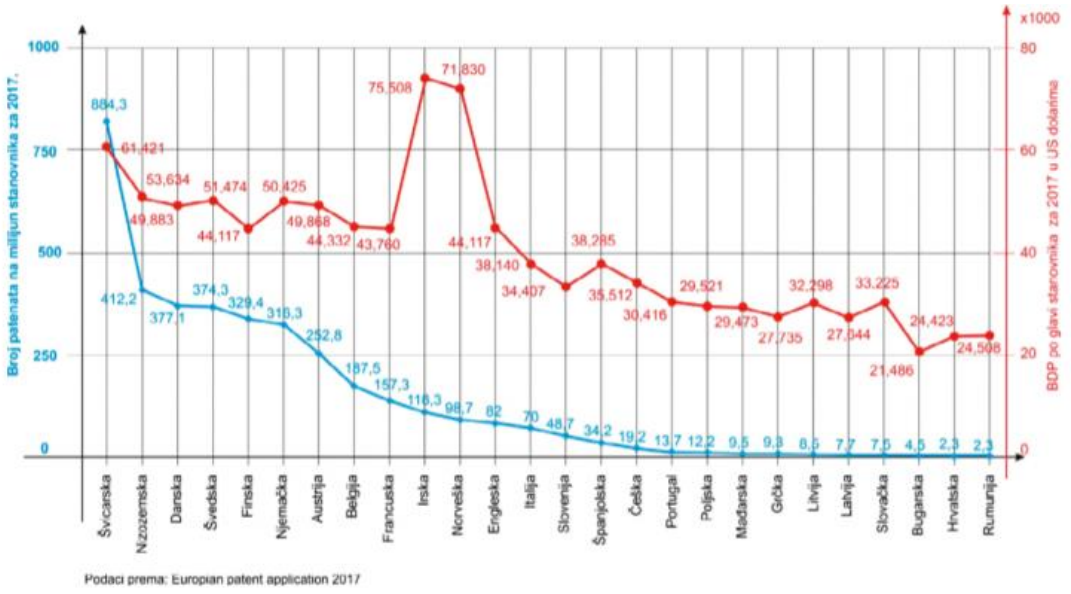
Shqipe Gerguri i Veland Ramadani iskazali su važnost inovacije riječima: „*Inovacija je otkucaj srca gospodarstva dvadesetprvog stoljeća, a suprotna sila je komodizacija, danas jedna od*

najmoćnijih sila u poslova-nju koja uzima sve ono što je bilo profitabilno i brzo ga čini uobičajenim i marginalnim, isisavajući vitalnost i profitabilnost.“ [18].

Rečeno je da je inovacija proces pretvorbe ideja i znanja u nove proizvode i usluge. Budući da se one događaju u svim područjima čovjekovog rada moguće je registrirati samo one koje se predstavljaju i prijavljuju kao izum. Postoje podaci kod institucija i biroa koje izdaju patentne isprave o prihvaćenim izumima - patentima. Kao usporediva mjera između država uzima se podatak broj patenata u Europskom patentnom uredu na milijun stanovnika [19].

Uspjeh gospodarstva mjeri se Bruto domaćim proizvodom ili BDP-om (engl. *Gross Domestic Product -GDP*) koji predstavlja tržišnu vrijednost svih finalnih proizvoda i usluga proizvedenih u nekoj zemlji tijekom jedne godine [20]. Ekonomski rast se iskazuje BDP-om po glavi stanovnika [21, 22]. Kako bi iznos BDP-a iskazan u USD bio realan i usporediv za svaku zemlju, obzirom da su u svakoj različite cijene proizvoda i usluga, izračunava se vrijednost valute USD prema njegovoj kupovnoj moći u toj državi. Ta se konverzija naziva „Paritet kupovne moći“ PPP (engl. *Purchasing power parities*). Izračunava se za skupine proizvoda ili košaricu dobara i izdataka za potrošnju kućanstava, vladinih usluga, stvaranje kapitala i neto izvoza, pokrivenih BDP-om [23].

Koristeći ova dva podatka moguće je analizirati korelaciju između napretka gospodarstva i broja izuma, sl.1 [6.] Zbog svođenja BDP (PPP) po glavi stanovnika kao i broja patenata na milijun stanovnika eliminiran je utjecaj veličine nacije i broj zaposlenih.

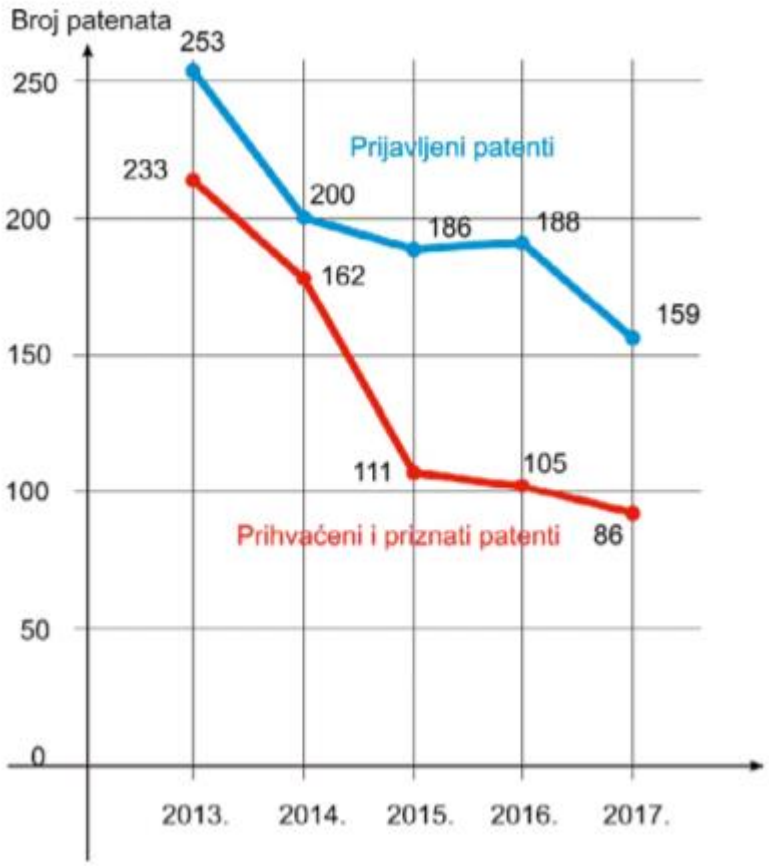


Sl.1 Broj patenata na milijun stanovnika i BDP po glavi stanovnika iskazan u USD (PPP) u europskim državama

Na broj patenata u nekoj državi sigurno ima utjecaj povoljna društvena klima, učinkovitost sustava obrazovanja, sposobnost gospodarstvenika, a u nekim zemljama i financijska podrška države.

Prikazani dijagrami na sl.1 ukazuju na postajanje određene korelacije. Jednostavno je objasniti odstupanja kod Irske i Norveške. BDP kod Norveške odstupa zbog prihoda od nafte u Sjevernom moru, a Irska je koncentrirala ITT industriju. Izvoznik je softverskih programa, proizvodi za tvrtke Nokia, Microsoft i dr. i ostvaruje visoke prihode. Već ranije je rečeno da se novi softverski programi ne mogu patentirati, a rad za druge tvrtke je na temelju njihovih patenata.

Iako je vidljiva korelacija između broja izuma i visine BDP -a treba uzeti u obzir da na njegovu veličinu utječu osim industrijske proizvodnje još poljoprivreda, turizam kao i razne druge usluge.



Sl.2 Broj prijavljenih i prihvaćenih patenata u Hrvatskoj u periodu od 5 godina [6]

U Hrvatskoj, nažalost prema poda- cima DZIV-a dolazi do pada broja prijavljenih izuma u posljednjih nekoliko godina, sl.2. To je u svakom slučaju zabrinjavajuće i ukazuje na nekoliko problema. Prvi je sigurno društvena klima koja ne potiče kreativnost i inovativnost koji su pred-uvjet za nastanak izuma. Izume i izumitelje nedovoljno cijene ni u tvrtkama ni u obrazovnim institucijama. Vjerojatno tu ima utjecaj i obrazovni sustav koji nije usmjeren na poticanje kreativnosti. Cijene prijave izuma, a posebno zaštite na europskoj razini, zaštite u raznim državama Europe su za platežne mogućnosti pojedinaca ili institucija poput škola ili fakulteta izuzetno visoke. Patenti imaju smisla ako ih podrže velike tvrtke, jake financijski i na tržištu. Sigurno bi veliki doprinos povećanom broju patenata bio da naša država snosi troškove patentiranja za pojedince i neprofitne organizacije, a naplaćuje tvrtkama. Država može utjecati i na ubrzanje postupaka priznavanja patenata koji npr. za potpunu provjeru patenta traje nekoliko godina. Za to vrijeme tehnika ide naprijed, a dok se nema potvrda o patentu ne može se krenuti ni u komercijalizaciju. U umreženom svijetu jednostavna je i brza provjera već postojećih patenata, a broj patenata u Hrvatskoj je izuzetno mali (sl.2) [24, 25]. Trebalo bi uvesti stalnu emisiju na TV poput emisije *Cronovatori* koja je krenula od 13. 2. 2019. na prvom programu HRT, te da se o izumiteljima više piše u tisku. To nisu veliki zahtjevi ali bi mogli znatno poboljšati klimu i dati impuls izumiteljima. U velikom broju izuma sigurno će biti i onih koji mogu pomoći razvoju našeg gospodarstva.
Možda najbolje ilustrira podatak da od skoro pedesetak registriranih izu-ma na TTF-u niti jedan nije komercijalno realiziran.

Koji put je problem i u nemogućnosti prijave izuma ako je on sastavljen iz komercijalnih dijelova. Kao primjer može poslužiti atraktivni i izuzetno inovativni hrvatski neurokirurški robot RONNA. Taj inovativni medicinski robota dobiva nagrade u svijetu i koristi se već nekoliko godina kod neurokirurških operacija u KB Dubrava. Kod njega su zaštitićeni samo inovativni markeri na glavi pacijenta kao i njihov način spajanja na lubanji pacijenta (u HR), a zaštićen je i njihov dizajn (u EU) [26, 27].

Obzirom na daljni razvoj ti markeri su nekoliko puta promijenjeni i sada više nisu u uporabi, te ne štite robotski sustav RONNA. Zaštita bi mogla biti ostvarena samo preko zaštićenog dizajna kućišta (u EU) koji vizualno dominira robotskim sustavom [28]. To je jedina zaštita RONNA-e. Ovaj primjer pokazuje da se koji put zbog zakona o zaštiti intelektualnog vlasništva ne mogu zaštiti sastavni dijelovi i sklopovi koji čine najznačajniji dio novog uređaja jer su kupljeni npr. roboti, senzori, optika, kao i softverski programi. Tako ovaj kao i vjerojatno slični izumi, iako vrlo značajni, nisu na popisu izuma Hrvatske te kao cjelina nisu zaštićeni.

Potpuno je razumljivo da i gospodarstvenici poput Mate Rimca ne prijavljuju patente, jer računaju da ta zaštita nije moguća ili nije isplativa, pogotovo iz razloga jer tehnika ide tako brzo naprijed, da se sve stalno mijenja, taman kada se proces proizvodnje uhodao.

4. Zaključno razmatranje

Okretanje prema povijesti kada smo imali mnogo svjetski značajnih izumitelja i u njoj nalaziti zadovoljstvo zbog sadašnje situacije kod nas nije za utjehu. Mala smo zemlja i u povijesti smo imali izumitelje velikane, koji su zadužili svijet. Žalosno je što se o njima ne govori u školi, fakultetima i ostalim obrazovnim ustanovama. Druge države i narodi se s njima hvale, veličaju ih, njihovim imenima obilježavaju ulice, trgove, daju imena školama. Zbog čega je to tako? Odgovor je vjerojatno zbog neznanja onih koji su zaduženi za obrazovanje, ali i nezainteresiranosti društava zbog stvorene klime o nekim drugim vrijednosnim kriterijima, vrlo često banalnim, populističkim.

Koristim prigodu da se i u ovom tekstu osvrnem na neke hrvatske izumitelje, koji su zadužili svijet, bez obzira jesu li izume ostvarili u Hrvatskoj ili izvan nje. Ima ih mnogo pa bi se u ovom tekstu mogli samo navesti neki tehničke struke iz novije povijesti. Ne treba posebno spominjati Nikolu Teslu, najznačajnijeg znanstvenika i izumitelja na svijetu. Vjerojatno većina zna za Slavoljuba Penkalu zbog patent olovke i nalivpera koje koriste. Nije dovoljno poznato da je izumio prvi deterdžent, prvo bjelilo za rublje, prvi insekticid, prvu džepnu lampu i niz drugih izuma od 80 koliko ih ima. Napravio je i prvi avion. Ivan Vučetić je poznat kao izumitelja daktiloskopije. Vjerojatno vrlo malo ljudi zna za Maria Puretića koji je spasio ribarsku flotu Amerike i svijeta izumom „Puretićevog vitla"(engl. Puretic Power Block) za podizanje velikih i teških mreža, koje danas imaju svi ribarski brodovi. Tu je i Anton Lučić (amerikanizirao je ime u Anthony Lucas). Cijeli ga svijet smatra ocem naftne industrije, a Amerikanci jednim od najvažnijih izumitelja i godišnje dodjeljuju zlatnu medalju s njegovim likom i imenom za važna ostvarenja u naftnoj industriji. Izumitelji svjetskog glasa su i Križevčanin Marcel pl. Kiepach, Istranin Josip Belušić, Zagrepčan Franjo Hanaman, Riječanin Ivan Lupis Vukić i veliki broj drugih.

Prazninu o našim najznačajnijim znanstvenicima i izumiteljima popuniti će knjiga koja će uskoro izaći. Tri su autora knjige od koji je jedan i pisac ovog članka, koji obrađuju pedesetak značajnijih hrvatskih znanstvenika i izumitelja kroz povijest.

4.1 TRANSLATION OF SOURCE TEXT 3

Innovations and Inventions, Today and Throughout History

1. Introduction

The development of mankind and civilization owes a lot to innovations and numerous inventions. Since the first hand tools to weapons, their influence changed people's behavior and insured them with the ability of a simpler survival. Newly developed technical inventions allowed for the growth of the economy as well as science, which affected society and social relationships. Those changes encouraged further development of new technical solutions which, in turn, influenced society and that spiral keeps climbing. Some of the inventions in industry, such as inventing the steam engine, electricity, PLC industrial computer (Programmable Logic Controller), computers, robots, were the cause of industrial revolutions. The revolution in medical treatment happened with, for example, vaccines, antibiotics, but also a series of devices ranging from the x-ray machine to the MRI, and soon medical robots and computers made for diagnostics.

Today it is thought that innovations and inventions are the main driver of the economy and we follow that data as indication of a country's economic and social development.

Numerous terms and conclusions are linked to intertwining innovative procedures. A part of those terms is taken as a crucial factor without the critical approach, and part of it is ignored.

Inventions and inventors, especially those more meaningful, deserve special attention and gratitude. Unfortunately, throughout history and much like today, many inventors receive no recognition for their inventions because they are taken over by others, which is an injustice that should be corrected.

2. Clarifying terms

Often in everyday speech, articles, and presentations we see imprecisely or incorrectly used expressions such as creativity, innovation, innovations, inventions, patents, innovators and inventors. For the sake of clarity these terms will be clarified.

Creativity signifies a mental process which includes creating new ideas, terms and solutions to problems [1,2]. It is considered that creative people have an open mind free of prejudice,

without limitations, create their own rules, they are ambitious and feisty. They accept challenges toward the unknown or unsolved. Their characteristic is personality, originality and being unbridled [3]. Research shows that creative people are intelligent, but not all intelligent people are creative [2,3]. Creativity is not just a characteristic and necessity for artists, it is essential in all creation, research, and problem-solving processes, no matter what they are. It is equally essential to scientists, economists, experts in all fields as well as administrative staff.

Creativity creates new ideas and **innovation** is the process of transforming these ideas by using knowledge about new products and services, for a new technological process and organization. It transforms ideas into life. It is a creative process without which there is no success in business and society. Creativity drives progress. "*Science is transferring money into knowledge, and innovation is transforming knowledge into money*" said Marianne P. Feldman (University of Toronto) [4].

Even though it can be considered that **innovations** happen regardless of an outside influence, that is not entirely correct; a social climate which encourages research and supports problem solving is also important. For innovation to happen and for it to be implemented, the innovation system is surely important, whether it be formal or informal [4]. The person who carries out a new idea through its practical solution is an **innovator**. Today these solutions are more and more poly-disciplinary, and more innovators are often engaged around certain innovations. The person who launches the innovation has the task of reinforcing said innovation or leading the team for its implementation. Advice and suggestions are often given to young innovators to make the innovation simple enough because every successful innovation is surprisingly simple [4].

In written communication and in everyday conversations we often equate innovation and **invention**. Innovation is not an invention, but every invention is an innovation. An invention is a new solution to a, most commonly, technical problem that did not exist before. The road to invention demands research, experimentation, and often making a series of prototypes, testing them and correcting solutions.

An invention can be registered to the state institution for intellectual property protection and, if it gets recognized after testing, it is protected with a patent. Good inventions without good commercial support often never get it to placement [5]. The person who came up with the invention is an **inventor**. That person is also called an **innovator**, which is correct, but it does not go vice versa. An inventor or inventors are people who first invented and protected their

invention. It is important for the invention to be protected. Everyone who worked on the invention later on, made it more modern or technically advanced, are not inventors unless they have significantly changed the inventions possibilities thus presenting a new product (item) with its new possibilities.

An invention is recognized by a patent document which protects it. For an invention to be recognized as a patent, there is a series of rules which must be met. It must be new, which is to say, before the patent application it must not be shown anywhere in public, it must be inventive and should not obviously come from prior art. It must be capable of industrial application, or its final application should be envisaged. [6]

Based on testing the invention applied for a patent, the competent state authority decides in a legal manner whether the invention can be accepted as a patent and issue it with a patent license. The patent belongs to a group of so-called intellectual property, which is a broad term because it covers other products of human mind and talent, and is protected in the State Intellectual Property Office (SIPO) or in the World Intellectual Property Organization, WIPO, and similar associations [6]. Patents cannot protect ideas, findings, scientific theories and mathematical methods, software, aesthetic manufacturing, animal and biological procedures, medical procedures etc. The national procedure and patent rights are issued by law and can be found on the pages of the State Intellectual Property Office of Croatia. [7,8]

The patent is property (of the inventor or another person or institution) and the Patent document ensures the owner has the right to make and use the patent during a limited period in the country or countries in which the patent protection is enforced. The maximum duration of patent protection is up to 20 years at which point it becomes publicly available to everyone who is interested.

3. The history

Invention protection was especially prominent during the Renaissance. Freedom of spirit and scientific flourishment created new ideas, new technical solutions. Inventors, the most established people at the time, were aware that publishing their inventions made them available to the wider public which can use them. Some made small changes to other people's inventions and presented them as their own. That kind of plagiarism was very often in the Renaissance. [9]

Researchers Marcus Popplow (mid 1990s), Danko Zelić (mid 2015) and Ivica Martinović (end of 2017) studied the documents which allowed Fausto Veranzio (under the pseudonym Felice Vero) to request and obtain privilege from the doge Pasquale Cicogna on October 28th 1590 for the invention of "….new machinery…." lasting 25 years. Researchers published in detail the maner and terms under which these privileges were appointed. They showed that there were written rules (laws) in the Republic of Venice which had to be followed as well as conditions that inventions had to meet to be awarded privileges.

This matter needs to be pointed out because the first patent law is incorrectly thought to be the Statute of the English Queen Anna (1665-1714), which came into power in 1710. It is listed as a source of the patent and copyright, which is to say intellectual property. [10]

In the Renaissance period, the rulers in Venice, Milan and Florence appointed privileges for inventions with precise terms considering duration, protection and fines for those who violate it. The first and oldest patent law was brought into force in 1474 in the Republic of Venice, nearly 300 years before Anna's Statute. The information that shows the vast number of requests for invention protection is the fact that from the 15th all the way up to the end of the 18th century, 1900 patent privileges were issued. [11]

Issuing privileges was worked out in full detail. The process began by sending an application to the state chief, the doge. Considering that request was the duty of the commune's *Provveditore*. Based on opinions of three expert public officials, assigning privileges would be decided by the Senate with a majority of votes. The Senate's decision was the Law, and the document was in the form of a ceremonial letter from the doge (*ducale)* with a pendent seal (a seal hanging from the letter) [11]. The decision about awarding privilege contained several mandatory parts of text:

1. to whom the privilege was issued (no authentication was required from the applicant)
2. where the privilege is in force (on the territory of the Republic of Venice)
3. for how long the privilege lasts
4. to which inventions the privilege applies
5. a fine was set for whoever violated the privilege
6. terms were stated under which the privilege is issued to the applicant:
    - that the invention is theirs and no one else has requested a patent for it already
    - that the applicant must publicize the invention within a set time frame (number of months is listed)

7. if the conditions under point 6 were not met, the privilege is void as if it was never issued [12]

Looking at today's conditions for a patent document issue, we can see that they are very similar. The key difference are the fundamental requests from point 6 which are conditions for requesting patent recognition. Point 5 is the key part of today's copyright law and the matter of dispute should it go to court. Obviously, there were some differences between the countries of that time in conditions when issuing privileges, such as granting the patent and patent rights. As the text before stated, the condition for invention recognition and issuing privilege is invention originality and that someone else hasn't already registered them. It is known that in his book *Machinae Novae* Fausto Veranzio clearly stated where he saw some solution, whether someone told it to him, as well as those inventions for which he had a written statement saying they were they were his. Based on the analysis of the author of this article in the book *The life of inventions of Fausto Veranzio* [14], from the total 57 drawings depicted in his book, only 16 are his original inventions. Along with significant technical innovations that can be included in new technical solutions, there are 29 inventions altogether, which is to say 51%. Fausto requested privilege for his book from the French King Louis XIII the Just, which he got on June 19th, 1614, as well as from the great Duke Cosimo II Medici, which he got on June 16th, 1615. It is likely that among the new machines that were shown were those that he got privileges from the doge Pasqual Cicogna on October 28th, 1590. It seems the criteria *that the invention is his and no one else applied for it already* was not checked in this case.

There are differences in approving protection duration, as well as penalties if someone violates the privilege. The doge P. Cicogna listed 25 years of protection in his privilege in 1590, and the privilege Fausto received from the ruler Louis XIII and Cosimo II Medici lasted 30 years. The protection Filippo Brunelleschi received in 1421 from the city of Florence for his invention "*a vessel to transports goods on the river Arno*" had a three-year protection time during which the author was given the right to commercialize his invention, and after that, for the cause of social development, the invention becomes available to anyone interested. [4,13] Danko Zelić, PhD, lists a similarly interesting piece of information about Fausto's contemporary, architect and painter, Florentine Bernardo Buontalenti. In 1578, after receiving privileges for three of his patents from the ruler Francisco I Medici, he requested recognition of those patents from rulers of 42 European countries. Upon his request, 9 countries responded positively, among which was the Republic of Dubrovnik. [11] That tells us that other countries approved of privileges and thus recognized inventions.

Patent trade was present In the Renaissance much like today. An example can be seen in a contract from May 5th 1588 written in Graz under which the Baron Johannes/Hans Friedrich Hoffman gives Fausto and Paolo Gandini from Lucca (Paolo Gandiny da Lucca) rights to his inventions in "countries of Dalmatia, Corfu and Senj" with compensation of half the profit of a year's worth of sales. That's where the estimate that Faust's legacy, 52,060 silver Milanese *libri* (a form of currency) was made by being an entrepreneur basing his work on someone else's and his own inventions for quarter of a century. He justifies the other part saying he earned it with his own hard work and diligence. [11,14]

Scientists Paolo Galluzzi, Bertrand Gille, Franco Pragera, Claudio Sgarbia and Ladislao Reti research renaissance engineer-inventors and come to many surprises stating that the greats such as the genius Leonardo da Vinci, along with some others (Francesco di Giorgio Martini), used other people's ideas and concepts. They redid and retouched drawings of their predecessors and displayed them as their own. Most researchers point out Mariano di Jacopo (Taccola) as the first and most significant inventor. There are theories that he saw parts of his innovations in a Chinese book on agriculture *Hong Shu (Nong Shu)* written by Wang Zhen in 1313, when the Chinese delegation visited Italy in 1434. [15, 16] Listing inventors for whom it is incorrectly thought to have set useful ideas in motion, used today in contemporary forms, should change soon. The error should be corrected, and we should thank those who are actually responsible for the original inventions for their accomplishments. Based on new findings, even the genius Leonardo da Vinci is not the original inventor of the helicopter, underwater suit, multi-barrel cannons, parachute and a series of other inventions. Other than the unfair approach of individuals, it is often the public's fault to accept it and spread misinformation still today. It is worth thinking back to some from the recent past. It is known that the "airship" dirigible was invented, patented and built by Zagrebian David Schwartz, but he suddenly died two days before the airship was supposed to officially take-off in front of the German emperor Wilhelm and the military commission on January 15th 1897 in Berlin. The rich German count Ferdinand von Zeppelin bought the drawings and calculations from his widow, slightly altered the drawings and applied it as his own patent. From then on, the dirigible is known as the zeppelin. Also famous is the dispute between Guglielmo Marconi and Nikola Tesla about the invention of the radio which ended with the Supreme Court of the United States deciding in favor of Tesla in 1943, though still today textbooks attribute the invention of the radio to Marconi. [9]

Those are just two publicly known cases which neither historians nor technicians nor encyclopedist, and therefore the public, do not change. There are even more examples today

which can be seen by carefully reading interviews about important inventions, as the original inventors are slowly left out over time and the credit is exclusively taken by others who worked on the tech.

4. The effect of inventions on GDP growth

Nobel award winning Robert Solow convinced most economists with his research that technological innovations should be the main power in manufacture growth, creating new values and employment in highly industrialized economies. [17] Due to the growing aggressiveness of the market, it is necessary to constantly introduce innovation in products, production and marketing. Only creative and innovative people with motivation, fresh approaches to new ideas and their implementation can achieve that. [18]

Shqipe Gerguri and Veland Ramadani pointed out the significance of innovation with the words: *"Innovation is the heartbeat of the 21st century economy, the opposing force is commoditization, one of the most important forces in business today, which takes everything that was profitable quickly making it ordinary and marginal, sucking out the vitality and profitability."* [18]

It was said that innovation is a process of transforming ideas and knowledge into new products and services. Given that they are happening in all areas of human work, it is possible to register only those that present and apply as an invention. There is information with institutions and bureaus who issue patent documents for accepted inventions – patents. As a comparable measure between countries, information is taken about the number of patents in the European Patent Office per million inhabitants. [19]

Success of the economy is measured in GDP (Gross Domestic Product) which represents market value of all final products and services manufactured in a country over the course of a year [20]. Economic growth is presented in GDP per capita [21,22]. To make sure the GDP denominated in US dollars is realistic and comparable to each country, considering that each has different product and service prices, the value is calculated according to the dollar purchasing power in a particular country. That conversion is called Purchasing Power Parities - PPP. It is calculated for product groups or a basket of goods and expenses for domestic consumption, government services, capital creation and net export covered by GDP. Using these two pieces of information, it is possible to analyze the correlation between economy

progress and invention numbers, fig. 1 [6]. Reducing GDP (PPP) and the number of patents to one million per capita eliminated the influence of a nation's size and number of people employed.

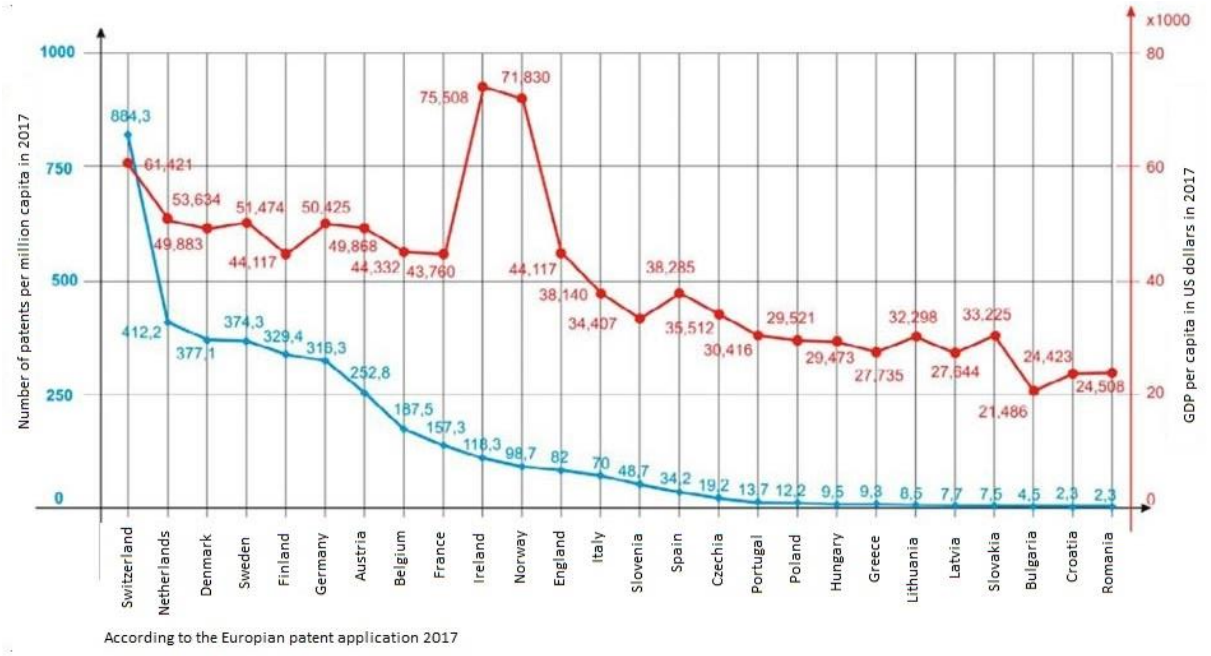


Fig.1 Number of patents per million capita and GDP per capita denominated in US dollars (PPP) in European countries

A favorable social climate surely has effect on the number of patents in a certain country, and so do efficiency of the education system, competence of economists and, in some countries, financial support from the state.

Diagrams depicted on figure 1 point to the existence of a certain correlation. It's simple to explain deviation with Ireland and Norway. Norway's GDP deviates because of income from oil in the Northern Sea, and Ireland concentrated the IT industry. It exports software programs, products for Nokia, Microsoft etc., and it achieves a large income. It was said before that new software programs cannot be patented and working for other companies is based on their patents.

Although the correlation between the number of inventions and GDP is visible, it should be taken into account that its size is influenced by industrial manufacturing, agriculture, tourism, and many other services.

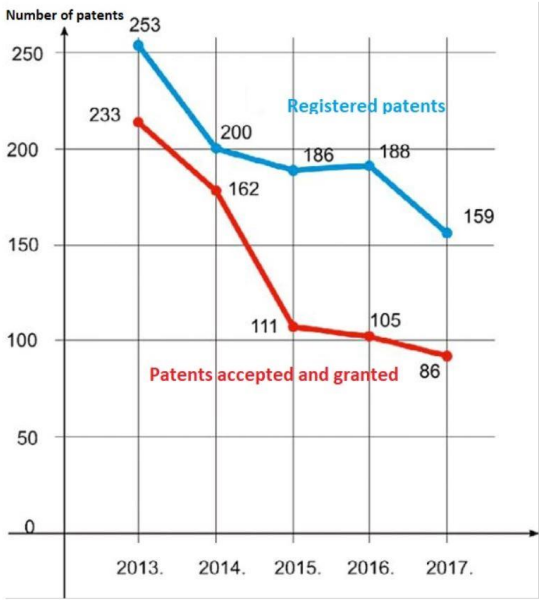


Fig. 2 Number of applied and granted patents in Croatia over a 5-year period

In Croatia, according to SIPO, the number of inventions applied has unfortunately diminished in the last few years (fig. 2). In any case, that is concerning and shows several problems. The first one definitely being the social climate which is not encourage creativity and innovation, the prerequisites for creating an invention. Inventions and inventors are underappreciated in companies as well as in educational institutions. It is most likely influenced by the educational system which is not focused on encouraging creativity. The prices of patents applications, and especially protection on the European level, are extremely out of the price range of individuals or institutions such as schools and universities in various European countries. Patents make sense if large companies support them, companies that are strong both financially and on the market. Surely a large contribution to the increased number of patents would be if our country took on the expense of patenting for individuals and nonprofit organizations, while charging companies. The government can affect the acceleration of patent granting which usually takes a few years. In that time, tech goes forward, and without a patent confirmation it cannot even start being commercialized. In a well-network world, already existing patent checks are simple and quick and the number of patents in Croatia is extremely small (fig. 2). [24,25] A permanent show should be introduced to TV, such as Cronovaters which started on February 13th, 2019 on channel 1 in Croatia (HRT 1). The press should write more about inventors. Those are not big requests but could significantly improve the climate and give impulse to inventors. With a large number of inventions, surely there will be those who can help develop our economy.

Maybe the best illustrating piece of information is that out of almost 50 registered inventors on TTF not one was commercially realized.

Sometimes the problem is the inability to register the invention if it is built from commercial parts. An example can be the attractive and exquisitely innovative Croatian neurosurgical robot RONNA. That innovative medical robot has been getting awards in the world and has been used for several years with neurosurgical operations in CH Dubrava. The only thing protected about it are the innovative markers on the patient's head as well as the way they connect to the patient's skull (in Croatia), and their design is also protected (in the EU) [26,27]. Considering further development, those markers have been changed several times and are now no longer in use, thus not protecting the RONNA robotic system. Protection could be achieved only over a protected case design (in the EU) which visually dominates the robotic system [28]. That is the only protection of the RONNA. This example shows that sometimes, due to the copyright laws, key parts and circuits which make the most important part of a new appliance cannot be protected because they were bought. Examples of that would be robots, sensors, optics, as well as software programs. So this, along with probably similar inventions, although very meaningful, are not on the list of Croatia's inventions and are unprotected as a whole.

It is completely understandable that economists such as Mate Rimac do not apply for patents because they know protection is impossible or not cost effective, especially because tech is moving forward so fast that everything is constantly changing just as the production process settles in.

4. Closing thoughts

Turning to history when we have had many world-class significant inventors to find pleasure in it due to today's situation might not be comforting here. We are a small country and we've historically had great inventors that the world will always be in debt to. It is saddening they are not talked about in schools, universities and other educational institutions. Other countries and nations brag about them, praise them, use their names to mark streets, squares, name their schools. Why is that so? It is probably due to ignorance of those in charge of education, but also the general disinterest of society because it now values some other criteria, often banal and populist.

I'm using this opportunity to mention some Croatian inventors in this text, inventors who the world is in debt to, regardless of whether they actualized their inventions in Croatia or outside of it. There are a lot of them so this text could just list some technical inventors of newer history. We don't have to especially mention Nikola Tesla, the most significant scientist and inventor in the world. Most people probably know of Slavoljub Penkala for his mechanical pencil and fountain pen they use. It is not well known that he invented the first detergent, first bleach, first insecticide, first pocket lamp and a series of other inventions of the 80 that he has. He also constructed the first airplane. Juan Vucetich is known as the inventor of dactyloscopy. Probably a very small number of people know about Mario Puretić who saved the commercial fishing fleet of America and the world by inventing the "Puretic Power Block" for lifting large and heavy nets which every fisherman boat has today. There is also Anton Lučić (Americanized his name to Anthony Lucas) who the whole world knows as the father of the oil industry. Americans know him as one of the most important inventors and every year they award a gold medal with his face and name on it for important contributions in the oil industry. World famous inventors are also Marcel Kiepach from Križevci, Istrian Josip Belušić, Zagrebian Franjo Hanaman, Giovanni Lupis from Rijeka and many others. The void of our most significant scientists and inventors will be filled by a book coming out soon. Three authors wrote the book, one of which is the author of this article, and they deal with 50 significant Croatian scientists and inventors throughout history.

4.2 Commentary and analysis

Text 3: *Innovations and inventions, today and throughout history*

1. genre: article, descriptive, scientific

2. source: published in the journal *Tekstil*, No. 67

3. audience: general audience interested in the subject

4. purpose of writing: reviewing history, pointing out problems and offering solutions for bettering Croatia's GDP

5. authenticity: original article

6. style: informative, critical

7. level of formality: formal

8. layout: five sections – introduction, clarifying terms, from history, the effect of inventions on GDP growth, conclusion; a total of 36 paragraphs

9. content: the author begins by describing how inventions are developed and goes on clarifying terms such as creativity, innovations, inventions. He then describes how patent grants work and what must be done to register a patent. The author informs the reader of the first known patents, who registered them, how they worked and who was in charge of granting them. Several Croatian examples are mentioned. Included are two graphs related to the connection between patents and a country's GDP. The author also offers solutions for bettering Croatia's GDP. The conclusion mentions famous Croatian inventors and their inventions.

10. cohesion: lexical cohesion is achieved by using topic related jargon

11. sentence patterns: mostly longer sentences, some complex with multiple dependent clauses, some short and to the point

12. terminology of the subject: use of terms such as *innovation, inventions, creativity, GDP, PPP, patents, granting, privileges*

This text contains numerous terms and phrases that are less known and more field specific. I was familiar with the keywords (innovation, invention, patent etc.), but translating terms such as "priznati patent" and "prijava patenta" was a challenge because they have very specific meanings and using synonyms of those words would not get the actual meaning across. I visited the State Intellectual Property Office of the Republic of Croatia webpages which offered the correct terms to use in this context patent registration/application/granting.

I was not acquainted with the phrase "proizlaziti iz stanja tehnike". I visited the SIPO webpages in Croatian and then compared it with the international WIPO pages in English where I found the correct phrase to use in English is "come from prior art".

The next challenge was translating the section regarding the first patent grants in the Republic of Venice. As some of those terms are archaic (for example *dužd, povlastica/privilegij*, meaning patent grants, *providur, komuna*, etc), I had to research historical terms from several university papers available on the Internet. I found the appropriate English equivalents (*doge, privilege, Provveditore, commune*) as well as make sure they refer to exactly what the author had in mind.

One term I could not find a translation for is "dukala", which stands for a ceremonial doge's letter, so I used the original Italian term *ducale*.

The sentence structure was at times confusing as the author tends to make some sentences an entire paragraph long. I dealt with this by either splitting those sentences into several, by changing the order of clauses to make sentences clearer, or by using dependent clauses.

I had to translate a lot of names as well, Ivan Lupis is Giovanni Lupis, Faust Vrančić is Fausto Veranzio, Krf is Corfu, etc.

When the author mentions the inheritance of Fausto Veranzio, he says he left behind "52.060 srebrnih milanskih libri". After learning that it refers to money, I tried looking up a translation for this currency, but was unable to find anything. Even researching old currency did not seem to offer an answer. I looked into his last will and testament thinking it would provide me with an equivalent, but soon found out his last will and testament was never translated into English. Finally, I decided to translate it as "silver Milanese *libri* (a form of currency)" to keep the expression but also to offer an explanation.

5. CONCLUSION

The process of translating is a challenging one – not only does it require extensive knowledge of the language, but also complete understanding of the source text, its target audience, genre, and purpose. It is up to the translator to convey both the accurate meaning of the source text and the tone the author had in mind.

Translation should be sense-for-sense, not word-for-word. Since the authors of the respective texts wrote the articles for a target audience, they often used terminology that is well-known in their fields, but not to someone with no experience in the subject matter. This means I had to do research beyond just the text itself and I had to focus on the extralinguistic context as I could not just translate literally.

The terminology is not the only problem translators face. Translations should feel natural to a native speaker, so it is important that they follow language rules both semantically and syntactically. This was one of the most challenging parts of translation for me as Croatian often uses long and complex sentences. I had to either split them into several sentences or use dependent clauses, all while keeping the target text comprehensible and in accordance with the English language.

It is the translator's job to consider numerous aspects regarding not just the texts, but the source and target language as well to ensure a quality translation.

6. BIBLIOGRAPHY

https://www.dziv.hr/en/ Accessed September 2021

https://www.wipo.int/portal/en/index.html Accessed September 2021

https://www.schooleducationgateway.eu/hr/pub/viewpoints/experts/metacognition-teaching.htm Accessed September 2021

https://cft.vanderbilt.edu/guides-sub-pages/metacognition/ Accessed September 2021

https://www.brainstormproductions.edu.au/theatre-in-education/ Accessed September 2021